



February 9, 2017

Mr. Greg Lukosky  
PENINSULA RETAIL PARTNERS, LLC.  
417 29<sup>th</sup> Street  
Newport Beach, CA 92663

**Subject: Central Plaza Traffic Impact Study, City of Lake Elsinore (Updated February 9, 2017)**

Dear Mr. Lukosky:

RK ENGINEERING GROUP, INC. (RK) is pleased to provide this traffic impact study for the proposed Central Plaza project. The currently vacant project site is located on the southeast corner of the Collier Avenue / Central Avenue (SR-74) intersection in the City of Lake Elsinore as shown in Exhibit 1-1. The proposed project, which is planned to open in 2017, consists of the following land uses:

- 53,469 square feet of retail;
- 4,500 square feet of fast food with drive-thru restaurant;
- 3,530 square feet of fast food without drive-thru restaurant; and
- 4,304 square feet of high turnover sit-down restaurant.

Additionally, as part of the proposed project, the following circulation system modifications are planned:

- At the intersection of Collier Avenue/Central Avenue (SR-74), widen the northbound Collier Avenue approach from one left-turn lane, one through lane, and one right-turn lane with right-turn overlap phasing to consist of one left-turn lane, two through lanes, and two right-turn lanes with right-turn overlap phasing; and

- Modify/widen the eastbound Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps from two and three through lanes to consist of four through lanes.

This report provides a summary of the findings, analysis procedures, and evaluation of the proposed project with respect to on-site and off-site traffic impacts, pursuant to City of Lake Elsinore requirements and California Department of Transportation (Caltrans) requirements.

The results of the analysis indicate the proposed project can be accommodated assuming implementation of the recommended improvements/mitigation measures identified in this report. The study recommendations are included in the *Findings and Recommendations* section of this report.

*Project Contribution for Mitigation Measures Identified for Existing Plus Project Conditions:*

The proposed project will be required to contribute a fair-share percentage for implementation of the identified mitigation measures at study facilities that are currently operating deficiently for Existing Conditions and are forecast to continue to operate deficiently for Existing Plus Project Conditions.

The proposed project will be required to make full contribution for implementation of the identified mitigation measures at study facilities that are currently operating acceptably for Existing Conditions and are forecast to operate deficiently for Existing Plus Project Conditions.

*Project Contribution for Mitigation Measures Identified for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project):*

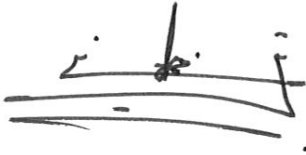
The proposed project will be required to contribute a fair-share percentage for implementation of the identified mitigation measures at study facilities that are currently operating deficiently for Existing Conditions and are forecast to continue to operate deficiently for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project).

The proposed project will be required to make full contribution for implementation of the identified mitigation measures at study facilities that are currently operating acceptably for Existing Conditions and are forecast to operate deficiently for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project).

Project Contribution for Mitigation Measures Identified for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project): The proposed project will be required to contribute a fair-share percentage for implementation of the identified mitigation measures at study facilities that are forecast to begin to operate deficiently for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project).

If you have any questions regarding this study, or would like further review, please call us at (949) 474-0809.

Sincerely,  
RK ENGINEERING GROUP, INC.

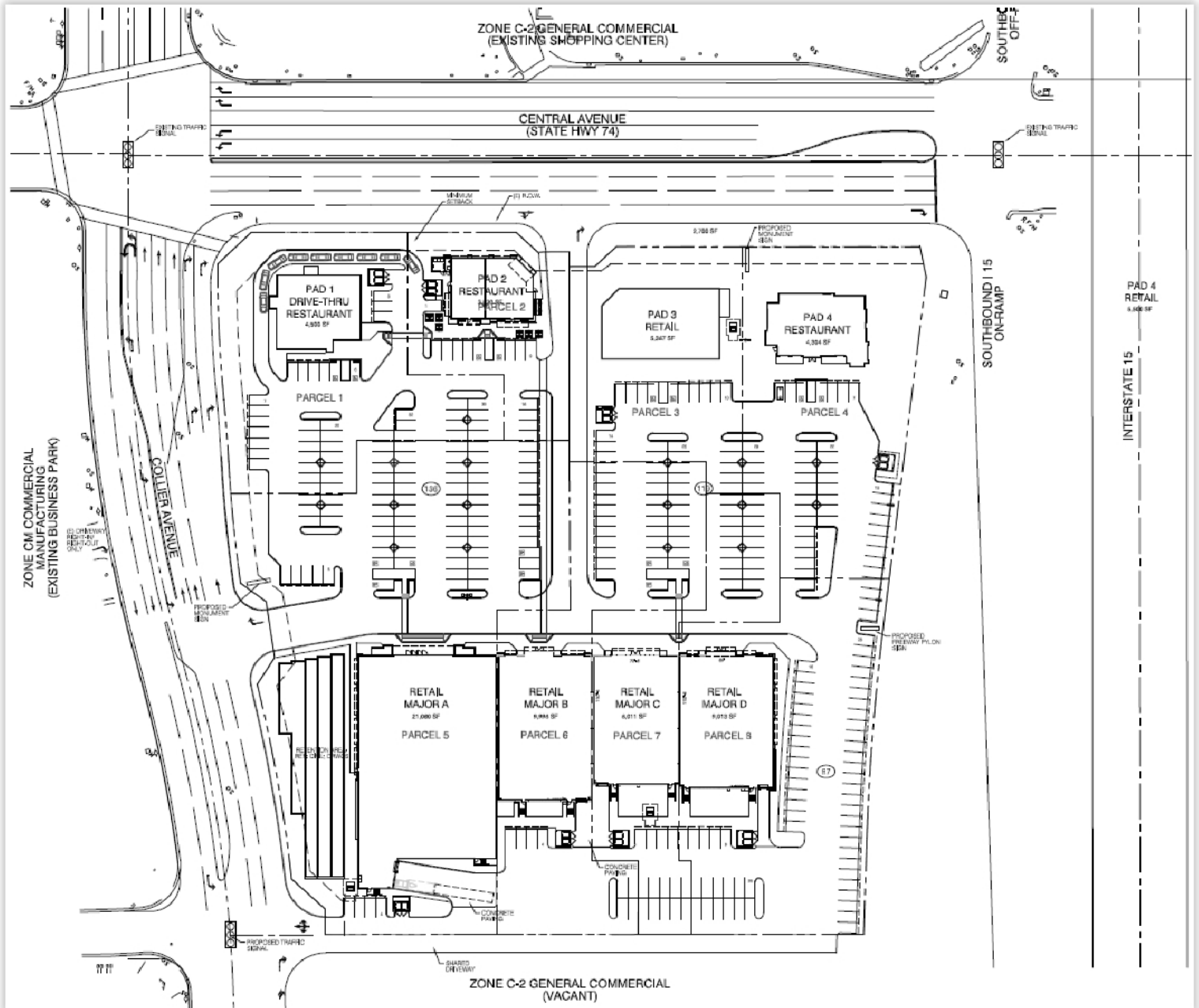


Alex Tabrizi, PE, TE  
Associate Principal

Attachments



**CENTRAL PLAZA  
TRAFFIC IMPACT STUDY  
City of Lake Elsinore, California  
(Updated 2/9/2017)**





**CENTRAL PLAZA  
TRAFFIC IMPACT STUDY  
City of Lake Elsinore, California  
(Updated 2/9/2017)**

**Prepared for:**

PENINSULA RETAIL PARTNERS, LLC.  
417 29<sup>th</sup> Street  
Newport Beach, CA 92663

**Prepared by:**

RK ENGINEERING GROUP, INC.  
4000 Westerly Place, Suite 280  
Newport Beach, CA 92660

**Mohammad "Alex" Tabrizi, PE, TE  
Alex Vu, EIT  
Jethro Narciso, EIT**



**February 9, 2017**

# Table of Contents

| <b>Section</b>                                                                               | <b>Page</b> |
|----------------------------------------------------------------------------------------------|-------------|
| <b>1.0 Introduction.....</b>                                                                 | <b>1-1</b>  |
| 1.1 Purpose of Report and Study Objectives                                                   | 1-1         |
| 1.2 Site Location                                                                            | 1-2         |
| 1.3 Development Project Description                                                          | 1-3         |
| 1.4 Study Area                                                                               | 1-4         |
| <b>2.0 Analysis Methodologies, Performance Criteria, and Thresholds of Significance.....</b> | <b>2-1</b>  |
| 2.1 Intersection Peak Hour Level of Service Analysis Methodology                             | 2-1         |
| 2.2 Intersection Peak Hour Vehicular Queue Length Analysis Methodology                       | 2-3         |
| 2.3 Roadway Segment Level of Service Analysis Methodology                                    | 2-3         |
| 2.4 Freeway Segment Level of Service Analysis Methodology                                    | 2-4         |
| 2.5 Freeway Ramp Merge/Diverge Level of Service Analysis Methodology                         | 2-5         |
| 2.6 Level of Service Performance Criteria & Thresholds of Significance                       | 2-5         |
| 2.7 Vehicular Queuing Performance Criteria & Thresholds of Significance                      | 2-5         |
| <b>3.0 City of Lake Elsinore General Plan.....</b>                                           | <b>3-1</b>  |
| 3.1 City of Lake Elsinore General Plan Circulation Element                                   | 3-1         |
| 3.2 City of Lake Elsinore Public Transit Service                                             | 3-1         |
| 3.3 City of Lake Elsinore Bikeway Plan                                                       | 3-1         |
| <b>4.0 Circulation System &amp; Existing Traffic Volumes .....</b>                           | <b>4-1</b>  |
| 4.1 Study Area Existing & Future-Planned Geometry & Traffic Controls                         | 4-1         |
| 4.2 Existing Intersection & Roadway Segment Traffic Volumes                                  | 4-1         |
| 4.3 Existing Freeway Segment Traffic Volumes                                                 | 4-2         |
| <b>5.0 Projected &amp; Future Traffic Volumes .....</b>                                      | <b>5-1</b>  |
| 5.1 Project Traffic Volumes                                                                  | 5-1         |
| 5.1.1 Project Trip Generation                                                                | 5-1         |
| 5.1.2 Project Pass-by Trip Adjustment                                                        | 5-2         |
| 5.1.3 Project Trip Distribution & Assignment                                                 | 5-2         |
| 5.1.4 Modal Split                                                                            | 5-3         |
| 5.1.5 Project Peak Hour Traffic Volumes                                                      | 5-3         |

|             |                                                                                                                                                                |             |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 5.2         | Existing Plus Project Conditions Traffic Volumes                                                                                                               | 5-3         |
| 5.3         | Background Traffic Volumes & Method of Projection                                                                                                              | 5-4         |
| 5.4         | Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) Traffic Volumes                                                             | 5-5         |
| 5.5         | Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) Traffic Volumes                                            | 5-5         |
| <b>6.0</b>  | <b>Traffic Signal Warrant Evaluation .....</b>                                                                                                                 | <b>6-1</b>  |
| <b>7.0</b>  | <b>Study Intersection Peak Hour LOS Analysis.....</b>                                                                                                          | <b>7-1</b>  |
| 7.1         | Existing Study Intersection Peak Hour Level of Service                                                                                                         | 7-1         |
| 7.2         | Existing Plus Project Conditions Study Intersection Peak Hour Level of Service                                                                                 | 7-2         |
| 7.2.1       | Existing Plus Project Conditions Mitigation Measures & Mitigated Peak Hour Level of Service                                                                    | 7-3         |
| 7.3         | Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) Study Intersection Peak Hour Level of Service                               | 7-4         |
| 7.3.1       | Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) Mitigation Measures & Mitigated Peak Hour Level of Service                  | 7-6         |
| 7.4         | Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) Study Intersection Peak Hour Level of Service              | 7-8         |
| 7.4.1       | Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) Mitigation Measures & Mitigated Peak Hour Level of Service | 7-9         |
| <b>8.0</b>  | <b>Peak Hour Vehicular Queue Analysis.....</b>                                                                                                                 | <b>8-1</b>  |
| <b>9.0</b>  | <b>Study Roadway Segment LOS Analysis .....</b>                                                                                                                | <b>9-1</b>  |
| <b>10.0</b> | <b>Study Freeway Segment LOS Analysis.....</b>                                                                                                                 | <b>10-1</b> |
| <b>11.0</b> | <b>Study Freeway Ramps Merge/Diverge LOS Analysis .....</b>                                                                                                    | <b>11-1</b> |
| <b>12.0</b> | <b>Findings and Recommendations .....</b>                                                                                                                      | <b>12-1</b> |
| 12.1        | Intersection Analysis Summary                                                                                                                                  | 12-1        |
| 12.2        | Site Access                                                                                                                                                    | 12-1        |

|        |                                     |      |
|--------|-------------------------------------|------|
| 12.3   | Circulation Recommendations         | 12-2 |
| 12.3.1 | On-Site                             | 12-2 |
| 12.3.2 | Area Wide                           | 12-3 |
| 12.4   | Safety and Operational Improvements | 12-3 |
| 12.5   | Regional Funding Mechanisms         | 12-3 |
| 12.6   | Project Contribution                | 12-3 |
| 12.7   | Summary of Mitigation Measures      | 12-5 |
| 12.8   | Conclusions                         | 12-9 |

# List of Attachments

## Exhibits

---

|                                                                                      |     |
|--------------------------------------------------------------------------------------|-----|
| Location Map .....                                                                   | 1-1 |
| Site Plan .....                                                                      | 1-2 |
| City of Lake Elsinore General Plan Roadway Classifications .....                     | 3-1 |
| City of Lake Elsinore General Plan Roadway Cross-Sections .....                      | 3-2 |
| City of Lake Elsinore General Plan Transit System .....                              | 3-3 |
| City of Lake Elsinore General Plan Bikeway Plan .....                                | 3-4 |
| Existing Lane Geometry and Traffic Controls.....                                     | 4-1 |
| Existing Peak Hour Intersection Volumes and Average Daily Traffic .....              | 4-2 |
| Project Trip Distribution .....                                                      | 5-1 |
| Project Peak Hour Intersection Volumes and Average Daily Traffic.....                | 5-2 |
| Existing Plus Project Peak Hour Intersection Volumes and Average Daily Traffic ..... | 5-3 |
| Cumulative Projects Location Map.....                                                | 5-4 |
| Cumulative Projects Peak Hour Intersection Volumes and Average Daily Traffic .....   | 5-5 |
| Project Completion Peak Hour Intersection Volumes and Average Daily Traffic .....    | 5-6 |
| Cumulative Conditions Peak Hour Intersection Volumes and Average Daily Traffic.....  | 5-7 |
| Existing Plus Project Lane Geometry and Traffic Controls.....                        | 7-1 |
| Mitigated Existing Plus Project Lane Geometry and Traffic Controls.....              | 7-2 |
| Project Completion Lane Geometry and Traffic Controls .....                          | 7-3 |
| Mitigated Project Completion Lane Geometry and Traffic Controls.....                 | 7-4 |
| Cumulative Conditions Lane Geometry and Traffic Controls .....                       | 7-5 |

## List of Attachments (continued)

|                                                                            |      |
|----------------------------------------------------------------------------|------|
| Mitigated Cumulative Conditions Lane Geometry and Traffic Controls .....   | 7-6  |
| Dexter Avenue/Central Avenue (SR-74) Mitigation Measure (Conceptual) ..... | 7-7  |
| Area-Wide Recommendations.....                                             | 12-1 |
| On-site Recommendations .....                                              | 12-2 |

### Tables

---

|                                                                                                                                              |      |
|----------------------------------------------------------------------------------------------------------------------------------------------|------|
| Freeway Study Facility traffic Volumes .....                                                                                                 | 4-1  |
| Proposed Project Trip Generation Rates .....                                                                                                 | 5-1  |
| Proposed Project Trip Generation .....                                                                                                       | 5-2  |
| Cumulative Projects Trip Generation.....                                                                                                     | 5-3  |
| Existing Conditions Study Intersection Peak Hour LOS.....                                                                                    | 7-1  |
| Existing Plus Project Conditions Study Intersection Peak Hour LOS .....                                                                      | 7-2  |
| Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) Study Intersection Peak Hour LOS .....                    | 7-3  |
| Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Conditions Plus Proposed Project) Study Intersection Peak Hour LOS ..... | 7-4  |
| HCM 95 <sup>th</sup> Percentile Vehicular Queuing Analysis Summary.....                                                                      | 8-1  |
| Study Roadway Segment Analysis Summary – Existing Classification & Capacity .....                                                            | 9-1  |
| Freeway Segment Analysis Summary .....                                                                                                       | 10-1 |
| Freeway Ramp Merge & Diverge Analysis Summary .....                                                                                          | 11-1 |
| Recommended Off-Site Intersection Improvements .....                                                                                         | 12-1 |
| Project Fair-Share Intersection Contribution for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) .....    | 12-2 |

## List of Attachments (continued)

### **Appendices**

---

|                                                                                                                                                         |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Approved Traffic Analysis Scope of Work .....                                                                                                           | A |
| Traffic Count Worksheets .....                                                                                                                          | B |
| MUTCD Signal Warrant Worksheets .....                                                                                                                   | C |
| Existing Conditions Intersection Analysis Worksheets .....                                                                                              | D |
| Existing Plus Project Conditions Intersection Analysis Worksheets.....                                                                                  | E |
| Mitigated Existing Plus Project Conditions Intersection Analysis Worksheets .....                                                                       | F |
| Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project)<br>Intersection Analysis Worksheets.....                             | G |
| Mitigated Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed<br>Project) Intersection Analysis Worksheets .....                  | H |
| Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus<br>Proposed Project) Intersection Analysis Worksheets .....           | I |
| Mitigated Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects<br>Plus Proposed Project) Intersection Analysis Worksheets ..... | J |
| Study Freeway Segment Analysis Worksheets .....                                                                                                         | K |
| Study Freeway Ramp Merge & Diverge Analysis Worksheets .....                                                                                            | L |

## **1.0 Introduction**

---

### **1.1 Purpose of Report and Study Objectives**

The purpose of this traffic impact analysis is to evaluate the development of the Central Plaza project from a traffic circulation standpoint. The currently vacant project site is located on the southeast corner of the Collier Avenue / Central Avenue (SR-74) intersection in the City of Lake Elsinore as shown in Exhibit 1-1. The proposed project, which is planned to open in 2017, consists of the following land uses:

- 53,469 square feet of retail;
- 4,500 square feet of fast food with drive-thru restaurant;
- 3,530 square feet of fast food without drive-thru restaurant; and
- 4,304 square feet of high turnover sit-down restaurant.

Access for the proposed project is planned as follows:

- One right-in/right-out access location on Central Avenue (SR-74);
- One left-in/right-in/right-out access location on Collier Avenue. Left-turn in access at this location will be restricted through construction of a raised center median along Collier Avenue; and
- One full access location at the existing Collier Avenue/Crane Street intersection.

Additionally, as part of the proposed project, the following circulation system modifications are planned:

- At the intersection of Collier Avenue/Central Avenue (SR-74), widen the northbound Collier Avenue approach from one left-turn lane, one through lane, and one right-turn lane with right-turn overlap phasing to consist of one left-turn lane, two through lanes, and two right-turn lanes with right-turn overlap phasing; and



- Modify/widen the eastbound Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps from two and three through lanes to consist of four through lanes.

Study objectives include: (1) documentation of existing traffic conditions in the vicinity of the site; (2) evaluation of traffic conditions in the Project Completion (Year 2017) Without and With Cumulative Projects; and (3) determination of on-site and off-site improvements and system management actions needed to achieve City of Lake Elsinore level of service requirements.

This study has been prepared in accordance with the City of Lake Elsinore traffic impact analysis procedures and the approved scope of work contained in Appendix A.

The study evaluates the following facilities based on discussions with City of Lake Elsinore staff and feedback from Caltrans District 8:

- Intersection peak hour Level of Service (LOS) analysis at twelve (12) study locations including the project full access driveways;
- Study intersection peak hour vehicular queue analysis along Central Avenue (SR-74) from Collier Avenue to Dexter Avenue;
- Roadway segment LOS analysis at seven (7) study roadway segments;
- Freeway segment peak hour LOS analysis on the I-15 Freeway in the vicinity of the Central Avenue (SR-74) interchange; and
- Freeway ramp merge/diverge peak hour LOS analysis at the I-15 Freeway interchange with Central Avenue (SR-74).

## **1.2 Site Location**

The currently vacant project site is located on the southeast corner of the Collier Avenue / Central Avenue (SR-74) intersection in the City of Lake Elsinore. Exhibit 1-1 illustrates the site location and traffic analysis study area.

The project site is currently zoned as General Commercial (C2). The proposed project will not require a zone change or General Plan Amendment.

### **1.3 Development Project Description**

The proposed project, which is planned to open in 2017, consists of the following land uses:

- 53,469 square feet of retail;
- 4,500 square feet of fast food with drive-thru restaurant;
- 3,530 square feet of fast food without drive-thru restaurant; and
- 4,304 square feet of high turnover sit-down restaurant.

Access for the proposed project is planned as follows:

- One right-in/right-out access location on Central Avenue (SR-74);
- One left-in/right-in/right-out access location on Collier Avenue. Left-turn in access at this location will be restricted through construction of a raised center median along Collier Avenue; and
- One full access location at the existing Collier Avenue/Crane Street intersection.

Additionally, as part of the proposed project, the following circulation system modifications are planned:

- At the intersection of Collier Avenue/Central Avenue (SR-74), widen the northbound Collier Avenue approach from one left-turn lane, one through lane, and one right-turn lane with right-turn overlap phasing to consist of one left-turn lane, two through lanes, and two right-turn lanes with right-turn overlap phasing; and
- Modify/widen the eastbound Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps from two and three through lanes to consist of four through lanes.

The proposed project has been analyzed in one (1) complete phase.

The site plan for the proposed development is shown in Exhibit 1-2.

#### **1.4 Study Area**

The study area consists of Riverside Drive and Central Avenue, designated by Caltrans as State Route 74 (SR-74), and Collier Avenue. It should be noted that SR-74 is under the jurisdiction of California Department of Transportation (Caltrans). The remaining roadway segments and intersections are under the City of Lake Elsinore jurisdiction.

The analysis evaluates the following study scenarios consistent with the City of Lake Elsinore requirements for evaluation of potential traffic impacts:

- Existing Conditions;
- Existing Plus Project Conditions;
- Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project); and
- Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project).

The following study facilities have been evaluated for the study conditions and scenarios listed above:

- A. Intersection peak hour Level of Service (LOS) analysis at the following twelve (12) study locations including the project full access driveways:

### Study Intersections & Jurisdictions

| #   | North-South Street            | East-West Street          | Jurisdiction          |          |
|-----|-------------------------------|---------------------------|-----------------------|----------|
|     |                               |                           | City of Lake Elsinore | Caltrans |
| 1.  | Gunnerson St / Strickland Ave | Riverside Dr (SR-74)      |                       | X        |
| 2.  | Collier Ave                   | Riverside Dr (SR-74)      |                       | X        |
| 3.  | Collier Ave                   | Central Ave (SR-74)       |                       | X        |
| 4.  | Collier Ave                   | Crane St - Project Access | X                     |          |
| 5.  | Collier Ave                   | Chaney St                 | X                     |          |
| 6.  | Collier Ave                   | North Spring St           | X                     |          |
| 7.  | I-15 SB Ramps                 | Central Ave (SR-74)       |                       | X        |
| 8.  | I-15 NB Ramps                 | Central Ave (SR-74)       |                       | X        |
| 9.  | Dexter Ave                    | Central Ave (SR-74)       |                       | X        |
| 10. | Camburn Ave                   | Central Ave (SR-74)       |                       | X        |
| 11. | Rosetta Canyon Dr             | Central Ave (SR-74)       |                       | X        |
| 12. | Collier Ave                   | Project Access            | X                     |          |

B. Study intersection peak hour vehicular queue analysis along Central Avenue (SR-74) from Collier Avenue to Dexter Avenue.

C. Roadway segment LOS analysis at the following seven (7) study roadway segments:

1. Collier Avenue from Riverside Drive to Central Avenue (SR-74);
2. Collier Avenue from Central Avenue to Crane Street;
3. Collier Avenue from Crane Street to Chaney Street;
4. Collier Avenue from Chaney Street to North Spring Street;
5. Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps;

6. Central Avenue (SR-74) from I-15 Southbound Ramps to I-15 Northbound Ramps; and
7. Central Avenue (SR-74) from I-15 Northbound Ramps to Dexter Avenue.

D. Freeway segment peak hour LOS analysis at the following four (4) study segments:

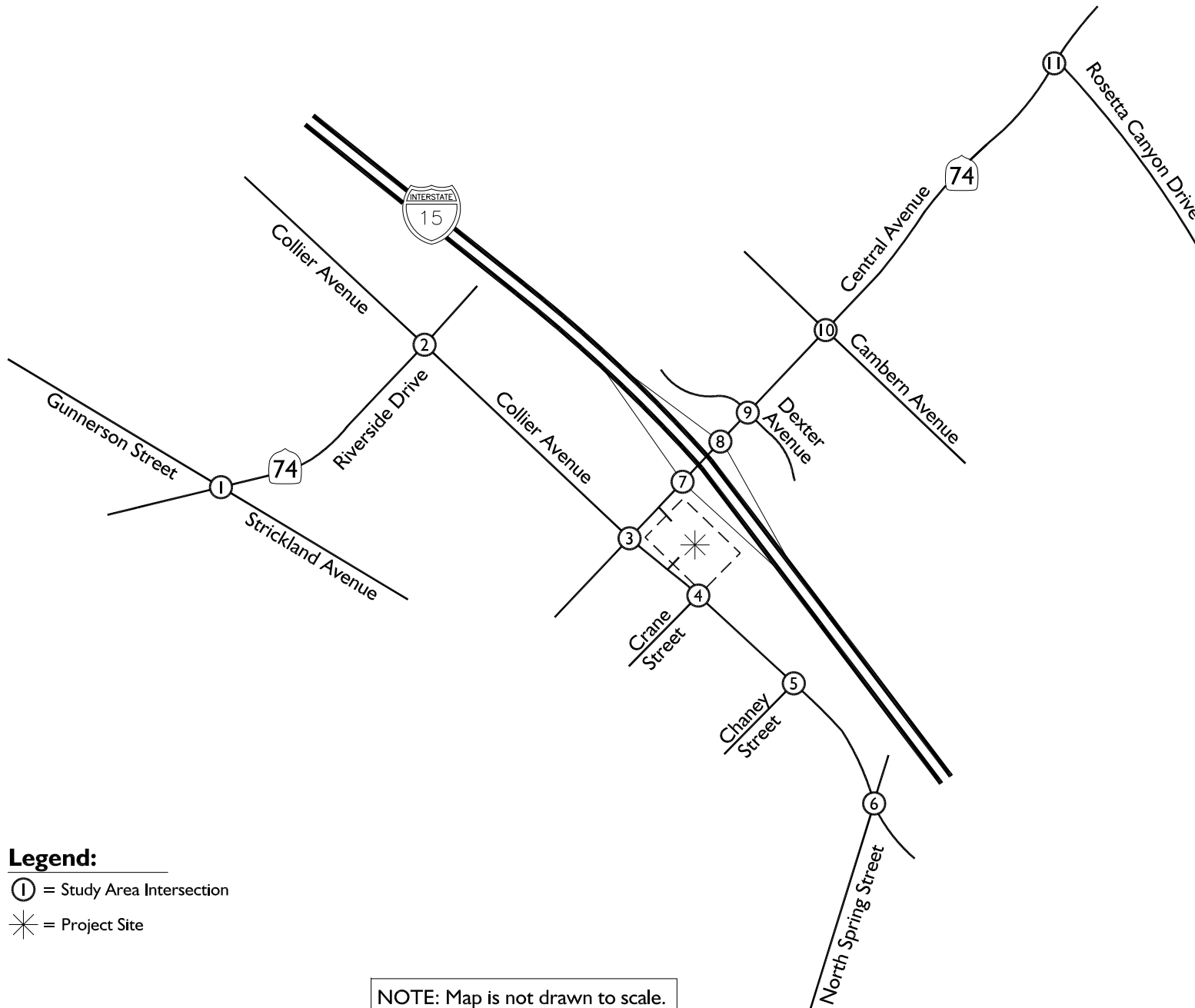
1. Northbound I-15 north of Central Avenue (SR-74);
2. Northbound I-15 south of Central Avenue (SR-74);
3. Southbound I-15 north of Central Avenue (SR-74); and
4. Southbound I-15 south of Central Avenue (SR-74).

E. Freeway ramp merge/diverge peak hour LOS analysis at the following four (4) study locations:

1. I-15 Northbound On-Ramp from Central Avenue (SR-74);
2. I-15 Northbound Off-Ramp at Central Avenue (SR-74);
3. I-15 Southbound Off-Ramp at Central Avenue (SR-74); and
4. I-15 Southbound On-Ramp from Central Avenue (SR-74).

Exhibit 1-1 provides a location map for the study area intersections and roadway segments.

# Exhibit I-1 Location Map



## Legend:

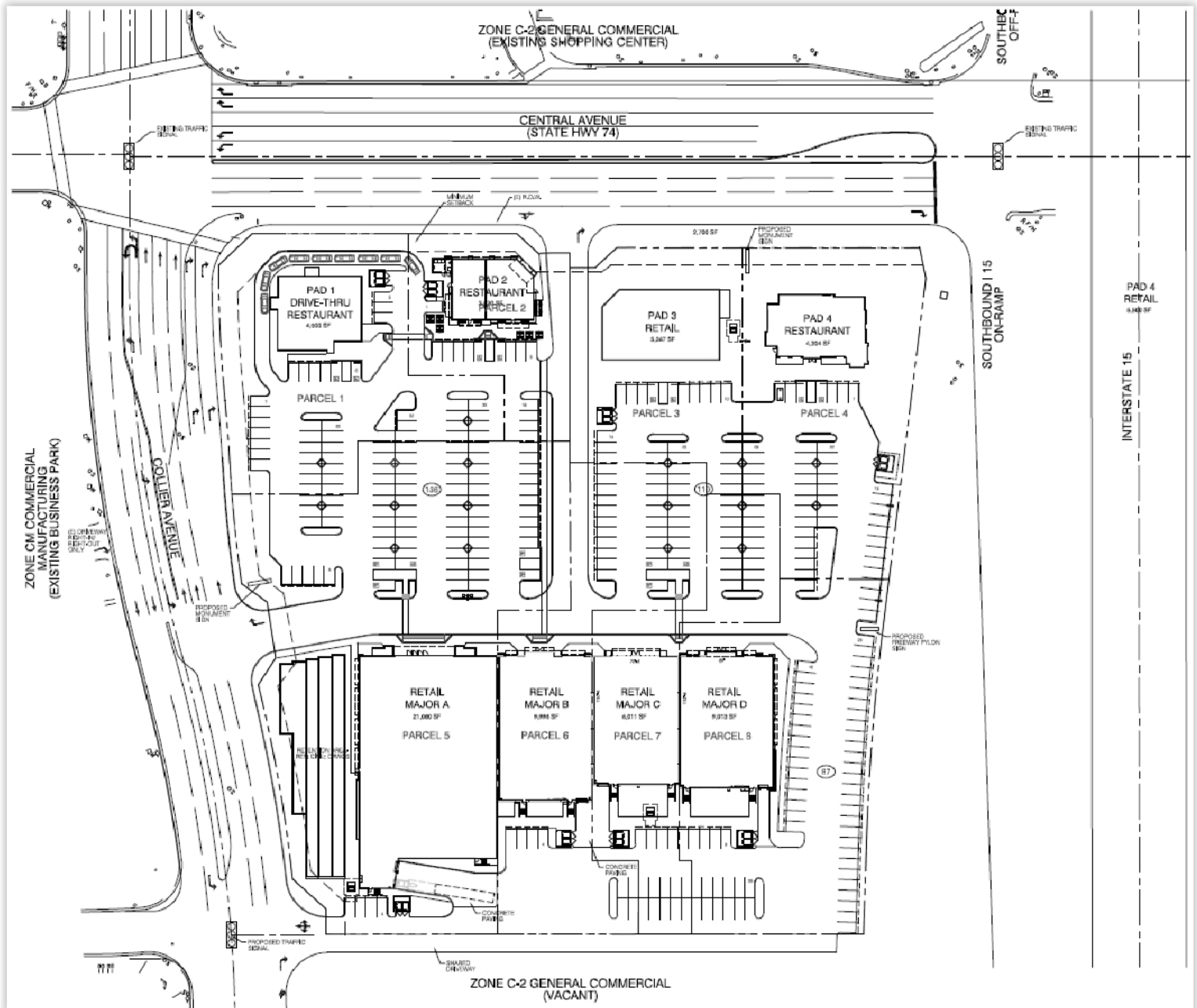
① = Study Area Intersection

\* = Project Site

NOTE: Map is not drawn to scale.



## Exhibit I-2 Site Plan



## **2.0 Analysis Methodologies, Performance Criteria, and Thresholds of Significance**

The methodologies used to assess the operation of the study area are outlined in the following sections. The following analysis procedures are discussed:

- Intersection Peak Hour Level of Service Analysis Methodology;
- Intersection Peak Hour Queue Length Analysis Methodology;
- Roadway Segment Level of Service Analysis Methodology;
- Freeway Segment Peak Hour Level of Service Analysis Methodology; and
- Freeway Ramp Merge and Diverge Peak Hour Level of Service Analysis Methodology.

This section also discusses the agency-established applicable performance criteria and thresholds of significance for the study facilities.

### **2.1 Intersection Peak Hour Level of Service Analysis Methodology**

Level of service (LOS) is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection.

Consistent with City of Lake Elsinore and Caltrans requirements, the methodology used to assess the operation of the study area intersections is the 2000 Highway Capacity Manual (HCM 2000). Synchro analysis software was used to calculate the HCM methodology at the study intersections.

The HCM defines level of service as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS (Level of Service) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

For signalized intersections, average control delay per vehicle is used to determine the level



of service. For all way stop controlled intersections, the level of service is also determined based on the average control delay per vehicle. For intersections with stop control on the minor street only, the calculation of level of service is dependent on the occurrence of gaps occurring in the traffic flow of the main street, and the level of service is determined based on the worst individual movements or movements sharing a single lane. The intersection Level of Service analysis utilizes the following analysis parameters consistent with the City of Lake Elsinore requirements for evaluation of potential traffic impacts:

1. *Ideal Flow Rate:*

Ideal flow value of 1,900 vehicles per lane per hour for all lanes.

2. *Lost Time*

A lost time of four (4) seconds per phase was utilized.

3. *Minimum Green Time*

A minimum green time of 7 seconds was utilized.

4. *Level of Service Ranges:*

The 2000 HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding ranges of stopped delay experienced per vehicle for signalized and unsignalized intersections as shown in the table below.

**HCM Intersection LOS & Delay Ranges**

| LOS | Average Control Delay Per Vehicle (Seconds) |               |
|-----|---------------------------------------------|---------------|
|     | Signalized                                  | Unsignalized  |
| A   | 0.00 - 10.00                                | 0.00 - 10.00  |
| B   | 10.01 - 20.00                               | 10.01 - 15.00 |
| C   | 20.01 - 35.00                               | 15.01 - 25.00 |
| D   | 35.01 - 55.00                               | 25.01 - 35.00 |
| E   | 55.01 - 80.00                               | 35.01 - 50.00 |
| F   | >80.00                                      | >50.00        |

**Source:** Highway Capacity Manual

## 2.2 Intersection Peak Hour Vehicular Queue Length Analysis Methodology

The *Highway Capacity Manual (HCM)* 95<sup>th</sup> percentile queue analysis methodology has been utilized to evaluate peak hour vehicular queues. The Synchro analysis software has been utilized.

## 2.3 Roadway Segment Level of Service Analysis Methodology

Level of service (LOS) is commonly used as a qualitative description of roadway segment operation and is based on the daily capacity of the roadway segment and the daily volume of traffic using the roadway segment.

Study roadway segment LOS and operation is evaluated utilizing the volume to capacity (v/c) methodology. The level of service is determined based on the numerical ratio obtained by dividing the daily traffic volume of the roadway segment by its daily capacity identified by the General Plan Circulation Element for the corresponding roadway classification.

The V/C ratio methodology describes the operation of a roadway segment using a range of LOS from LOS A to LOS F, based on the corresponding ranges as shown in the table below.

**Roadway Volume-to-Capacity Ranges & LOS**

| LOS | Volume-to-Capacity Ratio |
|-----|--------------------------|
| A   | 0.00 – 0.60              |
| B   | 0.61 – 0.700             |
| C   | 0.71 – 0.80              |
| D   | 0.81 – 0.90              |
| E   | 0.91 – 1.00              |
| F   | > 1.00                   |

The following roadway capacity values are utilized based on the City of Lake Elsinore General Plan Circulation Element:

**City of Lake Elsinore Roadway Segment Daily Capacities**

| Roadway Classification | Number of Lanes | Maximum Two-Way Traffic Volume (ADT)<br>Service Level E |
|------------------------|-----------------|---------------------------------------------------------|
| Collector              | 2               | 13,000                                                  |
| Divided Collector      | 2               | 18,000                                                  |
| Secondary              | 4               | 25,900                                                  |
| Major                  | 4               | 34,100                                                  |
| Urban Arterial         | 6               | 53,900                                                  |
| Urban Arterial         | 8               | 71,800                                                  |

## 2.4 Freeway Segment Level of Service Analysis Methodology

Caltrans advocates the use of HCM analysis methodology to analyze the operation of freeway segments and facilities. HCM analysis methodology describes the operation of freeway mainline segment facilities using a range of LOS from LOS A to LOS F based on corresponding density (passenger cars/mile/lane) shown in the table below.

**Freeway Segment  
LOS & Density Ranges**

| LOS | Density (pc/mi/lane)               |
|-----|------------------------------------|
| A   | $\leq 11$                          |
| B   | $> 11 - 18$                        |
| C   | $> 18 - 26$                        |
| D   | $> 26 - 35$                        |
| E   | $> 35 - 45$                        |
| F   | Demand Exceeds Capacity ( $> 45$ ) |

**Source:** *Highway Capacity Manual*

**Notes:** pc/mi/lane = passenger cars per mile per lane.

## 2.5 Freeway Ramp Merge/Diverge Level of Service Analysis Methodology

Caltrans advocates the use of HCM analysis methodology to analyze the operation of freeway ramps and facilities. HCM analysis methodology describes the operation of freeway mainline segment facilities using a range of LOS from LOS A to LOS F based on corresponding density (passenger cars/mile/lane) shown in the table below.

**Freeway Ramp Merge/Diverge  
LOS & Density Ranges**

| LOS | Density (pc/mi/lane)    |
|-----|-------------------------|
| A   | $\leq 10$               |
| B   | $> 10 - 20$             |
| C   | $> 20 - 28$             |
| D   | $> 28 - 35$             |
| E   | $> 35$                  |
| F   | Demand Exceeds Capacity |

**Source:** *Highway Capacity Manual*

**Notes:** pc/mi/lane = passenger cars per mile per lane.

## 2.6 Level of Service Performance Criteria & Thresholds of Significance

City of Lake Elsinore and Caltrans' goal for level of service operation is LOS D or better. Hence, any study facility (including study intersections, study roadway segments, and freeway study facilities) operating at LOS "E" or LOS "F" will be considered deficient and mitigation measures would need to be identified to achieve acceptable LOS.

## 2.7 Vehicular Queueing Performance Criteria & Thresholds of Significance

The City of Lake Elsinore and Caltrans do not have established and adopted performance criteria and significant impact thresholds for vehicular queueing. Hence, the vehicular queueing analysis presented in this report is strictly for informational purposes.

## **3.0 City of Lake Elsinore General Plan**

---

### **3.1 City of Lake Elsinore General Plan Circulation Element**

Exhibit 3-1 shows the City of Lake Elsinore General Plan Roadway Classifications, and Exhibit 3-2 shows the City of Lake Elsinore General Plan Roadway Cross Sections.

For the roadway segments immediately adjacent to the site, the ultimate buildout General Plan classifications are as follows:

- Collier Avenue north of Central Avenue – Urban Arterial (6 lanes, 120 feet right-of-way)
- Collier Avenue south of Central Avenue – Major (4 lanes, 100 feet right-of-way)
- Central Avenue – Augmented Urban Arterial (8 lanes)

### **3.2 City of Lake Elsinore Public Transit Service**

Exhibit 3-3 shows the existing transit system in the project site vicinity and City of Lake Elsinore. The following bus routes are currently operating near the site:

- Routes 7 and 22

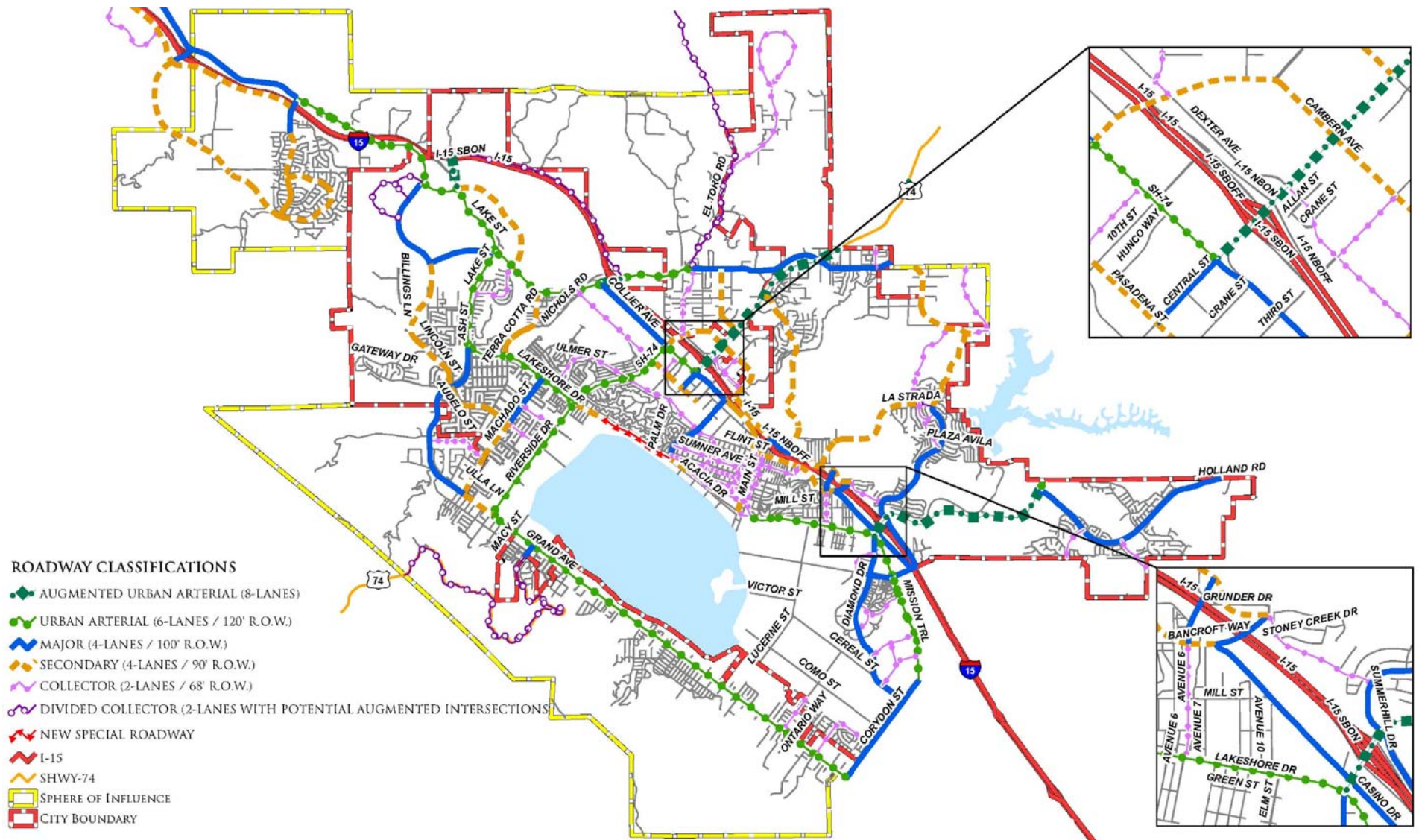
It is recommended that as additional development occurs within the area, the City consider expanding service to accommodate the travel demand of the community and reduce vehicle miles traveled.

### **3.3 City of Lake Elsinore Bikeway Plan**

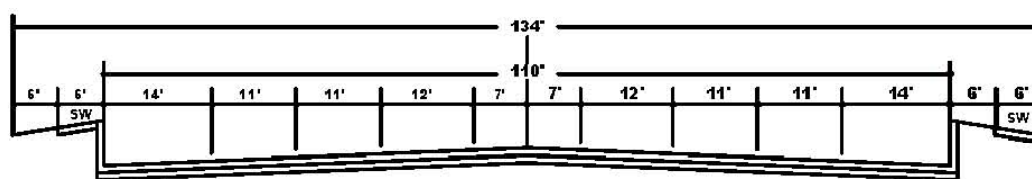
Exhibit 3-4 shows the City of Lake Elsinore's bikeway plan. The following are bikeway paths existing or planned near the project site:

Collier Avenue: Class II Bikeway

# City of Lake Elsinore General Plan Roadway Classifications

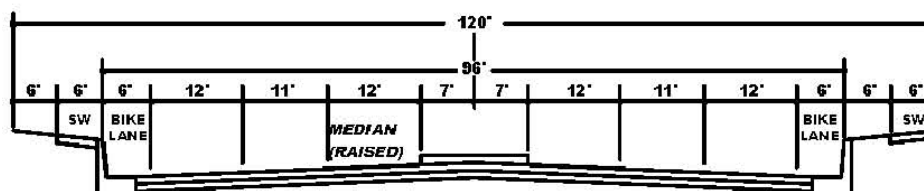


# City of Lake Elsinore General Plan Roadway Cross-Sections



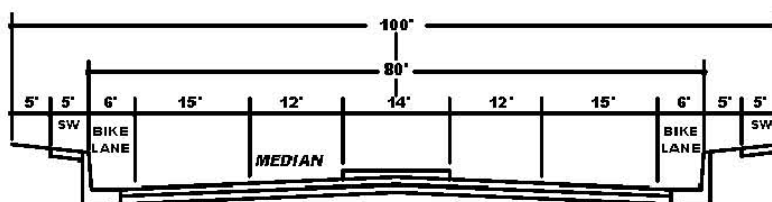
**AUGMENTED URBAN ARTERIAL - STATE HIGHWAY**

(8-LANE)



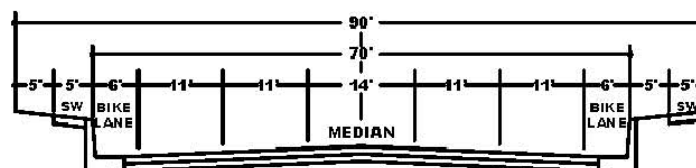
**URBAN ARTERIAL HIGHWAY**

(6-LANE)



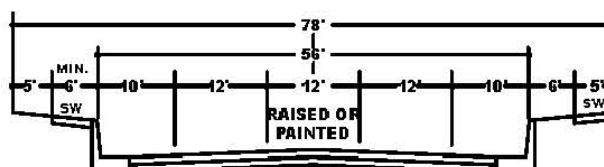
**MAJOR HIGHWAY**

(4-LANE)



**SECONDARY HIGHWAY**

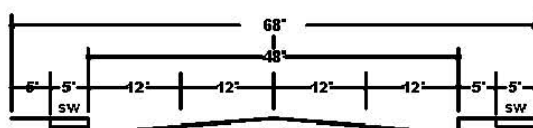
(4-LANE)



**DIVIDED COLLECTOR**

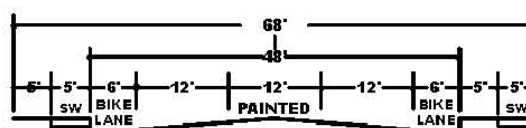
(2-LANE)

BIKES USE SHOULDER



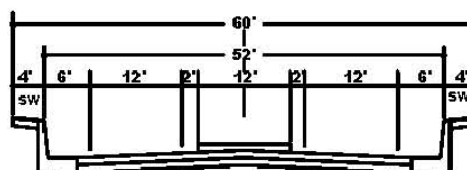
**COLLECTOR HIGHWAY**

(4-LANE)



**COLLECTOR HIGHWAY**

(2-LANE)



**NEW SPECIAL ROADWAY**

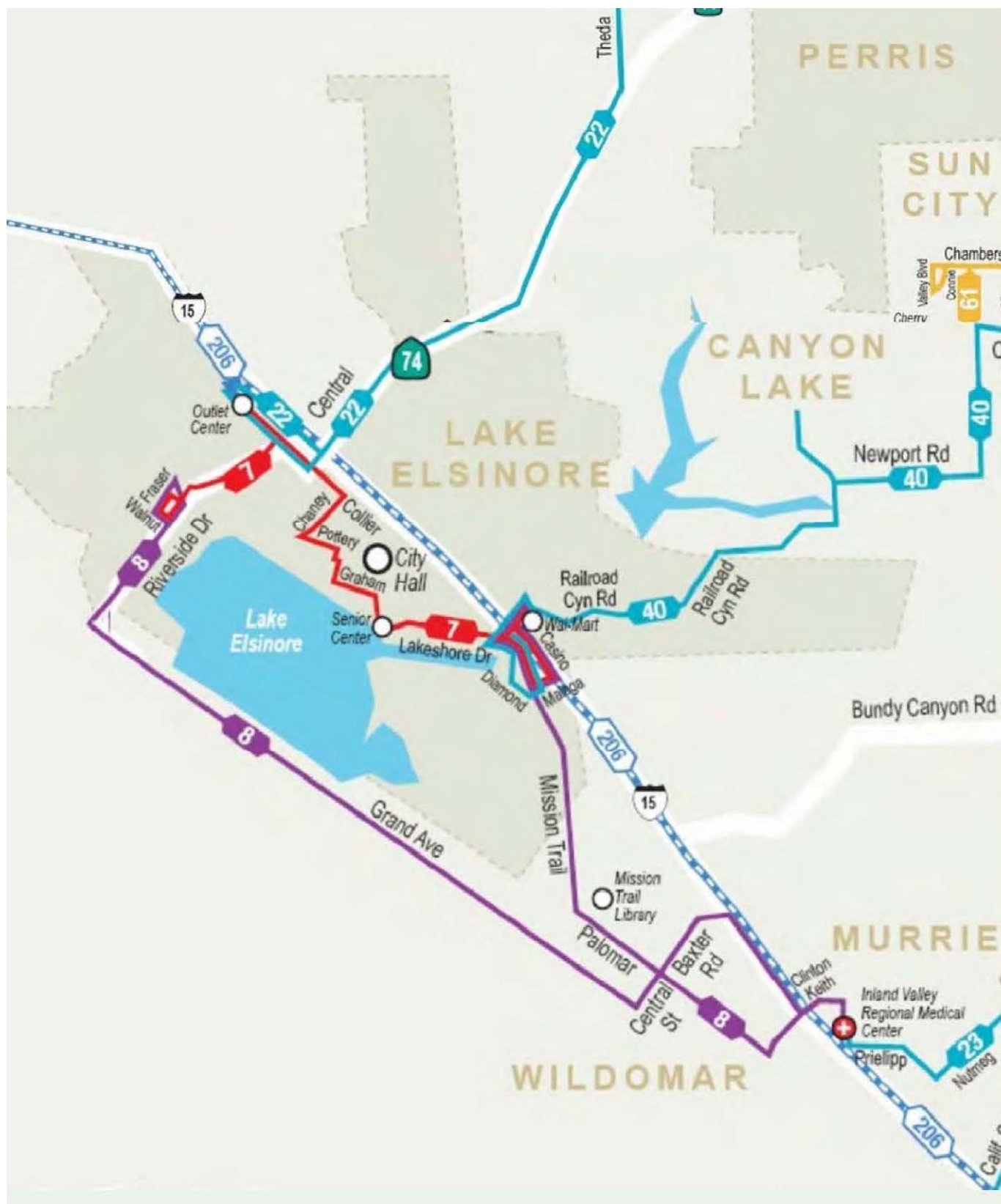
(2-LANE)

SHOULDER/BIKE LANE

(PROPOSED FOR LAKESHORE DRIVE IN THE COUNTRY CLUB HEIGHT DISTRICT)

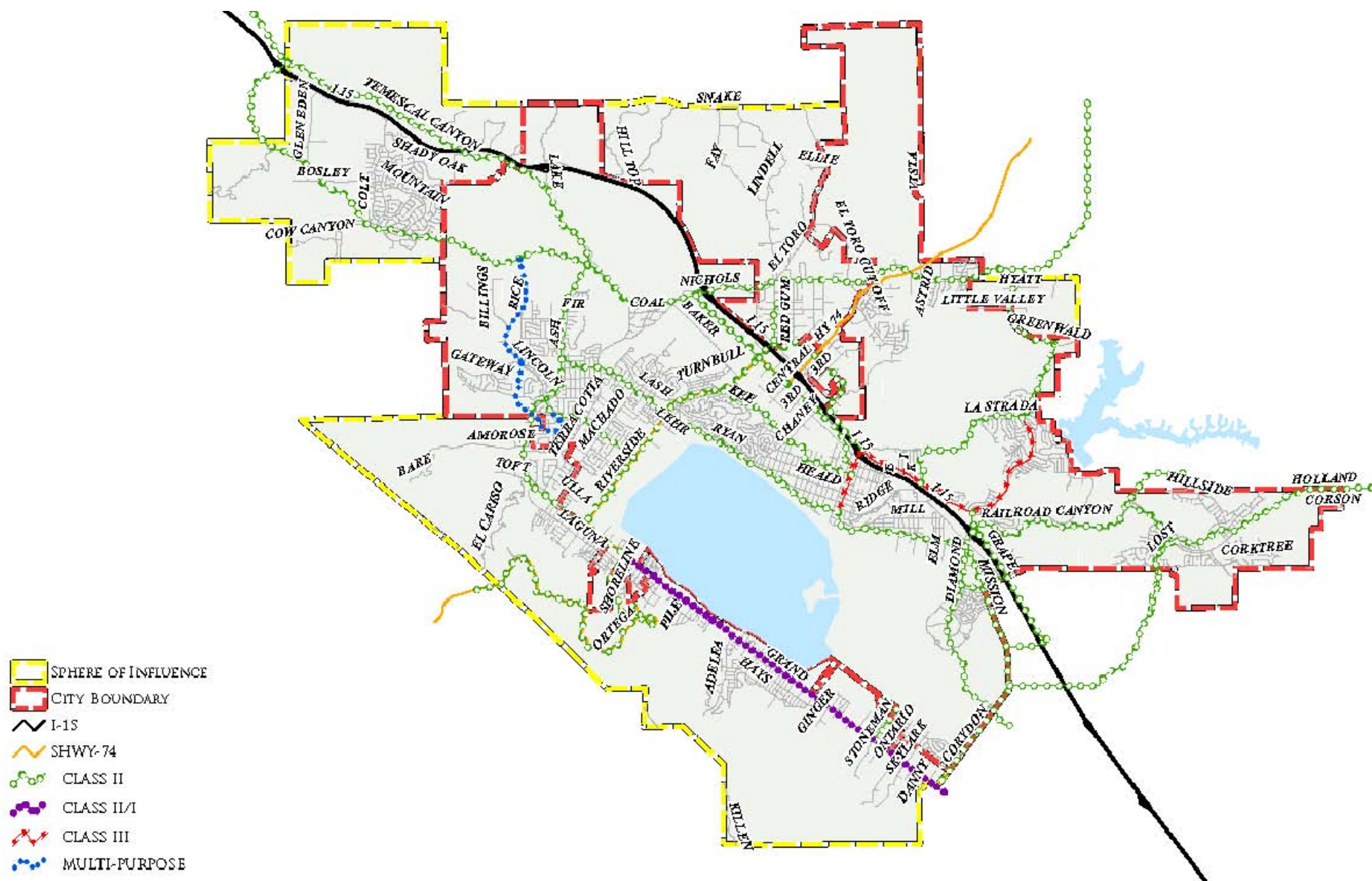


# City of Lake Elsinore General Plan Transit System





# City of Lake Elsinore General Plan Bikeway Plan



## **4.0 Circulation System & Existing Traffic Volumes**

---

This section provides a discussion of existing study area conditions and traffic volumes.

### **4.1 Study Area Existing & Future-Planned Geometry & Traffic Controls**

Exhibit 4-1 shows the existing intersection geometrics and traffic controls for the study area.

It should be noted based on discussions with Caltrans, the following future-planned circulation system modifications are planned within the study area:

- A. Based on the Transportation Concept Report for the I-15 Freeway in the vicinity of the Central Avenue (SR-74) interchange, this section of the freeway is planned to be widened from its current configuration as three (3) mixed-flow lanes in each direction of travel to consist of the following:
  - Three (3) mixed flow lanes and one (1) HOV lane in each direction travel south of the Central Avenue (SR-74) interchange; and
  - Four (4) mixed flow lanes and one (2) HOT lane in each direction travel north of the Central Avenue (SR-74) interchange.
- B. Caltrans currently has plans to increase the I-15 / Central Avenue (SR-74) interchange capacity by reconstructing the interchange as a Type L-9.

It should also be noted **none** of the above mentioned circulation system modifications are assumed to be in place when evaluating potential traffic impacts associated with the proposed project in this analysis.

### **4.2 Existing Intersection & Roadway Segment Traffic Volumes**

Existing AM and PM peak hour traffic volumes for study area intersections are shown on Exhibit 4-2. These volumes are based upon manual peak hour turning movement counts compiled for RK in November 2015.

AM peak period intersection counts were collected from 7:00 AM to 9:00 AM; PM peak period intersection counts were collected from 4:00 PM to 6:00 PM

The counts used in this analysis were taken from the highest hour within the peak period counted. Intersection traffic count worksheets are included in Appendix B.

Existing average daily traffic (ADT) volumes on arterial highways in the study area are shown on Exhibit 4-2 as well. Per standard practice, ADT volumes for the roadway segments within the study area are factored up from the PM peak hour counts, using the following formula for each intersection leg:

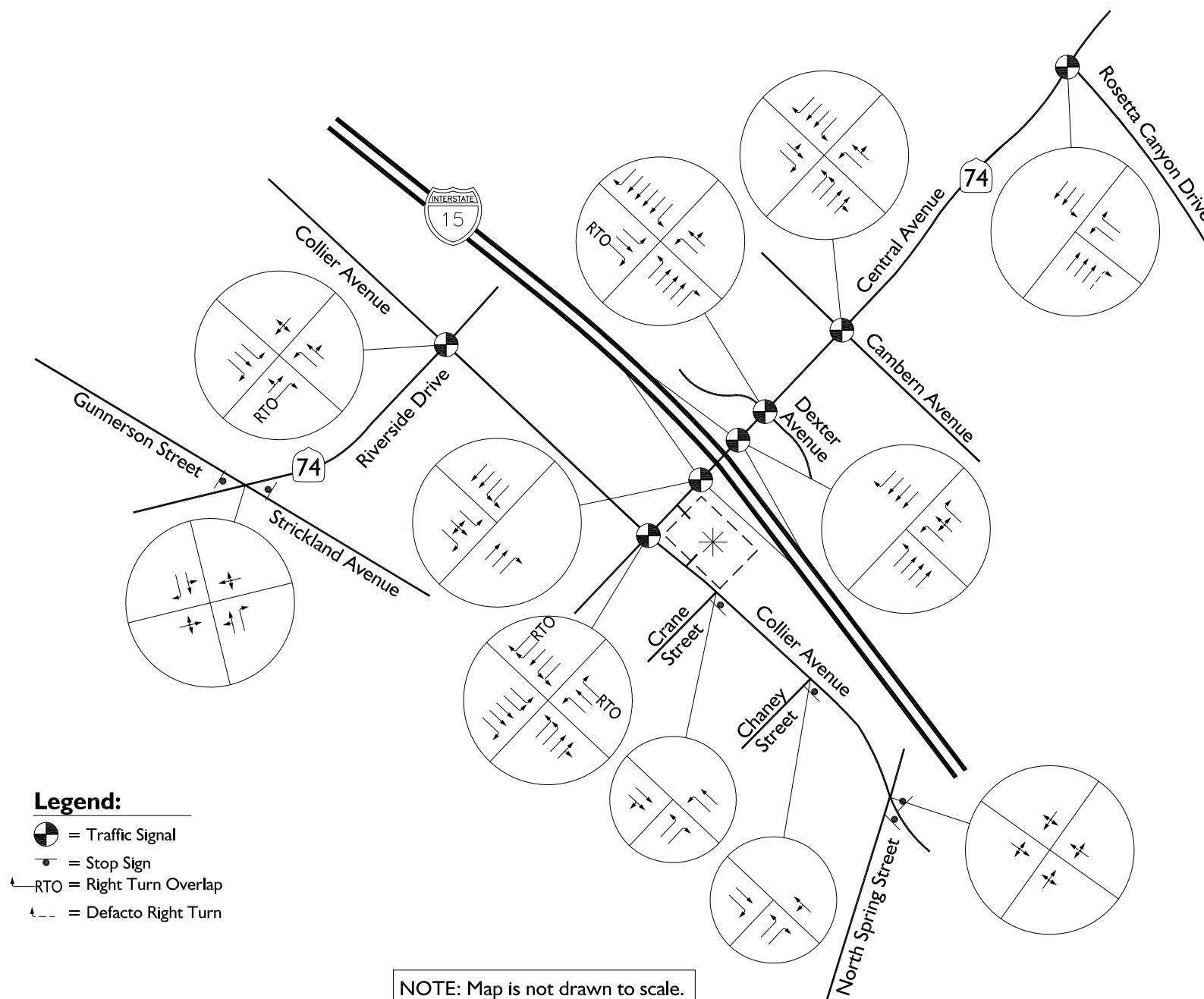
$$\text{Peak Hour (Approach Volume + Exit Volume)} * 12 = \text{Leg Volume}$$

### **4.3 Existing Freeway Segment Traffic Volumes**

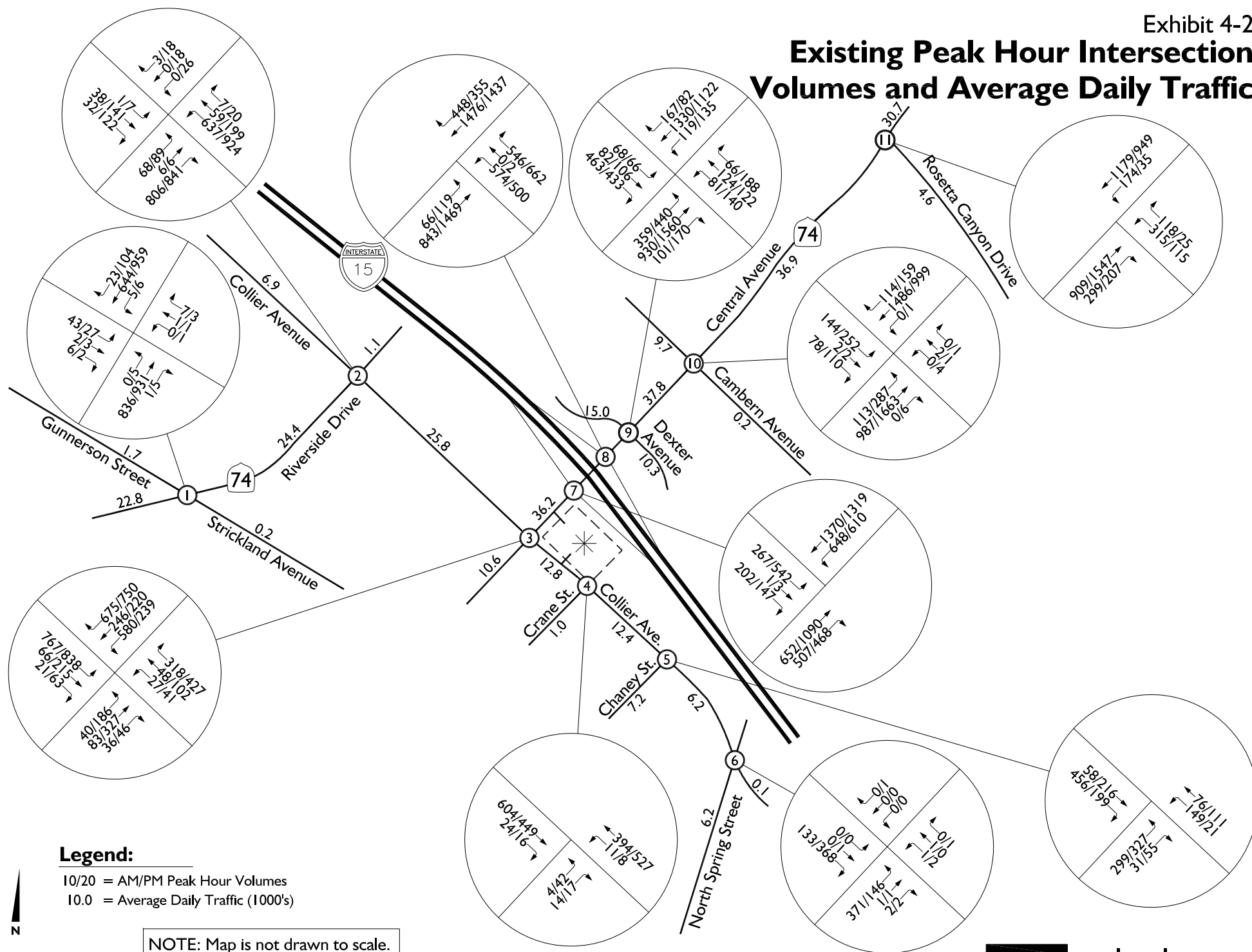
RK utilized Caltrans Performance Measurement System (PeMS) to obtain existing AM and PM peak hour directional traffic volumes for Interstate 15 (I-15) freeway study segments. The data is based on the most recent existing traffic volumes published by Caltrans at the time of preparation of this report (January 2016).

Existing freeway study facility traffic volumes are summarized in Table 4-1.

# Existing Lane Geometry and Traffic Controls



# Existing Peak Hour Intersection Volumes and Average Daily Traffic



**TABLE 4-1**  
**Freeway Study Facility Traffic Volumes**

| Freeway Facility                | No. of Lanes | Analysis Scenario Study Freeway Facility Traffic Volume |              |                    |              |                       |              |                                    |              |                        |              |                                                     |              |
|---------------------------------|--------------|---------------------------------------------------------|--------------|--------------------|--------------|-----------------------|--------------|------------------------------------|--------------|------------------------|--------------|-----------------------------------------------------|--------------|
|                                 |              | Existing                                                |              | Project Assignment |              | Existing Plus Project |              | Existing Plus Ambient Plus Project |              | Cumulatives Assignment |              | Existing Plus Ambient Plus Cumulatives Plus Project |              |
|                                 |              | AM Peak Hour                                            | PM Peak Hour | AM Peak Hour       | PM Peak Hour | AM Peak Hour          | PM Peak Hour | AM Peak Hour                       | PM Peak Hour | AM Peak Hour           | PM Peak Hour | AM Peak Hour                                        | PM Peak Hour |
| NB I-15 North of Central Avenue | 3            | 2,896                                                   | 2,731        | 21                 | 22           | 2,917                 | 2,753        | 3,033                              | 2,862        | 201                    | 284          | 3,234                                               | 3,146        |
| NB I-15 South of Central Avenue | 3            | 3,325                                                   | 2,884        | 27                 | 23           | 3,352                 | 2,907        | 3,485                              | 3,022        | 253                    | 323          | 3,738                                               | 3,345        |
| SB I-15 North of Central Avenue | 3            | 2,353                                                   | 3,400        | 27                 | 23           | 2,380                 | 3,423        | 2,474                              | 3,559        | 216                    | 272          | 2,690                                               | 3,831        |
| SB I-15 South of Central Avenue | 3            | 3,416                                                   | 4,118        | 21                 | 22           | 3,437                 | 4,140        | 3,574                              | 4,305        | 239                    | 328          | 3,813                                               | 4,633        |
| I-15 SB Off-Ramp                | 1            | 470                                                     | 692          | 27                 | 23           | 497                   | 715          | 516                                | 743          | 216                    | 272          | 732                                                 | 1,015        |
| I-15 SB On-Ramp                 | 1            | 1,156                                                   | 1,081        | 21                 | 22           | 1,177                 | 1,103        | 1,223                              | 1,146        | 239                    | 328          | 1,462                                               | 1,474        |
| I-15 NB On-Ramp                 | 1            | 514                                                     | 476          | 21                 | 22           | 535                   | 498          | 556                                | 517          | 201                    | 284          | 757                                                 | 801          |
| I-15 NB Off-Ramp                | 1            | 1,120                                                   | 1,164        | 27                 | 23           | 1,147                 | 1,187        | 1,192                              | 1,234        | 253                    | 323          | 1,445                                               | 1,557        |

## **5.0 Projected & Future Traffic Volumes**

---

This section provides a discussion on methodologies utilized to derive future traffic volumes for the study area.

### **5.1 Project Traffic Volumes**

#### **5.1.1 Project Trip Generation**

Trip generation represents the amount of traffic that is attracted and produced by a development. The trip generation for the project is based upon the specific land uses that have been planned for this development.

Trip generation rates for the proposed development are shown in Table 5-1 and are from the *Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition, 2012*. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

The trip generation for the project has been based on the following land uses:

- 53,469 square feet of retail;
- 4,500 square feet of fast food with drive-thru restaurant;
- 3,530 square feet of fast food without drive-thru restaurant; and
- 4,304 square feet of high turnover sit-down restaurant.

Trip generation summary for the proposed development is shown in Table 5-2. The proposed development is projected to generate approximately 7,590 trip-ends per day including 458 total vehicles per hour during the AM peak hour and 479 total vehicles per hour during the PM peak hour. However, due to the nature of the land uses, pass-by trip reductions have been utilized.

### **5.1.2 Project Pass-by Trip Adjustment**

Studies have shown that for some developments such as the one proposed, a portion of the site-generated vehicle trips are already present in the adjacent passing stream of traffic. These types of trips are known as pass-by trips. Pass-by trips are made by traffic already using the adjacent roadway and enter the site as an intermediate stop on the way from another destination. The trip may not necessarily be “generated” by the land use under study, and thus, no new trips are added to the roadway system. The proposed project is planned to include retail and restaurant uses, which both allow for a pass-by trip reduction.

The pass-by trip adjustments utilized are based on data collected and published by the *Institute of Transportation Engineers (ITE)*. For the fast food without drive-through restaurant land use, ITE does not have a compiled database available. Hence, this analysis conservatively utilizes a pass-by adjustment of 25 percent for fast food without drive-through restaurant land use.

Pass-by reductions are not applied to the project driveways or to the intersection immediately adjacent to the site (Collier Avenue / Central Avenue).

After accounting for the applicable pass-by adjustments, the proposed project is projected to generate approximately 7,269 net trip-ends per day with 319 net total vehicles per hour during the AM peak hour and 297 net total vehicles per hour during the PM peak hour.

It should be noted this analysis conservatively does not account for any potential trip reductions associated with internal capture and patrons visiting more than one destination on a single trip.

### **5.1.3 Project Trip Distribution & Assignment**

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of residential, employment and recreational opportunities, and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing and proposed land uses, and highways within the community and existing traffic volumes.



Trip distribution for this study has been based upon near-term conditions, based upon those highway facilities, which are either in place or will be implemented over the next few years, which represents the buildout occupancy for the proposed development. The trip distribution patterns for the proposed project have been developed while working with the City of Lake Elsinore staff and are graphically depicted on Exhibit 5-1.

The assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distributions, existing and proposed arterial highways, and local street systems, which would be in place by the time of initial occupancy of the site.

#### **5.1.4 Modal Split**

Modal split denotes the proportion of traffic generated by a project that would use any of the transportation modes, namely buses, cars, bicycles, motorcycles, trains, carpools, etc. The traffic reducing potential of public transit and other modes is significant. However, the traffic projections are "conservative" in that public transit and alternative transportation may be able to reduce the traffic volumes. Thus, no modal split reduction is applied to the projections. With the implementation of transit service and provision of multi-modal transportation ideas and incentives, the automobile traffic demand can be reduced significantly.

#### **5.1.5 Project Peak Hour Traffic Volumes**

Project peak hour traffic volumes have been calculated throughout the study area. The project's AM and PM peak hour intersection turning movement volumes and average daily traffic on the roadway segments are shown on Exhibit 5-2.

### **5.2 Existing Plus Project Conditions Traffic Volumes**

Existing Plus Project traffic volumes are derived by combining existing traffic volumes with project-generated traffic volumes. Existing Plus Project AM and PM peak hour intersection turning movement volumes and average daily traffic are shown on Exhibit 5-3.

Existing Plus Project freeway study facility traffic volumes are summarized in Table 4-1.

### **5.3 Background Traffic Volumes & Method of Projection**

Project Completion Year is expected to be in the Year 2017.

To assess future forecast traffic conditions, project traffic is combined with existing traffic, area wide/ambient growth, and traffic associated with other background/cumulative projects that are currently planned and/or approved but not yet constructed.

To account for area wide/ambient growth in the study area, an annual growth rate of two-percent (2%) has been applied to existing traffic volumes over a two-year period, as directed by City staff.

Information for background/cumulative projects for the area was obtained from the City of Lake Elsinore and also the County of Riverside.

Table 5-3 lists the proposed land uses for the nearby developments as obtained from the City of Lake Elsinore and County of Riverside during the time of preparation of this study.

Exhibit 5-4 shows the general location of the background/cumulative projects.

Table 5-3 also summarizes the daily and peak hour trip generation forecasts associated with the background/cumulative projects.

The background/cumulative project's AM and PM peak hour intersection turning movement volumes and average daily traffic are shown on Exhibit 5-5.

#### **5.4 Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) Traffic Volumes**

Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) traffic includes existing traffic volumes on surrounding roadways, area wide growth, and project-generated traffic. The AM and PM peak hour intersection turning movement volumes and average daily traffic for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) are shown on Exhibit 5-6.

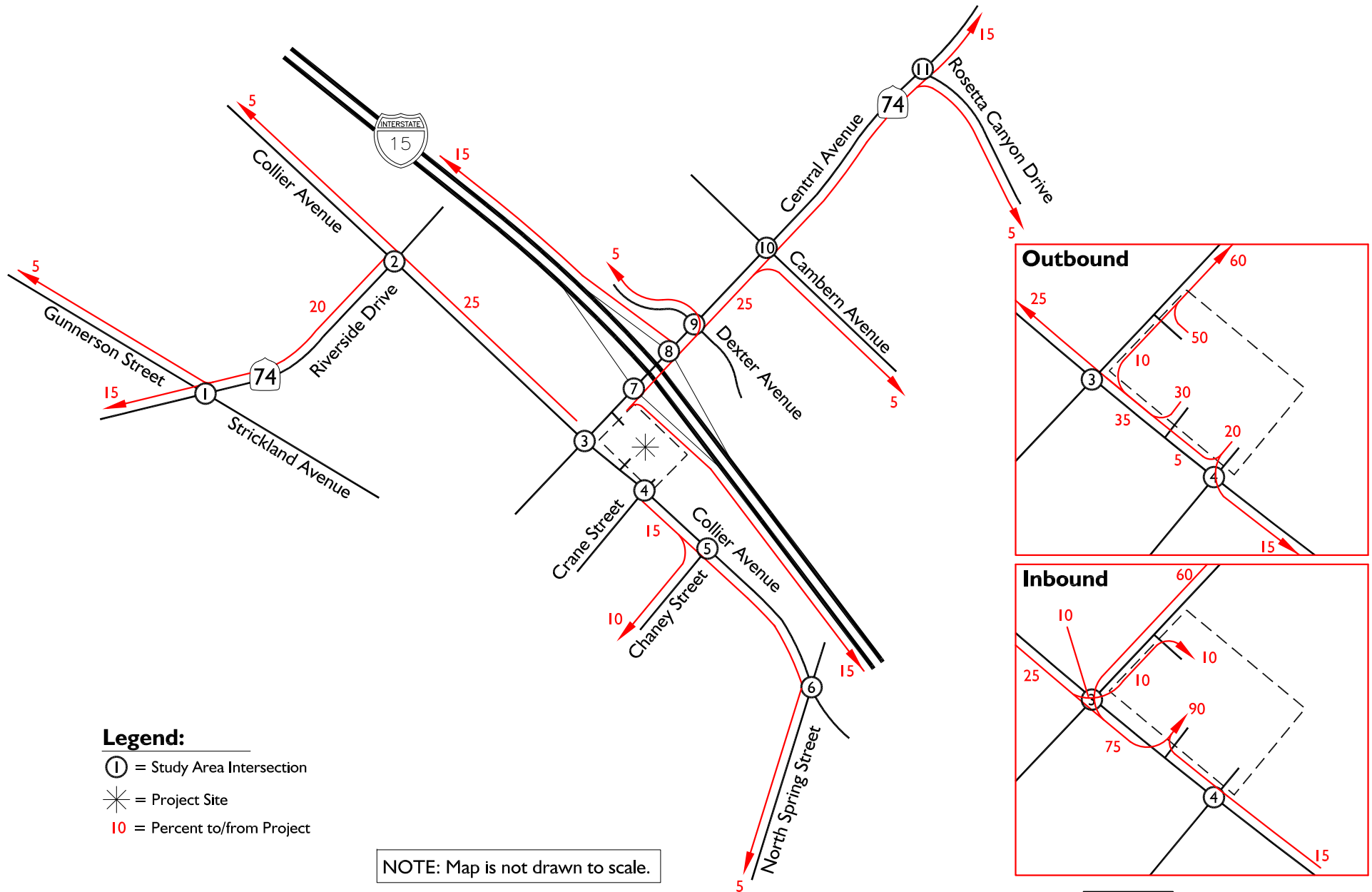
Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) freeway study facility traffic volumes are summarized in Table 4-1.

#### **5.5 Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) Traffic Volumes**

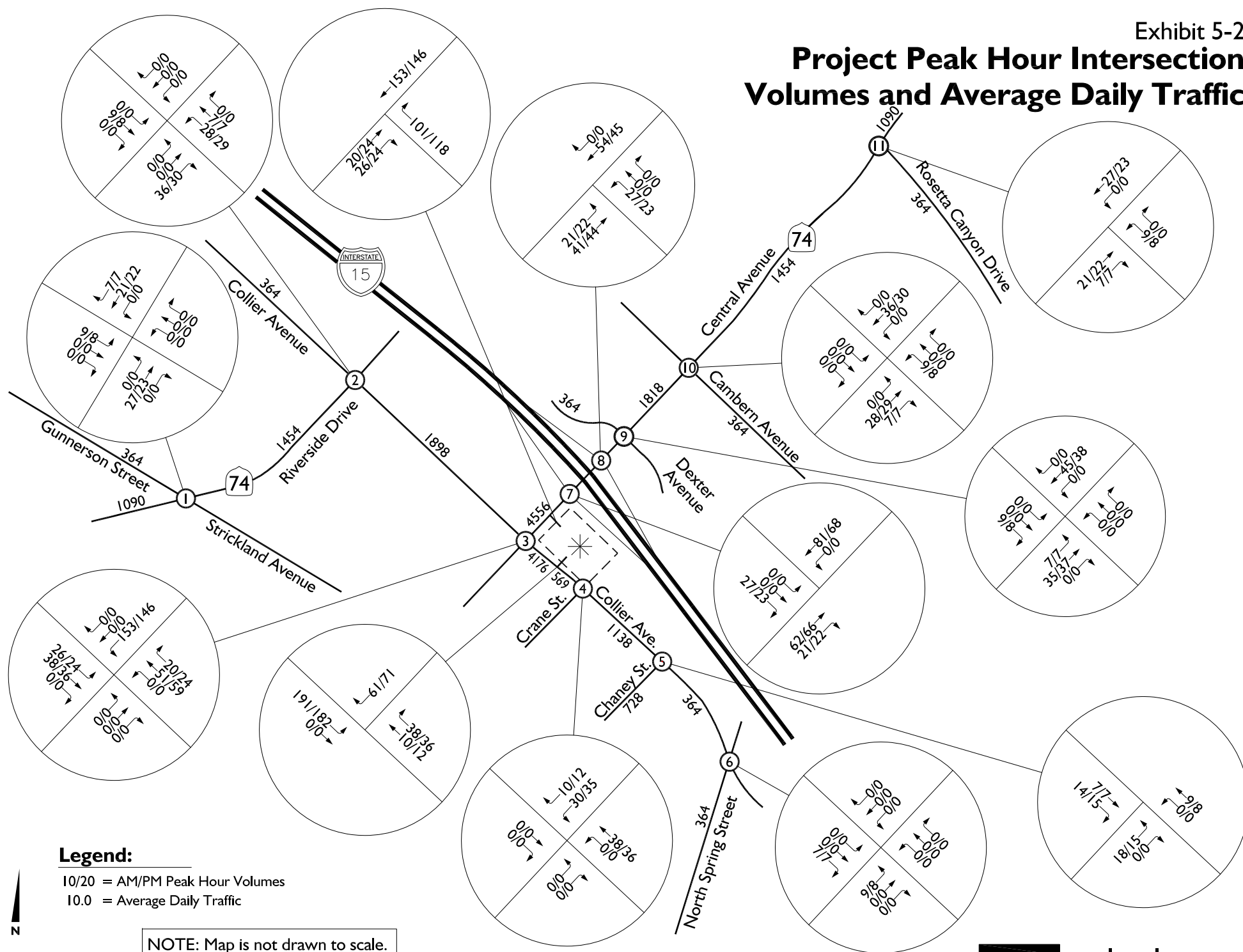
Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) traffic includes existing traffic volumes on surrounding roadways, area wide growth, traffic associated with cumulative projects, and project-generated traffic. The AM and PM peak hour intersection turning movement volumes and average daily traffic for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) are shown on Exhibit 5-7.

Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) freeway study facility traffic volumes are summarized in Table 4-1.

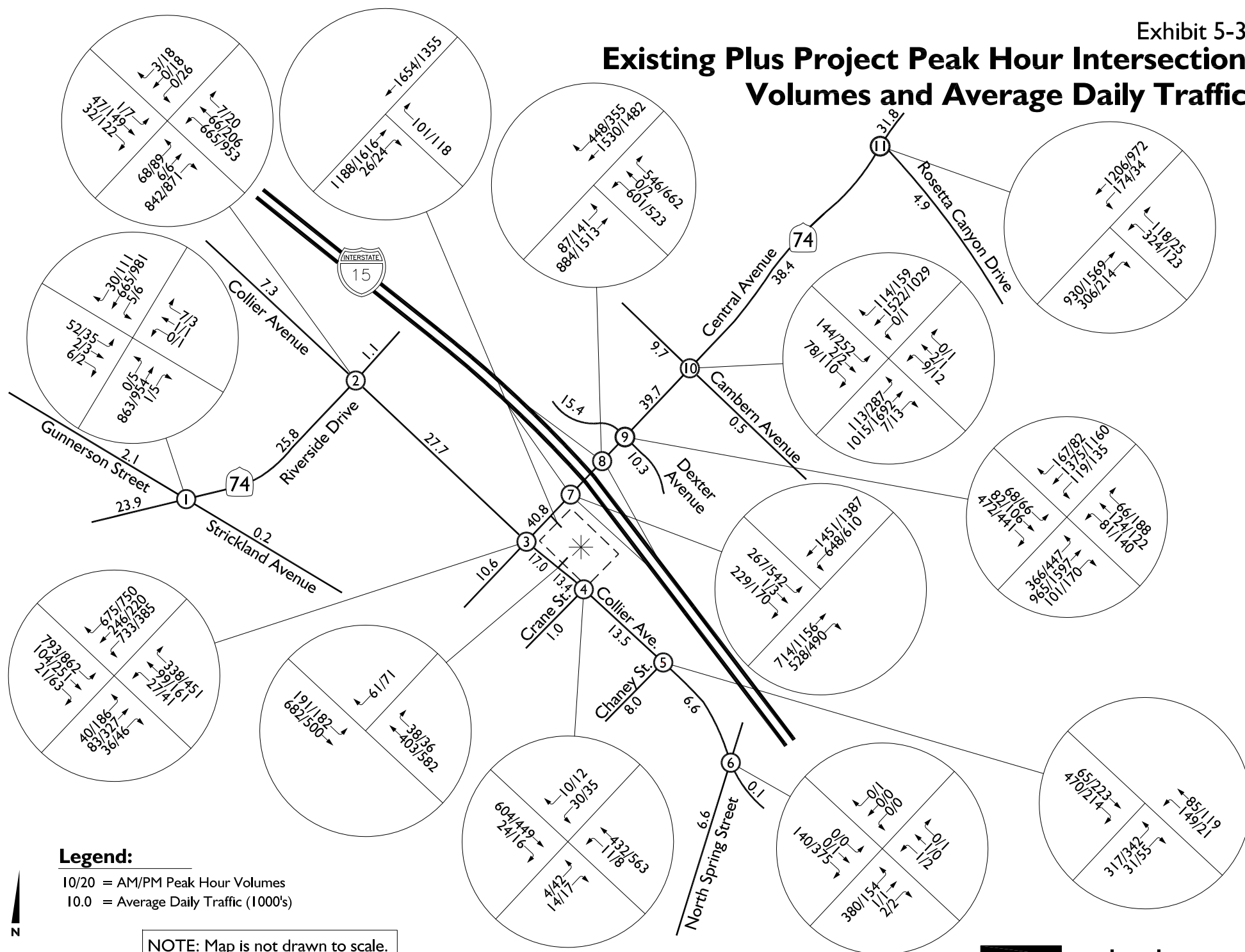
# Exhibit 5-1 Project Trip Distribution



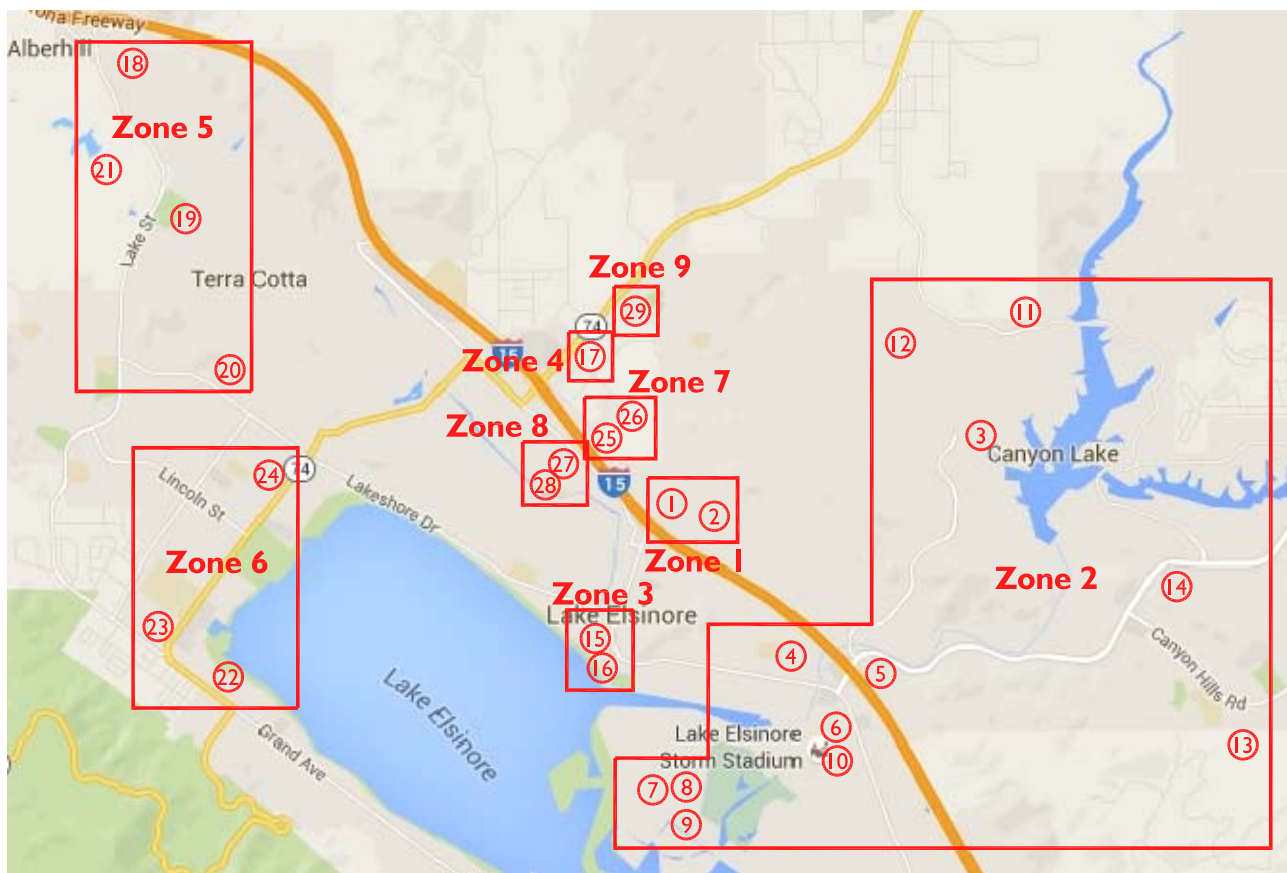
# Project Peak Hour Intersection Volumes and Average Daily Traffic



# Existing Plus Project Peak Hour Intersection Volumes and Average Daily Traffic



# Cumulative Projects Location Map



## Zone 1:

- ① = LE4 - Spyglass Ranch
- ② = LE5 - South Shore I & II

## Zone 2:

- ③ = LE6 - La Strada
- ④ = LE8 - TAG Property
- ⑤ = LE9 - City Center Condos
- ⑥ = LE10 - Diamond Specific Plan
- ⑦ = LE11 - The Colony, TAG Property, John Laing Homes (Phase 2)
- ⑧ = LE13 - Summerly
- ⑨ = LE14 - Beazer, KB Homes, McMillin Homes, Richmond American
- ⑩ = LE29 - LE Sports Complex
- ⑪ = LE1 - Greenwald
- ⑫ = LE2 - Ramsgate
- ⑬ = LE16 - Canyon Hills Estates
- ⑭ = LE17 - Canyon Hills

## Zone 3:

- ⑮ = LE7 - Marina Village Condos
- ⑯ = LE15 - Lakeshore Town Center

## Zone 4:

- ⑰ = LE4 - Lake Elsinore Walmart

## Zone 5:

- ⑱ = LE18 - Alberhill Ridge
- ⑲ = LE19 - Alberhill Ranch
- ⑳ = LE20 - Terracina
- ㉑ = LE25 - Alberhill Villages

## Zone 6:

- ㉒ = LE21 - Wakerider
- ㉓ = LE22 - Village at Lakeshore (Tract 33267)
- ㉔ = LE24 - Circle K

## Zone 7:

- ㉕ = LE23 - Golden Corral
- ㉖ = LE28 - La Quinta Inn

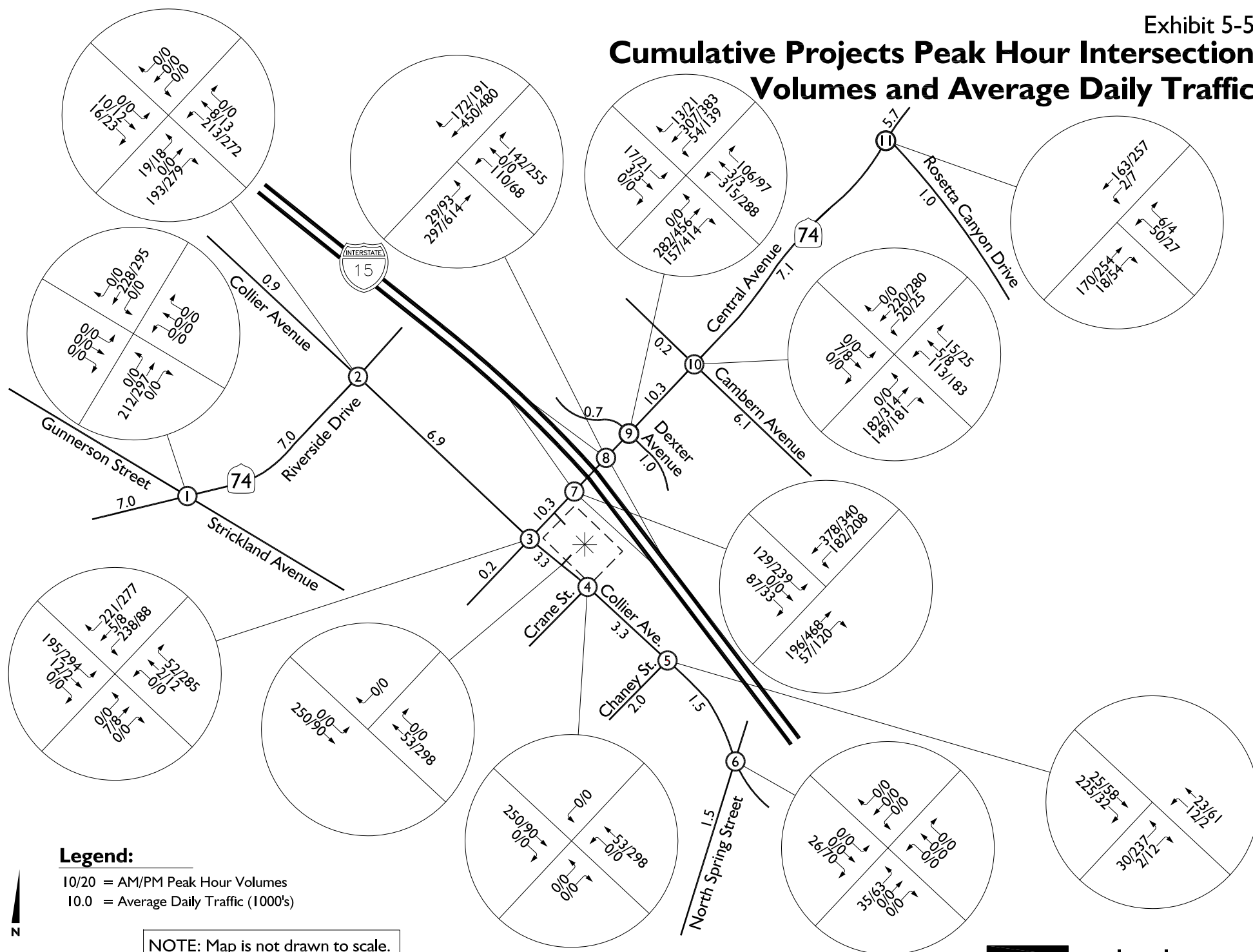
## Zone 8:

- ㉗ = LE26 - Ness Industrial Garage
- ㉘ = LE27 - Fairway Business Park

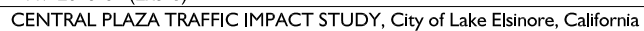
## Zone 9:

- ㉙ = LE3 - Trieste (Tract 36624)

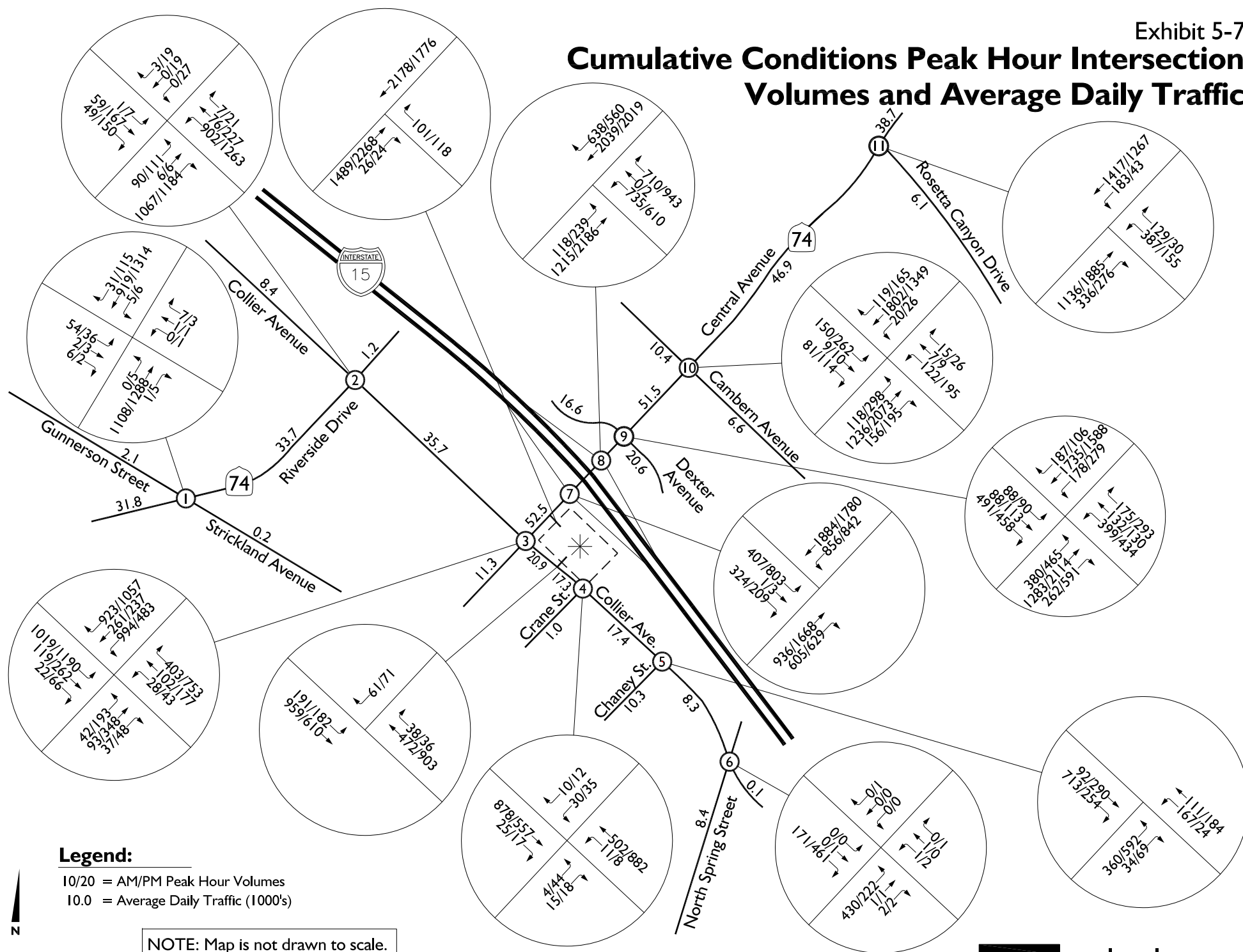
# Cumulative Projects Peak Hour Intersection Volumes and Average Daily Traffic







# Cumulative Conditions Peak Hour Intersection Volumes and Average Daily Traffic



**TABLE 5-1**  
**Trip Generation Rates for Proposed Project**

| Land Use                          | ITE<br>Trip Code | Units <sup>2</sup> | Weekday      |       |       |              |       |       |        |
|-----------------------------------|------------------|--------------------|--------------|-------|-------|--------------|-------|-------|--------|
|                                   |                  |                    | AM Peak Hour |       |       | PM Peak Hour |       |       | Daily  |
|                                   |                  |                    | In           | Out   | Total | In           | Out   | Total |        |
| Shopping Center                   | 820              | TSF                | 0.60         | 0.36  | 0.96  | 1.78         | 1.93  | 3.71  | 42.70  |
| Fast Food without Drive Thru      | 933              | TSF                | 26.32        | 17.55 | 43.87 | 13.34        | 12.81 | 26.15 | 716.00 |
| Fast Food with Drive Thru         | 934              | TSF                | 23.16        | 22.26 | 45.42 | 16.98        | 15.67 | 32.65 | 496.12 |
| High Turnover Sit-Down Restaurant | 932              | TSF                | 5.95         | 4.86  | 10.81 | 5.91         | 3.94  | 9.85  | 127.15 |

---

<sup>1</sup> Source: Institute of Transportation Engineers (ITE), *Trip Generation, 9th Edition, 2012*

<sup>2</sup> TSF = Thousand Square Feet

**TABLE 5-2**  
**Project Trip Generation**

| Land Use                                                     | Quantity | Units | AM         |            |            | PM         |            |            | Daily        |
|--------------------------------------------------------------|----------|-------|------------|------------|------------|------------|------------|------------|--------------|
|                                                              |          |       | In         | Out        | Total      | In         | Out        | Total      |              |
| Shopping Center                                              | 53.469   | TSF   | 32         | 20         | 52         | 95         | 103        | 198        | 2,283        |
| <i>Pass-by Adjustment (0% AM &amp; 34% PM) <sup>2</sup></i>  |          |       | 0          | 0          | 0          | -32        | -35        | -67        | -67          |
| <b>Subtotal - Shopping Center</b>                            |          |       | <b>32</b>  | <b>20</b>  | <b>52</b>  | <b>63</b>  | <b>68</b>  | <b>131</b> | <b>2,216</b> |
| Fast Food without Drive Thru                                 | 3.530    | TSF   | 93         | 62         | 155        | 47         | 45         | 92         | 2,527        |
| <i>Pass-by Adjustment (25% AM &amp; 25% PM) <sup>3</sup></i> |          |       | -23        | -16        | -39        | -12        | -11        | -23        | -62          |
| <b>Subtotal - Fast Food without Drive Thru</b>               |          |       | <b>70</b>  | <b>46</b>  | <b>116</b> | <b>35</b>  | <b>34</b>  | <b>69</b>  | <b>2,465</b> |
| Fast Food with Drive Thru                                    | 4.500    | TSF   | 104        | 100        | 204        | 76         | 71         | 147        | 2,233        |
| <i>Pass-by Adjustment (49% AM 50% PM) <sup>2</sup></i>       |          |       | -51        | -49        | -100       | -38        | -36        | -74        | -174         |
| <b>Subtotal - Fast Food with Drive Thru</b>                  |          |       | <b>53</b>  | <b>51</b>  | <b>104</b> | <b>38</b>  | <b>35</b>  | <b>73</b>  | <b>2,059</b> |
| High Turnover Sit-Down Restaurant                            | 4.304    | TSF   | 26         | 21         | 47         | 25         | 17         | 42         | 547          |
| <i>Pass-by Adjustment (0% AM 43% PM) <sup>2</sup></i>        |          |       | 0          | 0          | 0          | -11        | -7         | -18        | -18          |
| <b>Subtotal - High Turnover Sit-Down Restaurant</b>          |          |       | <b>26</b>  | <b>21</b>  | <b>47</b>  | <b>14</b>  | <b>10</b>  | <b>24</b>  | <b>529</b>   |
| <b>Project Total (before pass-by adjustment)</b>             |          |       | <b>255</b> | <b>203</b> | <b>458</b> | <b>243</b> | <b>236</b> | <b>479</b> | <b>7,590</b> |
| <b>Project Total (after pass-by adjustment)</b>              |          |       | <b>181</b> | <b>138</b> | <b>319</b> | <b>150</b> | <b>147</b> | <b>297</b> | <b>7,269</b> |

<sup>1</sup> TSF = Thousand Square Feet;

<sup>2</sup> Pass-by trip adjustment rates are based on ITE 9th Edition.

<sup>3</sup> Since ITE does not have any pass-by data compiled for this type of land use, this analysis conservatively utilizes a pass-by rate of 25 percent.

| Traffic Analysis Zone                    | #               | City of Lake Elsinore Project Number <sup>5</sup> | Project Name                       | Land Use                  | Quantity | Units <sup>1</sup> | ITE Code | Peak Hour |        |        |        |        |         | Daily   |
|------------------------------------------|-----------------|---------------------------------------------------|------------------------------------|---------------------------|----------|--------------------|----------|-----------|--------|--------|--------|--------|---------|---------|
|                                          |                 |                                                   |                                    |                           |          |                    |          | AM        |        |        | PM     |        |         |         |
|                                          |                 |                                                   |                                    |                           |          |                    |          | In        | Out    | Total  | In     | Out    | Total   |         |
| 1                                        | 1               | LE 4                                              | Spyglass Ranch                     | Single Family Residential | 523      | DU                 | 210      | 98        | 294    | 392    | 329    | 194    | 523     | 4,979   |
|                                          |                 |                                                   |                                    | Condominiums              | 171      | DU                 | 230      | 13        | 62     | 75     | 60     | 29     | 89      | 994     |
|                                          |                 |                                                   |                                    | Shopping Center           | 145.000  | TSF                | 820      | 86        | 53     | 139    | 258    | 280    | 538     | 6,192   |
|                                          | 2               | LE 5                                              | South Shore I                      | Single Family Residential | 521      | DU                 | 210      | 98        | 293    | 391    | 328    | 193    | 521     | 4,960   |
|                                          |                 |                                                   | South Shore II                     | Single Family Residential | 400      | DU                 | 210      | 75        | 225    | 300    | 252    | 148    | 400     | 3,808   |
| Zone 1 Subtotal                          |                 |                                                   |                                    |                           |          |                    |          | 370       | 927    | 1,297  | 1,227  | 844    | 2,071   | 20,933  |
| 2                                        | 3               | LE 6                                              | La Strada                          | Single Family Residential | 134      | DU                 | 210      | 25        | 75     | 100    | 84     | 50     | 134     | 1,276   |
|                                          | 4               | LE 8                                              | TAG Property                       | Car Dealership            | 50.000   | TSF                | 841      | 72        | 24     | 96     | 52     | 79     | 131     | 1,615   |
|                                          | 5               | LE 9                                              | City Center Condos                 | Condominiums              | 144      | DU                 | 230      | 11        | 53     | 64     | 50     | 25     | 75      | 837     |
|                                          | 6               | LE 10                                             | Diamond Specific Plan              | Condominiums              | 600      | DU                 | 230      | 45        | 219    | 264    | 209    | 103    | 312     | 3,486   |
|                                          |                 |                                                   |                                    | Hotel                     | 150      | RM                 | 310      | 47        | 33     | 80     | 46     | 44     | 90      | 1,226   |
|                                          |                 |                                                   |                                    | General Office            | 425.000  | TSF                | 710      | 583       | 80     | 663    | 108    | 526    | 634     | 4,688   |
|                                          |                 |                                                   |                                    | Shopping Center           | 472.000  | TSF                | 820      | 281       | 172    | 453    | 841    | 911    | 1,752   | 20,154  |
|                                          | 7               | LE 11                                             | The Colony                         | Apartments                | 211      | DU                 | 220      | 22        | 86     | 108    | 85     | 46     | 131     | 1,403   |
|                                          |                 |                                                   | TAG Property                       | Single Family Residential | 2407     | DU                 | 210      | 451       | 1,354  | 1,805  | 1,516  | 891    | 2,407   | 22,915  |
|                                          |                 |                                                   |                                    | Condominiums              | 324      | DU                 | 230      | 24        | 118    | 142    | 113    | 56     | 169     | 1,882   |
|                                          |                 |                                                   | John Laing Homes (Phase 2)         | Single Family Residential | 506      | DU                 | 210      | 95        | 285    | 380    | 319    | 187    | 506     | 4,817   |
|                                          |                 |                                                   |                                    | Condominiums              | 1141     | DU                 | 230      | 85        | 417    | 502    | 398    | 196    | 594     | 6,629   |
|                                          |                 |                                                   |                                    | Apartments                | 308      | DU                 | 220      | 31        | 126    | 157    | 124    | 67     | 191     | 2,048   |
|                                          | Shopping Center | 117.000                                           | TSF                                | 820                       | 70       | 43                 | 113      | 208       | 226    | 434    | 4,996  |        |         |         |
|                                          | 8               | LE 13                                             | Summerly                           | Single Family Residential | 142      | DU                 | 210      | 27        | 80     | 107    | 89     | 53     | 142     | 1,352   |
|                                          | 9               | LE 14                                             | Beazer                             | Single Family Residential | 72       | DU                 | 210      | 14        | 41     | 55     | 45     | 27     | 72      | 685     |
|                                          |                 |                                                   | KB Homes                           | Single Family Residential | 106      | DU                 | 210      | 20        | 60     | 80     | 67     | 39     | 106     | 1,009   |
|                                          |                 |                                                   | McMillin Homes                     | Single Family Residential | 143      | DU                 | 210      | 27        | 80     | 107    | 90     | 53     | 143     | 1,361   |
|                                          |                 |                                                   | Richmond American                  | Single Family Residential | 74       | DU                 | 210      | 14        | 42     | 56     | 47     | 27     | 74      | 704     |
|                                          | 10              | LE 29                                             | LE Sports Complex                  | Recreational              | 525.000  | TSF                | 495      | 710       | 366    | 1,076  | 705    | 734    | 1,439   | 17,756  |
|                                          | 11              | LE 1                                              | Greenwald                          | Shopping Center           | 104.450  | TSF                | 820      | 62        | 38     | 100    | 186    | 202    | 388     | 4,460   |
|                                          | 12              | LE 2                                              | Ramsgate                           | Single Family Residential | 1306     | DU                 | 210      | 245       | 735    | 980    | 823    | 483    | 1,306   | 12,433  |
|                                          |                 |                                                   |                                    | Condos/Townhomes          | 120      | DU                 | 230      | 9         | 44     | 53     | 42     | 21     | 63      | 697     |
|                                          | 13              | LE 16                                             | Canyon Hills Estates               | Single Family Residential | 302      | DU                 | 210      | 57        | 170    | 227    | 190    | 112    | 302     | 2,875   |
|                                          | 14              | LE 17                                             | Canyon Hills                       | Single Family Residential | 2700     | DU                 | 210      | 506       | 1,519  | 2,025  | 1,701  | 999    | 2,700   | 25,704  |
|                                          |                 |                                                   |                                    | Apartments                | 1575     | DU                 | 220      | 161       | 643    | 804    | 635    | 342    | 977     | 10,474  |
|                                          |                 |                                                   |                                    | Single Family Residential | 1003     | DU                 | 210      | 188       | 564    | 752    | 632    | 371    | 1,003   | 9,549   |
| Zone 2 Subtotal                          |                 |                                                   |                                    |                           |          |                    |          | 3,882     | 7,467  | 11,349 | 9,405  | 6,870  | 16,275  | 167,031 |
| 3                                        | 15              | LE 7                                              | Marina Village Condos              | Condominiums              | 94       | DU                 | 230      | 7         | 34     | 41     | 33     | 16     | 49      | 546     |
|                                          | 16              | LE 15                                             | Lakeshore Town Center              | Mixed-Use Commercial      | 237.400  | TSF                | 820      | 141       | 87     | 228    | 423    | 458    | 881     | 10,137  |
|                                          | Zone 3 Subtotal |                                                   |                                    |                           |          |                    |          | 148       | 121    | 269    | 456    | 474    | 930     | 10,683  |
| 4                                        | 17              | LE 12                                             | Lake Elsinore Walmart <sup>5</sup> | Mixed Commercial          | 170.487  | TSF                | ---      | 339       | 256    | 595    | 412    | 417    | 829     | 11,723  |
|                                          | Zone 4 Subtotal |                                                   |                                    |                           |          |                    |          | 339       | 256    | 595    | 412    | 417    | 829     | 11,723  |
| 5                                        | 18              | LE 18                                             | Alberhill Ridge                    | Single Family Residential | 1056     | DU                 | 210      | 198       | 594    | 792    | 665    | 391    | 1,056   | 10,053  |
|                                          |                 |                                                   |                                    | Apartments                | 345      | DU                 | 220      | 35        | 141    | 176    | 139    | 75     | 214     | 2,294   |
|                                          |                 |                                                   |                                    | Shopping Center           | 679.000  | TSF                | 820      | 404       | 248    | 652    | 1,209  | 1,310  | 2,519   | 28,993  |
|                                          |                 |                                                   |                                    | General Office            | 679.000  | TSF                | 710      | 932       | 127    | 1,059  | 172    | 840    | 1,012   | 7,489   |
|                                          | 19              | LE 19                                             | Alberhill Ranch                    | Single Family Residential | 1986     | DU                 | 210      | 372       | 1,117  | 1,489  | 1,251  | 735    | 1,986   | 18,907  |
|                                          | 20              | LE 20                                             | Terracina                          | Single Family Residential | 365      | DU                 | 210      | 68        | 205    | 273    | 230    | 135    | 365     | 3,475   |
| 21                                       | LE 25           | Alberhill Villages <sup>3</sup>                   | All Proposed Land Uses             | --                        | --       | --                 | 4,875    | 5,258     | 10,133 | 7,850  | 7,665  | 15,515 | 158,189 |         |
| Zone 5 Subtotal                          |                 |                                                   |                                    |                           |          |                    |          | 6,884     | 7,690  | 14,574 | 11,516 | 11,151 | 22,667  | 229,400 |
| 6                                        | 22              | LE 21                                             | Wakerider <sup>4</sup>             | Resort                    | --       | --                 | --       | 73        | 60     | 133    | 88     | 71     | 159     | 2,201   |
|                                          | 23              | LE 22                                             | Village at Lakeshore               | Condominiums              | 163      | DU                 | 230      | 12        | 60     | 72     | 57     | 28     | 85      | 947     |
|                                          | 24              | LE 24                                             | Circle K                           | Gas Station/Car Wash      | 12.000   | FP                 | 946      | 72        | 70     | 142    | 85     | 81     | 166     | 1,834   |
|                                          | Zone 6 Subtotal |                                                   |                                    |                           |          |                    |          | 157       | 190    | 347    | 230    | 180    | 410     | 4,982   |
| 7                                        | 25              | LE 23                                             | Golden Corral                      | Restaurant                | 7.798    | TSF                | 932      | 46        | 38     | 84     | 46     | 31     | 77      | 992     |
|                                          | 26              | LE 28                                             | La Quinta Inn                      | Hotel                     | 64       | RM                 | 310      | 20        | 14     | 34     | 20     | 19     | 39      | 523     |
|                                          | Zone 7 Subtotal |                                                   |                                    |                           |          |                    |          | 66        | 52     | 118    | 66     | 50     | 116     | 1,515   |
| 8                                        | 27              | LE 26                                             | Ness Industrial Garage             | Light Industrial          | 12.000   | TSF                | 110      | 10        | 1      | 11     | 1      | 10     | 11      | 84      |
|                                          | 28              | LE 27                                             | Fairway Business Park              | Light Industrial          | 280.000  | TSF                | 110      | 227       | 31     | 258    | 33     | 239    | 272     | 1,952   |
|                                          | Zone 8 Subtotal |                                                   |                                    |                           |          |                    |          | 237       | 32     | 269    | 34     | 249    | 283     | 2,036   |
| 9                                        | 29              | LE 3                                              | Trieste                            | Single Family Residential | 75       | DU                 | 210      | 14        | 42     | 56     | 47     | 28     | 75      | 714     |
|                                          | Zone 9 Subtotal |                                                   |                                    |                           |          |                    |          | 14        | 42     | 56     | 47     | 28     | 75      | 714     |
| Total Cumulative Project Trip Generation |                 |                                                   |                                    |                           |          |                    |          | 12,097    | 16,777 | 28,874 | 23,393 | 20,263 | 43,656  | 449,017 |

<sup>1</sup> DU = Dwelling Units; FP = Fueling Positions; RM = Rooms; TSF = Thousand Square Feet

<sup>2</sup> Cumulative project information provided by the City of Lake Elsinore and County of Riverside.

<sup>3</sup> Trip Generation is based on *Alberhill Villages Specific Plan (Linscott, Law & Greenspan Engineers, October 14, 2015)*.

<sup>4</sup> Trip Generation is based on *Wakerider Beach Resort Traffic Study (RK Engineering Group, Inc., May 27, 2015)*.

<sup>5</sup> Trip Generation is based on *Lake Elsinore Walmart Traffic Impact Analysis (Urban Crossroads, Inc., June 11, 2015)*.

<sup>6</sup> Project number from City of Lake Elsinore-provided cumulative project list.

## 6.0 Traffic Signal Warrant Evaluation

For each analysis scenario, existing unsignalized study intersections have been evaluated for signalization based on the peak hour and daily volume warrants and procedures contained in the *California Manual on Uniform Traffic Control Devices (CA MUTCD), 2014 Edition*.

The table below summarizes the results of the *MUTCD* signal warrant analysis at the unsignalized study intersections for all analysis scenarios evaluated as part of this report; detailed *MUTCD* signal warrant analysis sheets are contained in Appendix C.

| Unsignalized Study Intersection                 | Analysis Scenario Signal Warrant Met? |              |              |                                  |              |              |                                                                             |              |              |                                                                                              |              |              |
|-------------------------------------------------|---------------------------------------|--------------|--------------|----------------------------------|--------------|--------------|-----------------------------------------------------------------------------|--------------|--------------|----------------------------------------------------------------------------------------------|--------------|--------------|
|                                                 | Existing Conditions                   |              |              | Existing Plus Project Conditions |              |              | Project Completion Conditions (Existing Plus Ambient Plus Proposed Project) |              |              | Cumulative Conditions (Existing Plus Ambient Plus Cumulative Projects Plus Proposed Project) |              |              |
|                                                 | Daily (ADT)                           | AM Peak Hour | PM Peak Hour | Daily (ADT)                      | AM Peak Hour | PM Peak Hour | Daily (ADT)                                                                 | AM Peak Hour | PM Peak Hour | Daily (ADT)                                                                                  | AM Peak Hour | PM Peak Hour |
| 1. Gunnerson St – Strickland Ave / Riverside Dr | <u>Yes</u>                            | No           | No           | <u>Yes</u>                       | No           | No           | <u>Yes</u>                                                                  | No           | No           | <u>Yes</u>                                                                                   | No           | No           |
| 4. Collier Ave / Crane St                       | No                                    | No           | No           | No                               | No           | No           | No                                                                          | No           | No           | No                                                                                           | No           | No           |
| 5. Collier Ave / Chaney St                      | <u>Yes</u>                            | <u>Yes</u>   | <u>Yes</u>   | <u>Yes</u>                       | <u>Yes</u>   | <u>Yes</u>   | <u>Yes</u>                                                                  | <u>Yes</u>   | <u>Yes</u>   | <u>Yes</u>                                                                                   | <u>Yes</u>   | <u>Yes</u>   |
| 6. Collier Ave / Spring St                      | No                                    | No           | No           | No                               | No           | No           | No                                                                          | No           | No           | <u>Yes</u>                                                                                   | No           | No           |

As shown in the table above, the following two unsignalized study intersections are currently warranted for installation of a traffic signal and continue to warrant installation of a traffic signal for the future analysis scenarios based on existing and future peak hour and/or daily traffic volumes and projections.

- Gunnerson Street – Strickland Avenue / Riverside Drive (AM peak hour warrant satisfied); and
- Collier Avenue / Chaney Street (AM, PM, and Daily warrants satisfied).

## **7.0 Study Intersection Peak Hour LOS Analysis**

---

This section provides a discussion on the study intersection peak hour level of service analysis and findings.

### **7.1 Existing Study Intersection Peak Hour Level of Service**

Existing peak hour LOS for the study intersections have been calculated utilizing existing study intersection geometry previously shown in Exhibit 4-1 and the existing manual AM and PM peak hour turning movement counts compiled for RK and previously shown in Exhibit 4-2.

Existing Conditions utilizes existing traffic signal timing data provided by Caltrans.

Table 7-1 summarizes Existing Conditions peak hour LOS of the study intersections. HCM calculation worksheets for Existing Conditions are provided in Appendix D.

As shown in Table 7-1, the study intersections are currently operating at an acceptable LOS (LOS D or better) for Existing Conditions, with the exception of the following study intersections:

- Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74) (both AM and PM peak hours);
- Int 5 – Collier Avenue / Chaney Street (AM peak hour only); and
- Int 9 – Dexter Avenue / Central Avenue (SR-74) (both AM and PM peak hours).

As shown in Section 6 of this report, the intersections of Gunnerson Street – Strickland Avenue / Riverside Drive and Collier Avenue / Chaney Street satisfy one or more of the MUTCD traffic signal warrants under existing as well as all future analysis scenarios.

## **7.2 Existing Plus Project Conditions Study Intersection Peak Hour Level of Service**

Existing Plus Project Conditions peak hour LOS for the study intersections have been calculated utilizing the Existing Plus Project traffic volumes previously shown in Exhibit 5-3.

Existing Plus Project Conditions assumes implementation of the following circulation system modifications planned as part of the proposed project:

- At the intersection of Collier Avenue/Central Avenue (SR-74), widen the northbound Collier Avenue approach from one left-turn lane, one through lane, and one right-turn lane with right-turn overlap phasing to consist of one left-turn lane, two through lanes, and two right-turn lanes with right-turn overlap phasing; and
- Modify/widen the eastbound Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps from two and three through lanes to consist of four through lanes.

Existing Plus Project Conditions study intersection geometry is shown in Exhibit 7-1.

Existing Plus Project Conditions utilizes existing traffic signal timing parameters and data provided by Caltrans with optimized cycles and timing.

Table 7-2 summarizes Existing Plus Project Conditions peak hour LOS of the study intersections. HCM calculation worksheets for Existing Plus Project Conditions are provided in Appendix E.

As shown in Table 7-2, the study intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) for Existing Plus Project Conditions, with the exception of the following study intersections:

- Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74) (both AM and PM peak hours); and
- Int 5 – Collier Avenue / Chaney Street (AM peak hour only).



Hence, the above listed study intersections are required to be mitigated to an acceptable Level of Service (LOS D or better) based on agency-established thresholds and criteria.

As previously shown in Table 7-1, the Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74) study intersection and the Collier Avenue / Chaney Street study intersection are currently operating deficiently for Existing Conditions. Also, as shown in Section 6 of this report, the intersections satisfy one or more of the MUTCD traffic signal warrants under existing as well as all future analysis scenarios.

### **7.2.1 Existing Plus Project Conditions Mitigation Measures & Mitigated Peak Hour Level of Service**

The following mitigation measures are identified to reduce the forecast significant traffic impacts at the impacted study intersections to a level considered less than significant for Existing Plus Project Conditions:

#### **Int Mitigation #1**

**Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74):** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following

- a) Signalize the intersection.
- b) Restripe the northbound Strickland Avenue approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.
- c) Restripe the southbound Gunnerson Street approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.

#### **Int Mitigation #2**

**Int 5 – Collier Avenue / Chaney Street:** This study intersection is currently deficient under existing conditions. The project applicant shall

make a fair share contribution to implement the following:

- a) Signalize the intersection.

Mitigated Existing Plus Project Conditions study intersection geometry is shown in Exhibit 7-2.

Table 7-2 summarizes Existing Plus Project Conditions peak hour LOS of the study intersections assuming implementation of the identified mitigation measures. HCM calculation worksheets for Mitigated Existing Plus Project Conditions are provided in Appendix F.

As shown in Table 7-2, assuming implementation of the identified mitigation measures, the study intersections are forecast to operate at an acceptable LOS (LOS D or better) for Existing Plus Project Conditions and the impacts are reduced to a level considered less than significant.

### **7.3 Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) Study Intersection Peak Hour Level of Service**

Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) peak hour LOS for the study intersections have been calculated utilizing the Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) traffic volumes previously shown in Exhibit 5-6.

Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) does not assume implementation of the mitigation measures identified in the previous section. However, it does assume implementation of the following circulation system modifications planned as part of the proposed project:

- At the intersection of Collier Avenue/Central Avenue (SR-74), widen the northbound Collier Avenue approach from one left-turn lane, one through lane, and one right-turn lane with right-turn overlap phasing to consist of one left-turn lane, two through lanes, and two right-turn lanes with right-turn overlap phasing; and

- Modify/widen the eastbound Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps from two and three through lanes to consist of four through lanes.

Project Completion Conditions study intersection geometry is shown in Exhibit 7-3.

Project Completion Conditions utilizes existing traffic signal timing parameters and data provided by Caltrans with optimized cycles and timing.

Table 7-3 summarizes Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) peak hour LOS of the study intersections. HCM calculation worksheets for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) are provided in Appendix G.

As shown in Table 7-3, the study intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project), with the exception of the following study intersections:

- Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74) (both AM and PM peak hours);
- Int 4 – Collier Avenue / Crane Street (both AM and PM peak hours); and
- Int 5 – Collier Avenue / Chaney Street (AM peak hour).

Hence, the above listed study intersections are required to be mitigated to an acceptable Level of Service (LOS D or better) based on agency-established thresholds and criteria.

As previously discussed in Section 7.1, the Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74) study intersection and the Collier Avenue / Chaney Street study intersection are currently operating deficiently for Existing Conditions. Also, as shown in Section 6 of this report, the intersections satisfy one or more of the MUTCD traffic signal warrants under existing as well as all future analysis scenarios.

As also shown in Section 6 of this report, the intersection of Collier Avenue / Crane Street does **not** satisfy the evaluated MUTCD traffic signal warrants for the analysis scenarios evaluated as part of this report. To achieve acceptable LOS at this intersection for Project

Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project), installation of a traffic signal would be required.

### **7.3.1 Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) Mitigation Measures & Mitigated Peak Hour Level of Service**

The following mitigation measures are identified to reduce the forecast significant traffic impacts at the impacted study intersections to a level considered less than significant for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project):

#### **Int Mitigation #3**

**Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74):** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following (*identical to Int Mitigation #1*):

- a) Signalize the intersection.
- b) Restripe the northbound Strickland Avenue approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.
- c) Restripe the southbound Gunnerson Street approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.

#### **Int Mitigation #4**

**Int 4 – Collier Avenue / Crane Street:** The project applicant shall implement the following:

- a) Signalize the intersection.

#### **Int Mitigation #5**

**Int 5 – Collier Avenue / Chaney Street:** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following (*identical to Int Mitigation #2*):

- a) Signalize the intersection.

Mitigated Project Completion Conditions study intersection geometry is shown in Exhibit 7-4.

For the intersection of Collier Avenue / Crane Street, as shown in Section 6 of this report, the study intersection is forecast to not satisfy the traffic signal warrants for any of the analysis scenarios. Signalization would be required to achieve acceptable operation.

Table 7-3 summarizes Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) peak hour LOS of the study intersections assuming implementation of the identified feasible mitigation measures. HCM calculation worksheets for Mitigated Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) are provided in Appendix H.

As shown in Table 7-3, assuming implementation of the identified feasible mitigation measures, the study intersections are forecast to operate at an acceptable LOS (LOS D or better) for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project) and the identified impacts are forecast to be reduced to a level considered less than significant.

#### **7.4 Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) Study Intersection Peak Hour Level of Service**

Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) peak hour LOS for the study intersections have been calculated utilizing the Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) traffic volumes previously shown in Exhibit 5-7.

Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) does not assume implementation of the mitigation measures identified in the previous sections. However, it does assume implementation of the following circulation system modifications planned as part of the proposed project:

- At the intersection of Collier Avenue/Central Avenue (SR-74), widen the northbound Collier Avenue approach from one left-turn lane, one through lane, and one right-turn lane with right-turn overlap phasing to consist of one left-turn lane, two through lanes, and two right-turn lanes with right-turn overlap phasing; and
- Modify/widen the eastbound Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps from two and three through lanes to consist of four through lanes.

Cumulative Conditions study intersection geometry is shown in Exhibit 7-5.

Cumulative Conditions utilizes existing traffic signal timing parameters and data provided by Caltrans with optimized cycles and timing.

Table 7-4 summarizes Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) peak hour LOS of the study intersections. HCM calculation worksheets for Existing Plus Project Conditions are provided in Appendix I.

As shown in Table 7-4, the study intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project), with the exception of the following study intersections:

- Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74) (both AM and PM peak hours);
- Int 4 – Collier Avenue / Crane Street (both AM and PM peak hours);
- Int 5 – Collier Avenue / Chaney Street (both AM and PM peak hours); and
- Int 9 – Dexter Avenue / Central Avenue (SR-74) (PM peak hour only).

As previously discussed in Section 7.1, the Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74) study intersection and the Collier Avenue / Chaney Street study intersection are currently operating deficiently for Existing Conditions. Also, as shown in Section 6 of this report, the intersections satisfy one or more of the MUTCD traffic signal warrants under existing as well as all future analysis scenarios.

#### **7.4.1 Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) Mitigation Measures and Mitigated Peak Hour Level of Service**

The following mitigation measures are identified to reduce the forecast significant traffic impacts at the impacted study intersections to a level considered less than significant for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project):

##### **Int Mitigation #6**

**Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74):** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following (*identical to Int Mitigation #1 & #3*):

- a) Signalize the intersection.
- b) Restripe the northbound Strickland Avenue approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.
- c) Restripe the southbound Gunnerson Street approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.

**Int Mitigation #7**

**Int 4 – Collier Avenue / Crane Street:** This study intersection is forecast to also be deficient for Existing Plus Project Conditions. The project applicant shall implement the following (*identical to Int Mitigation #4*):

- a) Signalize the intersection.

**Int Mitigation #8**

**Int 5 – Collier Avenue / Chaney Street:** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following (*identical to Int Mitigation #2 & #5*):

- a) Signalize the intersection.

**Int Mitigation #9**

**Int 9 – Dexter Avenue / Central Avenue (SR-74):** The project applicant shall make a fair share contribution to implement the following:

- a) Modify the eastbound Central Avenue (SR-74) approach from one left-turn lane, three through lanes and one right-turn lane to consist of one left-turn lane, two through lanes, one shared through/right-turn lanes and one right-turn lane.

Mitigated Cumulative Conditions study intersection geometry is shown in Exhibit 7-6.

A conceptual layout of the mitigation measure at the Dexter Avenue / Central Avenue (SR-74) study intersection is shown in Exhibit 7-7.

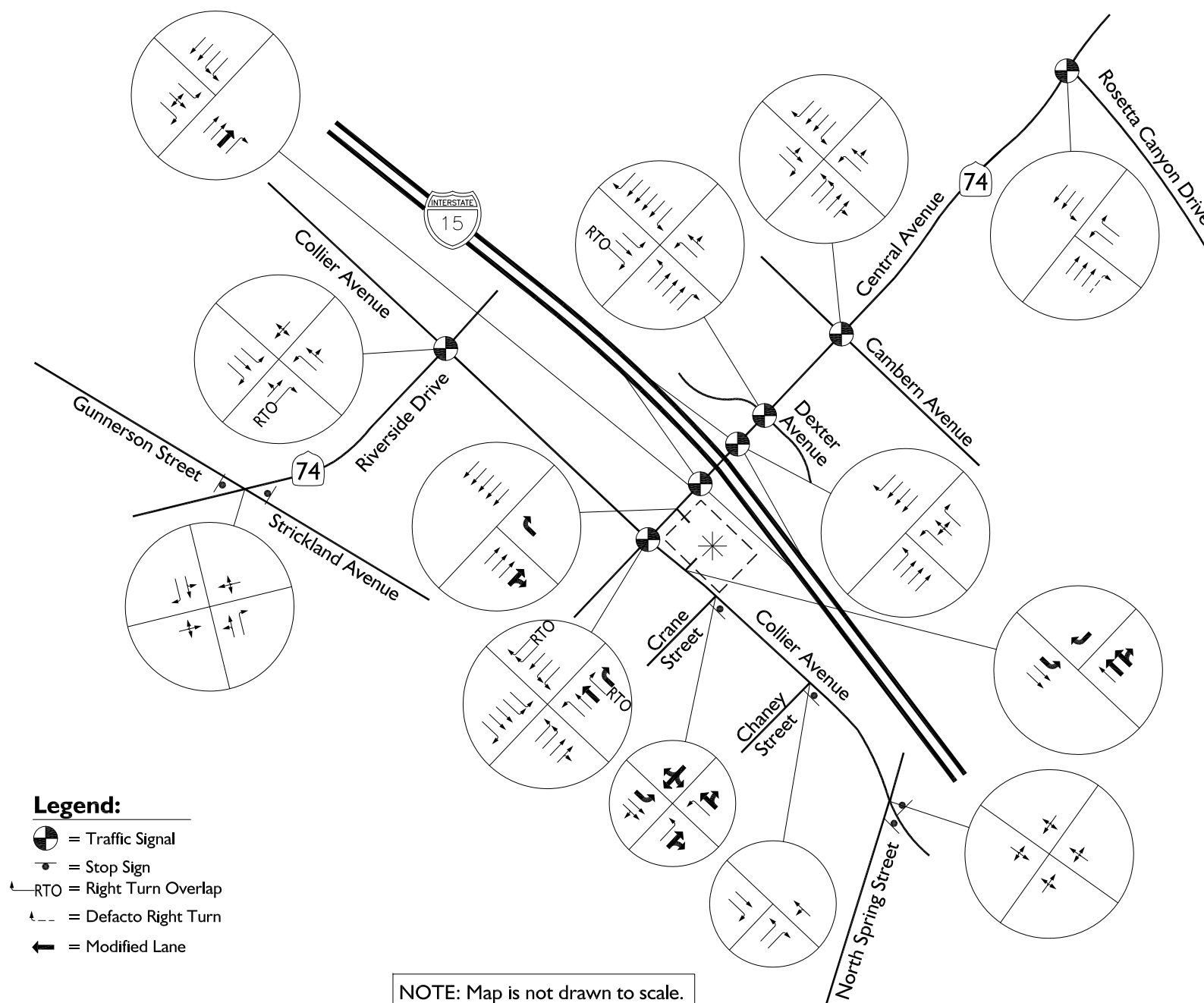
For the intersection of Collier Avenue / Crane Street, as shown in Section 6 of this report, the study intersection is forecast to not satisfy the traffic signal warrants for any of the analysis scenarios. Signalization would be required to achieve acceptable operation.



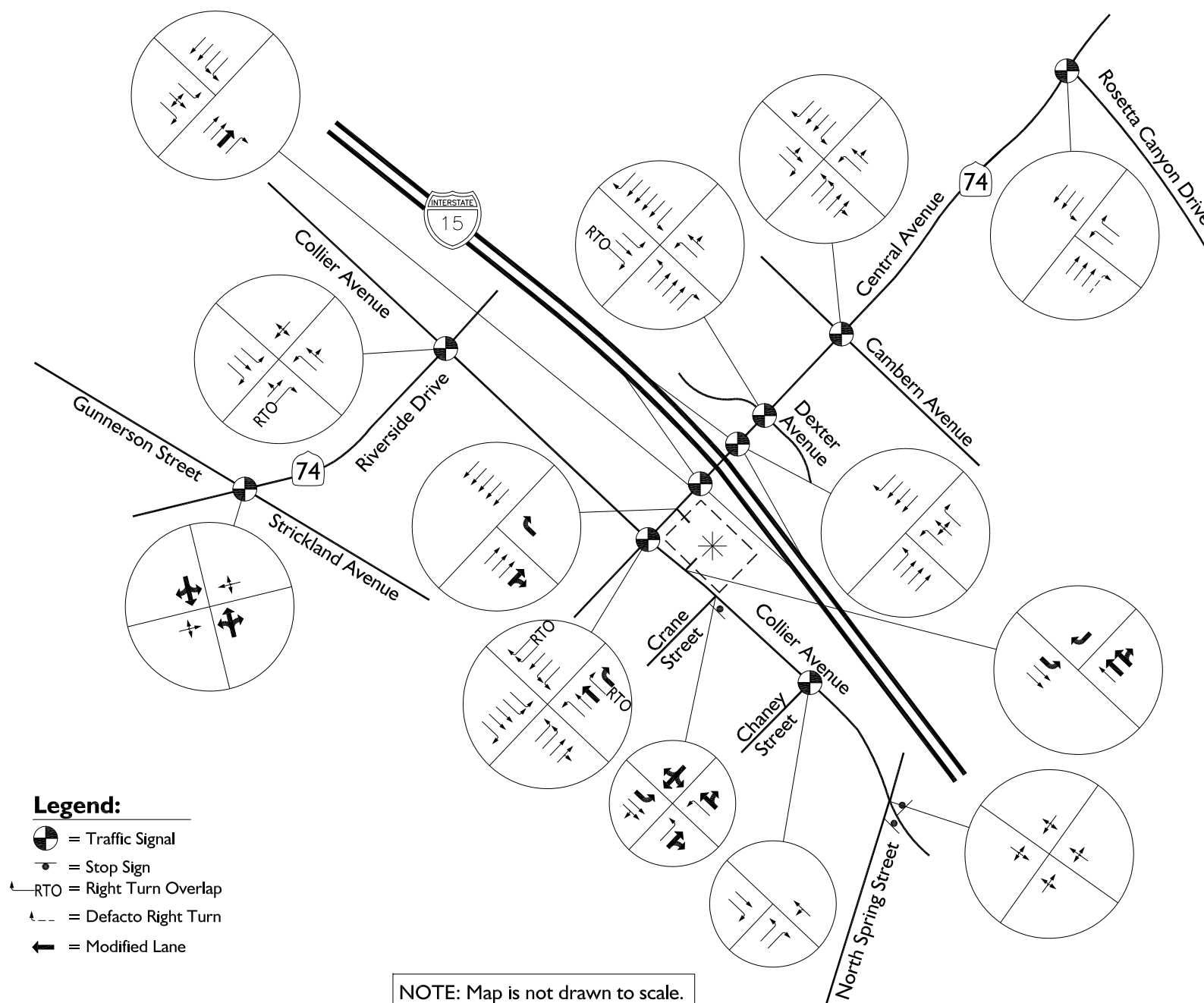
Table 7-4 summarizes Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) peak hour LOS of the study intersections assuming implementation of the identified feasible mitigation measures. HCM calculation worksheets for Existing Plus Project Conditions are provided in Appendix J.

As shown in Table 7-4, assuming implementation of the identified feasible mitigation measures, the study intersections are forecast to operate at an acceptable LOS (LOS D or better) for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) and the identified impacts are forecast to be reduced to a level considered less than significant.

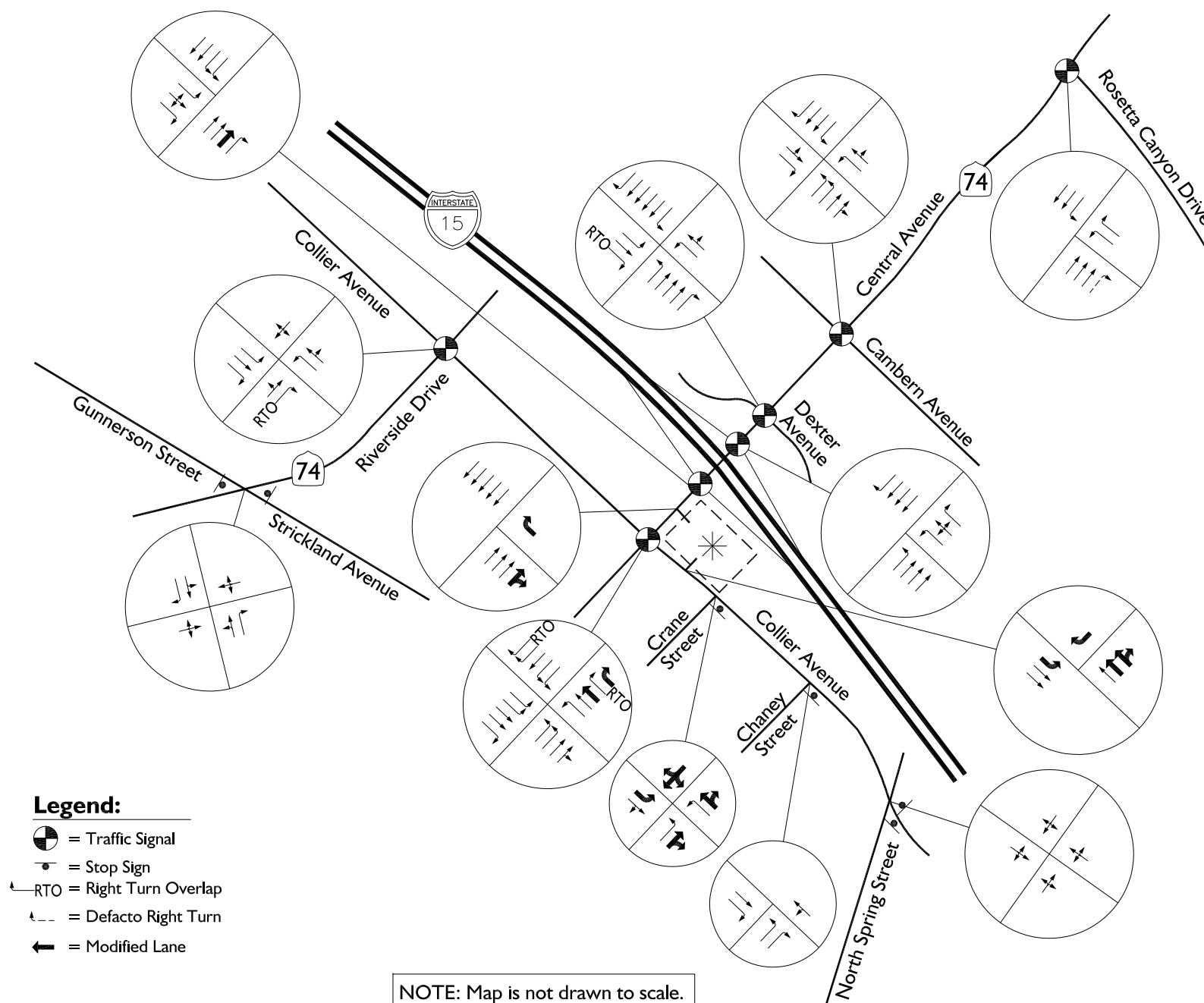
# Existing Plus Project Lane Geometry and Traffic Controls



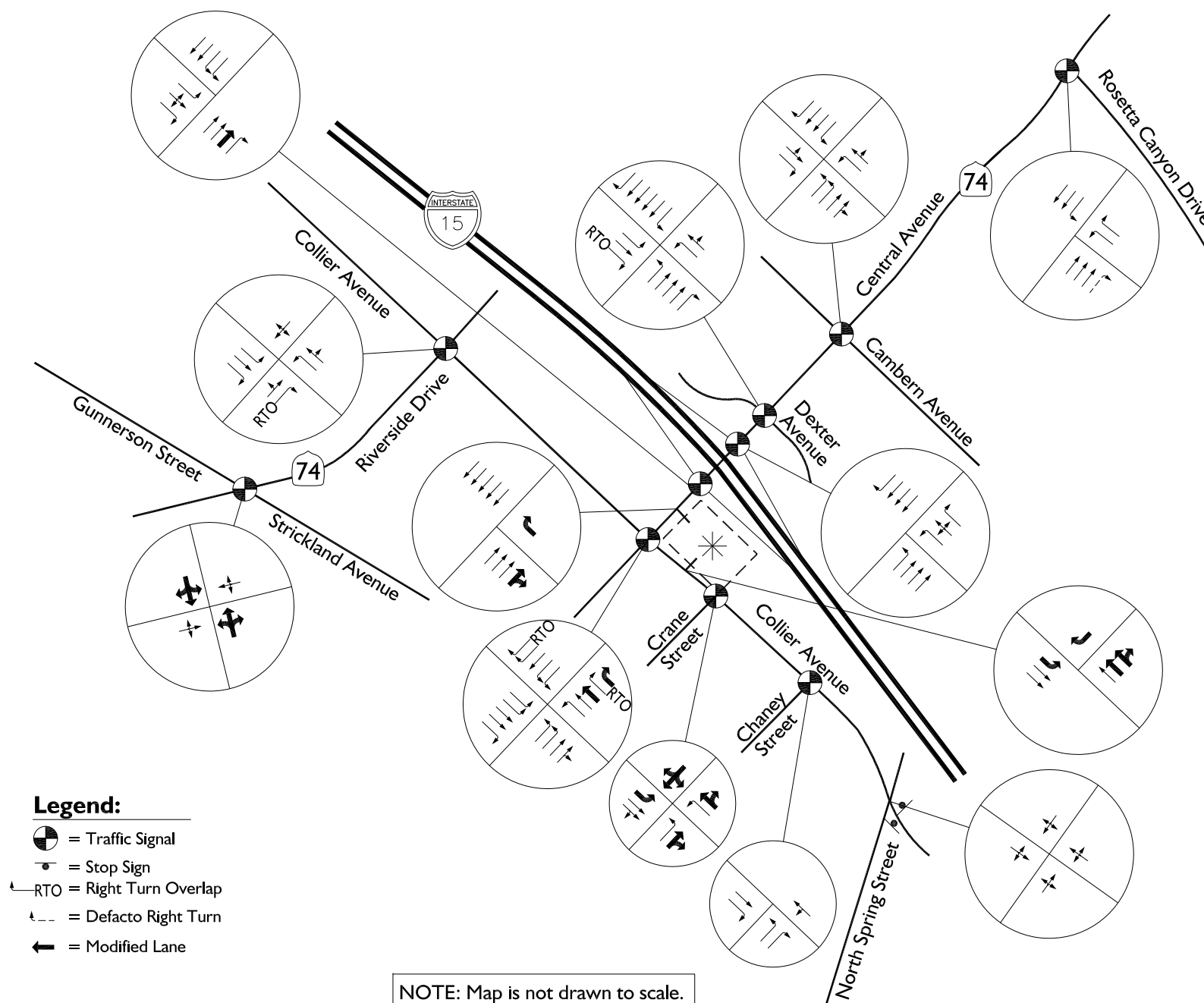
# Mitigated Existing Plus Project Lane Geometry and Traffic Controls



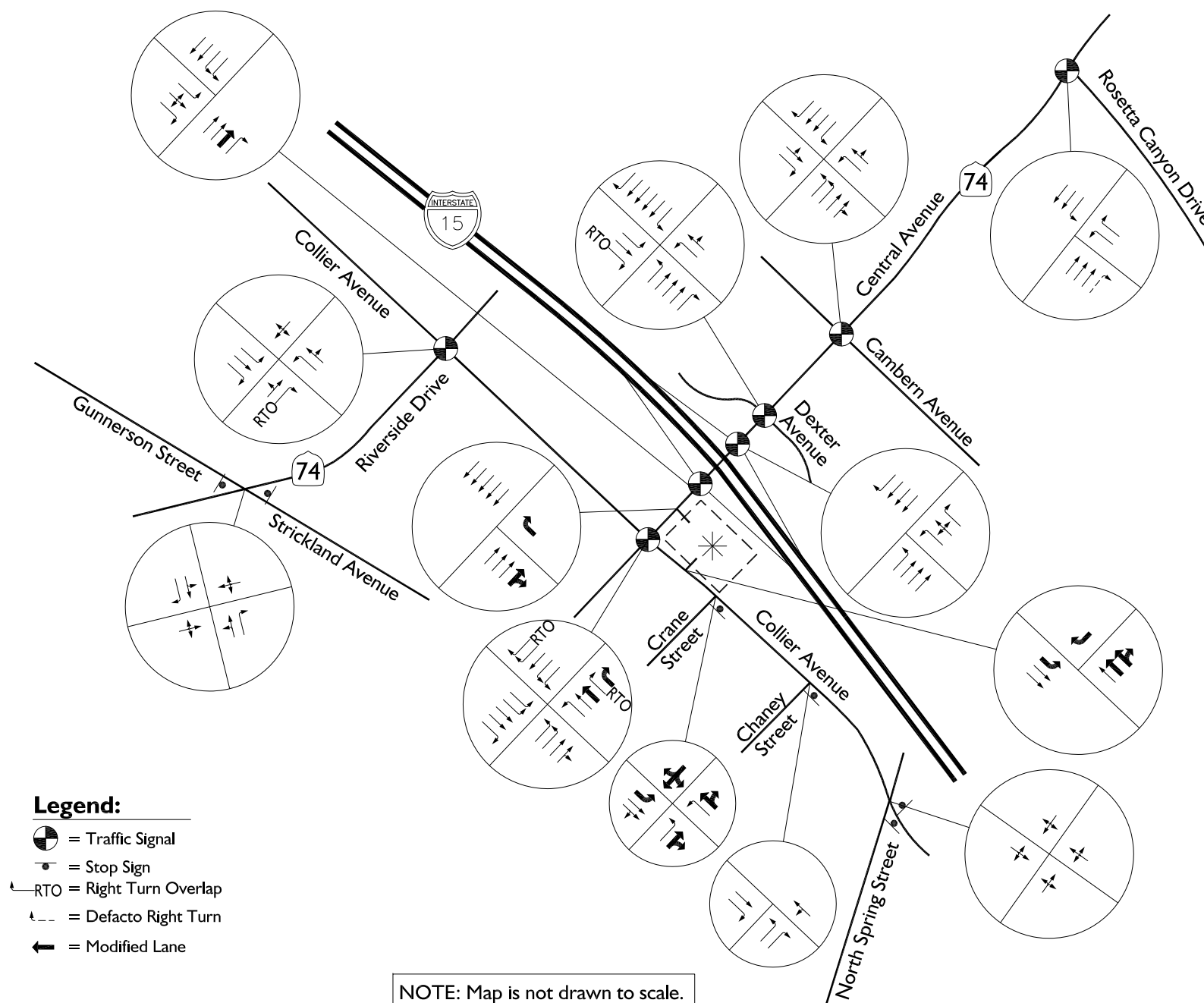
# Project Completion Lane Geometry and Traffic Controls



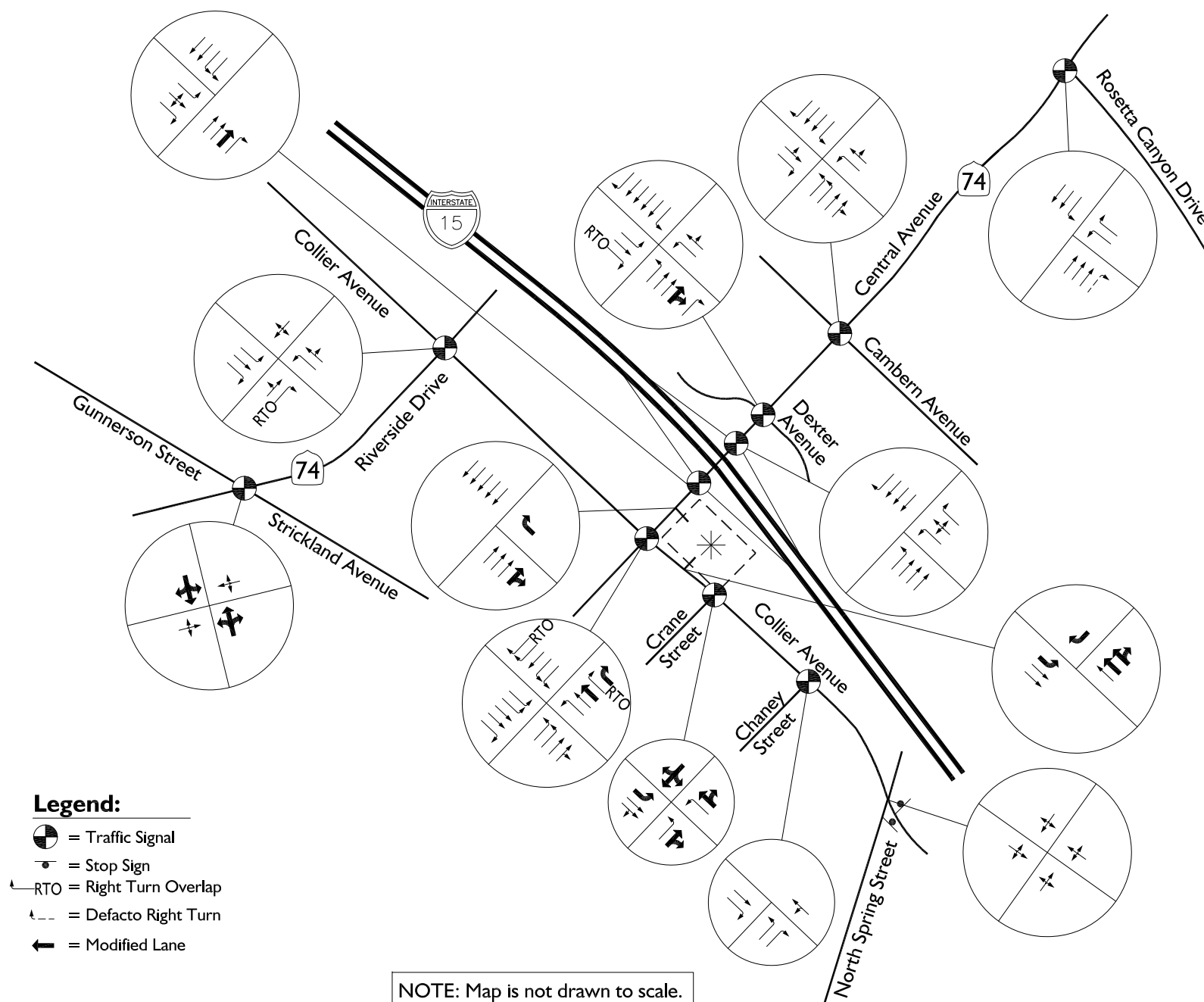
# Mitigated Project Completion Lane Geometry and Traffic Controls



# Cumulative Conditions Lane Geometry and Traffic Controls



# Mitigated Cumulative Conditions Lane Geometry and Traffic Controls





Dexter Ave. / Central Ave. (SR-74)  
Mitigation Measure (Conceptual)





**TABLE 7-1**  
**Existing Conditions Study Intersection Peak Hour LOS**

| Intersection                             | Traffic Control <sup>3</sup> | Intersection Approach Lane(s) <sup>1</sup> |     |     |            |     |     |           |     |     |           |     |     | Delay <sup>2</sup> (Seconds) |       | Level of Service |          |
|------------------------------------------|------------------------------|--------------------------------------------|-----|-----|------------|-----|-----|-----------|-----|-----|-----------|-----|-----|------------------------------|-------|------------------|----------|
|                                          |                              | Northbound                                 |     |     | Southbound |     |     | Eastbound |     |     | Westbound |     |     | AM                           | PM    | AM               | PM       |
|                                          |                              | L                                          | T   | R   | L          | T   | R   | L         | T   | R   | L         | T   | R   |                              |       |                  |          |
| Gunnerson St. / Strickland Ave. (NS) at: |                              |                                            |     |     |            |     |     |           |     |     |           |     |     |                              |       |                  |          |
| 1. Riverside Drive (EW)                  | CSS                          | 0.5                                        | 0.5 | 1.0 | 0.5        | 0.5 | 1.0 | 0.0       | 1!  | 0.0 | 0.0       | 1!  | 0.0 | 89.3                         | 230.3 | <b>F</b>         | <b>F</b> |
| Collier Avenue (NS) at:                  |                              |                                            |     |     |            |     |     |           |     |     |           |     |     |                              |       |                  |          |
| 2. Riverside Drive (EW)                  | TS                           | 1.0                                        | 0.5 | 0.5 | 1.0        | 1.0 | 1.0 | 0.5       | 0.5 | 1>  | 0.0       | 1!  | 0.0 | 9.9                          | 16.5  | A                | B        |
| 3. Central Avenue (EW)                   | TS                           | 1.0                                        | 1.0 | 1>  | 2.0        | 2.0 | 1.0 | 2.0       | 1.5 | 0.5 | 2.0       | 1.0 | 2>  | 31.5                         | 51.0  | C                | D        |
| 4. Crane Street (EW)                     | CSS                          | 1.0                                        | 1.0 | 0.0 | 0.0        | 1.5 | 0.5 | 1.0       | 0.0 | 1.0 | 0.0       | 0.0 | 0.0 | 25.1                         | 24.9  | D                | C        |
| 5. Chaney Street (EW)                    | CSS                          | 0.5                                        | 0.5 | 0.0 | 0.0        | 1.0 | 1.0 | 1.0       | 0.0 | 1.0 | 0.0       | 0.0 | 0.0 | 37.6                         | 20.6  | <b>E</b>         | C        |
| 6. North Spring Street (EW) <sup>4</sup> | AWS                          | 0.0                                        | 1!  | 0.0 | 0.0        | 1!  | 0.0 | 0.0       | 1!  | 0.0 | 0.0       | 1!  | 0.0 | 11.4                         | 9.5   | B                | A        |
| I-15 Southbound Ramps (NS) at:           |                              |                                            |     |     |            |     |     |           |     |     |           |     |     |                              |       |                  |          |
| 7. Central Avenue (EW)                   | TS                           | 0.0                                        | 0.0 | 0.0 | 1.0        | 1!  | 1.0 | 0.0       | 2.0 | 1.0 | 2.0       | 2.0 | 0.0 | 28.9                         | 33.1  | C                | C        |
| I-15 Northbound Ramps (NS) at:           |                              |                                            |     |     |            |     |     |           |     |     |           |     |     |                              |       |                  |          |
| 8. Central Avenue (EW)                   | TS                           | 1.0                                        | 1!  | 1.0 | 0.0        | 0.0 | 0.0 | 1.0       | 3.0 | 0.0 | 0.0       | 3.0 | 1.0 | 13.6                         | 22.1  | B                | C        |
| Dexter Avenue (NS) at:                   |                              |                                            |     |     |            |     |     |           |     |     |           |     |     |                              |       |                  |          |
| 9. Central Avenue (EW)                   | TS                           | 1.0                                        | 0.5 | 0.5 | 1.0        | 1.0 | 1>  | 1.0       | 3.0 | 1.0 | 1.0       | 4.0 | 1.0 | 87.2                         | 90.0  | <b>F</b>         | <b>F</b> |
| Cambern Avenue (NS) at:                  |                              |                                            |     |     |            |     |     |           |     |     |           |     |     |                              |       |                  |          |
| 10. Central Avenue (EW)                  | TS                           | 1.0                                        | 0.5 | 0.5 | 0.5        | 0.5 | 1.0 | 2.0       | 1.5 | 0.5 | 1.0       | 2.0 | 1.0 | 36.3                         | 43.9  | D                | D        |
| Rosetta Canyon Drive (NS) at:            |                              |                                            |     |     |            |     |     |           |     |     |           |     |     |                              |       |                  |          |
| 11. Central Avenue (EW)                  | TS                           | 1.0                                        | 0.0 | 1.0 | 0.0        | 0.0 | 0.0 | 0.0       | 3.0 | 1.0 | 1.0       | 2.0 | 0.0 | 17.1                         | 8.2   | B                | A        |
| Collier Avenue (NS) at:                  |                              |                                            |     |     |            |     |     |           |     |     |           |     |     |                              |       |                  |          |
| 12. Project Access (EW)                  | n/a                          | n/a                                        | n/a | n/a | n/a        | n/a | n/a | n/a       | n/a | n/a | n/a       | n/a | n/a | n/a                          | n/a   | n/a              | n/a      |

<sup>1</sup> When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "0" is indicated for the right or left turn, the movement is either non-existent or may be shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; **Improvements** = Improvements  
Deficient intersection operation is shown in **Bold**.

<sup>2</sup> Analysis Software: Synchro, Version 8.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> TS = Traffic Signal  
CSS = Cross Street Stop  
AWS = All Way Stop  
n/a = Future intersection as part of project

<sup>4</sup> The intersection currently operates as a three-leg stop, with the southbound movement free-flowing. However, for analysis purposes, the intersection is considered an all-way stop. This calculation is conservative, as the southbound movement will normally have zero delay.

**TABLE 7-2**  
**Existing Plus Project Conditions Study Intersection Peak Hour LOS**

| Intersection                             | Traffic Control <sup>3</sup> | Intersection Approach Lane(s) <sup>1</sup> |           |     |            |           |     |           |     |     |           |     |     | Delay <sup>2</sup><br>(Seconds) |       | Level of Service |          |
|------------------------------------------|------------------------------|--------------------------------------------|-----------|-----|------------|-----------|-----|-----------|-----|-----|-----------|-----|-----|---------------------------------|-------|------------------|----------|
|                                          |                              | Northbound                                 |           |     | Southbound |           |     | Eastbound |     |     | Westbound |     |     | AM                              | PM    | AM               | PM       |
|                                          |                              | L                                          | T         | R   | L          | T         | R   | L         | T   | R   | L         | T   | R   |                                 |       |                  |          |
| Gunnerson St. / Strickland Ave. (NS) at: |                              |                                            |           |     |            |           |     |           |     |     |           |     |     |                                 |       |                  |          |
| 1. Riverside Drive (EW)                  | CSS                          | 0.5                                        | 0.5       | 1.0 | 0.5        | 0.5       | 1.0 | 0.0       | 1!  | 0.0 | 0.0       | 1!  | 0.0 | 124.3                           | 335.0 | <b>F</b>         | <b>F</b> |
| - With Mitigation                        | <b>TS</b>                    | 0.0                                        | <b>1!</b> | 0.0 | 0.0        | <b>1!</b> | 0.0 | 0.0       | 1!  | 0.0 | 0.0       | 1!  | 0.0 | 9.1                             | 11.5  | A                | B        |
| Collier Avenue (NS) at:                  |                              |                                            |           |     |            |           |     |           |     |     |           |     |     |                                 |       |                  |          |
| 2. Riverside Drive (EW)                  | TS                           | 1.0                                        | 0.5       | 0.5 | 1.0        | 1.0       | 1.0 | 0.5       | 0.5 | 1>  | 0.0       | 1!  | 0.0 | 9.8                             | 18.2  | A                | B        |
| 3. Central Avenue (EW)                   | TS                           | 1.0                                        | 2.0       | 2>  | 2.0        | 2.0       | 1.0 | 2.0       | 1.5 | 0.5 | 2.0       | 1.0 | 2>  | 37.3                            | 36.5  | D                | D        |
| 4. Crane Street (EW)                     | CSS                          | 1.0                                        | 0.5       | 0.5 | 1.0        | 1.5       | 0.5 | 1.0       | 0.5 | 0.5 | 0.0       | 1!  | 0.0 | 33.3                            | 34.6  | D                | D        |
| 5. Chaney Street (EW)                    | CSS                          | 0.5                                        | 0.5       | 0.0 | 0.0        | 1.0       | 1.0 | 1.0       | 0.0 | 1.0 | 0.0       | 0.0 | 0.0 | 47.3                            | 22.8  | <b>E</b>         | C        |
| - With Mitigation                        | <b>TS</b>                    | 0.5                                        | 0.5       | 0.0 | 0.0        | 1.0       | 1.0 | 1.0       | 0.0 | 1.0 | 0.0       | 0.0 | 0.0 | 10.2                            | 7.9   | B                | A        |
| 6. North Spring Street (EW) <sup>4</sup> | AWS                          | 0.0                                        | 1!        | 0.0 | 0.0        | 1!        | 0.0 | 0.0       | 1!  | 0.0 | 0.0       | 1!  | 0.0 | 11.6                            | 9.7   | B                | A        |
| I-15 Southbound Ramps (NS) at:           |                              |                                            |           |     |            |           |     |           |     |     |           |     |     |                                 |       |                  |          |
| 7. Central Avenue (EW)                   | TS                           | 0.0                                        | 0.0       | 0.0 | 1.0        | 1!        | 1.0 | 0.0       | 3.0 | 1.0 | 2.0       | 2.0 | 0.0 | 27.5                            | 45.5  | C                | D        |
| I-15 Northbound Ramps (NS) at:           |                              |                                            |           |     |            |           |     |           |     |     |           |     |     |                                 |       |                  |          |
| 8. Central Avenue (EW)                   | TS                           | 1.0                                        | 1!        | 1.0 | 0.0        | 0.0       | 0.0 | 1.0       | 3.0 | 0.0 | 0.0       | 3.0 | 1.0 | 22.6                            | 26.7  | C                | C        |
| Dexter Avenue (NS) at:                   |                              |                                            |           |     |            |           |     |           |     |     |           |     |     |                                 |       |                  |          |
| 9. Central Avenue (EW)                   | TS                           | 1.0                                        | 0.5       | 0.5 | 1.0        | 1.0       | 1>  | 1.0       | 3.0 | 1.0 | 1.0       | 4.0 | 1.0 | 32.3                            | 27.9  | C                | C        |
| Cambern Avenue (NS) at:                  |                              |                                            |           |     |            |           |     |           |     |     |           |     |     |                                 |       |                  |          |
| 10. Central Avenue (EW)                  | TS                           | 1.0                                        | 0.5       | 0.5 | 0.5        | 0.5       | 1.0 | 2.0       | 1.5 | 0.5 | 1.0       | 2.0 | 1.0 | 21.8                            | 28.7  | C                | C        |
| Rosetta Canyon Drive (NS) at:            |                              |                                            |           |     |            |           |     |           |     |     |           |     |     |                                 |       |                  |          |
| 11. Central Avenue (EW)                  | TS                           | 1.0                                        | 0.0       | 1.0 | 0.0        | 0.0       | 0.0 | 0.0       | 3.0 | 1.0 | 1.0       | 2.0 | 0.0 | 19.7                            | 8.2   | B                | A        |
| Collier Avenue (NS) at:                  |                              |                                            |           |     |            |           |     |           |     |     |           |     |     |                                 |       |                  |          |
| 12. Project Access (EW)                  | CSS                          | 0.0                                        | 2.5       | 0.5 | 1.0        | 2.0       | 0.0 | 0.0       | 0.0 | 0.0 | 0.0       | 0.0 | 1.0 | 12.4                            | 14.8  | B                | B        |

<sup>1</sup> When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "0" is indicated for the right or left turn, the movement is either non-existent or may be shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; **Bold Underline** = Improvements

Deficient intersection operation is shown in **Bold**.

<sup>2</sup> Analysis Software: Synchro, Version 8.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> TS = Traffic Signal  
CSS = Cross Street Stop  
AWS = All Way Stop

<sup>4</sup> The intersection currently operates as a three-leg stop, with the southbound movement free-flowing. However, for analysis purposes, the intersection is considered an all-way stop. This calculation is conservative, as the southbound movement will normally have zero delay.

**TABLE 7-3**  
**Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project)**  
**Study Intersection Peak Hour LOS**

| Intersection                                                                                                                                                                                                        | Traffic Control <sup>3</sup>                            | Intersection Approach Lane(s) <sup>1</sup>        |                                                  |                                                  |                                                  |                                                   |                                                   |                                                   |                                                 |                                                   |                                                |                                                  |                                                         | Delay <sup>2</sup><br>(Seconds)                        |                                                   | Level of Service                           |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|-------------------------------------------------|---------------------------------------------------|------------------------------------------------|--------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------|--------------------------------------------|--------|
|                                                                                                                                                                                                                     |                                                         | Northbound                                        |                                                  |                                                  | Southbound                                       |                                                   |                                                   | Eastbound                                         |                                                 |                                                   | Westbound                                      |                                                  |                                                         | AM                                                     | PM                                                | AM                                         | PM     |
|                                                                                                                                                                                                                     |                                                         | L                                                 | T                                                | R                                                | L                                                | T                                                 | R                                                 | L                                                 | T                                               | R                                                 | L                                              | T                                                | R                                                       |                                                        |                                                   |                                            |        |
| Gunnerson St. / Strickland Ave. (NS) at:<br>1. Riverside Drive (EW)<br>- With Mitigation                                                                                                                            | CSS<br><b>TS</b>                                        | 0.5<br>0.0                                        | 0.5<br><b>1!</b>                                 | 1.0<br>0.0                                       | 0.5<br>0.0                                       | 0.5<br><b>1!</b>                                  | 1.0<br>0.0                                        | 0.0<br>0.0                                        | 1!<br>1!                                        | 0.0<br>0.0                                        | 0.0<br>0.0                                     | 1!<br>1!                                         | 0.0<br>0.0                                              | 160.3<br>9.4                                           | 438.8<br>13.3                                     | F<br>A                                     | F<br>B |
| Collier Avenue (NS) at:<br>2. Riverside Drive (EW)<br>3. Central Avenue (EW)<br>4. Crane Street (EW)<br>- With Mitigation<br>5. Chaney Street (EW)<br>- With Mitigation<br>6. North Spring Street (EW) <sup>4</sup> | TS<br>TS<br>CSS<br><b>TS</b><br>CSS<br><b>TS</b><br>AWS | <br>1.0<br>1.0<br>1.0<br>1.0<br>0.5<br>0.5<br>0.0 | <br>0.5<br>2.0<br>0.5<br>0.5<br>0.5<br>0.5<br>1! | <br>0.5<br>2><br>0.5<br>1.5<br>0.0<br>0.0<br>0.0 | <br>1.0<br>2.0<br>1.0<br>1.5<br>0.0<br>1.0<br>1! | <br>1.0<br>2.0<br>0.5<br>0.5<br>1.0<br>1.0<br>0.0 | <br>0.5<br>1.0<br>1.0<br>0.5<br>1.0<br>1.0<br>0.0 | <br>0.5<br>2.0<br>1.0<br>0.5<br>1.0<br>0.0<br>0.0 | <br>1><br>0.5<br>0.5<br>0.5<br>0.0<br>0.0<br>1! | <br>0.0<br>2.0<br>0.5<br>0.0<br>1.0<br>0.0<br>0.0 | <br>0.0<br>1.0<br>1!<br>1!<br>0.0<br>0.0<br>1! | <br>0.0<br>2><br>0.0<br>0.0<br>0.0<br>0.0<br>0.0 | <br>10.1<br>32.3<br>36.0<br>3.5<br>59.8<br>10.8<br>12.1 | <br>19.4<br>36.6<br>38.1<br>4.5<br>25.3<br>8.1<br>10.0 | <br>B<br>C<br><b>E</b><br>A<br><b>F</b><br>B<br>B | <br>B<br>D<br><b>E</b><br>A<br>D<br>A<br>A |        |
| I-15 Southbound Ramps (NS) at:<br>7. Central Avenue (EW)                                                                                                                                                            | TS                                                      | 0.0                                               | 0.0                                              | 0.0                                              | 1.0                                              | 1!                                                | 1.0                                               | 0.0                                               | 3.0                                             | 1.0                                               | 2.0                                            | 2.0                                              | 0.0                                                     | 16.2                                                   | 32.2                                              | B                                          | C      |
| I-15 Northbound Ramps (NS) at:<br>8. Central Avenue (EW)                                                                                                                                                            | TS                                                      | 1.0                                               | 1!                                               | 1.0                                              | 0.0                                              | 0.0                                               | 0.0                                               | 1.0                                               | 3.0                                             | 0.0                                               | 0.0                                            | 3.0                                              | 1.0                                                     | 15.5                                                   | 15.3                                              | B                                          | B      |
| Dexter Avenue (NS) at:<br>9. Central Avenue (EW)                                                                                                                                                                    | TS                                                      | 1.0                                               | 0.5                                              | 0.5                                              | 1.0                                              | 1.0                                               | 1>                                                | 1.0                                               | 3.0                                             | 1.0                                               | 1.0                                            | 4.0                                              | 1.0                                                     | 34.7                                                   | 29.1                                              | C                                          | C      |
| Cambern Avenue (NS) at:<br>10. Central Avenue (EW)                                                                                                                                                                  | TS                                                      | 1.0                                               | 0.5                                              | 0.5                                              | 0.5                                              | 0.5                                               | 1.0                                               | 2.0                                               | 1.5                                             | 0.5                                               | 1.0                                            | 2.0                                              | 1.0                                                     | 22.5                                                   | 29.3                                              | C                                          | C      |
| Rosetta Canyon Drive (NS) at:<br>11. Central Avenue (EW)                                                                                                                                                            | TS                                                      | 1.0                                               | 0.0                                              | 1.0                                              | 0.0                                              | 0.0                                               | 0.0                                               | 0.0                                               | 3.0                                             | 1.0                                               | 1.0                                            | 2.0                                              | 0.0                                                     | 20.6                                                   | 8.5                                               | C                                          | A      |
| Collier Avenue (NS) at:<br>12. Project Access (EW)                                                                                                                                                                  | CSS                                                     | 0.0                                               | 2.5                                              | 0.5                                              | 1.0                                              | 2.0                                               | 0.0                                               | 0.0                                               | 0.0                                             | 0.0                                               | 0.0                                            | 0.0                                              | 1.0                                                     | 12.6                                                   | 15.3                                              | B                                          | C      |

<sup>1</sup> When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "0" is indicated for the right or left turn, the movement is either non-existent or may be shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; **Improvements** = Improvements  
Deficient intersection operation is shown in **Bold**.

<sup>2</sup> Analysis Software: Synchro, Version 8.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> TS = Traffic Signal  
CSS = Cross Street Stop  
AWS = All Way Stop

<sup>4</sup> The intersection currently operates as a three-leg stop, with the southbound movement free-flowing. However, for analysis purposes, the intersection is considered an all-way stop. This calculation is conservative, as the southbound movement will normally have zero delay.

**TABLE 7-4**  
**Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulatives Plus Proposed Project)**  
**Study Intersection Peak Hour LOS**

| Intersection                             | Traffic Control <sup>3</sup> | Intersection Approach Lane(s) <sup>1</sup> |           |     |            |           |     |           |            |            |           |     |     | Delay <sup>2</sup><br>(Seconds) |       | Level of Service |          |
|------------------------------------------|------------------------------|--------------------------------------------|-----------|-----|------------|-----------|-----|-----------|------------|------------|-----------|-----|-----|---------------------------------|-------|------------------|----------|
|                                          |                              | Northbound                                 |           |     | Southbound |           |     | Eastbound |            |            | Westbound |     |     | AM                              | PM    | AM               | PM       |
|                                          |                              | L                                          | T         | R   | L          | T         | R   | L         | T          | R          | L         | T   | R   |                                 |       |                  |          |
| Gunnerson St. / Strickland Ave. (NS) at: |                              |                                            |           |     |            |           |     |           |            |            |           |     |     |                                 |       |                  |          |
| 1. Riverside Drive (EW)                  | CSS                          | 0.5                                        | 0.5       | 1.0 | 0.5        | 0.5       | 1.0 | 0.0       | 1!         | 0.0        | 0.0       | 1!  | 0.0 | 666.4                           | 1000  | <b>F</b>         | <b>F</b> |
| - With Mitigation                        | <b>TS</b>                    | 0.0                                        | <b>1!</b> | 0.0 | 0.0        | <b>1!</b> | 0.0 | 0.0       | 1!         | 0.0        | 0.0       | 1!  | 0.0 | 12.3                            | 34.0  | B                | C        |
| Collier Avenue (NS) at:                  |                              |                                            |           |     |            |           |     |           |            |            |           |     |     |                                 |       |                  |          |
| 2. Riverside Drive (EW)                  | TS                           | 1.0                                        | 0.5       | 0.5 | 1.0        | 1.0       | 1.0 | 0.5       | 0.5        | 1>         | 0.0       | 1!  | 0.0 | 14.2                            | 35.4  | B                | D        |
| 3. Central Avenue (EW)                   | TS                           | 1.0                                        | 2.0       | 2>  | 2.0        | 2.0       | 1.0 | 2.0       | 1.5        | 0.5        | 2.0       | 1.0 | 2>  | 52.7                            | 46.4  | D                | D        |
| 4. Crane Street (EW)                     | CSS                          | 1.0                                        | 0.5       | 0.5 | 1.0        | 1.5       | 0.5 | 1.0       | 0.5        | 0.5        | 0.0       | 1!  | 0.0 | 63.7                            | 110.6 | <b>F</b>         | <b>F</b> |
| - With Mitigation                        | <b>TS</b>                    | 1.0                                        | 0.5       | 0.5 | 1.0        | 1.5       | 0.5 | 1.0       | 0.5        | 0.5        | 0.0       | 1!  | 0.0 | 3.5                             | 5.3   | A                | A        |
| 5. Chaney Street (EW)                    | CSS                          | 0.5                                        | 0.5       | 0.0 | 0.0        | 1.0       | 1.0 | 1.0       | 0.0        | 1.0        | 0.0       | 0.0 | 0.0 | 132.5                           | 222.8 | <b>F</b>         | <b>F</b> |
| - With Mitigation                        | <b>TS</b>                    | 0.5                                        | 0.5       | 0.0 | 0.0        | 1.0       | 1.0 | 1.0       | 0.0        | 1.0        | 0.0       | 0.0 | 0.0 | 34.4                            | 10.9  | C                | B        |
| 6. North Spring Street (EW) <sup>4</sup> | AWS                          | 0.0                                        | 1!        | 0.0 | 0.0        | 1!        | 0.0 | 0.0       | 1!         | 0.0        | 0.0       | 1!  | 0.0 | 13.7                            | 11.9  | B                | B        |
| I-15 Southbound Ramps (NS) at:           |                              |                                            |           |     |            |           |     |           |            |            |           |     |     |                                 |       |                  |          |
| 7. Central Avenue (EW)                   | TS                           | 0.0                                        | 0.0       | 0.0 | 1.0        | 1!        | 1.0 | 0.0       | 3.0        | 1.0        | 2.0       | 2.0 | 0.0 | 38.9                            | 49.2  | D                | D        |
| I-15 Northbound Ramps (NS) at:           |                              |                                            |           |     |            |           |     |           |            |            |           |     |     |                                 |       |                  |          |
| 8. Central Avenue (EW)                   | TS                           | 1.0                                        | 1!        | 1.0 | 0.0        | 0.0       | 0.0 | 1.0       | 3.0        | 0.0        | 0.0       | 3.0 | 1.0 | 22.1                            | 34.4  | C                | C        |
| Dexter Avenue (NS) at:                   |                              |                                            |           |     |            |           |     |           |            |            |           |     |     |                                 |       |                  |          |
| 9. Central Avenue (EW)                   | TS                           | 1.0                                        | 0.5       | 0.5 | 1.0        | 1.0       | 1>  | 1.0       | 3.0        | 1.0        | 1.0       | 4.0 | 1.0 | 51.7                            | 62.3  | D                | <b>E</b> |
| - With Mitigation                        | TS                           | 1.0                                        | 0.5       | 0.5 | 1.0        | 1.0       | 1>  | 1.0       | <b>2.5</b> | <b>1.5</b> | 1.0       | 4.0 | 1.0 | 50.5                            | 53.2  | D                | D        |
| Cambern Avenue (NS) at:                  |                              |                                            |           |     |            |           |     |           |            |            |           |     |     |                                 |       |                  |          |
| 10. Central Avenue (EW)                  | TS                           | 1.0                                        | 0.5       | 0.5 | 0.5        | 0.5       | 1.0 | 2.0       | 1.5        | 0.5        | 1.0       | 2.0 | 1.0 | 31.1                            | 40.0  | C                | D        |
| Rosetta Canyon Drive (NS) at:            |                              |                                            |           |     |            |           |     |           |            |            |           |     |     |                                 |       |                  |          |
| 11. Central Avenue (EW)                  | TS                           | 1.0                                        | 0.0       | 1.0 | 0.0        | 0.0       | 0.0 | 0.0       | 3.0        | 1.0        | 1.0       | 2.0 | 0.0 | 24.1                            | 9.9   | C                | A        |
| Collier Avenue (NS) at:                  |                              |                                            |           |     |            |           |     |           |            |            |           |     |     |                                 |       |                  |          |
| 12. Project Access (EW)                  | CSS                          | 0.0                                        | 2.5       | 0.5 | 1.0        | 2.0       | 0.0 | 0.0       | 0.0        | 0.0        | 0.0       | 0.0 | 1.0 | 13.3                            | 24.1  | B                | C        |

<sup>1</sup> When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "0" is indicated for the right or left turn, the movement is either non-existent or may be shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; **Bold Underline** = Improvements

Deficient intersection operation is shown in **Bold**.

<sup>2</sup> Analysis Software: Synchro, Version 8.0. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> TS = Traffic Signal  
CSS = Cross Street Stop  
AWS = All Way Stop

<sup>4</sup> The intersection currently operates as a three-leg stop, with the southbound movement free-flowing. However, for analysis purposes, the intersection is considered an all-way stop. This calculation is conservative, as the southbound movement will normally have zero delay.

## **8.0 Peak Hour Vehicular Queue Analysis**

---

As requested by Caltrans, a peak hour 95<sup>th</sup> percentile vehicular queue evaluation has been prepared for the study intersections along Central Avenue (SR-74) from Collier Avenue to Dexter Avenue as well as the full access project site driveway on Collier Avenue. The queue analysis has been prepared for all analysis scenarios evaluated as part of this study.

As previously noted, the City of Lake Elsinore and Caltrans do not have established and adopted performance criteria and significant impact thresholds for vehicular queuing. Hence, the vehicular queuing analysis presented in this report is strictly for informational purposes.

Table 8-1 summarizes the results of the 95<sup>th</sup> percentile vehicular queue evaluation for all analysis scenarios.

HCM 95<sup>th</sup> percentile vehicular queue calculation worksheets for the scenarios are contained in Appendices D, E, G, and H.

As previously noted in Section 4.1, Caltrans currently has plans to increase the I-15 / Central Avenue (SR-74) interchange capacity by reconstructing the interchange as a Type L-9. The interchange reconfiguration is expected to eliminate left-turn movement from Central Avenue onto the I-15 on-ramps and improve the vehicular queueing at this location. It should be noted, this analysis does not assume the future planned improvements at the interchange and the reconfiguration of the ramps.

**TABLE 8-1**  
**HCM 95th Percentile Vehicular Queue Analysis Summary**

| Study Location                       | Movement <sup>1</sup>         | Storage Capacity per Lane (ft) <sup>2</sup> | Existing Conditions <sup>4</sup> |                                   |              |                                   |              | Existing Plus Project Conditions <sup>5</sup> |                                   |              |                                   |              | Project Completion Conditions (Existing Plus Ambient Plus Proposed Project) <sup>5</sup> |                                   |              |                                   |              | Cumulative Conditions (Existing Plus Ambient Plus Cumulatives Plus Proposed Project) <sup>5</sup> |                                   |              |                                   |              |
|--------------------------------------|-------------------------------|---------------------------------------------|----------------------------------|-----------------------------------|--------------|-----------------------------------|--------------|-----------------------------------------------|-----------------------------------|--------------|-----------------------------------|--------------|------------------------------------------------------------------------------------------|-----------------------------------|--------------|-----------------------------------|--------------|---------------------------------------------------------------------------------------------------|-----------------------------------|--------------|-----------------------------------|--------------|
|                                      |                               |                                             | No. of Lanes                     | Vehicular Queue (ft) <sup>3</sup> |              | Adequate Queue Storage Available? |              | No. of Lanes                                  | Vehicular Queue (ft) <sup>3</sup> |              | Adequate Queue Storage Available? |              | No. of Lanes                                                                             | Vehicular Queue (ft) <sup>3</sup> |              | Adequate Queue Storage Available? |              | No. of Lanes                                                                                      | Vehicular Queue (ft) <sup>3</sup> |              | Adequate Queue Storage Available? |              |
|                                      |                               |                                             |                                  | AM Peak Hour                      | PM Peak Hour | AM Peak Hour                      | PM Peak Hour |                                               | AM Peak Hour                      | PM Peak Hour | AM Peak Hour                      | PM Peak Hour |                                                                                          | AM Peak Hour                      | PM Peak Hour | AM Peak Hour                      | PM Peak Hour |                                                                                                   | AM Peak Hour                      | PM Peak Hour | AM Peak Hour                      | PM Peak Hour |
| Central Ave (SR-74) at Collier Ave   | WB Left-Turn                  | 470                                         | 2.0                              | 292                               | 112          | YES                               | YES          | 2.0                                           | 358                               | 211          | YES                               | YES          | 2.0                                                                                      | 374                               | 197          | YES                               | YES          | 2.0                                                                                               | 636                               | 247          | <u>NO</u>                         | YES          |
|                                      | WB Through                    | 595                                         | 1.0                              | 232                               | 186          | YES                               | YES          | 1.0                                           | 246                               | 255          | YES                               | YES          | 1.0                                                                                      | 218                               | 263          | YES                               | YES          | 1.0                                                                                               | 254                               | 208          | YES                               | YES          |
|                                      | WB Right-Turn                 | 470                                         | 2.0                              | 0                                 | 14           | YES                               | YES          | 2.0                                           | 65                                | 203          | YES                               | YES          | 2.0                                                                                      | 23                                | 220          | YES                               | YES          | 2.0                                                                                               | 200                               | 373          | YES                               | YES          |
| Central Ave (SR-74) at I-15 SB Ramps | SB Off-Ramp Left-Turn         | 650                                         | 1.0                              | 163                               | 364          | YES                               | YES          | 1.0                                           | 227                               | 311          | YES                               | YES          | 1.0                                                                                      | 238                               | 326          | YES                               | YES          | 1.0                                                                                               | 351                               | 587          | YES                               | YES          |
|                                      | SB Off-Ramp Shared Rt/Lt-Turn | 650                                         | 1.0                              | 152                               | 381          | YES                               | YES          | 1.0                                           | 207                               | 325          | YES                               | YES          | 1.0                                                                                      | 218                               | 339          | YES                               | YES          | 1.0                                                                                               | 362                               | 613          | YES                               | YES          |
|                                      | SB Off-Ramp Right-Turn        | 650                                         | 1.0                              | 100                               | 87           | YES                               | YES          | 1.0                                           | 155                               | 125          | YES                               | YES          | 1.0                                                                                      | 164                               | 130          | YES                               | YES          | 1.0                                                                                               | 247                               | 167          | YES                               | YES          |
|                                      | EB Through                    | 600                                         | 2.0                              | 161                               | 215          | YES                               | YES          | 3.0                                           | 193                               | 354          | YES                               | YES          | 3.0                                                                                      | 245                               | 372          | YES                               | YES          | 3.0                                                                                               | 226                               | 543          | YES                               | YES          |
|                                      | EB Right-Turn                 | 600                                         | 1.0                              | 91                                | 21           | YES                               | YES          | 1.0                                           | 352                               | 151          | YES                               | YES          | 1.0                                                                                      | 407                               | 134          | YES                               | YES          | 1.0                                                                                               | 401                               | 184          | YES                               | YES          |
|                                      | WB Left-Turn                  | 410                                         | 2.0                              | 183                               | 150          | YES                               | YES          | 2.0                                           | 371                               | 260          | YES                               | YES          | 2.0                                                                                      | 384                               | 341          | YES                               | YES          | 2.0                                                                                               | 328                               | 388          | YES                               | YES          |
|                                      | WB Through                    | 410                                         | 2.0                              | 81                                | 57           | YES                               | YES          | 2.0                                           | 231                               | 531          | YES                               | <u>NO</u>    | 2.0                                                                                      | 214                               | 432          | YES                               | <u>NO</u>    | 2.0                                                                                               | 217                               | 291          | YES                               | YES          |
| Central Ave (SR-74) at I-15 NB Ramps | NB Off-Ramp Left-Turn         | 600                                         | 1.0                              | 330                               | 341          | YES                               | YES          | 1.0                                           | 437                               | 427          | YES                               | YES          | 1.0                                                                                      | 468                               | 447          | YES                               | YES          | 1.0                                                                                               | 701                               | 696          | <u>NO</u>                         | <u>NO</u>    |
|                                      | NB Off-Ramp Shared Rt/Lt-Turn | 600                                         | 1.0                              | 285                               | 335          | YES                               | YES          | 1.0                                           | 404                               | 416          | YES                               | YES          | 1.0                                                                                      | 435                               | 443          | YES                               | YES          | 1.0                                                                                               | 667                               | 732          | <u>NO</u>                         | <u>NO</u>    |
|                                      | NB Off-Ramp Right-Turn        | 600                                         | 1.0                              | 250                               | 276          | YES                               | YES          | 1.0                                           | 335                               | 357          | YES                               | YES          | 1.0                                                                                      | 364                               | 377          | YES                               | YES          | 1.0                                                                                               | 601                               | 625          | <u>NO</u>                         | <u>NO</u>    |
|                                      | EB Left-Turn                  | 190                                         | 1.0                              | 84                                | 109          | YES                               | YES          | 1.0                                           | 149                               | 180          | YES                               | YES          | 1.0                                                                                      | 144                               | 190          | YES                               | YES          | 1.0                                                                                               | 207                               | 231          | <u>NO</u>                         | <u>NO</u>    |
|                                      | EB Through                    | 410                                         | 3.0                              | 215                               | 398          | YES                               | YES          | 3.0                                           | 108                               | 358          | YES                               | YES          | 3.0                                                                                      | 109                               | 182          | YES                               | YES          | 3.0                                                                                               | 357                               | 384          | YES                               | YES          |
|                                      | WB Through                    | 245                                         | 3.0                              | 403                               | 320          | <u>NO</u>                         | <u>NO</u>    | 3.0                                           | 161                               | 199          | YES                               | YES          | 3.0                                                                                      | 165                               | 179          | YES                               | YES          | 3.0                                                                                               | 226                               | 245          | YES                               | YES          |
|                                      | WB Right-Turn                 | 245                                         | 1.0                              | 0                                 | 7            | YES                               | YES          | 1.0                                           | 3                                 | 25           | YES                               | YES          | 1.0                                                                                      | 2                                 | 14           | YES                               | YES          | 1.0                                                                                               | 33                                | 19           | YES                               | YES          |
| Central Ave (SR-74) at Dexter Ave    | EB Left-Turn                  | 245                                         | 1.0                              | 556                               | 624          | <u>NO</u>                         | <u>NO</u>    | 1.0                                           | 469                               | 513          | <u>NO</u>                         | <u>NO</u>    | 1.0                                                                                      | 498                               | 549          | <u>NO</u>                         | <u>NO</u>    | 1.0                                                                                               | 568                               | 523          | <u>NO</u>                         | <u>NO</u>    |
|                                      | EB Through                    | 245                                         | 3.0                              | 132                               | 498          | YES                               | <u>NO</u>    | 3.0                                           | 286                               | 451          | <u>NO</u>                         | <u>NO</u>    | 3.0                                                                                      | 321                               | 439          | <u>NO</u>                         | <u>NO</u>    | 3.0                                                                                               | 398                               | 755          | <u>NO</u>                         | <u>NO</u>    |
|                                      | EB Right-Turn                 | 245                                         | 1.0                              | 15                                | 23           | YES                               | YES          | 1.0                                           | 25                                | 14           | YES                               | YES          | 1.0                                                                                      | 34                                | 37           | YES                               | YES          | 1.0                                                                                               | 44                                | 171          | YES                               | YES          |
| Collier Ave at Project Access        | NB Shared Through/Right-Turn  | 200                                         | 0.0                              | N/A                               | N/A          | N/A                               | N/A          | 1.0                                           | 0                                 | 0            | YES                               | YES          | 1.0                                                                                      | 0                                 | 0            | YES                               | YES          | 1.0                                                                                               | 0                                 | 0            | YES                               | YES          |
|                                      | SB Left-Turn                  | 100                                         | 0.0                              | N/A                               | N/A          | N/A                               | N/A          | 1.0                                           | 33                                | 40           | YES                               | YES          | 1.0                                                                                      | 33                                | 40           | YES                               | YES          | 1.0                                                                                               | 35                                | 73           | YES                               | YES          |

The City of Lake Elsinore and Caltrans do not have established and adopted performance criteria and significant impact thresholds for vehicular queuing. Hence, the vehicular queuing analysis presented in this report is strictly for informational purposes.

<sup>1</sup> NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.

<sup>2</sup> Through lane storage capacity is measured as distance to the next intersection.

<sup>3</sup> Queue reported is the 95th percentile queue per lane.

<sup>4</sup> Utilizes Existing Signal Timing Data.

<sup>5</sup> Utilizes Optimized Signal Timing.

## **9.0 Study Roadway Segment LOS Analysis**

---

This section provides a discussion on the study roadway segment level of service analysis and findings.

The study evaluates the following seven (7) study roadway segments:

1. Collier Avenue from Riverside Drive to Central Avenue (SR-74);
2. Collier Avenue from Central Avenue to Crane Street;
3. Collier Avenue from Crane Street to Chaney Street;
4. Collier Avenue from Chaney Street to North Spring Street;
5. Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps;
6. Central Avenue (SR-74) from I-15 Southbound Ramps to I-15 Northbound Ramps; and
7. Central Avenue (SR-74) from I-15 Northbound Ramps to Dexter Avenue.

Table 9-1 summarizes the results of the study roadway segment analysis for all analysis scenarios evaluated as part of this study utilizing existing roadway segment geometry and capacities.

As shown in Table 9-1, all of the study roadway segments are currently operating at an acceptable LOS (LOS D or better) and are forecast to continue to operate at an acceptable LOS (LOS D or better) for all of the analysis scenarios evaluated as part of this report with the exception of the following three study roadway segments which are forecast to operate at a deficient LOS (LOS E or worse) under Cumulative Conditions:

1. Collier Avenue from Riverside Drive to Central Avenue (SR-74);
6. Central Avenue (SR-74) from I-15 Southbound Ramps to I-15 Northbound Ramps; and

7. Central Avenue (SR-74) from I-15 Northbound Ramps to Dexter Avenue.

The following mitigation measures are identified to reduce the forecast significant traffic impacts at the impacted study roadway segment to a level considered less than significant for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project):

**Roadway Mitigation #1**

**Segment 1 – Collier Avenue from Riverside Drive to Central Avenue (SR-74):** The project applicant shall make a fair share contribution to implement the following:

- a) Widen the roadway segment from four-lanes to its ultimate classification as a six-lane Urban Arterial.

**Roadway Mitigation #2**

**Segment 6 – Central Avenue (SR-74) from I-15 Southbound Ramps to I-15 Northbound Ramps:** The project applicant shall make a fair share contribution to implement the following:

- a) Widen the roadway segment from six-lanes to its ultimate classification as an eight-lane Augmented Urban Arterial.

**Roadway Mitigation #3**

**Segment 7 – Central Avenue (SR-74) from I-15 Northbound Ramps to Dexter Avenue:** The project applicant shall make a fair share contribution to implement the following:

- a) Widen the roadway segment from six-lanes to its ultimate classification as an eight-lane Augmented Urban Arterial.

As shown in Table 9-1, assuming implementation of the identified feasible mitigation measures, the study roadway segments are forecast to operate at an acceptable LOS (LOS D or better) for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project) and the identified impacts are forecast to be reduced to a level considered less than significant.



**TABLE 9-1**  
**Study Roadway Segment Analysis Summary**

| Study Roadway Segment               | General Plan                       |                | No. of Lanes |                       |                                                                             |                                                                                      | Daily Capacity |                       |                                                                             |                                                                                      | Daily Traffic Volume |                        |                       |                                                                             |                            |                                                                                      | V/C Ratio |                       |                                                                             |                                                                                      | LOS      |                       |                                                                             |                                                                                      |
|-------------------------------------|------------------------------------|----------------|--------------|-----------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------|-----------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------|------------------------|-----------------------|-----------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------|-----------|-----------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------|-----------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                     | Classification                     | LOS E Capacity | Existing     | Existing Plus Project | Project Completion Conditions (Existing Plus Ambient Plus Proposed Project) | Cumulative Conditions (Existing Plus Ambient Plus Cumulatives Plus Proposed Project) | Existing       | Existing Plus Project | Project Completion Conditions (Existing Plus Ambient Plus Proposed Project) | Cumulative Conditions (Existing Plus Ambient Plus Cumulatives Plus Proposed Project) | Existing             | Project ADT Assignment | Existing Plus Project | Project Completion Conditions (Existing Plus Ambient Plus Proposed Project) | Cumulatives ADT Assignment | Cumulative Conditions (Existing Plus Ambient Plus Cumulatives Plus Proposed Project) | Existing  | Existing Plus Project | Project Completion Conditions (Existing Plus Ambient Plus Proposed Project) | Cumulative Conditions (Existing Plus Ambient Plus Cumulatives Plus Proposed Project) | Existing | Existing Plus Project | Project Completion Conditions (Existing Plus Ambient Plus Proposed Project) | Cumulative Conditions (Existing Plus Ambient Plus Cumulatives Plus Proposed Project) |
| <b>Collier Ave:</b>                 |                                    |                |              |                       |                                                                             |                                                                                      |                |                       |                                                                             |                                                                                      |                      |                        |                       |                                                                             |                            |                                                                                      |           |                       |                                                                             |                                                                                      |          |                       |                                                                             |                                                                                      |
| Riverside Dr. to Central Ave (SR-4) | Urban Arterial (6 Lanes)           | 53,900         | 4            | 4                     | 4                                                                           | 4                                                                                    | 35,933         | 35,933                | 35,933                                                                      | 35,933                                                                               | 25,848               | 1,898                  | 27,746                | 28,780                                                                      | 6,930                      | 35,710                                                                               | 0.72      | 0.77                  | 0.80                                                                        | 0.99                                                                                 | C        | C                     | C                                                                           | E                                                                                    |
| - Mitigated                         |                                    |                | 4            | 4                     | 4                                                                           | 6                                                                                    | 35,933         | 35,933                | 35,933                                                                      | 53,900                                                                               | 25,848               | 1,898                  | 27,746                | 28,780                                                                      | 6,930                      | 35,710                                                                               | 0.72      | 0.77                  | 0.80                                                                        | 0.66                                                                                 | C        | C                     | C                                                                           | B                                                                                    |
| Central Ave (SR-74) to Crane St     | Major (4 Lanes)                    | 34,100         | 3            | 4                     | 4                                                                           | 4                                                                                    | 25,575         | 34,100                | 34,100                                                                      | 34,100                                                                               | 12,840               | 4,176                  | 17,016                | 17,530                                                                      | 3,348                      | 20,878                                                                               | 0.50      | 0.50                  | 0.51                                                                        | 0.61                                                                                 | A        | A                     | A                                                                           | B                                                                                    |
| Crane St to Chaney St               | Major (4 Lanes)                    | 34,100         | 3            | 3                     | 3                                                                           | 3                                                                                    | 25,575         | 25,575                | 25,575                                                                      | 25,575                                                                               | 12,408               | 1,138                  | 13,546                | 14,042                                                                      | 3,348                      | 17,390                                                                               | 0.49      | 0.53                  | 0.55                                                                        | 0.68                                                                                 | A        | A                     | A                                                                           | B                                                                                    |
| Chaney St to Spring St              | Secondary (4 Lanes)                | 25,900         | 2            | 2                     | 2                                                                           | 2                                                                                    | 12,950         | 12,950                | 12,950                                                                      | 12,950                                                                               | 6,192                | 364                    | 6,556                 | 6,804                                                                       | 1,516                      | 8,320                                                                                | 0.48      | 0.51                  | 0.53                                                                        | 0.64                                                                                 | A        | A                     | A                                                                           | B                                                                                    |
| <b>Central Ave (SR-74):</b>         |                                    |                |              |                       |                                                                             |                                                                                      |                |                       |                                                                             |                                                                                      |                      |                        |                       |                                                                             |                            |                                                                                      |           |                       |                                                                             |                                                                                      |          |                       |                                                                             |                                                                                      |
| Collier Ave to I-15 SB Ramps        | Augmented Urban Arterial (8 Lanes) | 71,800         | 6            | 8                     | 8                                                                           | 8                                                                                    | 53,850         | 71,800                | 71,800                                                                      | 71,800                                                                               | 36,228               | 4,556                  | 40,784                | 42,233                                                                      | 10,308                     | 52,541                                                                               | 0.67      | 0.57                  | 0.59                                                                        | 0.73                                                                                 | B        | A                     | A                                                                           | C                                                                                    |
| I-15 SB Ramps to I-15 NB Ramps      | Augmented Urban Arterial (8 Lanes) | 71,800         | 6            | 6                     | 6                                                                           | 6                                                                                    | 53,850         | 53,850                | 53,850                                                                      | 53,850                                                                               | 42,732               | 3,272                  | 46,004                | 47,713                                                                      | 14,168                     | 61,881                                                                               | 0.79      | 0.85                  | 0.89                                                                        | 1.15                                                                                 | C        | D                     | D                                                                           | F                                                                                    |
| - Mitigated                         |                                    |                | 6            | 6                     | 6                                                                           | 8                                                                                    | 53,850         | 53,850                | 53,850                                                                      | 71,800                                                                               | 42,732               | 3,272                  | 46,004                | 47,713                                                                      | 14,168                     | 61,881                                                                               | 0.79      | 0.85                  | 0.89                                                                        | 0.86                                                                                 | C        | D                     | D                                                                           | D                                                                                    |
| I-15 NB Ramps to Dexter Ave         | Augmented Urban Arterial (8 Lanes) | 71,800         | 6            | 6                     | 6                                                                           | 6                                                                                    | 53,850         | 53,850                | 53,850                                                                      | 53,850                                                                               | 37,836               | 2,182                  | 40,018                | 41,531                                                                      | 18,026                     | 59,557                                                                               | 0.70      | 0.74                  | 0.77                                                                        | 1.11                                                                                 | B        | C                     | C                                                                           | F                                                                                    |
| - Mitigated                         |                                    |                | 6            | 6                     | 6                                                                           | 8                                                                                    | 53,850         | 53,850                | 53,850                                                                      | 71,800                                                                               | 37,836               | 2,182                  | 40,018                | 41,531                                                                      | 18,026                     | 59,557                                                                               | 0.70      | 0.74                  | 0.77                                                                        | 0.83                                                                                 | B        | C                     | C                                                                           | D                                                                                    |

## **10.0 Study Freeway Segment LOS Analysis**

---

This section provides a discussion on the study freeway segment level of service analysis and findings.

The study evaluates the following four (4) study freeway segments:

1. Northbound I-15 north of Central Avenue (SR-74);
2. Northbound I-15 south of Central Avenue (SR-74);
3. Southbound I-15 north of Central Avenue (SR-74); and
4. Southbound I-15 south of Central Avenue (SR-74).

Table 10-1 summarizes the results of the study freeway segment analysis for all analysis scenarios evaluated as part of this study utilizing existing freeway segment geometry and capacities. Detailed study freeway segment analysis worksheets are contained in Appendix K.

As shown in Table 10-1, the study freeway segments are currently operating at an acceptable LOS (LOS D or better) and are forecast to continue to operate at an acceptable LOS for all future analysis scenarios evaluated as part of this study.

**TABLE 10-1**  
**Freeway Segment Analysis Summary**

| Basic Freeway Study Segment  | Analysis Scenario |     |              |     |                       |     |              |     |                                                                                |     |              |     |                                                                                            |     |              |     |
|------------------------------|-------------------|-----|--------------|-----|-----------------------|-----|--------------|-----|--------------------------------------------------------------------------------|-----|--------------|-----|--------------------------------------------------------------------------------------------|-----|--------------|-----|
|                              | Existing          |     |              |     | Existing Plus Project |     |              |     | Project Completion Conditions<br>(Existing Plus Ambient Plus Proposed Project) |     |              |     | Cumulative Conditions (Existing Plus<br>Ambient Plus Cumulatives Plus<br>Proposed Project) |     |              |     |
|                              | AM Peak Hour      |     | PM Peak Hour |     | AM Peak Hour          |     | PM Peak Hour |     | AM Peak Hour                                                                   |     | PM Peak Hour |     | AM Peak Hour                                                                               |     | PM Peak Hour |     |
|                              | Density           | LOS | Density      | LOS | Density               | LOS | Density      | LOS | Density                                                                        | LOS | Density      | LOS | Density                                                                                    | LOS | Density      | LOS |
| I-15 NB North of Central Ave | 15.5              | B   | 14.6         | B   | 15.6                  | B   | 14.7         | B   | 16.2                                                                           | B   | 15.3         | B   | 17.3                                                                                       | B   | 16.8         | B   |
| I-15 NB South of Central Ave | 17.8              | B   | 15.4         | B   | 17.9                  | B   | 15.5         | B   | 18.7                                                                           | C   | 16.2         | B   | 20.1                                                                                       | C   | 17.9         | B   |
| I-15 SB North of Central Ave | 12.6              | B   | 18.2         | C   | 12.7                  | B   | 18.3         | C   | 13.2                                                                           | B   | 19.1         | C   | 14.4                                                                                       | B   | 20.7         | C   |
| I-15 SB South of Central Ave | 18.3              | C   | 22.4         | C   | 18.4                  | C   | 22.6         | C   | 19.2                                                                           | C   | 23.7         | C   | 20.5                                                                                       | C   | 26.0         | C   |

## **11.0 Study Freeway Ramp Merge/Diverge LOS Analysis**

This section provides a discussion on the study freeway ramp merge/diverge level of service analysis and findings.

The study evaluates the merge and diverge operations at the following four (4) study freeway ramps:

1. I-15 Northbound On-Ramp from Central Avenue (SR-74);
2. I-15 Northbound Off-Ramp at Central Avenue (SR-74);
3. I-15 Southbound Off-Ramp at Central Avenue (SR-74); and
4. I-15 Southbound On-Ramp from Central Avenue (SR-74).

Table 11-1 summarizes the results of the study freeway ramp merge and diverge analysis for all analysis scenarios evaluated as part of this study utilizing existing freeway segment and ramp geometry and capacities. Detailed study freeway ramp merge and diverge analysis worksheets are contained in Appendix L.

As shown in Table 11-1, the study freeway ramps are currently operating at an acceptable LOS (LOS D or better) and are forecast to continue to operate at an acceptable LOS for all future analysis scenarios evaluated as part of this study with the exception of the I-15 SB On-Ramp from Central Avenue (SR-74) which is forecast to operate at a deficient LOS (LOS E or worse) for Project Completion Conditions as well as Cumulative Conditions.

As previously noted, based on the Transportation Concept Report for the I-15 Freeway in the vicinity of the Central Avenue (SR-74) interchange, this section of the freeway is planned to be widened from its current configuration as three (3) mixed-flow lanes in each direction of travel to consist of the following:

- Three (3) mixed flow lanes and one (1) HOV lane in each direction travel south of the Central Avenue (SR-74) interchange; and
- Four (4) mixed flow lanes and one (2) HOT lane in each direction travel north of the Central Avenue (SR-74) interchange.

Also, Caltrans currently has plans to increase the I-15 / Central Avenue (SR-74) interchange capacity by reconstructing the interchange as a Type L-9.

Table 11-1 shows the resulting LOS of the I-15 SB On-Ramp from Central Avenue (SR-74) study freeway ramp operations for Project Completion Conditions as well as Cumulative Conditions after implementation of the planned freeway widening by Caltrans.

As shown in Table 11-1, the I-15 SB On-Ramp from Central Avenue (SR-74) study freeway ramp is expected to operate at an acceptable level after implementation of the planned improvements. Detailed study freeway ramp merge and diverge analysis worksheets are contained in Appendix L.

**TABLE 11-1**  
**Freeway Ramp Merge & Diverge Analysis Summary**

| Merge/Diverge Study Location      | Analysis Type | Analysis Scenario |     |              |     |                       |     |              |     |                                                                                |     |              |          |                                                                                      |          |              |          |
|-----------------------------------|---------------|-------------------|-----|--------------|-----|-----------------------|-----|--------------|-----|--------------------------------------------------------------------------------|-----|--------------|----------|--------------------------------------------------------------------------------------|----------|--------------|----------|
|                                   |               | Existing          |     |              |     | Existing Plus Project |     |              |     | Project Completion Conditions<br>(Existing Plus Ambient Plus Proposed Project) |     |              |          | Cumulative Conditions (Existing Plus Ambient Plus Cumulatives Plus Proposed Project) |          |              |          |
|                                   |               | AM Peak Hour      |     | PM Peak Hour |     | AM Peak Hour          |     | PM Peak Hour |     | AM Peak Hour                                                                   |     | PM Peak Hour |          | AM Peak Hour                                                                         |          | PM Peak Hour |          |
|                                   |               | Density           | LOS | Density      | LOS | Density               | LOS | Density      | LOS | Density                                                                        | LOS | Density      | LOS      | Density                                                                              | LOS      | Density      | LOS      |
| I-15 NB On-Ramp From Central Ave  | Merge         | 22.4              | C   | 21.2         | C   | 22.7                  | C   | 21.5         | C   | 23.5                                                                           | C   | 22.2         | C        | 26.3                                                                                 | C        | 26.2         | C        |
| I-15 NB Off-Ramp From Central Ave | Diverge       | 24.4              | C   | 22.1         | C   | 24.6                  | C   | 22.3         | C   | 25.5                                                                           | C   | 23.1         | C        | 27.5                                                                                 | C        | 25.8         | C        |
| I-15 SB Off-Ramp From Central Ave | Diverge       | 17.1              | B   | 23.7         | C   | 17.3                  | B   | 23.9         | C   | 18.0                                                                           | B   | 24.7         | C        | 19.8                                                                                 | B        | 26.8         | C        |
| I-15 SB On-Ramp From Central Ave  | Merge         | 30.7              | D   | 33.8         | D   | 31.0                  | D   | 34.1         | D   | 32.1                                                                           | D   | <u>35.4</u>  | <u>E</u> | <u>35.4</u>                                                                          | <u>E</u> | <u>40.0</u>  | <u>F</u> |
| - With Planned Improvement        | Merge         | ---               | --- | ---          | --- | ---                   | --- | ---          | --- | 25.8                                                                           | C   | 27.8         | C        | 28.7                                                                                 | D        | 31.8         | D        |

## **12.0 Findings and Recommendations**

---

### **12.1 Intersection Analysis Summary**

A summary of all recommended study intersection and study roadway segment improvements are listed in Table 12-1.

The recommended study intersection and study roadway segment improvements represent the minimum necessary improvements to meet level of service requirements. The proposed feasible study intersection and study roadway mitigation measures are also summarized on Exhibit 12-1.

See discussions related to feasibility of improvements to achieve acceptable operation at the Collier Avenue / Crane Street study intersection in Sections 7.3.1 and 7.4.1 of this report.

### **12.2 Site Access**

Access for the proposed project is planned as follows as shown in the most recent site plan provided on Exhibit 1-2:

- One right-in/right-out access location on Central Avenue (SR-74);
- One left-in/right-in/right-out access location on Collier Avenue. Left-turn in access at this location will be restricted through construction of a raised center median along Collier Avenue; and
- One full access location at the existing Collier Avenue/Crane Street intersection.

Additionally, as part of the proposed project, the following circulation system modifications are planned:

- At the intersection of Collier Avenue/Central Avenue (SR-74), widen the northbound Collier Avenue approach from one left-turn lane, one through lane, and one right-turn lane with right-turn overlap phasing to consist of one left-turn lane, two through lanes, and two right-turn lanes with right-turn overlap phasing; and

- Modify/widen the eastbound Central Avenue (SR-74) from Collier Avenue to I-15 Southbound Ramps from two and three through lanes to consist of four through lanes.

It is also important that adequate sight distance be provided for drivers entering and exiting the project site.

- The minimum required sight distance should be provided at all access points.
- A limited use area is maintained where a clear line of sight can be established.
- The limited use area shall be used for the purpose of prohibiting or clearing obstructions to maintain adequate sight distance at intersections.
- Limited use area to be kept clear of all obstructions over 30 inches high, including vegetation.
- No trees, walls, or any obstructions shall be allowed in the limited use area.
- The toe of the slope shall not encroach into the limited use area.

## **12.3 Circulation Recommendations**

### **12.3.1 On-Site**

- I. Construct an on-site circulation system per the detailed site plan. Install stop signs, stop bars, and stop legends at all project access points.
- II. Restrict Project Access along Central Avenue (SR-74) to be right-in/right-out only. Install "No Left Turn" signage.
- III. Restrict Project Access along Collier Avenue between Central Avenue (SR-74) and Crane Street to be left-in/right-in/right-out only. Install "No Left Turn" signage.



The on-site recommendations are shown in Exhibit 12-2.

### **12.3.2 Area Wide**

- I. Contribute towards implementation of the identified feasible mitigation measures required to achieve acceptable operations.
- II. Complete half-section street improvements for Collier Avenue and Central Avenue (SR-74), adjacent to the site.
- III. Roadways in the area should be built out as planned in the City of Lake Elsinore Circulation Element as development occurs.
- IV. Traffic signing/stripping should be implemented in conjunction with detailed construction plans for the project site.

## **12.4 Safety and Operational Improvements**

Adequate sight distance should be provided at each project access location.

As is the case for any roadway design, the City of Lake Elsinore and/or Caltrans should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

## **12.5 Regional Funding Mechanisms**

Participate in any approved transportation or development impact fees, such as TUMF fees, required by the County of Riverside.

## **12.6 Project Contribution**

Project Contribution for Mitigation Measures Identified for Existing Plus Project Conditions: The proposed project will be required to contribute a fair-share percentage for implementation of the identified mitigation measures at study facilities that are currently operating deficiently for Existing Conditions and are forecast to continue to operate deficiently for Existing Plus Project Conditions.

The proposed project will be required to make full contribution for implementation of the identified mitigation measures at study facilities that are currently operating acceptably for Existing Conditions and are forecast to operate deficiently for Existing Plus Project Conditions.

*Project Contribution for Mitigation Measures Identified for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project):* The proposed project will be required to contribute a fair-share percentage for implementation of the identified mitigation measures at study facilities that are currently operating deficiently for Existing Conditions and are forecast to continue to operate deficiently for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project).

The proposed project will be required to make full contribution for implementation of the identified mitigation measures at study facilities that are currently operating acceptably for Existing Conditions and are forecast to operate deficiently for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project).

*Project Contribution for Mitigation Measures Identified for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project):* The proposed project will be required to contribute a fair-share percentage for implementation of the identified mitigation measures at study facilities that are forecast to begin to operate deficiently for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project).

The project's fair-share traffic contribution represents the project's traffic contribution at each study area intersection as a percentage of the overall growth in traffic for both Project Completion Conditions and Cumulative Conditions.

The project's fair-share intersection contribution for Cumulative Conditions to intersections requiring feasible improvements necessary to meet level of service standards is shown in Table 12-2.

## 12.7 Summary of Mitigation Measures

The following mitigation measures are identified to reduce the forecast significant traffic impacts at the impacted study intersections to a level considered less than significant for Existing Plus Project Conditions:

### **Int Mitigation #1**

**Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74):** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following

- a) Signalize the intersection.
- b) Restripe the northbound Strickland Avenue approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.
- c) Restripe the southbound Gunnerson Street approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.

### **Int Mitigation #2**

**Int 5 – Collier Avenue / Chaney Street:** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following:

- a) Signalize the intersection.

The following mitigation measures are identified to reduce the forecast significant traffic impacts at the impacted study intersections to a level considered less than significant for Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed Project):

**Int Mitigation #3**

**Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74):** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following (*identical to Int Mitigation #1*):

- a) Signalize the intersection.
- b) Restripe the northbound Strickland Avenue approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.
- c) Restripe the southbound Gunnerson Street approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.

**Int Mitigation #4**

**Int 4 – Collier Avenue / Crane Street:** The project applicant shall implement the following:

- a) Signalize the intersection.

**Int Mitigation #5**

**Int 5 – Collier Avenue / Chaney Street:** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following (*identical to Int Mitigation #2*):

- a) Signalize the intersection.

The following mitigation measures are identified to reduce the forecast significant traffic impacts at the impacted study intersections to a level considered less than significant for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project):

**Int Mitigation #6**

**Int 1 – Gunnerson Street – Strickland Avenue / Riverside Drive (SR-74):** This study intersection is currently deficient under existing conditions. The project applicant shall make a fair share contribution to implement the following (*identical to Int Mitigation #1 & #3*):

- a) Signalize the intersection.
- b) Restripe the northbound Strickland Avenue approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.
- c) Restripe the southbound Gunnerson Street approach from one shared left-turn/through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.

**Int Mitigation #7**

**Int 4 – Collier Avenue / Crane Street:** This study intersection is forecast to also be deficient for Existing Plus Project Conditions. The project applicant shall implement the following (*identical to Int Mitigation #4*):

- a) Signalize the intersection.

**Int Mitigation #8**

**Int 5 – Collier Avenue / Chaney Street:** This study intersection is currently deficient under existing conditions. The project applicant shall

make a fair share contribution to implement the following (*identical to Int Mitigation #2 & #5*):

- a) Signalize the intersection.

#### **Int Mitigation #9**

**Int 9 – Dexter Avenue / Central Avenue (SR-74):** The project applicant shall make a fair share contribution to implement the following:

- a) Modify the eastbound Central Avenue (SR-74) approach from one left-turn lane, three through lanes and one right-turn lane to consist of one left-turn lane, two through lanes, one shared through/right-turn lanes and one right-turn lane.

Additionally, the following mitigation measures are identified to reduce the forecast significant traffic impacts at the impacted study roadway segments to a level considered less than significant for Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project):

#### **Roadway Mitigation #1**

**Segment 1 – Collier Avenue from Riverside Drive to Central Avenue (SR-74):** The project applicant shall make a fair share contribution to implement the following:

- a) Widen the roadway segment from four-lanes to its ultimate classification as a six-lane Urban Arterial.

#### **Roadway Mitigation #2**

**Segment 6 – Central Avenue (SR-74) from I-15 Southbound Ramps to I-15 Northbound Ramps:** The project applicant shall make a fair share contribution to implement the following:

- a) Widen the roadway segment from six-lanes to its ultimate classification as an eight-lane Augmented Urban Arterial.

**Roadway Mitigation #3****Segment 7 – Central Avenue (SR-74) from I-15 Northbound Ramps to Dexter Avenue:**

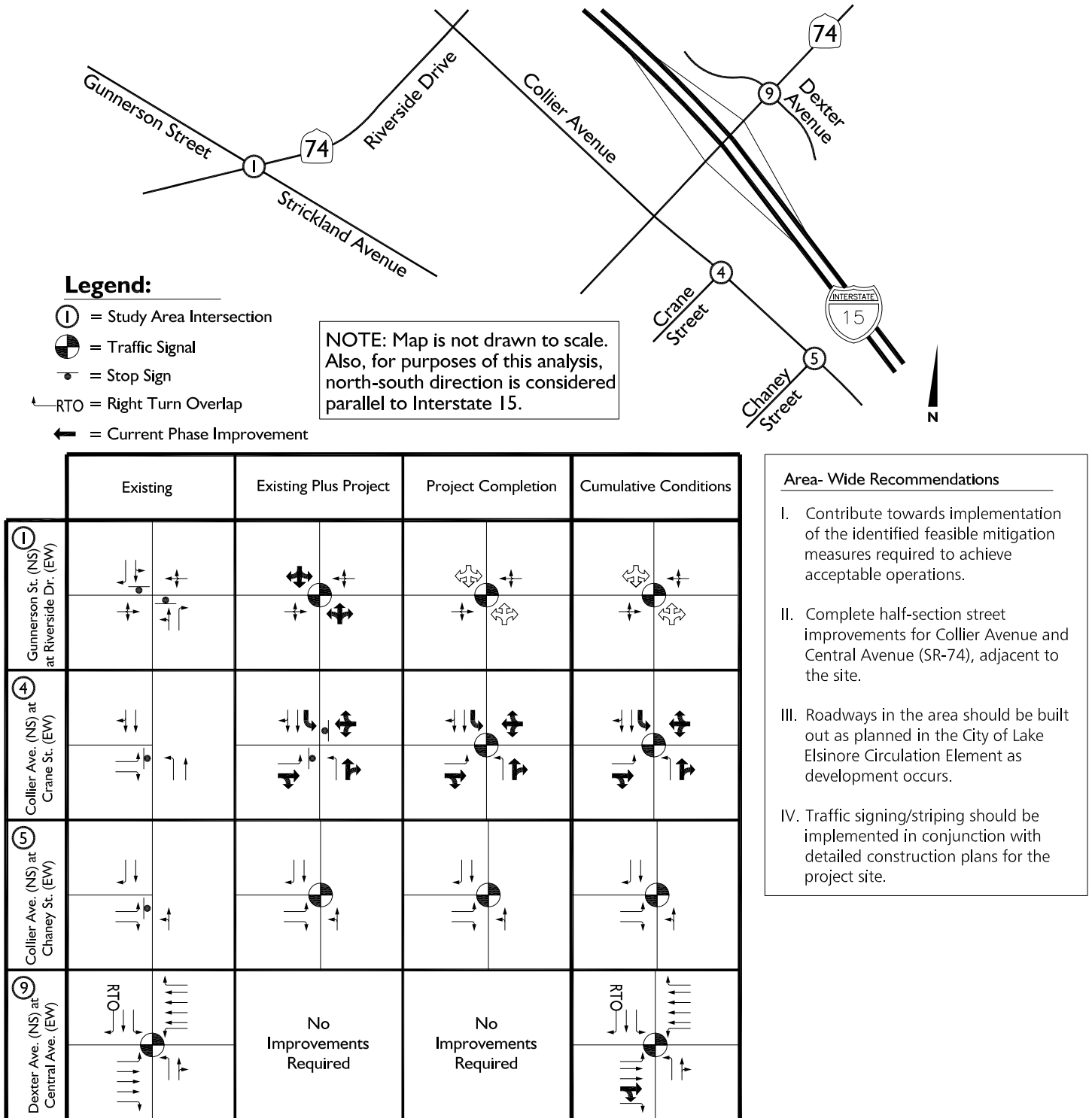
The project applicant shall make a fair share contribution to implement the following:

- a) Widen the roadway segment from six-lanes to its ultimate classification as an eight-lane Augmented Urban Arterial.

**12.8 Conclusions**

Based upon this traffic impact analysis for the proposed Central Plaza, the project can be accommodated with the implementation of feasible improvements/mitigation measures recommended in this report. A copy of the Approved Scoping Agreement for this project has been provided in Appendix A.

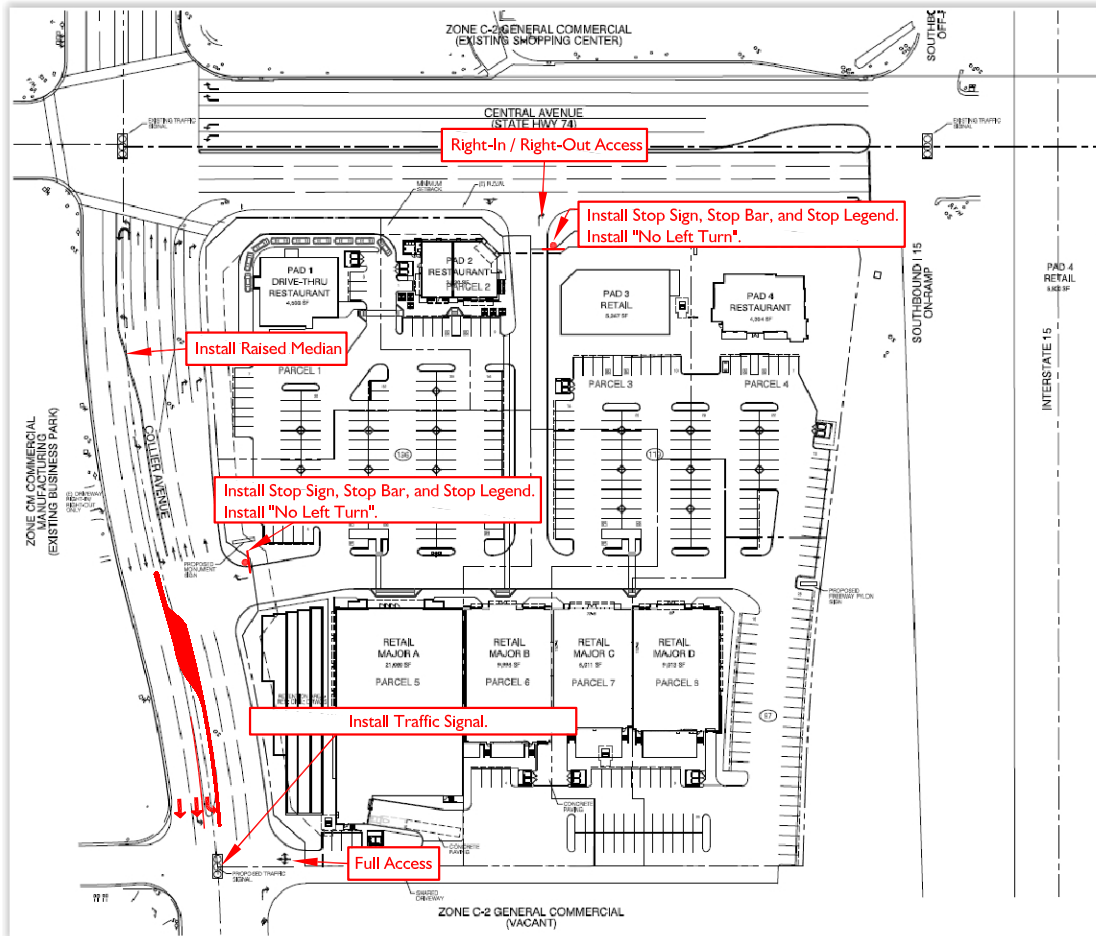
# Area-Wide Recommendations



The project applicant shall make a fair share contribution to implement the following study roadway segment modifications for Cumulative Conditions:

- Collier Avenue from Riverside Drive to Central Avenue (SR-74): Widen the roadway segment from four-lanes to its ultimate classification as a six-lane Urban Arterial.
- Central Avenue (SR-74) from I-15 Southbound Ramps to I-15 Northbound Ramps: Widen the roadway segment from six-lanes to its ultimate classification as an eight-lane Augmented Urban Arterial.
- Central Avenue (SR-74) from I-15 Northbound Ramps to Dexter Avenue: Widen the roadway segment from six-lanes to its ultimate classification as an eight-lane Augmented Urban Arterial.





## On-Site Recommendations

### I. Site Access

Access for the proposed project is planned as follows as shown in the most recent site plan provided on Exhibit 1-2:

- One right-in/right-out access location on Central Avenue (SR-74);
- One left-in/right-in/right-out access location on Collier Avenue. Left-turn in access at this location will be restricted through construction of a raised center median along Collier Avenue; and
- One full access location at the existing Collier Avenue/Crane Street intersection.

Additionally, as part of the proposed project, the following circulation system modifications are planned at the intersection of Collier Avenue/Central Avenue (SR-74):

- Widen the northbound Collier Avenue approach from one left-turn lane, one through lane, and one right-turn lane with right-turn overlap phasing to consist of one left-turn lane, two through lanes, and two right-turn lanes with right-turn overlap phasing.

## On-Site Recommendations

### II. Sight Distance

It is also important that adequate sight distance be provided for drivers entering and exiting the project site.

- The minimum required sight distance should be provided at all access points.
- A limited use area is maintained where a clear line of sight can be established.
- The limited use area shall be used for the purpose of prohibiting or clearing obstructions to maintain adequate sight distance at intersections.
- Limited use area to be kept clear of all obstructions over 30 inches high, including vegetation.
- No trees, walls, or any obstructions shall be allowed in the limited use area.
- The toe of the slope shall not encroach into the limited use area.

### III. On-Site Recommendations

- Construct an on-site circulation system per the detailed site plan. Install stop signs, stop bars, and stop legends at all project access points.
- Restrict Project Access along Central Avenue (SR-74) to be right-in/right-out only. Install "No Left Turn" signage.
- Restrict Project Access along Collier Avenue between Central Avenue (SR-74) and Crane Street to be left-in/right-in/right-out only. Install "No Left Turn" signage.

**TABLE 12-1**  
**Recommended Off-Site Intersection Improvements<sup>1</sup>**

| Study Location  |                                                                                  | Existing Plus Project<br>Recommended Improvements                                                                                                                                                                                                                                                                                                                                           | Project Completion<br>(Existing Plus Ambient Growth<br>Plus Proposed Project)<br><br>Recommended Improvements                                                                                                                                                                                                                                                                                     | Cumulative Conditions<br>(Existing Plus Ambient Growth Plus<br>Cumulative Projects Plus Proposed<br>Project)<br><br>Recommended Improvements                                                                                                                                                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intersection    | Gunnerson St. / Strickland Ave. (NS) at:<br>1. Riverside Drive (EW) <sup>2</sup> | - Install Traffic Signal<br><br>- Restripe the northbound Strickland Avenue approach from one shared left-through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.<br><br>- Restripe the southbound Gunnerson Street approach from one shared left-through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane. | - (Install Traffic Signal)<br><br>- (Restripe the northbound Strickland Avenue approach from one shared left-through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.)<br><br>- (Restripe the southbound Gunnerson Street approach from one shared left-through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.) | - (Install Traffic Signal)<br><br>- (Restripe the northbound Strickland Avenue approach from one shared left-through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.)<br><br>- (Restripe the southbound Gunnerson Street approach from one shared left-through lane and one right-turn lane to consist of one shared left-turn/through/right-turn lane.) |
|                 | Collier Avenue (NS) at:<br>4. Crane Street (EW)                                  | - No improvements required                                                                                                                                                                                                                                                                                                                                                                  | - Install Traffic Signal                                                                                                                                                                                                                                                                                                                                                                          | - (Install Traffic Signal)                                                                                                                                                                                                                                                                                                                                                                        |
|                 | Collier Avenue (NS) at:<br>5. Chaney Street (EW) <sup>2</sup>                    | - Install Traffic Signal                                                                                                                                                                                                                                                                                                                                                                    | - (Install Traffic Signal)                                                                                                                                                                                                                                                                                                                                                                        | - (Install Traffic Signal)                                                                                                                                                                                                                                                                                                                                                                        |
|                 | Dexter Avenue (NS) at:<br>9. Central Avenue (SR-74) (EW)                         | - No improvements required                                                                                                                                                                                                                                                                                                                                                                  | - No improvements required                                                                                                                                                                                                                                                                                                                                                                        | - Restripe the eastbound Central Avenue (SR-74) approach from one left-turn lane, three through lanes, and one right-turn lane to consist of one left-turn lane, two through lanes, one shared through/right-turn lane, and one right-turn lane. Implementation of this mitigation measure would require slight modification to the existing traffic signal at this location.                     |
| Roadway Segment | 1. Collier Avenue from Riverside Drive to Central Avenue (SR-74)                 | - No improvements required                                                                                                                                                                                                                                                                                                                                                                  | - No improvements required                                                                                                                                                                                                                                                                                                                                                                        | - Widen the roadway segment from four-lanes to its ultimate classification as a six-lane Urban Arterial.                                                                                                                                                                                                                                                                                          |
|                 | 6. Central Avenue (SR-74) from I-15 Southbound Ramps to I-15 Northbound Ramps    | - No improvements required                                                                                                                                                                                                                                                                                                                                                                  | - No improvements required                                                                                                                                                                                                                                                                                                                                                                        | - Widen the roadway segment from six-lanes to its ultimate classification as an eight-lane Augmented Urban Arterial.                                                                                                                                                                                                                                                                              |
|                 | 7. Central Avenue (SR-74) from I-15 Northbound Ramps to Dexter Avenue            | - No improvements required                                                                                                                                                                                                                                                                                                                                                                  | - No improvements required                                                                                                                                                                                                                                                                                                                                                                        | - Widen the roadway segment from six-lanes to its ultimate classification as an eight-lane Augmented Urban Arterial.                                                                                                                                                                                                                                                                              |

<sup>1</sup> Recommended improvements consist of the minimum necessary improvements at an intersection to improve Level of Service to D or better.

<sup>2</sup> Intersection currently operating deficiently under Existing Conditions.

( ) = Mitigation measure from previous scenario.

**TABLE 12-2**  
**Project Fair-Share Intersection Contribution for Cumulative Conditions**  
**(Existing Plus Ambient Growth Plus Cumulative Projects Plus Proposed Project)<sup>1</sup>**

| Intersection                                                                     | Existing Conditions |       | Cumulative Conditions |       | Total Growth in Traffic |       | Project Traffic |    | Project % of Trips |        |
|----------------------------------------------------------------------------------|---------------------|-------|-----------------------|-------|-------------------------|-------|-----------------|----|--------------------|--------|
|                                                                                  | AM                  | PM    | AM                    | PM    | AM                      | PM    | AM              | PM | AM                 | PM     |
| Gunnerson St. / Strickland Ave. (NS) at:<br>1. Riverside Drive (EW) <sup>2</sup> | 1,568               | 2,047 | 2,134                 | 2,779 | 566                     | 732   | 64              | 60 | 11.31%             | 8.20%  |
| Collier Avenue (NS) at:<br>4. Crane St. (EW)                                     | 1,051               | 1,059 | 1,475                 | 1,573 | 424                     | 514   | 78              | 83 | 18.40%             | 16.15% |
| Collier Avenue (NS) at:<br>5. Chaney St. (EW) <sup>2</sup>                       | 1,069               | 929   | 1,477                 | 1,413 | 408                     | 484   | 48              | 45 | 11.76%             | 9.30%  |
| Dexter Avenue (NS) at:<br>9. Central Ave (SR-74) (EW)                            | 3,890               | 4,564 | 5,398                 | 6,661 | 1,508                   | 2,097 | 96              | 90 | 6.37%              | 4.29%  |

<sup>1</sup>

Project Fair-Share Traffic Contribution represents the project's traffic contribution at each study are intersection as a percentage of the overall growth in traffic for Cumulative conditions.

<sup>2</sup>

Intersection currently operating deficiently under Existing Conditions.

## **Appendix A**

Approved Traffic Analysis Scope of Work

Note: Project Site Plan & Trip Generation Shown in this Scoping Agreement is Superseded by a More Recent Site Plan & Trip Generation Reviewed & Approved by the City.

### SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the Riverside County Transportation Department requirements for traffic impact analysis of the following project. The analysis must follow the Riverside County Transportation Department Traffic Study Guidelines dated April 2008.

Case No. \_\_\_\_\_  
Related Cases - \_\_\_\_\_  
SP No. \_\_\_\_\_  
EIR No. \_\_\_\_\_  
GPA No. \_\_\_\_\_  
CZ No. \_\_\_\_\_  
Project Name: CENTRAL PLAZA  
Project Address: SOUTHEAST CORNER OF COLLIER AVENUE & CENTRAL AVENUE (SR-74)  
Project Description: 59,300 SF RETAIL & 9,592 SF FAST FOOD RESTAURANT

|            | Consultant                                                            | Developer                                                |
|------------|-----------------------------------------------------------------------|----------------------------------------------------------|
| Name:      | <u>RK ENGINEERING GROUP, INC.</u>                                     | <u>PENINSULA RETAIL PARTNERS</u>                         |
| Address:   | <u>4000 WESTERLY PLACE, STE 280</u><br><u>NEWPORT BEACH, CA 92660</u> | <u>417 29TH STREET</u><br><u>NEWPORT BEACH, CA 92663</u> |
| Telephone: | <u>949-474-0809</u>                                                   | <u>949-723-9500</u>                                      |
| Fax:       | <u>949-474-0902</u>                                                   | <u>949-723-9505</u>                                      |

#### A. Trip Generation Source:

Current GP Land Use: BUSINESS DISTRICT Proposed Land Use: BUSINESS DISTRICT

Current Zoning: C-2 (GENERAL COMMERCIAL) Proposed Zoning C-2 (GENERAL COMMERCIAL)

#### Current Trip Generation:

|          | In       | Out      | Total    |
|----------|----------|----------|----------|
| AM Trips | <u>0</u> | <u>0</u> | <u>0</u> |
| PM Trips | <u>0</u> | <u>0</u> | <u>0</u> |

#### Proposed Trip Generation

|  | In         | Out        | Total      |
|--|------------|------------|------------|
|  | <u>192</u> | <u>176</u> | <u>368</u> |
|  | <u>201</u> | <u>197</u> | <u>398</u> |

|                         |                    |                   |                 |            |
|-------------------------|--------------------|-------------------|-----------------|------------|
| Internal Trip Allowance | Yes _____          | No <u>X</u> _____ | % Trip Discount | _____      |
| Pass-By Trip Allowance  | Yes <u>X</u> _____ | No _____          | % Trip Discount | <u>25%</u> |

A pass by trip discount of 25% is allowed for appropriate land uses. The pass by trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

B. Trip Geographic Distribution  
(See attached exhibit for detailed distribution)

|   |            |   |            |   |            |   |            |
|---|------------|---|------------|---|------------|---|------------|
| N | <u>25%</u> | S | <u>20%</u> | E | <u>25%</u> | W | <u>30%</u> |
|---|------------|---|------------|---|------------|---|------------|

#### C. Background Traffic

Project buildout Year: 2017 Annual Ambient Growth Rate: 2%

Phase Year(s) Single Phase

Other area projects to be analyzed: TO BE PROVIDED BY CITY OF LAKE ELSINORE STAFF & COUNTY OF RIVERSIDE STAFF

Model forecast methodology: AMBIENT GROWTH PLUS CUMULATIVE PROJECTS 2% ANNUAL AMBIENT

65

Note: Project Site Plan & Trip Generation Shown in this Scoping Agreement is Superseded by a More Recent Site Plan & Trip Generation Reviewed & Approved by the City.

Scoping Agreement - Page 2

**D. Study Intersections:** Note: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.

- |                                              |                                                |
|----------------------------------------------|------------------------------------------------|
| 1 <u>GUNNERSON ST / RIVERSIDE DR</u>         | 7 <u>DEXTER AVE / CENTRAL AVE (SR-74)</u>      |
| 2 <u>COLLIER AVE / RIVERSIDE DR</u>          | 8 <u>CAMBERN AVE / CENTRAL AVE (SR-74)</u>     |
| 3 <u>COLLIER AVE / CENTRAL AVE (SR-74)</u>   | 9 <u>ROSETTA CNYN DR / CENTRAL AVE (SR-74)</u> |
| 4 <u>COLLIER AVE / N SPRING ST</u>           | 10 <u>COLLIER AVE / CHANEY ST</u>              |
| 5 <u>I-10 SB RAMPS / CENTRAL AVE (SR-74)</u> | 11 <u>COLLIER AVE / PROJECT FULL ACCESS</u>    |
| 6 <u>I-10 NB RAMPS / CENTRAL AVE (SR-74)</u> | 12 _____                                       |

**E. Study Roadway Segments:** Note: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.

- |                                                    |          |
|----------------------------------------------------|----------|
| 1 <u>COLLIER AVE - CENTRAL AVE TO SPRING ST</u>    | 6 _____  |
| 2 <u>CENTRAL AVE - COLLIER AVE TO DEXTER AVE</u>   | 7 _____  |
| 3 <u>COLLIER AVE - CENTRAL AVE TO RIVERSIDE DR</u> | 8 _____  |
| 4 _____                                            | 9 _____  |
| 5 _____                                            | 10 _____ |

**F. Other Jurisdictional Impacts**

Is the project within a City's sphere of influence or one-mile radius of City boundaries?

Yes X No \_\_\_\_\_

If so, name of City or Jurisdiction:

COUNTY OF RIVERSIDE

**G. Site Plan** (Copy Attached)

**H. Specific Issues to be addressed in the Study** (in addition of the standard analysis described in the Guidelines) - To be filled out by transportation department. Note: If the traffic study states that a "traffic signal is warranted" or "a traffic signal appears to be warranted", or similar statement, at an existing unsignalized intersection, under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.

TO ADDRESS CALTRANS INITIAL COMMENTS, THE ANALYSIS WILL EVALUATE THE I-15 FREEWAY MAINLINE NORTH AND SOUTH OF CENTRAL AVENUE, MERGE & DIVERGE ANALYSIS OF I-10 NB AND SB RAMPS AT CENTRAL AVE, AND SYNCHRO QUEUING ANALYSIS ALONG CENTRAL AVENUE BETWEEN COLLIER AVENUE AND DEXTER AVENUE.

TRAFFIC ANALYSIS WILL EVALUATE EXISTING AND PROJECT OPENING YEAR CONDITIONS. NO LONG RANGE ANALYSIS WILL BE REQUIRED

**I. Existing Conditions**

Traffic count data must be new or recent. Provide traffic count dates if using other than new counts. Date of counts:

NEW COUNTS

Note: Traffic Study Submittal Form and appropriate fee must be submitted with, or prior to submittal of this form. Transportation Department staff will not process the Scoping Agreement prior to the fee.

**Recommended by:**

ALEX TABRIZI, PE, TE

Consultant's Representative

12/29/2015

Date

**Approved by:**

Gusman / Kambon  
Transportation Department

1-21-16

Date

Scoping agreement submitted on:

9/16/2015

Scoping agreement revised on:

12/29/2015

Note: Project Site Plan & Trip Generation Shown in this Scoping Agreement is Superceded by a More Recent Site Plan & Trip Generation Reviewed & Approved by the City.

**Table 1**  
**ITE Trip Generation Rates**

| Land Use                  | Units | AM    |       |       | PM    |       |       | Daily  |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|--------|
|                           |       | In    | Out   | Total | In    | Out   | Total |        |
| Shopping Center           | TSF   | 0.60  | 0.36  | 0.96  | 1.78  | 1.93  | 3.71  | 42.70  |
| Fast Food with Drive Thru | TSF   | 23.16 | 22.26 | 45.42 | 16.98 | 15.67 | 32.65 | 496.12 |

Source: 2012 ITE Trip Generation Manual (9th Edition)

TSF = thousand square feet

**Table 2**  
**Forecast Trip Generation of Proposed Project**

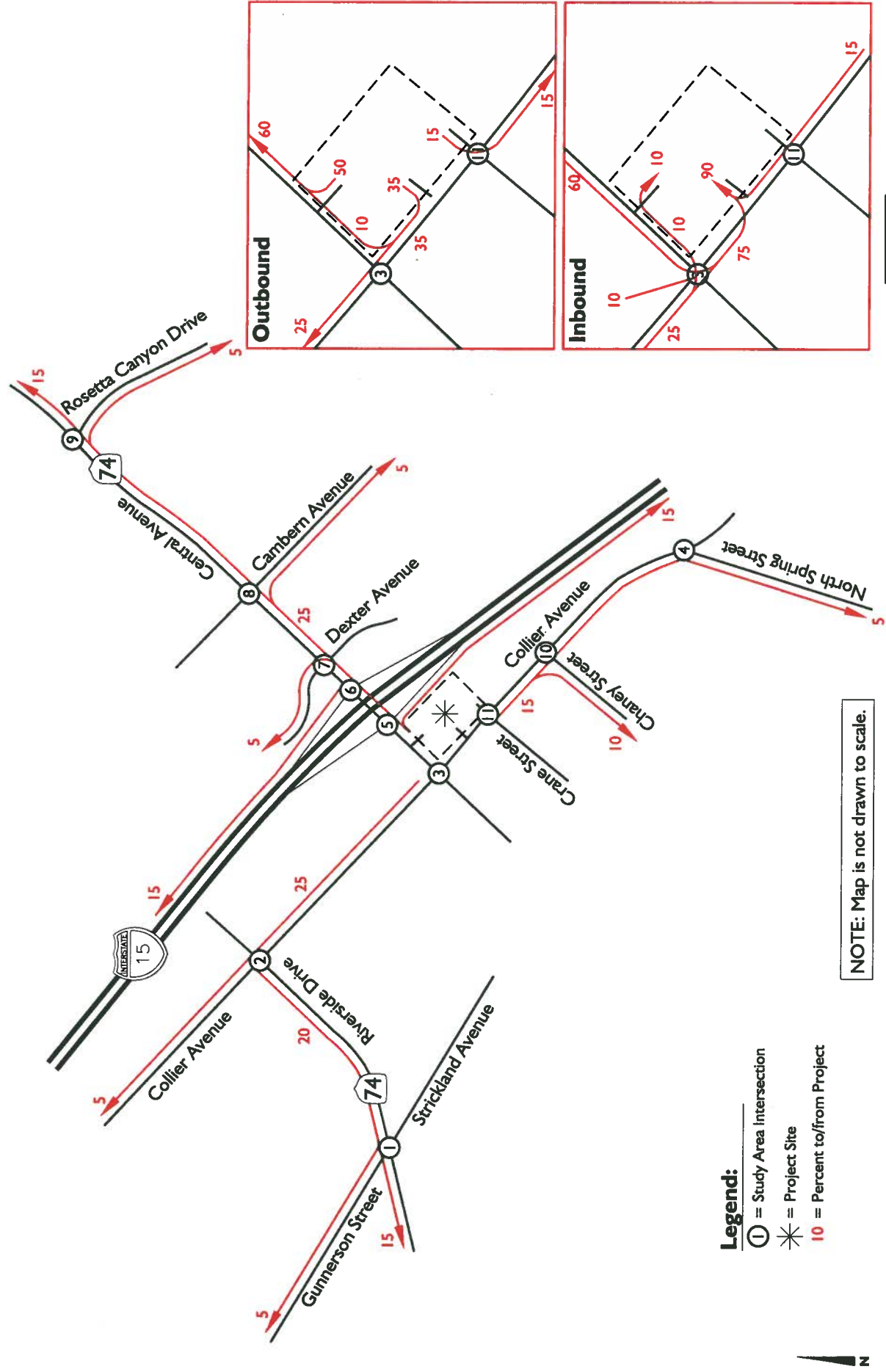
| Land Use                                    | Quantity | Units | AM         |            |            | PM         |            |            | Daily        |
|---------------------------------------------|----------|-------|------------|------------|------------|------------|------------|------------|--------------|
|                                             |          |       | In         | Out        | Total      | In         | Out        | Total      |              |
| Shopping Center                             | 59,300   | TSF   | 35         | 22         | 57         | 106        | 114        | 220        | 2,532        |
| <i>Pass-by Adjustment (25%)</i>             |          |       | -9         | -6         | -15        | -27        | -29        | -56        | -71          |
| <b>Subtotal - Shopping Center</b>           |          |       | <b>26</b>  | <b>16</b>  | <b>42</b>  | <b>79</b>  | <b>85</b>  | <b>164</b> | <b>2,461</b> |
| Fast Food with Drive Thru                   | 9,592    | TSF   | 222        | 213        | 435        | 163        | 150        | 313        | 4,759        |
| <i>Pass-by Adjustment (25%)</i>             |          |       | -56        | -53        | -109       | -41        | -38        | -79        | -188         |
| <b>Subtotal - Fast Food with Drive Thru</b> |          |       | <b>166</b> | <b>160</b> | <b>326</b> | <b>122</b> | <b>112</b> | <b>234</b> | <b>4,571</b> |
| <b>Project Total</b>                        |          |       | <b>192</b> | <b>176</b> | <b>368</b> | <b>201</b> | <b>197</b> | <b>398</b> | <b>7,032</b> |

Source: 2012 ITE Trip Generation Manual (9th Edition)

Notes: Pass-by adjustment is conservatively assumed at 25% which is much lower than the ITE recommended pass-by trip adjustment of approximately 34% for retail use and 50% for fast food with drive-through use.

TSF = thousand square feet

# Trip Distribution





## **Appendix B**

### Traffic Count Worksheets

City of Lake Elsinore  
N/S: Gunnerson Street  
E/W: Riverside Drive  
Weather: Clear

File Name : LKEGURIAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

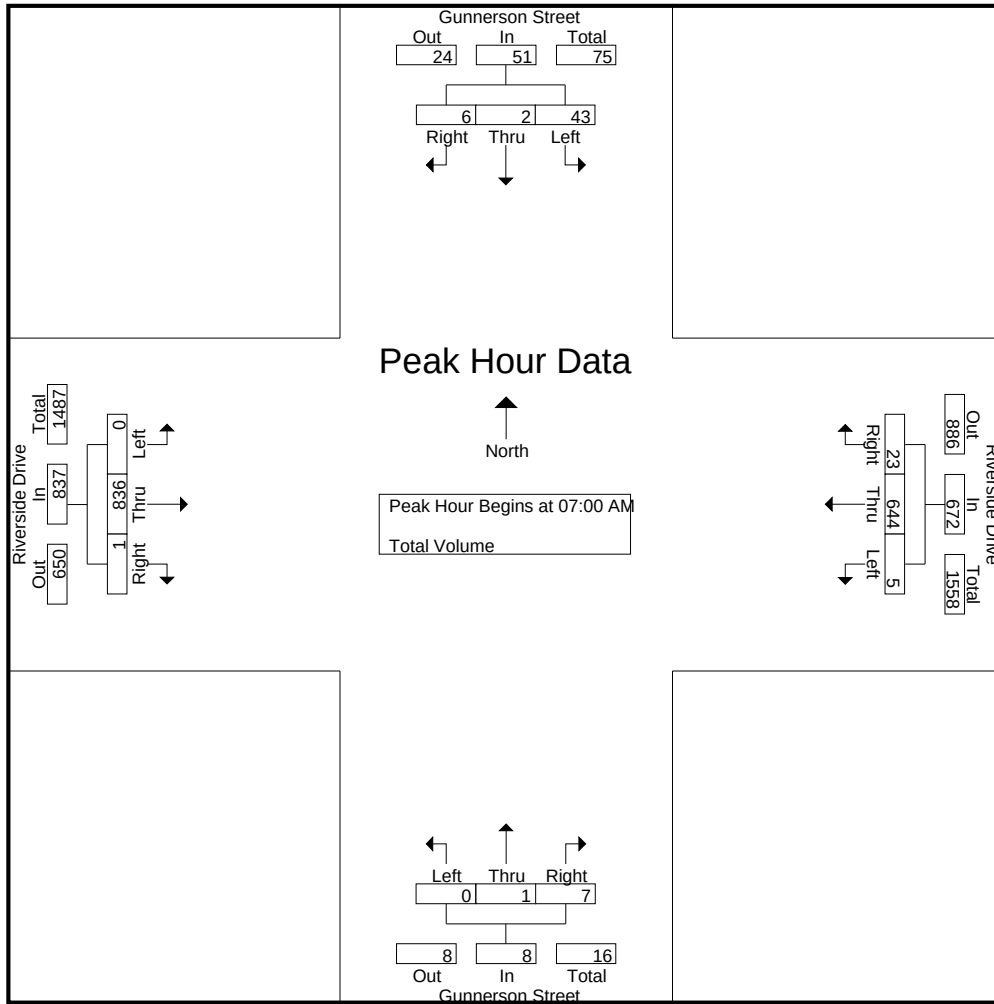
Groups Printed- Total Volume

|             | Gunnerson Street Southbound |      |       |            | Riverside Drive Westbound |      |       |            | Gunnerson Street Northbound |      |       |            | Riverside Drive Eastbound |      |       |            |            |
|-------------|-----------------------------|------|-------|------------|---------------------------|------|-------|------------|-----------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time  | Left                        | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 8                           | 1    | 3     | 12         | 2                         | 148  | 3     | 153        | 0                           | 0    | 2     | 2          | 0                         | 211  | 0     | 211        | 378        |
| 07:15 AM    | 12                          | 1    | 1     | 14         | 3                         | 184  | 7     | 194        | 0                           | 0    | 0     | 0          | 0                         | 205  | 0     | 205        | 413        |
| 07:30 AM    | 13                          | 0    | 2     | 15         | 0                         | 158  | 7     | 165        | 0                           | 0    | 1     | 1          | 0                         | 226  | 0     | 226        | 407        |
| 07:45 AM    | 10                          | 0    | 0     | 10         | 0                         | 154  | 6     | 160        | 0                           | 1    | 4     | 5          | 0                         | 194  | 1     | 195        | 370        |
| Total       | 43                          | 2    | 6     | 51         | 5                         | 644  | 23    | 672        | 0                           | 1    | 7     | 8          | 0                         | 836  | 1     | 837        | 1568       |
| 08:00 AM    | 10                          | 0    | 0     | 10         | 0                         | 143  | 3     | 146        | 2                           | 1    | 1     | 4          | 1                         | 178  | 0     | 179        | 339        |
| 08:15 AM    | 10                          | 1    | 1     | 12         | 2                         | 139  | 12    | 153        | 0                           | 1    | 1     | 2          | 0                         | 155  | 0     | 155        | 322        |
| 08:30 AM    | 9                           | 3    | 0     | 12         | 1                         | 118  | 11    | 130        | 0                           | 0    | 0     | 0          | 0                         | 189  | 1     | 190        | 332        |
| 08:45 AM    | 6                           | 0    | 0     | 6          | 2                         | 138  | 9     | 149        | 0                           | 1    | 1     | 2          | 0                         | 160  | 1     | 161        | 318        |
| Total       | 35                          | 4    | 1     | 40         | 5                         | 538  | 35    | 578        | 2                           | 3    | 3     | 8          | 1                         | 682  | 2     | 685        | 1311       |
| Grand Total | 78                          | 6    | 7     | 91         | 10                        | 1182 | 58    | 1250       | 2                           | 4    | 10    | 16         | 1                         | 1518 | 3     | 1522       | 2879       |
| Apprch %    | 85.7                        | 6.6  | 7.7   |            | 0.8                       | 94.6 | 4.6   |            | 12.5                        | 25   | 62.5  |            | 0.1                       | 99.7 | 0.2   |            |            |
| Total %     | 2.7                         | 0.2  | 0.2   | 3.2        | 0.3                       | 41.1 | 2     | 43.4       | 0.1                         | 0.1  | 0.3   | 0.6        | 0                         | 52.7 | 0.1   | 52.9       |            |

|                                                            | Gunnerson Street Southbound |          |          |            | Riverside Drive Westbound |            |          |            | Gunnerson Street Northbound |          |          |            | Riverside Drive Eastbound |            |          |            |            |
|------------------------------------------------------------|-----------------------------|----------|----------|------------|---------------------------|------------|----------|------------|-----------------------------|----------|----------|------------|---------------------------|------------|----------|------------|------------|
| Start Time                                                 | Left                        | Thru     | Right    | App. Total | Left                      | Thru       | Right    | App. Total | Left                        | Thru     | Right    | App. Total | Left                      | Thru       | Right    | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                             |          |          |            |                           |            |          |            |                             |          |          |            |                           |            |          |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                             |          |          |            |                           |            |          |            |                             |          |          |            |                           |            |          |            |            |
| 07:00 AM                                                   | 8                           | <b>1</b> | <b>3</b> | 12         | 2                         | 148        | 3        | 153        | 0                           | 0        | 2        | 2          | 0                         | 211        | 0        | 211        | 378        |
| 07:15 AM                                                   | 12                          | 1        | 1        | 14         | <b>3</b>                  | <b>184</b> | <b>7</b> | <b>194</b> | 0                           | 0        | 0        | 0          | 0                         | 205        | 0        | 205        | <b>413</b> |
| 07:30 AM                                                   | <b>13</b>                   | 0        | 2        | <b>15</b>  | 0                         | 158        | 7        | 165        | 0                           | 0        | 1        | 1          | 0                         | <b>226</b> | 0        | <b>226</b> | 407        |
| 07:45 AM                                                   | 10                          | 0        | 0        | 10         | 0                         | 154        | 6        | 160        | 0                           | <b>1</b> | <b>4</b> | <b>5</b>   | 0                         | 194        | <b>1</b> | 195        | 370        |
| Total Volume                                               | 43                          | 2        | 6        | 51         | 5                         | 644        | 23       | 672        | 0                           | 1        | 7        | 8          | 0                         | 836        | 1        | 837        | 1568       |
| % App. Total                                               | 84.3                        | 3.9      | 11.8     |            | 0.7                       | 95.8       | 3.4      |            | 0                           | 12.5     | 87.5     |            | 0                         | 99.9       | 0.1      |            |            |
| PHF                                                        | .827                        | .500     | .500     | .850       | .417                      | .875       | .821     | .866       | .000                        | .250     | .438     | .400       | .000                      | .925       | .250     | .926       | .949       |

City of Lake Elsinore  
N/S: Gunnerson Street  
E/W: Riverside Drive  
Weather: Clear

File Name : LKEGURIAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 07:00 AM  |      |      |           | 07:00 AM |            |          |            | 07:30 AM |          |          |          | 07:00 AM |            |          |            |
|--------------|-----------|------|------|-----------|----------|------------|----------|------------|----------|----------|----------|----------|----------|------------|----------|------------|
| +0 mins.     | 8         | 1    | 3    | 12        | 2        | 148        | 3        | 153        | 0        | 0        | 1        | 1        | 0        | 211        | 0        | 211        |
| +15 mins.    | 12        | 1    | 1    | 14        | <b>3</b> | <b>184</b> | <b>7</b> | <b>194</b> | 0        | <b>1</b> | <b>4</b> | <b>5</b> | 0        | 205        | 0        | 205        |
| +30 mins.    | <b>13</b> | 0    | 2    | <b>15</b> | 0        | 158        | 7        | 165        | <b>2</b> | 1        | 1        | 4        | 0        | <b>226</b> | 0        | <b>226</b> |
| +45 mins.    | 10        | 0    | 0    | 10        | 0        | 154        | 6        | 160        | 0        | 1        | 1        | 2        | 0        | 194        | <b>1</b> | 195        |
| Total Volume | 43        | 2    | 6    | 51        | 5        | 644        | 23       | 672        | 2        | 3        | 7        | 12       | 0        | 836        | 1        | 837        |
| % App. Total | 84.3      | 3.9  | 11.8 |           | 0.7      | 95.8       | 3.4      |            | 16.7     | 25       | 58.3     |          | 0        | 99.9       | 0.1      |            |
| PHF          | .827      | .500 | .500 | .850      | .417     | .875       | .821     | .866       | .250     | .750     | .438     | .600     | .000     | .925       | .250     | .926       |

City of Lake Elsinore  
N/S: Gunnerson Street  
E/W: Riverside Drive  
Weather: Clear

File Name : LKEGURIPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

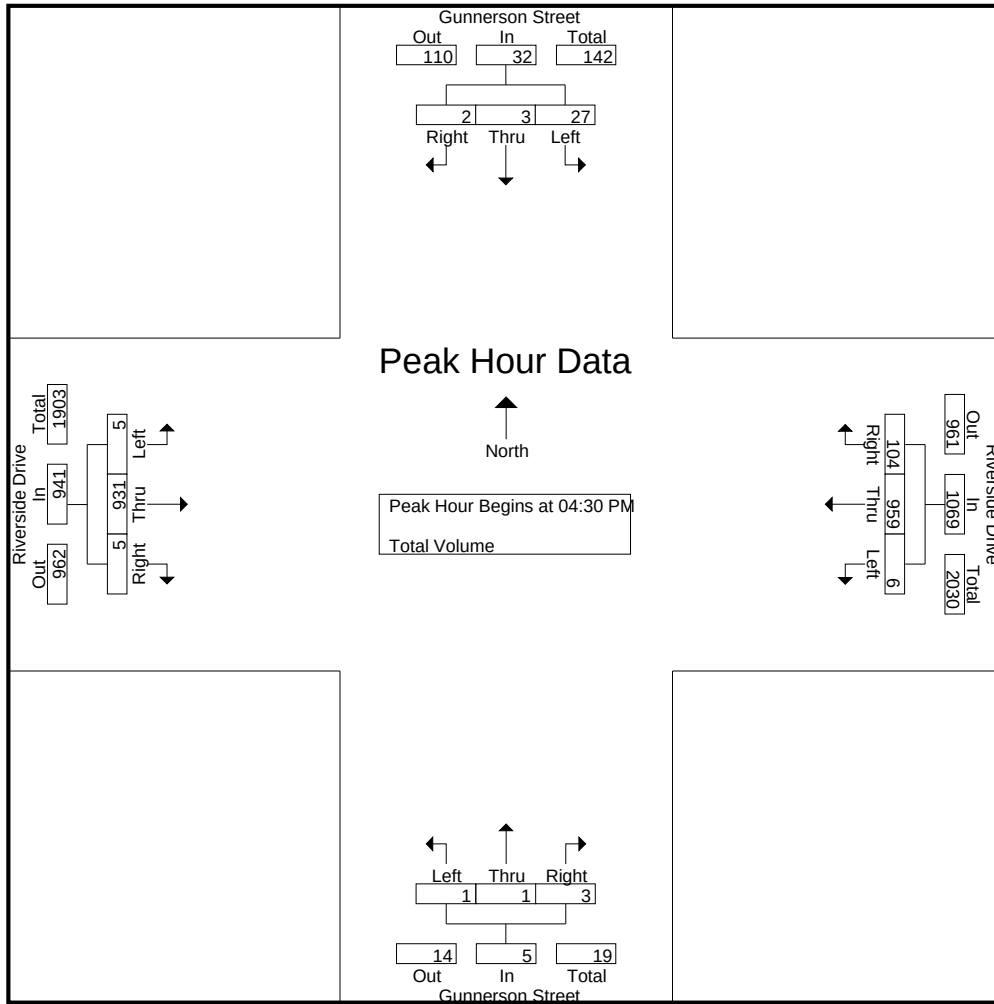
Groups Printed- Total Volume

|             | Gunnerson Street<br>Southbound |      |       |            | Riverside Drive<br>Westbound |      |       |            | Gunnerson Street<br>Northbound |      |       |            | Riverside Drive<br>Eastbound |      |       |            |            |
|-------------|--------------------------------|------|-------|------------|------------------------------|------|-------|------------|--------------------------------|------|-------|------------|------------------------------|------|-------|------------|------------|
| Start Time  | Left                           | Thru | Right | App. Total | Left                         | Thru | Right | App. Total | Left                           | Thru | Right | App. Total | Left                         | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 6                              | 0    | 0     | 6          | 3                            | 197  | 20    | 220        | 0                              | 1    | 6     | 7          | 1                            | 236  | 3     | 240        | 473        |
| 04:15 PM    | 8                              | 1    | 0     | 9          | 2                            | 244  | 23    | 269        | 0                              | 0    | 4     | 4          | 0                            | 220  | 1     | 221        | 503        |
| 04:30 PM    | 5                              | 2    | 0     | 7          | 1                            | 257  | 27    | 285        | 0                              | 0    | 1     | 1          | 1                            | 238  | 2     | 241        | 534        |
| 04:45 PM    | 9                              | 0    | 0     | 9          | 0                            | 225  | 20    | 245        | 0                              | 0    | 0     | 0          | 1                            | 251  | 0     | 252        | 506        |
| Total       | 28                             | 3    | 0     | 31         | 6                            | 923  | 90    | 1019       | 0                              | 1    | 11    | 12         | 3                            | 945  | 6     | 954        | 2016       |
| 05:00 PM    | 4                              | 1    | 1     | 6          | 3                            | 237  | 31    | 271        | 1                              | 1    | 1     | 3          | 0                            | 207  | 1     | 208        | 488        |
| 05:15 PM    | 9                              | 0    | 1     | 10         | 2                            | 240  | 26    | 268        | 0                              | 0    | 1     | 1          | 3                            | 235  | 2     | 240        | 519        |
| 05:30 PM    | 4                              | 0    | 1     | 5          | 1                            | 222  | 23    | 246        | 0                              | 0    | 0     | 0          | 1                            | 219  | 0     | 220        | 471        |
| 05:45 PM    | 4                              | 1    | 0     | 5          | 0                            | 231  | 23    | 254        | 0                              | 0    | 2     | 2          | 1                            | 212  | 0     | 213        | 474        |
| Total       | 21                             | 2    | 3     | 26         | 6                            | 930  | 103   | 1039       | 1                              | 1    | 4     | 6          | 5                            | 873  | 3     | 881        | 1952       |
| Grand Total | 49                             | 5    | 3     | 57         | 12                           | 1853 | 193   | 2058       | 1                              | 2    | 15    | 18         | 8                            | 1818 | 9     | 1835       | 3968       |
| Apprch %    | 86                             | 8.8  | 5.3   |            | 0.6                          | 90   | 9.4   |            | 5.6                            | 11.1 | 83.3  |            | 0.4                          | 99.1 | 0.5   |            |            |
| Total %     | 1.2                            | 0.1  | 0.1   | 1.4        | 0.3                          | 46.7 | 4.9   | 51.9       | 0                              | 0.1  | 0.4   | 0.5        | 0.2                          | 45.8 | 0.2   | 46.2       |            |

|                                                            | Gunnerson Street<br>Southbound |      |       |            | Riverside Drive<br>Westbound |      |       |            | Gunnerson Street<br>Northbound |      |       |            | Riverside Drive<br>Eastbound |      |       |            |            |
|------------------------------------------------------------|--------------------------------|------|-------|------------|------------------------------|------|-------|------------|--------------------------------|------|-------|------------|------------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                           | Thru | Right | App. Total | Left                         | Thru | Right | App. Total | Left                           | Thru | Right | App. Total | Left                         | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                |      |       |            |                              |      |       |            |                                |      |       |            |                              |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                                |      |       |            |                              |      |       |            |                                |      |       |            |                              |      |       |            |            |
| 04:30 PM                                                   | 5                              | 2    | 0     | 7          | 1                            | 257  | 27    | 285        | 0                              | 0    | 1     | 1          | 1                            | 238  | 2     | 241        | 534        |
| 04:45 PM                                                   | 9                              | 0    | 0     | 9          | 0                            | 225  | 20    | 245        | 0                              | 0    | 0     | 0          | 1                            | 251  | 0     | 252        | 506        |
| 05:00 PM                                                   | 4                              | 1    | 1     | 6          | 3                            | 237  | 31    | 271        | 1                              | 1    | 1     | 3          | 0                            | 207  | 1     | 208        | 488        |
| 05:15 PM                                                   | 9                              | 0    | 1     | 10         | 2                            | 240  | 26    | 268        | 0                              | 0    | 1     | 1          | 3                            | 235  | 2     | 240        | 519        |
| Total Volume                                               | 27                             | 3    | 2     | 32         | 6                            | 959  | 104   | 1069       | 1                              | 1    | 3     | 5          | 5                            | 931  | 5     | 941        | 2047       |
| % App. Total                                               | 84.4                           | 9.4  | 6.2   |            | 0.6                          | 89.7 | 9.7   |            | 20                             | 20   | 60    |            | 0.5                          | 98.9 | 0.5   |            |            |
| PHF                                                        | .750                           | .375 | .500  | .800       | .500                         | .933 | .839  | .938       | .250                           | .250 | .750  | .417       | .417                         | .927 | .625  | .934       | .958       |

City of Lake Elsinore  
N/S: Gunnerson Street  
E/W: Riverside Drive  
Weather: Clear

File Name : LKEGURIPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 04:30 PM |      |      |      | 04:15 PM |      |      |      | 04:00 PM |      |      |      | 04:00 PM |      |      |      |
|--------------|----------|------|------|------|----------|------|------|------|----------|------|------|------|----------|------|------|------|
| +0 mins.     | 5        | 2    | 0    | 7    | 2        | 244  | 23   | 269  | 0        | 1    | 6    | 7    | 1        | 236  | 3    | 240  |
| +15 mins.    | 9        | 0    | 0    | 9    | 1        | 257  | 27   | 285  | 0        | 0    | 4    | 4    | 0        | 220  | 1    | 221  |
| +30 mins.    | 4        | 1    | 1    | 6    | 0        | 225  | 20   | 245  | 0        | 0    | 1    | 1    | 1        | 238  | 2    | 241  |
| +45 mins.    | 9        | 0    | 1    | 10   | 3        | 237  | 31   | 271  | 0        | 0    | 0    | 0    | 1        | 251  | 0    | 252  |
| Total Volume | 27       | 3    | 2    | 32   | 6        | 963  | 101  | 1070 | 0        | 1    | 11   | 12   | 3        | 945  | 6    | 954  |
| % App. Total | 84.4     | 9.4  | 6.2  |      | 0.6      | 90   | 9.4  |      | 0        | 8.3  | 91.7 |      | 0.3      | 99.1 | 0.6  |      |
| PHF          | .750     | .375 | .500 | .800 | .500     | .937 | .815 | .939 | .000     | .250 | .458 | .429 | .750     | .941 | .500 | .946 |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Riverside Drive  
Weather: Clear

File Name : LKECORIAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

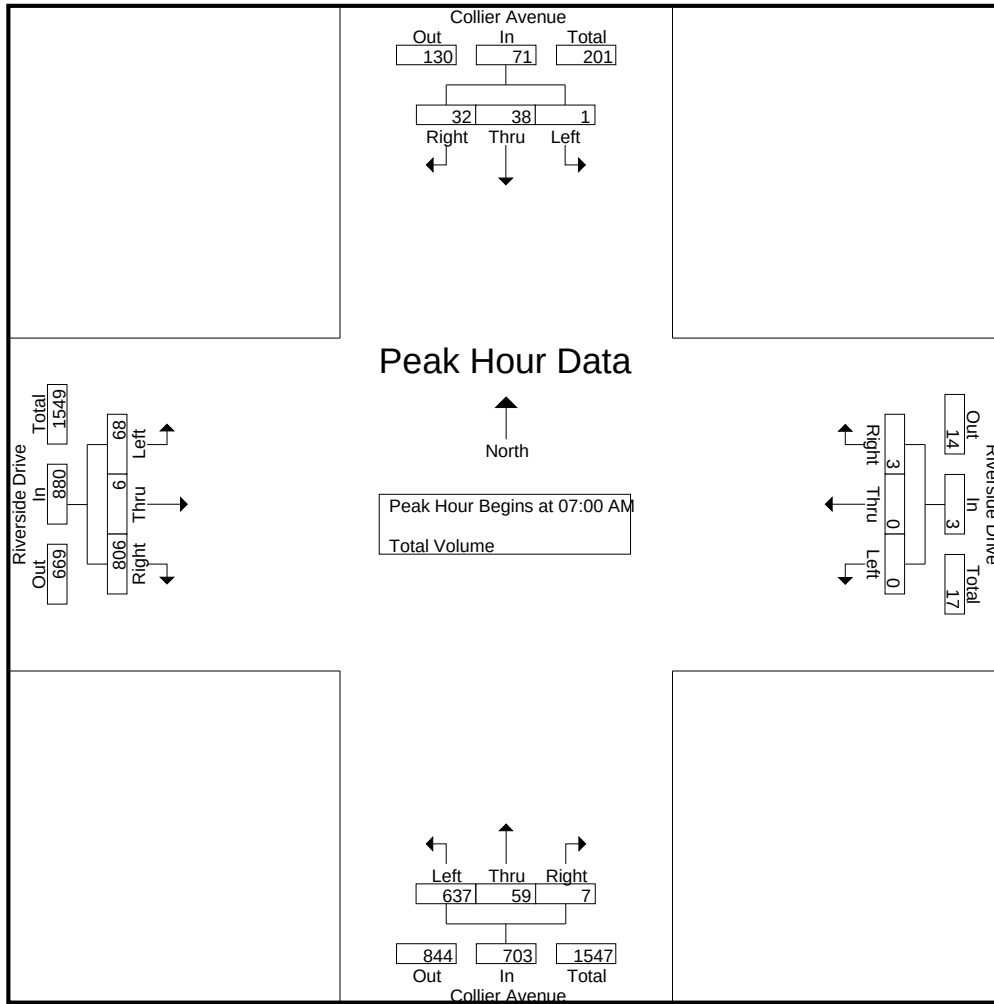
Groups Printed- Total Volume

|             | Collier Avenue Southbound |      |       |            | Riverside Drive Westbound |      |       |            | Collier Avenue Northbound |      |       |            | Riverside Drive Eastbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 1                         | 6    | 8     | 15         | 0                         | 0    | 0     | 0          | 153                       | 9    | 1     | 163        | 21                        | 1    | 183   | 205        | 383        |
| 07:15 AM    | 0                         | 9    | 7     | 16         | 0                         | 0    | 1     | 1          | 187                       | 14   | 2     | 203        | 27                        | 1    | 209   | 237        | 457        |
| 07:30 AM    | 0                         | 11   | 9     | 20         | 0                         | 0    | 0     | 0          | 148                       | 20   | 2     | 170        | 6                         | 1    | 218   | 225        | 415        |
| 07:45 AM    | 0                         | 12   | 8     | 20         | 0                         | 0    | 2     | 2          | 149                       | 16   | 2     | 167        | 14                        | 3    | 196   | 213        | 402        |
| Total       | 1                         | 38   | 32    | 71         | 0                         | 0    | 3     | 3          | 637                       | 59   | 7     | 703        | 68                        | 6    | 806   | 880        | 1657       |
| 08:00 AM    | 3                         | 15   | 10    | 28         | 0                         | 0    | 2     | 2          | 139                       | 13   | 4     | 156        | 11                        | 4    | 172   | 187        | 373        |
| 08:15 AM    | 0                         | 14   | 7     | 21         | 1                         | 0    | 0     | 1          | 153                       | 21   | 6     | 180        | 11                        | 1    | 150   | 162        | 364        |
| 08:30 AM    | 2                         | 10   | 8     | 20         | 0                         | 5    | 1     | 6          | 112                       | 16   | 7     | 135        | 10                        | 4    | 195   | 209        | 370        |
| 08:45 AM    | 2                         | 14   | 8     | 24         | 1                         | 3    | 5     | 9          | 131                       | 18   | 3     | 152        | 20                        | 2    | 132   | 154        | 339        |
| Total       | 7                         | 53   | 33    | 93         | 2                         | 8    | 8     | 18         | 535                       | 68   | 20    | 623        | 52                        | 11   | 649   | 712        | 1446       |
| Grand Total | 8                         | 91   | 65    | 164        | 2                         | 8    | 11    | 21         | 1172                      | 127  | 27    | 1326       | 120                       | 17   | 1455  | 1592       | 3103       |
| Apprch %    | 4.9                       | 55.5 | 39.6  |            | 9.5                       | 38.1 | 52.4  |            | 88.4                      | 9.6  | 2     |            | 7.5                       | 1.1  | 91.4  |            |            |
| Total %     | 0.3                       | 2.9  | 2.1   | 5.3        | 0.1                       | 0.3  | 0.4   | 0.7        | 37.8                      | 4.1  | 0.9   | 42.7       | 3.9                       | 0.5  | 46.9  | 51.3       |            |

|                                                            | Collier Avenue Southbound |      |       |            | Riverside Drive Westbound |      |       |            | Collier Avenue Northbound |      |       |            | Riverside Drive Eastbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                           |      |       |            |                           |      |       |            |                           |      |       |            |                           |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                           |      |       |            |                           |      |       |            |                           |      |       |            |                           |      |       |            |            |
| 07:00 AM                                                   | 1                         | 6    | 8     | 15         | 0                         | 0    | 0     | 0          | 153                       | 9    | 1     | 163        | 21                        | 1    | 183   | 205        | 383        |
| 07:15 AM                                                   | 0                         | 9    | 7     | 16         | 0                         | 0    | 1     | 1          | 187                       | 14   | 2     | 203        | 27                        | 1    | 209   | 237        | 457        |
| 07:30 AM                                                   | 0                         | 11   | 9     | 20         | 0                         | 0    | 0     | 0          | 148                       | 20   | 2     | 170        | 6                         | 1    | 218   | 225        | 415        |
| 07:45 AM                                                   | 0                         | 12   | 8     | 20         | 0                         | 0    | 2     | 2          | 149                       | 16   | 2     | 167        | 14                        | 3    | 196   | 213        | 402        |
| Total Volume                                               | 1                         | 38   | 32    | 71         | 0                         | 0    | 3     | 3          | 637                       | 59   | 7     | 703        | 68                        | 6    | 806   | 880        | 1657       |
| % App. Total                                               | 1.4                       | 53.5 | 45.1  |            | 0                         | 0    | 100   |            | 90.6                      | 8.4  | 1     |            | 7.7                       | 0.7  | 91.6  |            |            |
| PHF                                                        | .250                      | .792 | .889  | .888       | .000                      | .000 | .375  | .375       | .852                      | .738 | .875  | .866       | .630                      | .500 | .924  | .928       | .906       |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Riverside Drive  
Weather: Clear

File Name : LKECORIAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 08:00 AM |      |      |      | 08:00 AM |      |      |      | 07:00 AM |      |      |      | 07:00 AM |      |      |      |
|--------------|----------|------|------|------|----------|------|------|------|----------|------|------|------|----------|------|------|------|
| +0 mins.     | 3        | 15   | 10   | 28   | 0        | 0    | 2    | 2    | 153      | 9    | 1    | 163  | 21       | 1    | 183  | 205  |
| +15 mins.    | 0        | 14   | 7    | 21   | 1        | 0    | 0    | 1    | 187      | 14   | 2    | 203  | 27       | 1    | 209  | 237  |
| +30 mins.    | 2        | 10   | 8    | 20   | 0        | 5    | 1    | 6    | 148      | 20   | 2    | 170  | 6        | 1    | 218  | 225  |
| +45 mins.    | 2        | 14   | 8    | 24   | 1        | 3    | 5    | 9    | 149      | 16   | 2    | 167  | 14       | 3    | 196  | 213  |
| Total Volume | 7        | 53   | 33   | 93   | 2        | 8    | 8    | 18   | 637      | 59   | 7    | 703  | 68       | 6    | 806  | 880  |
| % App. Total | 7.5      | 57   | 35.5 |      | 11.1     | 44.4 | 44.4 |      | 90.6     | 8.4  | 1    |      | 7.7      | 0.7  | 91.6 |      |
| PHF          | .583     | .883 | .825 | .830 | .500     | .400 | .400 | .500 | .852     | .738 | .875 | .866 | .630     | .500 | .924 | .928 |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Riverside Drive  
Weather: Clear

File Name : LKECORIPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

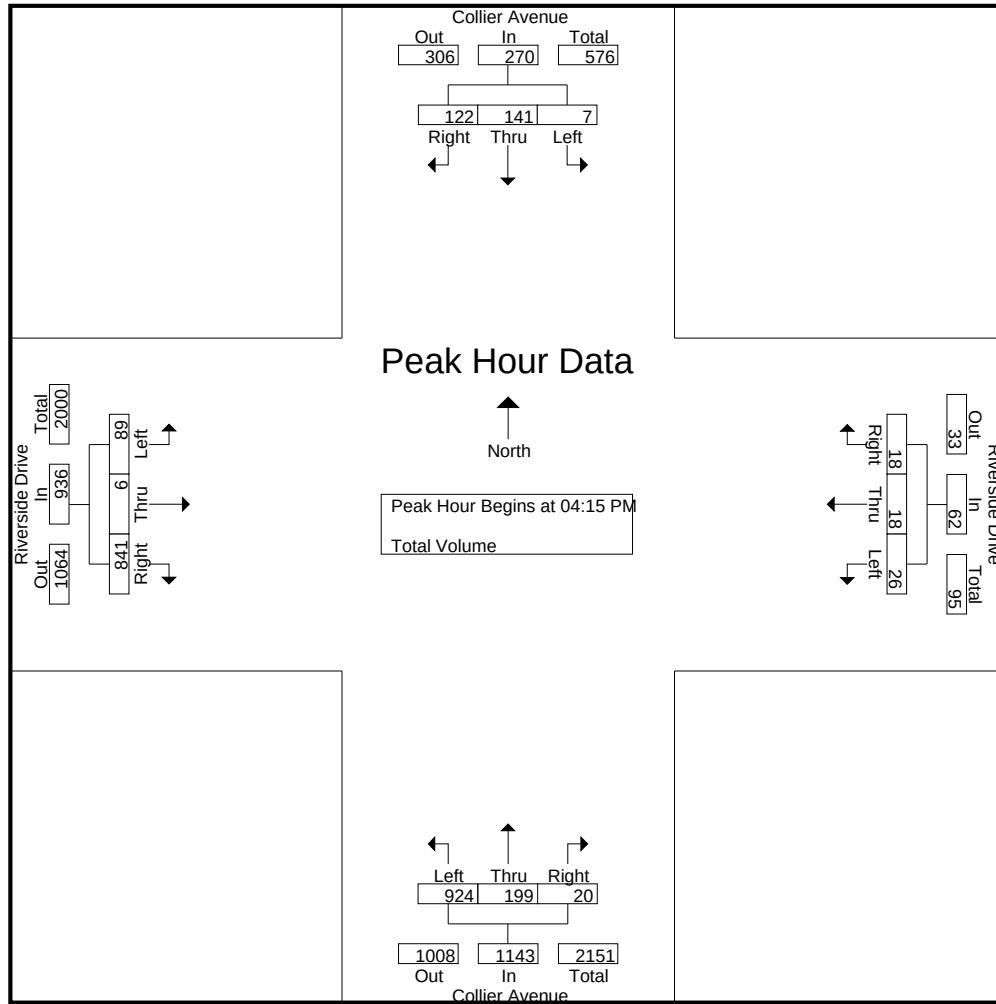
|             | Collier Avenue Southbound |      |       |            | Riverside Drive Westbound |      |       |            | Collier Avenue Northbound |      |       |            | Riverside Drive Eastbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 2                         | 58   | 29    | 89         | 7                         | 5    | 2     | 14         | 185                       | 40   | 2     | 227        | 25                        | 3    | 227   | 255        | 585        |
| 04:15 PM    | 3                         | 32   | 22    | 57         | 7                         | 3    | 4     | 14         | 243                       | 46   | 8     | 297        | 14                        | 1    | 214   | 229        | 597        |
| 04:30 PM    | 2                         | 37   | 33    | 72         | 7                         | 6    | 1     | 14         | 237                       | 50   | 8     | 295        | 15                        | 2    | 234   | 251        | 632        |
| 04:45 PM    | 2                         | 29   | 31    | 62         | 4                         | 4    | 4     | 12         | 211                       | 52   | 4     | 267        | 32                        | 1    | 213   | 246        | 587        |
| Total       | 9                         | 156  | 115   | 280        | 25                        | 18   | 11    | 54         | 876                       | 188  | 22    | 1086       | 86                        | 7    | 888   | 981        | 2401       |
| 05:00 PM    | 0                         | 43   | 36    | 79         | 8                         | 5    | 9     | 22         | 233                       | 51   | 0     | 284        | 28                        | 2    | 180   | 210        | 595        |
| 05:15 PM    | 0                         | 36   | 31    | 67         | 2                         | 3    | 5     | 10         | 227                       | 50   | 6     | 283        | 55                        | 2    | 163   | 220        | 580        |
| 05:30 PM    | 3                         | 28   | 28    | 59         | 0                         | 1    | 2     | 3          | 221                       | 57   | 1     | 279        | 39                        | 2    | 211   | 252        | 593        |
| 05:45 PM    | 1                         | 14   | 24    | 39         | 1                         | 1    | 0     | 2          | 225                       | 38   | 3     | 266        | 15                        | 1    | 218   | 234        | 541        |
| Total       | 4                         | 121  | 119   | 244        | 11                        | 10   | 16    | 37         | 906                       | 196  | 10    | 1112       | 137                       | 7    | 772   | 916        | 2309       |
| Grand Total | 13                        | 277  | 234   | 524        | 36                        | 28   | 27    | 91         | 1782                      | 384  | 32    | 2198       | 223                       | 14   | 1660  | 1897       | 4710       |
| Apprch %    | 2.5                       | 52.9 | 44.7  |            | 39.6                      | 30.8 | 29.7  |            | 81.1                      | 17.5 | 1.5   |            | 11.8                      | 0.7  | 87.5  |            |            |
| Total %     | 0.3                       | 5.9  | 5     | 11.1       | 0.8                       | 0.6  | 0.6   | 1.9        | 37.8                      | 8.2  | 0.7   | 46.7       | 4.7                       | 0.3  | 35.2  | 40.3       |            |

|                                                            | Collier Avenue Southbound |      |       |            | Riverside Drive Westbound |      |       |            | Collier Avenue Northbound |      |       |            | Riverside Drive Eastbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                           |      |       |            |                           |      |       |            |                           |      |       |            |                           |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:15 PM       |                           |      |       |            |                           |      |       |            |                           |      |       |            |                           |      |       |            |            |
| 04:15 PM                                                   | 3                         | 32   | 22    | 57         | 7                         | 3    | 4     | 14         | 243                       | 46   | 8     | 297        | 14                        | 1    | 214   | 229        | 597        |
| 04:30 PM                                                   | 2                         | 37   | 33    | 72         | 7                         | 6    | 1     | 14         | 237                       | 50   | 8     | 295        | 15                        | 2    | 234   | 251        | 632        |
| 04:45 PM                                                   | 2                         | 29   | 31    | 62         | 4                         | 4    | 4     | 12         | 211                       | 52   | 4     | 267        | 32                        | 1    | 213   | 246        | 587        |
| 05:00 PM                                                   | 0                         | 43   | 36    | 79         | 8                         | 5    | 9     | 22         | 233                       | 51   | 0     | 284        | 28                        | 2    | 180   | 210        | 595        |
| Total Volume                                               | 7                         | 141  | 122   | 270        | 26                        | 18   | 18    | 62         | 924                       | 199  | 20    | 1143       | 89                        | 6    | 841   | 936        | 2411       |
| % App. Total                                               | 2.6                       | 52.2 | 45.2  |            | 41.9                      | 29   | 29    |            | 80.8                      | 17.4 | 1.7   |            | 9.5                       | 0.6  | 89.9  |            |            |
| PHF                                                        | .583                      | .820 | .847  | .854       | .813                      | .750 | .500  | .705       | .951                      | .957 | .625  | .962       | .695                      | .750 | .899  | .932       | .954       |



City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Riverside Drive  
Weather: Clear

File Name : LKECORIPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 04:00 PM |           |           |           | 04:15 PM |          |          |           | 04:15 PM   |           |          |            | 04:00 PM  |          |            |            |
|--------------|----------|-----------|-----------|-----------|----------|----------|----------|-----------|------------|-----------|----------|------------|-----------|----------|------------|------------|
| +0 mins.     | 2        | <b>58</b> | 29        | <b>89</b> | 7        | 3        | 4        | 14        | <b>243</b> | 46        | <b>8</b> | <b>297</b> | 25        | <b>3</b> | 227        | <b>255</b> |
| +15 mins.    | <b>3</b> | 32        | 22        | 57        | 7        | <b>6</b> | 1        | 14        | 237        | 50        | 8        | 295        | 14        | <b>1</b> | 214        | 229        |
| +30 mins.    | 2        | 37        | <b>33</b> | 72        | 4        | 4        | 4        | 12        | 211        | <b>52</b> | 4        | 267        | 15        | 2        | <b>234</b> | 251        |
| +45 mins.    | 2        | 29        | 31        | 62        | <b>8</b> | 5        | <b>9</b> | <b>22</b> | 233        | 51        | 0        | 284        | <b>32</b> | 1        | 213        | 246        |
| Total Volume | 9        | 156       | 115       | 280       | 26       | 18       | 18       | 62        | 924        | 199       | 20       | 1143       | 86        | 7        | 888        | 981        |
| % App. Total | 3.2      | 55.7      | 41.1      |           | 41.9     | 29       | 29       |           | 80.8       | 17.4      | 1.7      |            | 8.8       | 0.7      | 90.5       |            |
| PHF          | .750     | .672      | .871      | .787      | .813     | .750     | .500     | .705      | .951       | .957      | .625     | .962       | .672      | .583     | .949       | .962       |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKECOCEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

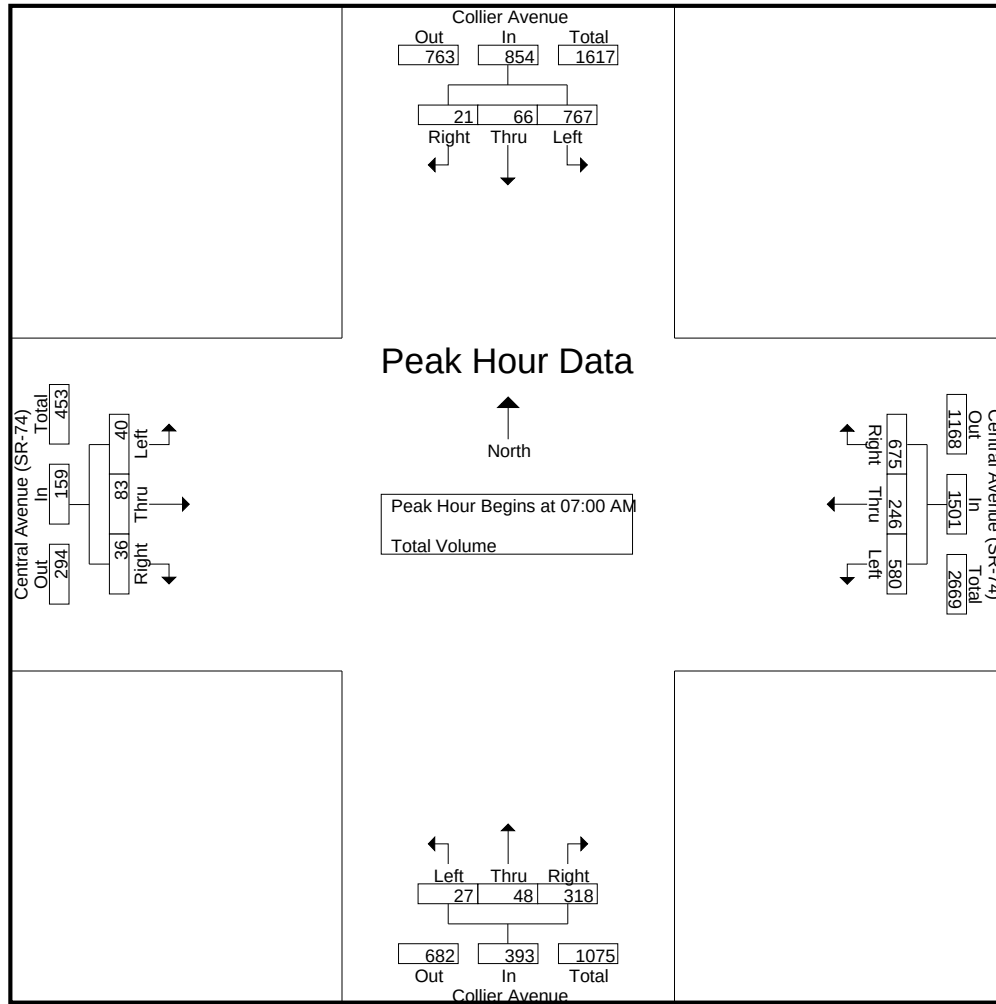
Groups Printed- Total Volume

|             | Collier Avenue<br>Southbound |      |       |            | Central Avenue (SR-74)<br>Westbound |      |       |            | Collier Avenue<br>Northbound |      |       |            | Central Avenue (SR-74)<br>Eastbound |      |       |            |            |
|-------------|------------------------------|------|-------|------------|-------------------------------------|------|-------|------------|------------------------------|------|-------|------------|-------------------------------------|------|-------|------------|------------|
| Start Time  | Left                         | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Left                         | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 180                          | 17   | 2     | 199        | 132                                 | 55   | 163   | 350        | 2                            | 5    | 82    | 89         | 9                                   | 19   | 8     | 36         | 674        |
| 07:15 AM    | 198                          | 16   | 4     | 218        | 170                                 | 66   | 188   | 424        | 6                            | 8    | 103   | 117        | 14                                  | 29   | 9     | 52         | 811        |
| 07:30 AM    | 208                          | 15   | 6     | 229        | 131                                 | 46   | 141   | 318        | 8                            | 14   | 68    | 90         | 8                                   | 17   | 10    | 35         | 672        |
| 07:45 AM    | 181                          | 18   | 9     | 208        | 147                                 | 79   | 183   | 409        | 11                           | 21   | 65    | 97         | 9                                   | 18   | 9     | 36         | 750        |
| Total       | 767                          | 66   | 21    | 854        | 580                                 | 246  | 675   | 1501       | 27                           | 48   | 318   | 393        | 40                                  | 83   | 36    | 159        | 2907       |
| 08:00 AM    | 188                          | 16   | 5     | 209        | 93                                  | 64   | 152   | 309        | 9                            | 20   | 64    | 93         | 10                                  | 20   | 8     | 38         | 649        |
| 08:15 AM    | 157                          | 18   | 6     | 181        | 81                                  | 62   | 143   | 286        | 5                            | 11   | 67    | 83         | 28                                  | 30   | 7     | 65         | 615        |
| 08:30 AM    | 195                          | 22   | 1     | 218        | 75                                  | 54   | 116   | 245        | 11                           | 17   | 35    | 63         | 16                                  | 43   | 9     | 68         | 594        |
| 08:45 AM    | 193                          | 17   | 6     | 216        | 50                                  | 42   | 120   | 212        | 11                           | 20   | 38    | 69         | 14                                  | 25   | 5     | 44         | 541        |
| Total       | 733                          | 73   | 18    | 824        | 299                                 | 222  | 531   | 1052       | 36                           | 68   | 204   | 308        | 68                                  | 118  | 29    | 215        | 2399       |
| Grand Total | 1500                         | 139  | 39    | 1678       | 879                                 | 468  | 1206  | 2553       | 63                           | 116  | 522   | 701        | 108                                 | 201  | 65    | 374        | 5306       |
| Apprch %    | 89.4                         | 8.3  | 2.3   |            | 34.4                                | 18.3 | 47.2  |            | 9                            | 16.5 | 74.5  |            | 28.9                                | 53.7 | 17.4  |            |            |
| Total %     | 28.3                         | 2.6  | 0.7   | 31.6       | 16.6                                | 8.8  | 22.7  | 48.1       | 1.2                          | 2.2  | 9.8   | 13.2       | 2                                   | 3.8  | 1.2   | 7          |            |

|                                                            | Collier Avenue<br>Southbound |           |          |            | Central Avenue (SR-74)<br>Westbound |           |            |            | Collier Avenue<br>Northbound |           |            |            | Central Avenue (SR-74)<br>Eastbound |           |           |            |            |
|------------------------------------------------------------|------------------------------|-----------|----------|------------|-------------------------------------|-----------|------------|------------|------------------------------|-----------|------------|------------|-------------------------------------|-----------|-----------|------------|------------|
| Start Time                                                 | Left                         | Thru      | Right    | App. Total | Left                                | Thru      | Right      | App. Total | Left                         | Thru      | Right      | App. Total | Left                                | Thru      | Right     | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                              |           |          |            |                                     |           |            |            |                              |           |            |            |                                     |           |           |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                              |           |          |            |                                     |           |            |            |                              |           |            |            |                                     |           |           |            |            |
| 07:00 AM                                                   | 180                          | 17        | 2        | 199        | 132                                 | 55        | 163        | 350        | 2                            | 5         | 82         | 89         | 9                                   | 19        | 8         | 36         | 674        |
| 07:15 AM                                                   | 198                          | 16        | 4        | 218        | <b>170</b>                          | 66        | <b>188</b> | <b>424</b> | 6                            | 8         | <b>103</b> | <b>117</b> | <b>14</b>                           | <b>29</b> | 9         | <b>52</b>  | <b>811</b> |
| 07:30 AM                                                   | <b>208</b>                   | 15        | 6        | <b>229</b> | 131                                 | 46        | 141        | 318        | 8                            | 14        | 68         | 90         | 8                                   | 17        | <b>10</b> | 35         | 672        |
| 07:45 AM                                                   | 181                          | <b>18</b> | <b>9</b> | 208        | 147                                 | <b>79</b> | 183        | 409        | <b>11</b>                    | <b>21</b> | 65         | 97         | 9                                   | 18        | 9         | 36         | 750        |
| Total Volume                                               | 767                          | 66        | 21       | 854        | 580                                 | 246       | 675        | 1501       | 27                           | 48        | 318        | 393        | 40                                  | 83        | 36        | 159        | 2907       |
| % App. Total                                               | 89.8                         | 7.7       | 2.5      |            | 38.6                                | 16.4      | 45         |            | 6.9                          | 12.2      | 80.9       |            | 25.2                                | 52.2      | 22.6      |            |            |
| PHF                                                        | .922                         | .917      | .583     | .932       | .853                                | .778      | .898       | .885       | .614                         | .571      | .772       | .840       | .714                                | .716      | .900      | .764       | .896       |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKECOCEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 07:15 AM   |           |          |            | 07:00 AM   |           |            |            | 07:15 AM  |           |            |            | 08:00 AM  |           |          |           |
|--------------|------------|-----------|----------|------------|------------|-----------|------------|------------|-----------|-----------|------------|------------|-----------|-----------|----------|-----------|
| +0 mins.     | 198        | 16        | 4        | 218        | 132        | 55        | 163        | 350        | 6         | 8         | <b>103</b> | <b>117</b> | 10        | 20        | 8        | 38        |
| +15 mins.    | <b>208</b> | 15        | 6        | <b>229</b> | <b>170</b> | 66        | <b>188</b> | <b>424</b> | 8         | 14        | 68         | 90         | <b>28</b> | 30        | 7        | 65        |
| +30 mins.    | 181        | <b>18</b> | <b>9</b> | 208        | 131        | 46        | 141        | 318        | <b>11</b> | <b>21</b> | 65         | 97         | 16        | <b>43</b> | <b>9</b> | <b>68</b> |
| +45 mins.    | 188        | 16        | 5        | 209        | 147        | <b>79</b> | 183        | 409        | 9         | 20        | 64         | 93         | 14        | 25        | 5        | 44        |
| Total Volume | 775        | 65        | 24       | 864        | 580        | 246       | 675        | 1501       | 34        | 63        | 300        | 397        | 68        | 118       | 29       | 215       |
| % App. Total | 89.7       | 7.5       | 2.8      |            | 38.6       | 16.4      | 45         |            | 8.6       | 15.9      | 75.6       |            | 31.6      | 54.9      | 13.5     |           |
| PHF          | .931       | .903      | .667     | .943       | .853       | .778      | .898       | .885       | .773      | .750      | .728       | .848       | .607      | .686      | .806     | .790      |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKECOCEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

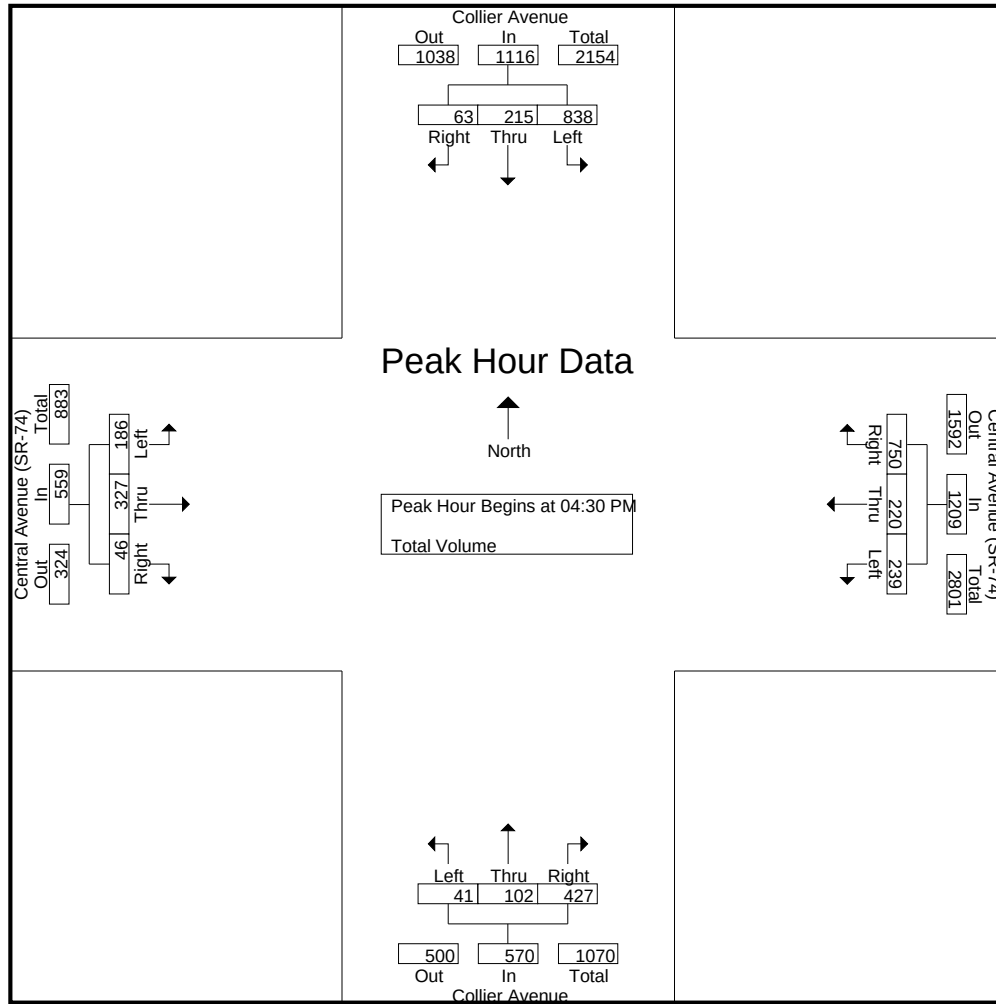
Groups Printed- Total Volume

|             | Collier Avenue Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | Collier Avenue Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 231                       | 34   | 7     | 272        | 69                               | 50   | 187   | 306        | 13                        | 22   | 89    | 124        | 46                               | 62   | 22    | 130        | 832        |
| 04:15 PM    | 248                       | 38   | 4     | 290        | 56                               | 39   | 210   | 305        | 16                        | 30   | 77    | 123        | 39                               | 64   | 16    | 119        | 837        |
| 04:30 PM    | 215                       | 59   | 19    | 293        | 49                               | 61   | 198   | 308        | 7                         | 25   | 120   | 152        | 55                               | 81   | 10    | 146        | 899        |
| 04:45 PM    | 214                       | 55   | 16    | 285        | 49                               | 59   | 163   | 271        | 10                        | 27   | 103   | 140        | 39                               | 79   | 14    | 132        | 828        |
| Total       | 908                       | 186  | 46    | 1140       | 223                              | 209  | 758   | 1190       | 46                        | 104  | 389   | 539        | 179                              | 286  | 62    | 527        | 3396       |
| 05:00 PM    | 205                       | 49   | 12    | 266        | 81                               | 47   | 192   | 320        | 14                        | 27   | 106   | 147        | 43                               | 83   | 9     | 135        | 868        |
| 05:15 PM    | 204                       | 52   | 16    | 272        | 60                               | 53   | 197   | 310        | 10                        | 23   | 98    | 131        | 49                               | 84   | 13    | 146        | 859        |
| 05:30 PM    | 207                       | 41   | 17    | 265        | 51                               | 45   | 180   | 276        | 13                        | 19   | 91    | 123        | 30                               | 67   | 17    | 114        | 778        |
| 05:45 PM    | 198                       | 41   | 13    | 252        | 62                               | 54   | 186   | 302        | 9                         | 17   | 67    | 93         | 43                               | 82   | 7     | 132        | 779        |
| Total       | 814                       | 183  | 58    | 1055       | 254                              | 199  | 755   | 1208       | 46                        | 86   | 362   | 494        | 165                              | 316  | 46    | 527        | 3284       |
| Grand Total | 1722                      | 369  | 104   | 2195       | 477                              | 408  | 1513  | 2398       | 92                        | 190  | 751   | 1033       | 344                              | 602  | 108   | 1054       | 6680       |
| Apprch %    | 78.5                      | 16.8 | 4.7   |            | 19.9                             | 17   | 63.1  |            | 8.9                       | 18.4 | 72.7  |            | 32.6                             | 57.1 | 10.2  |            |            |
| Total %     | 25.8                      | 5.5  | 1.6   | 32.9       | 7.1                              | 6.1  | 22.6  | 35.9       | 1.4                       | 2.8  | 11.2  | 15.5       | 5.1                              | 9    | 1.6   | 15.8       |            |

|                                                            | Collier Avenue Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | Collier Avenue Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                           |      |       |            |                                  |      |       |            |                           |      |       |            |                                  |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                           |      |       |            |                                  |      |       |            |                           |      |       |            |                                  |      |       |            |            |
| 04:30 PM                                                   | 215                       | 59   | 19    | 293        | 49                               | 61   | 198   | 308        | 7                         | 25   | 120   | 152        | 55                               | 81   | 10    | 146        | 899        |
| 04:45 PM                                                   | 214                       | 55   | 16    | 285        | 49                               | 59   | 163   | 271        | 10                        | 27   | 103   | 140        | 39                               | 79   | 14    | 132        | 828        |
| 05:00 PM                                                   | 205                       | 49   | 12    | 266        | 81                               | 47   | 192   | 320        | 14                        | 27   | 106   | 147        | 43                               | 83   | 9     | 135        | 868        |
| 05:15 PM                                                   | 204                       | 52   | 16    | 272        | 60                               | 53   | 197   | 310        | 10                        | 23   | 98    | 131        | 49                               | 84   | 13    | 146        | 859        |
| Total Volume                                               | 838                       | 215  | 63    | 1116       | 239                              | 220  | 750   | 1209       | 41                        | 102  | 427   | 570        | 186                              | 327  | 46    | 559        | 3454       |
| % App. Total                                               | 75.1                      | 19.3 | 5.6   |            | 19.8                             | 18.2 | 62    |            | 7.2                       | 17.9 | 74.9  |            | 33.3                             | 58.5 | 8.2   |            |            |
| PHF                                                        | .974                      | .911 | .829  | .952       | .738                             | .902 | .947  | .945       | .732                      | .944 | .890  | .938       | .845                             | .973 | .821  | .957       | .961       |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKECOCEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 04:00 PM   |           |           |            | 04:30 PM  |           |            |            | 04:30 PM  |           |            |            | 04:30 PM  |           |           |            |
|--------------|------------|-----------|-----------|------------|-----------|-----------|------------|------------|-----------|-----------|------------|------------|-----------|-----------|-----------|------------|
| +0 mins.     | 231        | 34        | 7         | 272        | 49        | <b>61</b> | <b>198</b> | 308        | 7         | 25        | <b>120</b> | <b>152</b> | <b>55</b> | 81        | 10        | <b>146</b> |
| +15 mins.    | <b>248</b> | 38        | 4         | 290        | 49        | 59        | 163        | 271        | 10        | <b>27</b> | 103        | 140        | 39        | 79        | <b>14</b> | 132        |
| +30 mins.    | 215        | <b>59</b> | <b>19</b> | <b>293</b> | <b>81</b> | 47        | 192        | <b>320</b> | <b>14</b> | 27        | 106        | 147        | 43        | 83        | 9         | 135        |
| +45 mins.    | 214        | 55        | 16        | 285        | 60        | 53        | 197        | 310        | 10        | 23        | 98         | 131        | 49        | <b>84</b> | 13        | 146        |
| Total Volume | 908        | 186       | 46        | 1140       | 239       | 220       | 750        | 1209       | 41        | 102       | 427        | 570        | 186       | 327       | 46        | 559        |
| % App. Total | 79.6       | 16.3      | 4         |            | 19.8      | 18.2      | 62         |            | 7.2       | 17.9      | 74.9       |            | 33.3      | 58.5      | 8.2       |            |
| PHF          | .915       | .788      | .605      | .973       | .738      | .902      | .947       | .945       | .732      | .944      | .890       | .938       | .845      | .973      | .821      | .957       |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Crane Street  
Weather: Clear

File Name : LKECOCRAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

|             | Collier Avenue<br>Southbound |       |            | Collier Avenue<br>Northbound |      |            | Crane Street<br>Eastbound |       |            |            |
|-------------|------------------------------|-------|------------|------------------------------|------|------------|---------------------------|-------|------------|------------|
| Start Time  | Thru                         | Right | App. Total | Left                         | Thru | App. Total | Left                      | Right | App. Total | Int. Total |
| 07:00 AM    | 128                          | 7     | 135        | 2                            | 85   | 87         | 2                         | 1     | 3          | 225        |
| 07:15 AM    | 183                          | 1     | 184        | 1                            | 114  | 115        | 0                         | 9     | 9          | 308        |
| 07:30 AM    | 146                          | 3     | 149        | 2                            | 94   | 96         | 1                         | 3     | 4          | 249        |
| 07:45 AM    | 147                          | 13    | 160        | 6                            | 101  | 107        | 1                         | 1     | 2          | 269        |
| Total       | 604                          | 24    | 628        | 11                           | 394  | 405        | 4                         | 14    | 18         | 1051       |
| 08:00 AM    | 108                          | 9     | 117        | 5                            | 87   | 92         | 3                         | 0     | 3          | 212        |
| 08:15 AM    | 95                           | 2     | 97         | 5                            | 77   | 82         | 5                         | 0     | 5          | 184        |
| 08:30 AM    | 76                           | 8     | 84         | 2                            | 63   | 65         | 3                         | 2     | 5          | 154        |
| 08:45 AM    | 59                           | 3     | 62         | 3                            | 61   | 64         | 2                         | 1     | 3          | 129        |
| Total       | 338                          | 22    | 360        | 15                           | 288  | 303        | 13                        | 3     | 16         | 679        |
| Grand Total | 942                          | 46    | 988        | 26                           | 682  | 708        | 17                        | 17    | 34         | 1730       |
| Apprch %    | 95.3                         | 4.7   |            | 3.7                          | 96.3 |            | 50                        | 50    |            |            |
| Total %     | 54.5                         | 2.7   | 57.1       | 1.5                          | 39.4 | 40.9       | 1                         | 1     | 2          |            |

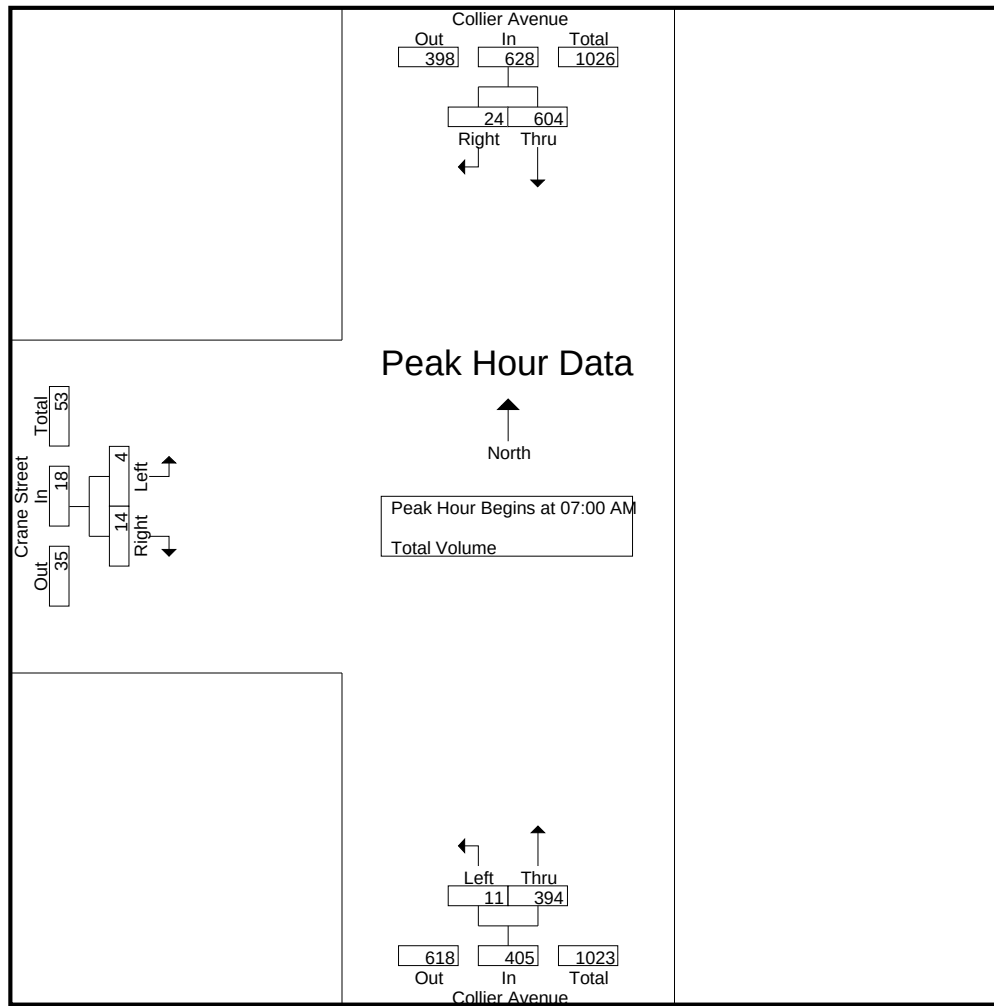
|              | Collier Avenue<br>Southbound |           |            | Collier Avenue<br>Northbound |            |            | Crane Street<br>Eastbound |          |            |            |
|--------------|------------------------------|-----------|------------|------------------------------|------------|------------|---------------------------|----------|------------|------------|
| Start Time   | Thru                         | Right     | App. Total | Left                         | Thru       | App. Total | Left                      | Right    | App. Total | Int. Total |
| 07:00 AM     | 128                          | 7         | 135        | 2                            | 85         | 87         | 2                         | 1        | 3          | 225        |
| 07:15 AM     | <b>183</b>                   | 1         | <b>184</b> | 1                            | <b>114</b> | <b>115</b> | 0                         | <b>9</b> | <b>9</b>   | <b>308</b> |
| 07:30 AM     | 146                          | 3         | 149        | 2                            | 94         | 96         | 1                         | 3        | 4          | 249        |
| 07:45 AM     | 147                          | <b>13</b> | 160        | <b>6</b>                     | 101        | 107        | 1                         | 1        | 2          | 269        |
| Total Volume | 604                          | 24        | 628        | 11                           | 394        | 405        | 4                         | 14       | 18         | 1051       |
| % App. Total | 96.2                         | 3.8       |            | 2.7                          | 97.3       |            | 22.2                      | 77.8     |            |            |
| PHF          | .825                         | .462      | .853       | .458                         | .864       | .880       | .500                      | .389     | .500       | .853       |

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Crane Street  
Weather: Clear

File Name : LKECOCRAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

|              | 07:00 AM   |           |            | 07:15 AM |            |            | 07:00 AM |          |          |
|--------------|------------|-----------|------------|----------|------------|------------|----------|----------|----------|
| +0 mins.     | 128        | 7         | 135        | 1        | <b>114</b> | <b>115</b> | <b>2</b> | 1        | 3        |
| +15 mins.    | <b>183</b> | 1         | <b>184</b> | 2        | 94         | 96         | 0        | <b>9</b> | <b>9</b> |
| +30 mins.    | 146        | 3         | 149        | <b>6</b> | 101        | 107        | 1        | 3        | 4        |
| +45 mins.    | 147        | <b>13</b> | 160        | 5        | 87         | 92         | 1        | 1        | 2        |
| Total Volume | 604        | 24        | 628        | 14       | 396        | 410        | 4        | 14       | 18       |
| % App. Total | 96.2       | 3.8       |            | 3.4      | 96.6       |            | 22.2     | 77.8     |          |
| PHF          | .825       | .462      | .853       | .583     | .868       | .891       | .500     | .389     | .500     |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Crane Street  
Weather: Clear

File Name : LKECOCRPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

|             | Collier Avenue<br>Southbound |       |            | Collier Avenue<br>Northbound |      |            | Crane Street<br>Eastbound |       |            |            |
|-------------|------------------------------|-------|------------|------------------------------|------|------------|---------------------------|-------|------------|------------|
| Start Time  | Thru                         | Right | App. Total | Left                         | Thru | App. Total | Left                      | Right | App. Total | Int. Total |
| 04:00 PM    | 111                          | 6     | 117        | 1                            | 119  | 120        | 2                         | 5     | 7          | 244        |
| 04:15 PM    | 103                          | 5     | 108        | 1                            | 107  | 108        | 6                         | 1     | 7          | 223        |
| 04:30 PM    | 102                          | 5     | 107        | 4                            | 150  | 154        | 14                        | 2     | 16         | 277        |
| 04:45 PM    | 115                          | 3     | 118        | 0                            | 123  | 123        | 10                        | 4     | 14         | 255        |
| Total       | 431                          | 19    | 450        | 6                            | 499  | 505        | 32                        | 12    | 44         | 999        |
| 05:00 PM    | 117                          | 3     | 120        | 4                            | 144  | 148        | 11                        | 7     | 18         | 286        |
| 05:15 PM    | 115                          | 5     | 120        | 0                            | 110  | 110        | 7                         | 4     | 11         | 241        |
| 05:30 PM    | 98                           | 0     | 98         | 0                            | 156  | 156        | 2                         | 4     | 6          | 260        |
| 05:45 PM    | 90                           | 4     | 94         | 1                            | 80   | 81         | 5                         | 3     | 8          | 183        |
| Total       | 420                          | 12    | 432        | 5                            | 490  | 495        | 25                        | 18    | 43         | 970        |
| Grand Total | 851                          | 31    | 882        | 11                           | 989  | 1000       | 57                        | 30    | 87         | 1969       |
| Apprch %    | 96.5                         | 3.5   |            | 1.1                          | 98.9 |            | 65.5                      | 34.5  |            |            |
| Total %     | 43.2                         | 1.6   | 44.8       | 0.6                          | 50.2 | 50.8       | 2.9                       | 1.5   | 4.4        |            |

|              | Collier Avenue<br>Southbound |          |            | Collier Avenue<br>Northbound |            |            | Crane Street<br>Eastbound |          |            |            |
|--------------|------------------------------|----------|------------|------------------------------|------------|------------|---------------------------|----------|------------|------------|
| Start Time   | Thru                         | Right    | App. Total | Left                         | Thru       | App. Total | Left                      | Right    | App. Total | Int. Total |
| 04:30 PM     | 102                          | <b>5</b> | 107        | <b>4</b>                     | <b>150</b> | <b>154</b> | <b>14</b>                 | 2        | 16         | 277        |
| 04:45 PM     | 115                          | 3        | 118        | 0                            | 123        | 123        | 10                        | 4        | 14         | 255        |
| 05:00 PM     | <b>117</b>                   | 3        | <b>120</b> | 4                            | 144        | 148        | 11                        | <b>7</b> | <b>18</b>  | <b>286</b> |
| 05:15 PM     | 115                          | 5        | 120        | 0                            | 110        | 110        | 7                         | 4        | 11         | 241        |
| Total Volume | 449                          | 16       | 465        | 8                            | 527        | 535        | 42                        | 17       | 59         | 1059       |
| % App. Total | 96.6                         | 3.4      |            | 1.5                          | 98.5       |            | 71.2                      | 28.8     |            |            |
| PHF          | .959                         | .800     | .969       | .500                         | .878       | .869       | .750                      | .607     | .819       | .926       |

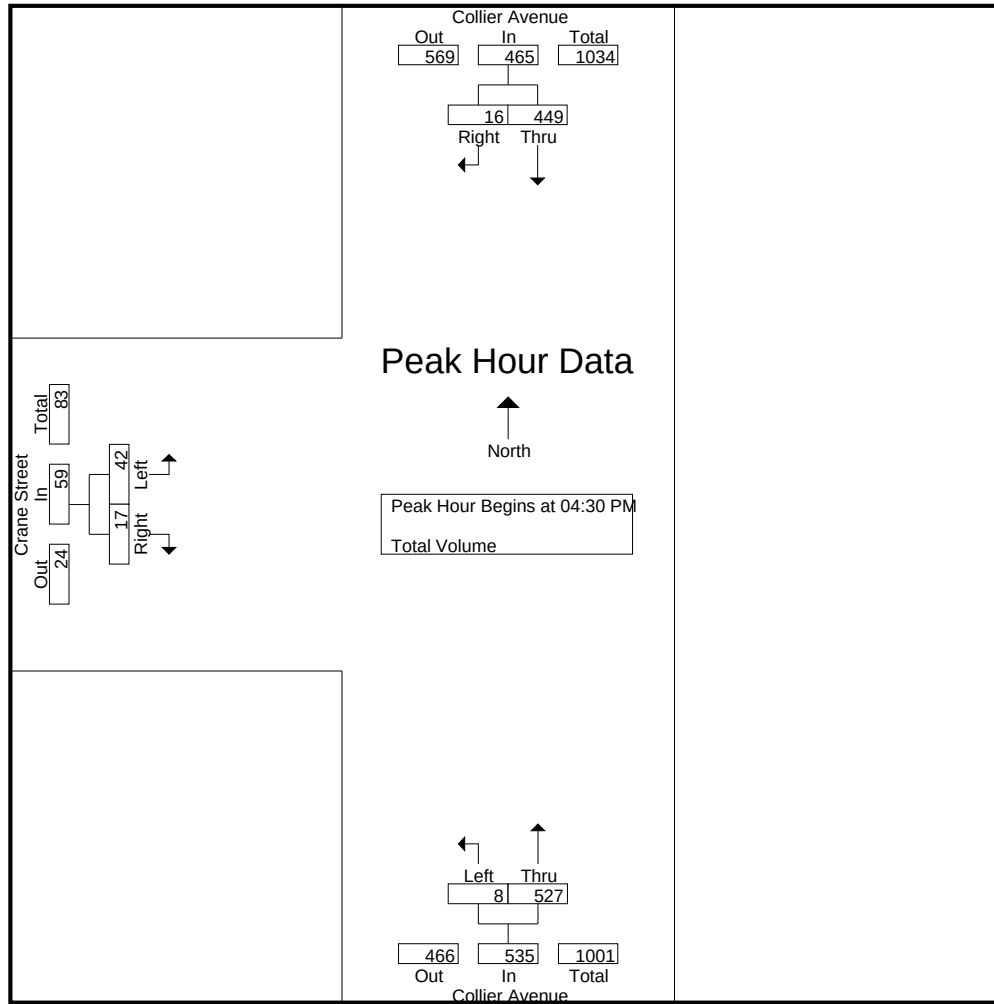
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM



City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Crane Street  
Weather: Clear

File Name : LKECOCRPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

|              | 04:30 PM |      |      | 04:45 PM |      |      | 04:30 PM |      |      |
|--------------|----------|------|------|----------|------|------|----------|------|------|
| +0 mins.     | 102      | 5    | 107  | 0        | 123  | 123  | 14       | 2    | 16   |
| +15 mins.    | 115      | 3    | 118  | 4        | 144  | 148  | 10       | 4    | 14   |
| +30 mins.    | 117      | 3    | 120  | 0        | 110  | 110  | 11       | 7    | 18   |
| +45 mins.    | 115      | 5    | 120  | 0        | 156  | 156  | 7        | 4    | 11   |
| Total Volume | 449      | 16   | 465  | 4        | 533  | 537  | 42       | 17   | 59   |
| % App. Total | 96.6     | 3.4  |      | 0.7      | 99.3 |      | 71.2     | 28.8 |      |
| PHF          | .959     | .800 | .969 | .250     | .854 | .861 | .750     | .607 | .819 |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Chaney Street  
Weather: Clear

File Name : LKECOCHAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

|             | Collier Avenue<br>Southbound |       |            | Collier Avenue<br>Northbound |      |            | Chaney Street<br>Eastbound |       |            |            |
|-------------|------------------------------|-------|------------|------------------------------|------|------------|----------------------------|-------|------------|------------|
| Start Time  | Thru                         | Right | App. Total | Left                         | Thru | App. Total | Left                       | Right | App. Total | Int. Total |
| 07:00 AM    | 8                            | 99    | 107        | 22                           | 10   | 32         | 80                         | 1     | 81         | 220        |
| 07:15 AM    | 18                           | 156   | 174        | 37                           | 18   | 55         | 88                         | 4     | 92         | 321        |
| 07:30 AM    | 12                           | 106   | 118        | 48                           | 23   | 71         | 54                         | 11    | 65         | 254        |
| 07:45 AM    | 20                           | 95    | 115        | 42                           | 25   | 67         | 77                         | 15    | 92         | 274        |
| Total       | 58                           | 456   | 514        | 149                          | 76   | 225        | 299                        | 31    | 330        | 1069       |
| 08:00 AM    | 12                           | 64    | 76         | 21                           | 21   | 42         | 64                         | 11    | 75         | 193        |
| 08:15 AM    | 7                            | 15    | 22         | 5                            | 8    | 13         | 15                         | 0     | 15         | 50         |
| 08:30 AM    | 19                           | 39    | 58         | 11                           | 22   | 33         | 34                         | 5     | 39         | 130        |
| 08:45 AM    | 23                           | 32    | 55         | 9                            | 19   | 28         | 35                         | 8     | 43         | 126        |
| Total       | 61                           | 150   | 211        | 46                           | 70   | 116        | 148                        | 24    | 172        | 499        |
| Grand Total | 119                          | 606   | 725        | 195                          | 146  | 341        | 447                        | 55    | 502        | 1568       |
| Apprch %    | 16.4                         | 83.6  |            | 57.2                         | 42.8 |            | 89                         | 11    |            |            |
| Total %     | 7.6                          | 38.6  | 46.2       | 12.4                         | 9.3  | 21.7       | 28.5                       | 3.5   | 32         |            |

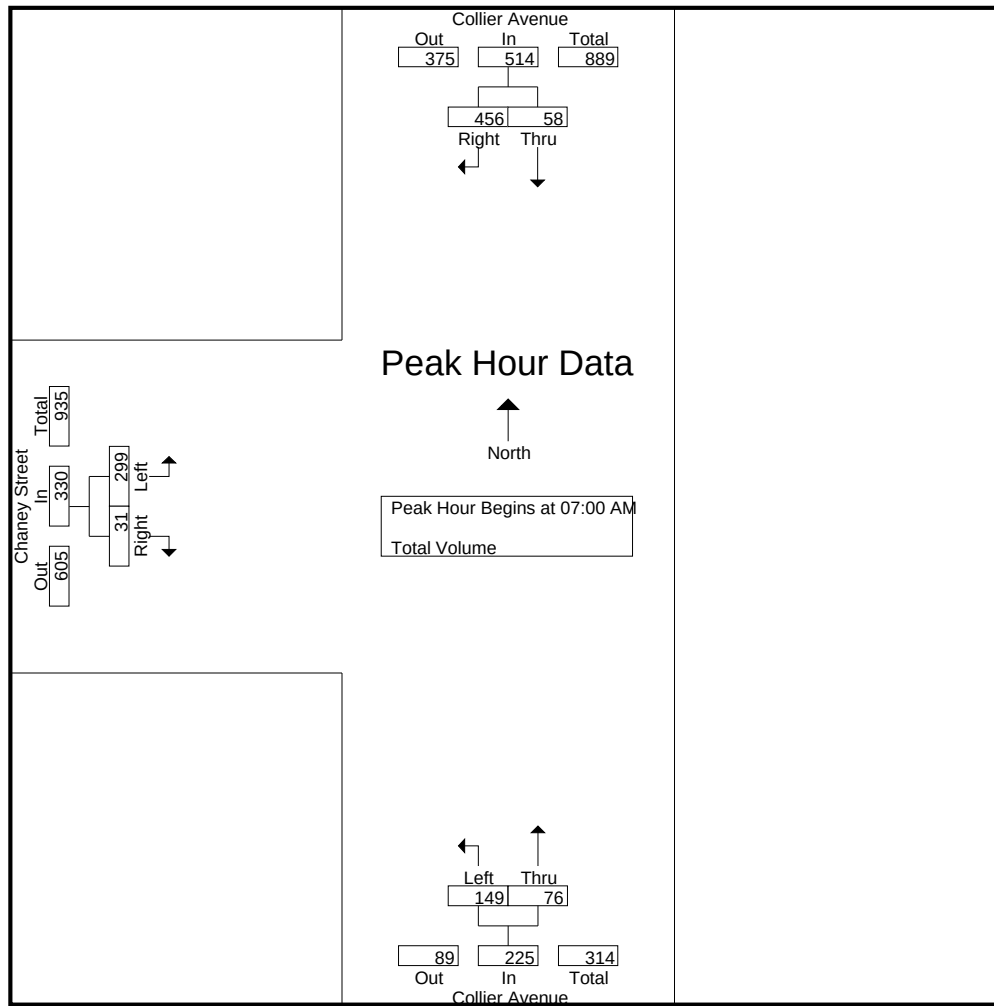
|              | Collier Avenue<br>Southbound |            |            | Collier Avenue<br>Northbound |           |            | Chaney Street<br>Eastbound |           |            |            |
|--------------|------------------------------|------------|------------|------------------------------|-----------|------------|----------------------------|-----------|------------|------------|
| Start Time   | Thru                         | Right      | App. Total | Left                         | Thru      | App. Total | Left                       | Right     | App. Total | Int. Total |
| 07:00 AM     | 8                            | 99         | 107        | 22                           | 10        | 32         | 80                         | 1         | 81         | 220        |
| 07:15 AM     | 18                           | <b>156</b> | <b>174</b> | 37                           | 18        | 55         | <b>88</b>                  | 4         | <b>92</b>  | <b>321</b> |
| 07:30 AM     | 12                           | 106        | 118        | <b>48</b>                    | 23        | <b>71</b>  | 54                         | 11        | 65         | 254        |
| 07:45 AM     | <b>20</b>                    | 95         | 115        | 42                           | <b>25</b> | 67         | 77                         | <b>15</b> | 92         | 274        |
| Total Volume | 58                           | 456        | 514        | 149                          | 76        | 225        | 299                        | 31        | 330        | 1069       |
| % App. Total | 11.3                         | 88.7       |            | 66.2                         | 33.8      |            | 90.6                       | 9.4       |            |            |
| PHF          | .725                         | .731       | .739       | .776                         | .760      | .792       | .849                       | .517      | .897       | .833       |

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Chaney Street  
Weather: Clear

File Name : LKECOCHAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

|              | 07:00 AM  |            |            | 07:15 AM  |           |           | 07:00 AM  |           |           |
|--------------|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|
| +0 mins.     | 8         | 99         | 107        | 37        | 18        | 55        | 80        | 1         | 81        |
| +15 mins.    | 18        | <b>156</b> | <b>174</b> | <b>48</b> | 23        | <b>71</b> | <b>88</b> | 4         | <b>92</b> |
| +30 mins.    | 12        | 106        | 118        | 42        | <b>25</b> | 67        | 54        | 11        | 65        |
| +45 mins.    | <b>20</b> | 95         | 115        | 21        | 21        | 42        | 77        | <b>15</b> | 92        |
| Total Volume | 58        | 456        | 514        | 148       | 87        | 235       | 299       | 31        | 330       |
| % App. Total | 11.3      | 88.7       |            | 63        | 37        |           | 90.6      | 9.4       |           |
| PHF          | .725      | .731       | .739       | .771      | .870      | .827      | .849      | .517      | .897      |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Chaney Street  
Weather: Clear

File Name : LKECOCHPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

|             | Collier Avenue<br>Southbound |       |            | Collier Avenue<br>Northbound |      |            | Chaney Street<br>Eastbound |       |            |            |
|-------------|------------------------------|-------|------------|------------------------------|------|------------|----------------------------|-------|------------|------------|
| Start Time  | Thru                         | Right | App. Total | Left                         | Thru | App. Total | Left                       | Right | App. Total | Int. Total |
| 04:00 PM    | 38                           | 56    | 94         | 8                            | 26   | 34         | 64                         | 10    | 74         | 202        |
| 04:15 PM    | 33                           | 58    | 91         | 4                            | 24   | 28         | 61                         | 16    | 77         | 196        |
| 04:30 PM    | 49                           | 41    | 90         | 6                            | 33   | 39         | 85                         | 21    | 106        | 235        |
| 04:45 PM    | 48                           | 54    | 102        | 9                            | 26   | 35         | 69                         | 8     | 77         | 214        |
| Total       | 168                          | 209   | 377        | 27                           | 109  | 136        | 279                        | 55    | 334        | 847        |
| 05:00 PM    | 57                           | 54    | 111        | 6                            | 35   | 41         | 84                         | 21    | 105        | 257        |
| 05:15 PM    | 57                           | 53    | 110        | 2                            | 28   | 30         | 73                         | 9     | 82         | 222        |
| 05:30 PM    | 54                           | 38    | 92         | 4                            | 22   | 26         | 101                        | 17    | 118        | 236        |
| 05:45 PM    | 42                           | 38    | 80         | 3                            | 22   | 25         | 57                         | 11    | 68         | 173        |
| Total       | 210                          | 183   | 393        | 15                           | 107  | 122        | 315                        | 58    | 373        | 888        |
| Grand Total | 378                          | 392   | 770        | 42                           | 216  | 258        | 594                        | 113   | 707        | 1735       |
| Apprch %    | 49.1                         | 50.9  |            | 16.3                         | 83.7 |            | 84                         | 16    |            |            |
| Total %     | 21.8                         | 22.6  | 44.4       | 2.4                          | 12.4 | 14.9       | 34.2                       | 6.5   | 40.7       |            |

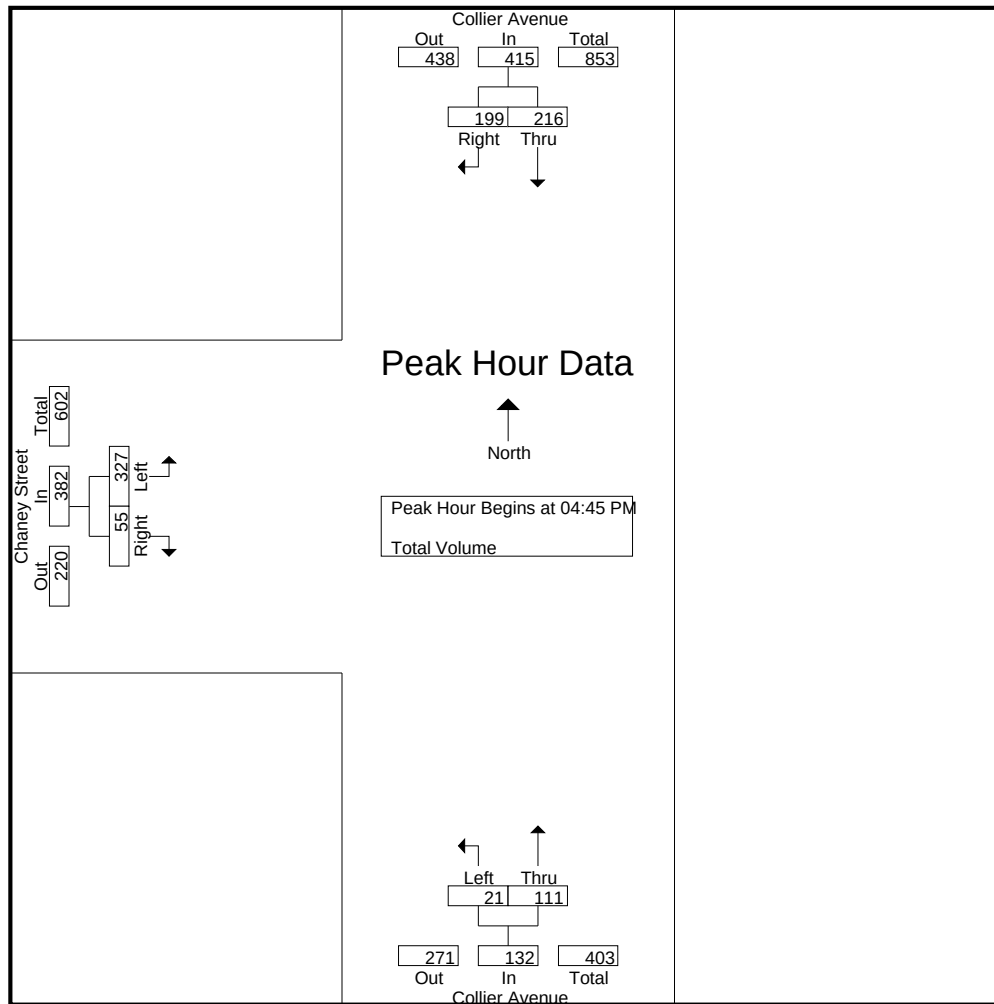
|              | Collier Avenue<br>Southbound |           |            | Collier Avenue<br>Northbound |           |            | Chaney Street<br>Eastbound |           |            |            |
|--------------|------------------------------|-----------|------------|------------------------------|-----------|------------|----------------------------|-----------|------------|------------|
| Start Time   | Thru                         | Right     | App. Total | Left                         | Thru      | App. Total | Left                       | Right     | App. Total | Int. Total |
| 04:45 PM     | 48                           | <b>54</b> | 102        | <b>9</b>                     | 26        | 35         | 69                         | 8         | 77         | 214        |
| 05:00 PM     | <b>57</b>                    | 54        | <b>111</b> | 6                            | <b>35</b> | <b>41</b>  | 84                         | <b>21</b> | 105        | <b>257</b> |
| 05:15 PM     | 57                           | 53        | 110        | 2                            | 28        | 30         | 73                         | 9         | 82         | 222        |
| 05:30 PM     | 54                           | 38        | 92         | 4                            | 22        | 26         | <b>101</b>                 | 17        | <b>118</b> | 236        |
| Total Volume | 216                          | 199       | 415        | 21                           | 111       | 132        | 327                        | 55        | 382        | 929        |
| % App. Total | 52                           | 48        |            | 15.9                         | 84.1      |            | 85.6                       | 14.4      |            |            |
| PHF          | .947                         | .921      | .935       | .583                         | .793      | .805       | .809                       | .655      | .809       | .904       |

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: Chaney Street  
Weather: Clear

File Name : LKECOCHPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

|              | 04:45 PM |      |      | 04:30 PM |      |      | 04:45 PM |      |      |
|--------------|----------|------|------|----------|------|------|----------|------|------|
| +0 mins.     | 48       | 54   | 102  | 6        | 33   | 39   | 69       | 8    | 77   |
| +15 mins.    | 57       | 54   | 111  | 9        | 26   | 35   | 84       | 21   | 105  |
| +30 mins.    | 57       | 53   | 110  | 6        | 35   | 41   | 73       | 9    | 82   |
| +45 mins.    | 54       | 38   | 92   | 2        | 28   | 30   | 101      | 17   | 118  |
| Total Volume | 216      | 199  | 415  | 23       | 122  | 145  | 327      | 55   | 382  |
| % App. Total | 52       | 48   |      | 15.9     | 84.1 |      | 85.6     | 14.4 |      |
| PHF          | .947     | .921 | .935 | .639     | .871 | .884 | .809     | .655 | .809 |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: N. Spring Street  
Weather: Clear

File Name : LKECOSPAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

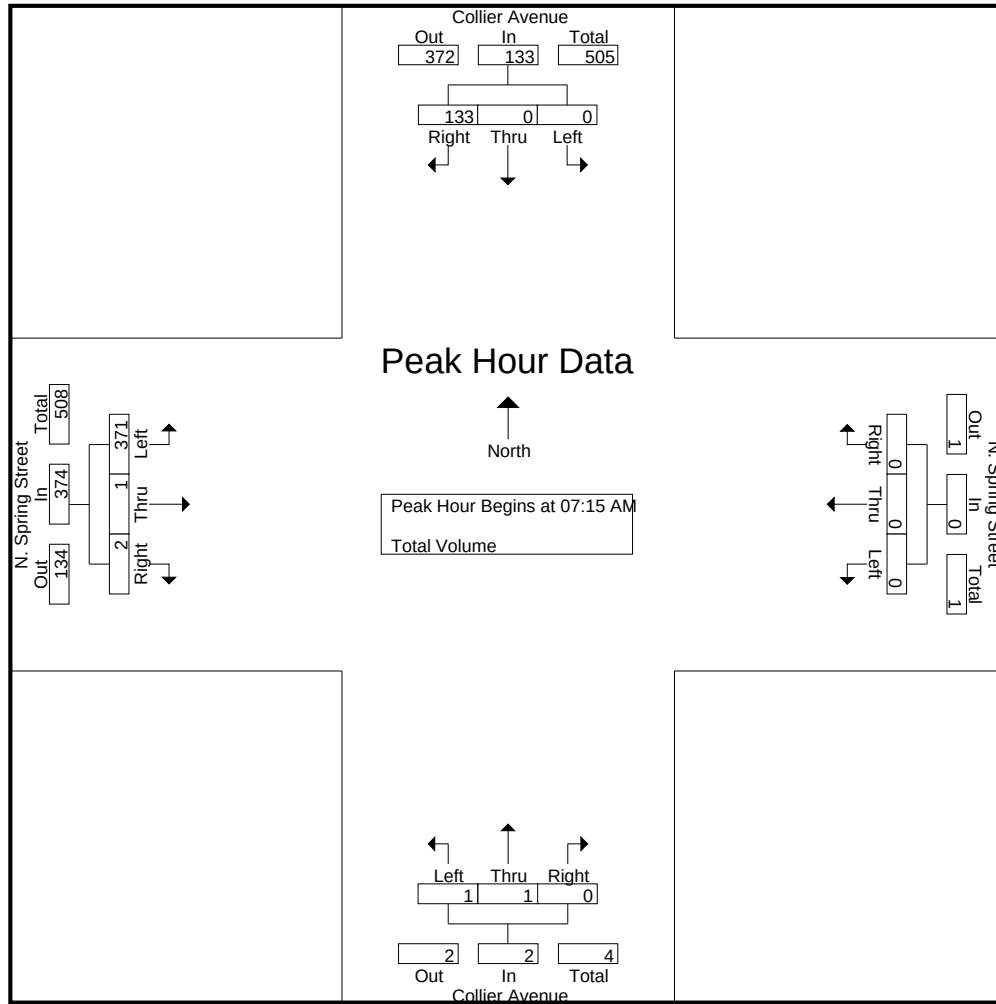
Groups Printed- Total Volume

|             | Collier Avenue Southbound |      |       |            | N. Spring Street Westbound |      |       |            | Collier Avenue Northbound |      |       |            | N. Spring Street Eastbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|----------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                       | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                       | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 0                         | 0    | 10    | 10         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 54                         | 0    | 0     | 54         | 64         |
| 07:15 AM    | 0                         | 0    | 24    | 24         | 0                          | 0    | 0     | 0          | 1                         | 0    | 0     | 1          | 98                         | 1    | 1     | 100        | 125        |
| 07:30 AM    | 0                         | 0    | 37    | 37         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 111                        | 0    | 0     | 111        | 148        |
| 07:45 AM    | 0                         | 0    | 42    | 42         | 0                          | 0    | 0     | 0          | 0                         | 1    | 0     | 1          | 97                         | 0    | 1     | 98         | 141        |
| Total       | 0                         | 0    | 113   | 113        | 0                          | 0    | 0     | 0          | 1                         | 1    | 0     | 2          | 360                        | 1    | 2     | 363        | 478        |
| 08:00 AM    | 0                         | 0    | 30    | 30         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 65                         | 0    | 0     | 65         | 95         |
| 08:15 AM    | 0                         | 3    | 23    | 26         | 0                          | 0    | 0     | 0          | 3                         | 0    | 0     | 3          | 66                         | 0    | 0     | 66         | 95         |
| 08:30 AM    | 0                         | 1    | 28    | 29         | 0                          | 0    | 0     | 0          | 1                         | 0    | 0     | 1          | 47                         | 0    | 0     | 47         | 77         |
| 08:45 AM    | 0                         | 0    | 43    | 43         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 55                         | 0    | 0     | 55         | 98         |
| Total       | 0                         | 4    | 124   | 128        | 0                          | 0    | 0     | 0          | 4                         | 0    | 0     | 4          | 233                        | 0    | 0     | 233        | 365        |
| Grand Total | 0                         | 4    | 237   | 241        | 0                          | 0    | 0     | 0          | 5                         | 1    | 0     | 6          | 593                        | 1    | 2     | 596        | 843        |
| Apprch %    | 0                         | 1.7  | 98.3  |            | 0                          | 0    | 0     |            | 83.3                      | 16.7 | 0     |            | 99.5                       | 0.2  | 0.3   |            |            |
| Total %     | 0                         | 0.5  | 28.1  | 28.6       | 0                          | 0    | 0     | 0          | 0.6                       | 0.1  | 0     | 0.7        | 70.3                       | 0.1  | 0.2   | 70.7       |            |

|                                                            | Collier Avenue Southbound |      |       |            | N. Spring Street Westbound |      |       |            | Collier Avenue Northbound |      |       |            | N. Spring Street Eastbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|----------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                       | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                       | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                           |      |       |            |                            |      |       |            |                           |      |       |            |                            |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:15 AM       |                           |      |       |            |                            |      |       |            |                           |      |       |            |                            |      |       |            |            |
| 07:15 AM                                                   | 0                         | 0    | 24    | 24         | 0                          | 0    | 0     | 0          | 1                         | 0    | 0     | 1          | 98                         | 1    | 1     | 100        | 125        |
| 07:30 AM                                                   | 0                         | 0    | 37    | 37         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 111                        | 0    | 0     | 111        | 148        |
| 07:45 AM                                                   | 0                         | 0    | 42    | 42         | 0                          | 0    | 0     | 0          | 0                         | 1    | 0     | 1          | 97                         | 0    | 1     | 98         | 141        |
| 08:00 AM                                                   | 0                         | 0    | 30    | 30         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 65                         | 0    | 0     | 65         | 95         |
| Total Volume                                               | 0                         | 0    | 133   | 133        | 0                          | 0    | 0     | 0          | 1                         | 1    | 0     | 2          | 371                        | 1    | 2     | 374        | 509        |
| % App. Total                                               | 0                         | 0    | 100   |            | 0                          | 0    | 0     |            | 50                        | 50   | 0     |            | 99.2                       | 0.3  | 0.5   |            |            |
| PHF                                                        | .000                      | .000 | .792  | .792       | .000                       | .000 | .000  | .000       | .250                      | .250 | .000  | .500       | .836                       | .250 | .500  | .842       | .860       |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: N. Spring Street  
Weather: Clear

File Name : LKECOSPAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 07:30 AM |      |      |      | 07:00 AM |      |      |      | 07:45 AM |      |      |      | 07:15 AM |      |      |      |
|--------------|----------|------|------|------|----------|------|------|------|----------|------|------|------|----------|------|------|------|
| +0 mins.     | 0        | 0    | 37   | 37   | 0        | 0    | 0    | 0    | 0        | 1    | 0    | 1    | 98       | 1    | 1    | 100  |
| +15 mins.    | 0        | 0    | 42   | 42   | 0        | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 111      | 0    | 0    | 111  |
| +30 mins.    | 0        | 0    | 30   | 30   | 0        | 0    | 0    | 0    | 3        | 0    | 0    | 3    | 97       | 0    | 1    | 98   |
| +45 mins.    | 0        | 3    | 23   | 26   | 0        | 0    | 0    | 0    | 1        | 0    | 0    | 1    | 65       | 0    | 0    | 65   |
| Total Volume | 0        | 3    | 132  | 135  | 0        | 0    | 0    | 0    | 4        | 1    | 0    | 5    | 371      | 1    | 2    | 374  |
| % App. Total | 0        | 2.2  | 97.8 |      | 0        | 0    | 0    | 0    | 80       | 20   | 0    |      | 99.2     | 0.3  | 0.5  |      |
| PHF          | .000     | .250 | .786 | .804 | .000     | .000 | .000 | .000 | .333     | .250 | .000 | .417 | .836     | .250 | .500 | .842 |

City of Lake Elsinore  
N/S: Collier Avenue  
E/W: N. Spring Street  
Weather: Clear

File Name : LKECOSPPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

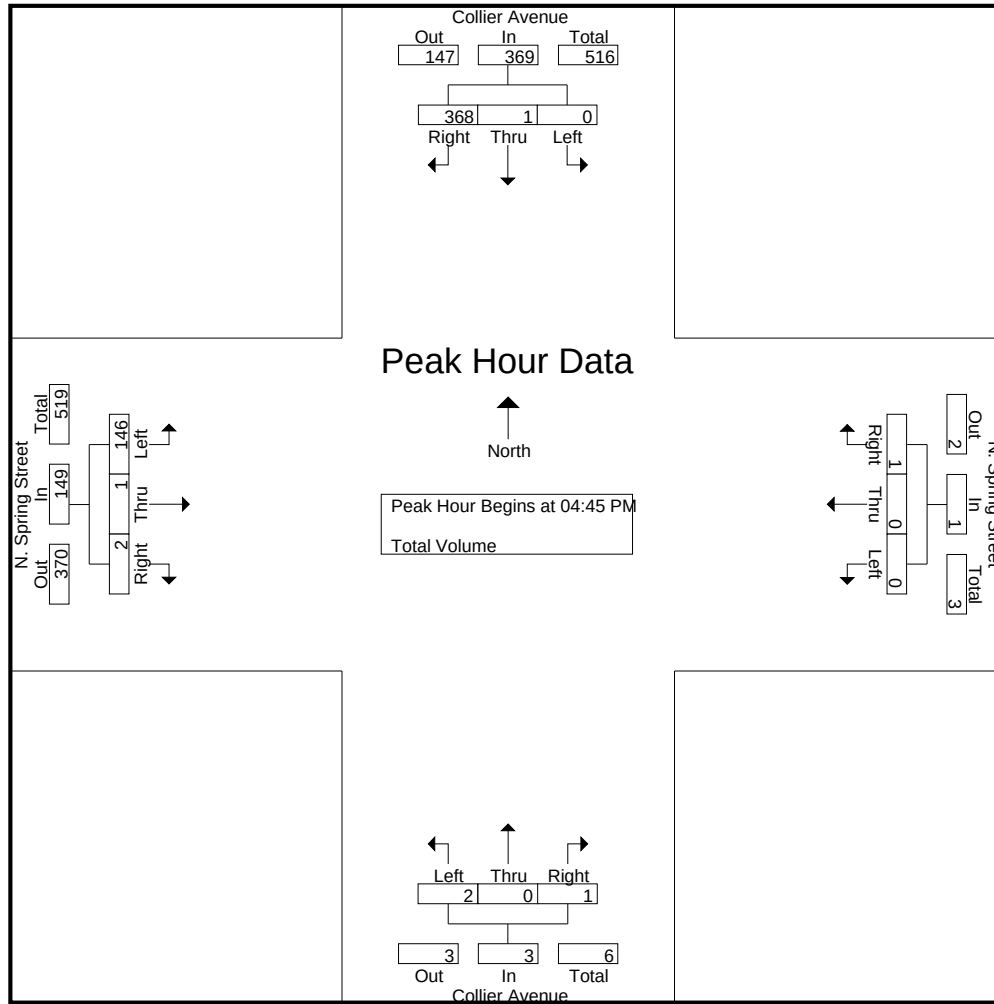
|             | Collier Avenue Southbound |      |       |            | N. Spring Street Westbound |      |       |            | Collier Avenue Northbound |      |       |            | N. Spring Street Eastbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|----------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                       | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                       | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 0                         | 1    | 73    | 74         | 0                          | 0    | 0     | 0          | 0                         | 1    | 0     | 1          | 39                         | 0    | 0     | 39         | 114        |
| 04:15 PM    | 0                         | 1    | 75    | 76         | 0                          | 0    | 0     | 0          | 1                         | 0    | 0     | 1          | 40                         | 1    | 0     | 41         | 118        |
| 04:30 PM    | 1                         | 0    | 97    | 98         | 0                          | 1    | 1     | 2          | 0                         | 0    | 0     | 0          | 39                         | 0    | 0     | 39         | 139        |
| 04:45 PM    | 0                         | 0    | 80    | 80         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 38                         | 0    | 1     | 39         | 119        |
| Total       | 1                         | 2    | 325   | 328        | 0                          | 1    | 1     | 2          | 1                         | 1    | 0     | 2          | 156                        | 1    | 1     | 158        | 490        |
| 05:00 PM    | 0                         | 0    | 96    | 96         | 0                          | 0    | 1     | 1          | 1                         | 0    | 1     | 2          | 44                         | 1    | 1     | 46         | 145        |
| 05:15 PM    | 0                         | 1    | 83    | 84         | 0                          | 0    | 0     | 0          | 1                         | 0    | 0     | 1          | 33                         | 0    | 0     | 33         | 118        |
| 05:30 PM    | 0                         | 0    | 109   | 109        | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 31                         | 0    | 0     | 31         | 140        |
| 05:45 PM    | 0                         | 0    | 59    | 59         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 24                         | 0    | 0     | 24         | 83         |
| Total       | 0                         | 1    | 347   | 348        | 0                          | 0    | 1     | 1          | 2                         | 0    | 1     | 3          | 132                        | 1    | 1     | 134        | 486        |
| Grand Total | 1                         | 3    | 672   | 676        | 0                          | 1    | 2     | 3          | 3                         | 1    | 1     | 5          | 288                        | 2    | 2     | 292        | 976        |
| Apprch %    | 0.1                       | 0.4  | 99.4  |            | 0                          | 33.3 | 66.7  |            | 60                        | 20   | 20    |            | 98.6                       | 0.7  | 0.7   |            |            |
| Total %     | 0.1                       | 0.3  | 68.9  | 69.3       | 0                          | 0.1  | 0.2   | 0.3        | 0.3                       | 0.1  | 0.1   | 0.5        | 29.5                       | 0.2  | 0.2   | 29.9       |            |

|                                                            | Collier Avenue Southbound |      |       |            | N. Spring Street Westbound |      |       |            | Collier Avenue Northbound |      |       |            | N. Spring Street Eastbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|----------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                       | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                       | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                           |      |       |            |                            |      |       |            |                           |      |       |            |                            |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 04:45 PM       |                           |      |       |            |                            |      |       |            |                           |      |       |            |                            |      |       |            |            |
| 04:45 PM                                                   | 0                         | 0    | 80    | 80         | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 38                         | 0    | 1     | 39         | 119        |
| 05:00 PM                                                   | 0                         | 0    | 96    | 96         | 0                          | 0    | 1     | 1          | 1                         | 0    | 1     | 2          | 44                         | 1    | 1     | 46         | 145        |
| 05:15 PM                                                   | 0                         | 1    | 83    | 84         | 0                          | 0    | 0     | 0          | 1                         | 0    | 0     | 1          | 33                         | 0    | 0     | 33         | 118        |
| 05:30 PM                                                   | 0                         | 0    | 109   | 109        | 0                          | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 31                         | 0    | 0     | 31         | 140        |
| Total Volume                                               | 0                         | 1    | 368   | 369        | 0                          | 0    | 1     | 1          | 2                         | 0    | 1     | 3          | 146                        | 1    | 2     | 149        | 522        |
| % App. Total                                               | 0                         | 0.3  | 99.7  |            | 0                          | 0    | 100   |            | 66.7                      | 0    | 33.3  |            | 98                         | 0.7  | 1.3   |            |            |
| PHF                                                        | .000                      | .250 | .844  | .846       | .000                       | .000 | .250  | .250       | .500                      | .000 | .250  | .375       | .830                       | .250 | .500  | .810       | .900       |



City of Lake Elsinore  
N/S: Collier Avenue  
E/W: N. Spring Street  
Weather: Clear

File Name : LKECOSPPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 04:45 PM |      |      |      | 04:15 PM |      |      |      | 04:15 PM |      |      |      | 04:15 PM |      |      |      |
|--------------|----------|------|------|------|----------|------|------|------|----------|------|------|------|----------|------|------|------|
| +0 mins.     | 0        | 0    | 80   | 80   | 0        | 0    | 0    | 0    | 1        | 1    | 0    | 0    | 1        | 0    | 0    | 41   |
| +15 mins.    | 0        | 0    | 96   | 96   | 0        | 1    | 1    | 2    | 0        | 0    | 0    | 0    | 0        | 0    | 0    | 39   |
| +30 mins.    | 0        | 1    | 83   | 84   | 0        | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 0        | 1    | 1    | 39   |
| +45 mins.    | 0        | 0    | 109  | 109  | 0        | 0    | 1    | 1    | 1        | 0    | 1    | 2    | 44       | 1    | 1    | 46   |
| Total Volume | 0        | 1    | 368  | 369  | 0        | 1    | 2    | 3    | 2        | 0    | 1    | 3    | 161      | 2    | 2    | 165  |
| % App. Total | 0        | 0.3  | 99.7 |      | 0        | 33.3 | 66.7 |      | 66.7     | 0    | 33.3 |      | 97.6     | 1.2  | 1.2  |      |
| PHF          | .000     | .250 | .844 | .846 | .000     | .250 | .500 | .375 | .500     | .000 | .250 | .375 | .915     | .500 | .500 | .897 |

City of Lake Elsinore  
N/S: I-15 Southbound Ramps  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKE15SCEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

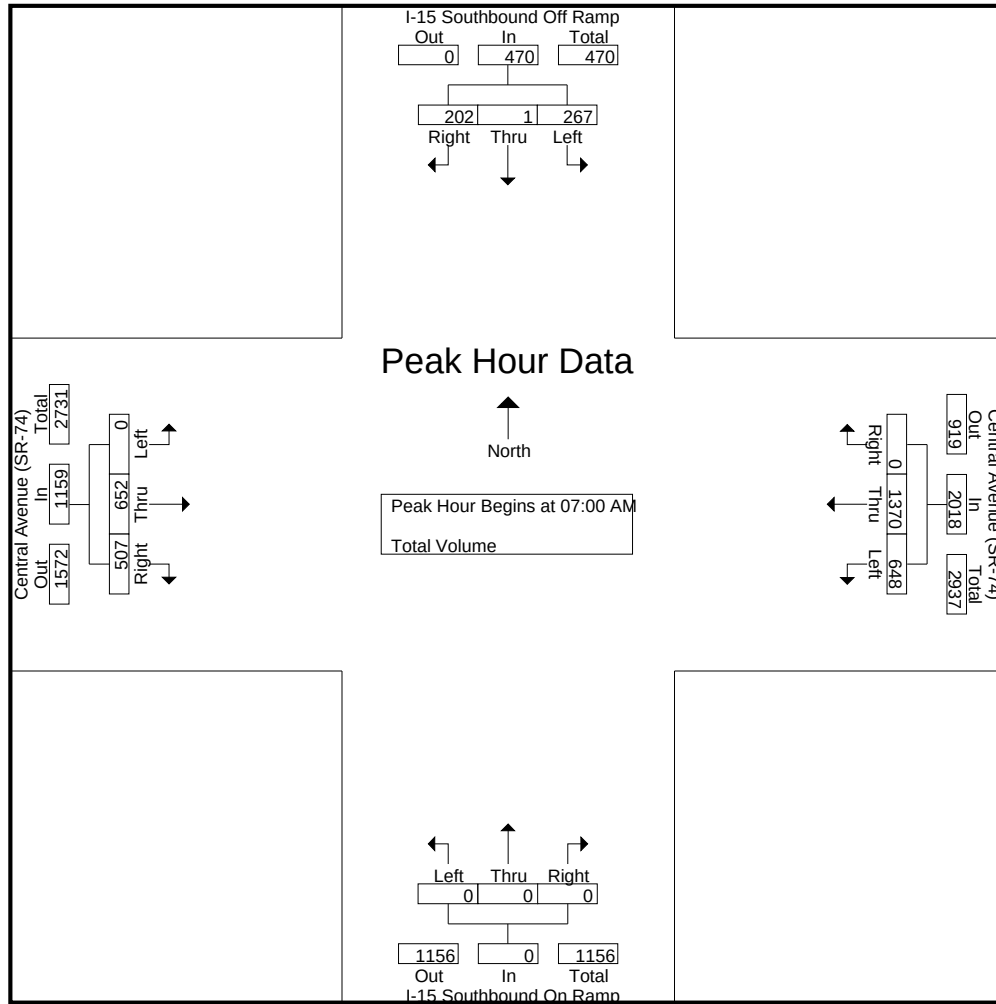
Groups Printed- Total Volume

|             | I-15 Southbound Off Ramp<br>Southbound |      |       |            | Central Avenue (SR-74)<br>Westbound |      |       |            | I-15 Southbound On Ramp<br>Northbound |      |       |            | Central Avenue (SR-74)<br>Eastbound |      |       |            |            |
|-------------|----------------------------------------|------|-------|------------|-------------------------------------|------|-------|------------|---------------------------------------|------|-------|------------|-------------------------------------|------|-------|------------|------------|
| Start Time  | Left                                   | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Left                                  | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 65                                     | 0    | 43    | 108        | 146                                 | 336  | 0     | 482        | 0                                     | 0    | 0     | 0          | 0                                   | 165  | 110   | 275        | 865        |
| 07:15 AM    | 72                                     | 1    | 58    | 131        | 194                                 | 376  | 0     | 570        | 0                                     | 0    | 0     | 0          | 0                                   | 190  | 132   | 322        | 1023       |
| 07:30 AM    | 60                                     | 0    | 45    | 105        | 172                                 | 295  | 0     | 467        | 0                                     | 0    | 0     | 0          | 0                                   | 154  | 152   | 306        | 878        |
| 07:45 AM    | 70                                     | 0    | 56    | 126        | 136                                 | 363  | 0     | 499        | 0                                     | 0    | 0     | 0          | 0                                   | 143  | 113   | 256        | 881        |
| Total       | 267                                    | 1    | 202   | 470        | 648                                 | 1370 | 0     | 2018       | 0                                     | 0    | 0     | 0          | 0                                   | 652  | 507   | 1159       | 3647       |
| 08:00 AM    | 37                                     | 0    | 47    | 84         | 148                                 | 286  | 0     | 434        | 0                                     | 0    | 0     | 0          | 0                                   | 127  | 125   | 252        | 770        |
| 08:15 AM    | 66                                     | 0    | 34    | 100        | 125                                 | 258  | 0     | 383        | 0                                     | 0    | 0     | 0          | 0                                   | 117  | 131   | 248        | 731        |
| 08:30 AM    | 56                                     | 1    | 28    | 85         | 123                                 | 220  | 0     | 343        | 0                                     | 0    | 0     | 0          | 0                                   | 137  | 136   | 273        | 701        |
| 08:45 AM    | 60                                     | 2    | 34    | 96         | 100                                 | 218  | 0     | 318        | 0                                     | 0    | 0     | 0          | 0                                   | 117  | 123   | 240        | 654        |
| Total       | 219                                    | 3    | 143   | 365        | 496                                 | 982  | 0     | 1478       | 0                                     | 0    | 0     | 0          | 0                                   | 498  | 515   | 1013       | 2856       |
| Grand Total | 486                                    | 4    | 345   | 835        | 1144                                | 2352 | 0     | 3496       | 0                                     | 0    | 0     | 0          | 0                                   | 1150 | 1022  | 2172       | 6503       |
| Apprch %    | 58.2                                   | 0.5  | 41.3  |            | 32.7                                | 67.3 | 0     |            | 0                                     | 0    | 0     |            | 0                                   | 52.9 | 47.1  |            |            |
| Total %     | 7.5                                    | 0.1  | 5.3   | 12.8       | 17.6                                | 36.2 | 0     | 53.8       | 0                                     | 0    | 0     | 0          | 0                                   | 17.7 | 15.7  | 33.4       |            |

|                                                            | I-15 Southbound Off Ramp<br>Southbound |          |           |            | Central Avenue (SR-74)<br>Westbound |            |       |            | I-15 Southbound On Ramp<br>Northbound |      |       |            | Central Avenue (SR-74)<br>Eastbound |            |            |            |             |
|------------------------------------------------------------|----------------------------------------|----------|-----------|------------|-------------------------------------|------------|-------|------------|---------------------------------------|------|-------|------------|-------------------------------------|------------|------------|------------|-------------|
| Start Time                                                 | Left                                   | Thru     | Right     | App. Total | Left                                | Thru       | Right | App. Total | Left                                  | Thru | Right | App. Total | Left                                | Thru       | Right      | App. Total | Int. Total  |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                        |          |           |            |                                     |            |       |            |                                       |      |       |            |                                     |            |            |            |             |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                                        |          |           |            |                                     |            |       |            |                                       |      |       |            |                                     |            |            |            |             |
| 07:00 AM                                                   | 65                                     | 0        | 43        | 108        | 146                                 | 336        | 0     | 482        | 0                                     | 0    | 0     | 0          | 0                                   | 165        | 110        | 275        | 865         |
| 07:15 AM                                                   | <b>72</b>                              | <b>1</b> | <b>58</b> | <b>131</b> | <b>194</b>                          | <b>376</b> | 0     | <b>570</b> | 0                                     | 0    | 0     | 0          | 0                                   | <b>190</b> | <b>132</b> | <b>322</b> | <b>1023</b> |
| 07:30 AM                                                   | 60                                     | 0        | 45        | 105        | 172                                 | 295        | 0     | 467        | 0                                     | 0    | 0     | 0          | 0                                   | 154        | <b>152</b> | 306        | 878         |
| 07:45 AM                                                   | 70                                     | 0        | 56        | 126        | 136                                 | 363        | 0     | 499        | 0                                     | 0    | 0     | 0          | 0                                   | 143        | 113        | 256        | 881         |
| Total Volume                                               | 267                                    | 1        | 202       | 470        | 648                                 | 1370       | 0     | 2018       | 0                                     | 0    | 0     | 0          | 0                                   | 652        | 507        | 1159       | 3647        |
| % App. Total                                               | 56.8                                   | 0.2      | 43        |            | 32.1                                | 67.9       | 0     |            | 0                                     | 0    | 0     |            | 0                                   | 56.3       | 43.7       |            |             |
| PHF                                                        | .927                                   | .250     | .871      | .897       | .835                                | .911       | .000  | .885       | .000                                  | .000 | .000  | .000       | .000                                | .858       | .834       | .900       | .891        |

City of Lake Elsinore  
N/S: I-15 Southbound Ramps  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKE15SCEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 07:00 AM  |          |           |            | 07:00 AM   |            |      |            | 07:00 AM |      |      |      | 07:00 AM |            |            |            |
|--------------|-----------|----------|-----------|------------|------------|------------|------|------------|----------|------|------|------|----------|------------|------------|------------|
| +0 mins.     | 65        | 0        | 43        | 108        | 146        | 336        | 0    | 482        | 0        | 0    | 0    | 0    | 0        | 165        | 110        | 275        |
| +15 mins.    | <b>72</b> | <b>1</b> | <b>58</b> | <b>131</b> | <b>194</b> | <b>376</b> | 0    | <b>570</b> | 0        | 0    | 0    | 0    | 0        | <b>190</b> | 132        | <b>322</b> |
| +30 mins.    | 60        | 0        | 45        | 105        | 172        | 295        | 0    | 467        | 0        | 0    | 0    | 0    | 0        | 154        | <b>152</b> | 306        |
| +45 mins.    | 70        | 0        | 56        | 126        | 136        | 363        | 0    | 499        | 0        | 0    | 0    | 0    | 0        | 143        | 113        | 256        |
| Total Volume | 267       | 1        | 202       | 470        | 648        | 1370       | 0    | 2018       | 0        | 0    | 0    | 0    | 0        | 652        | 507        | 1159       |
| % App. Total | 56.8      | 0.2      | 43        |            | 32.1       | 67.9       | 0    |            | 0        | 0    | 0    | 0    | 0        | 56.3       | 43.7       |            |
| PHF          | .927      | .250     | .871      | .897       | .835       | .911       | .000 | .885       | .000     | .000 | .000 | .000 | .000     | .858       | .834       | .900       |

City of Lake Elsinore  
N/S: I-15 Southbound Ramps  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKE15SCEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

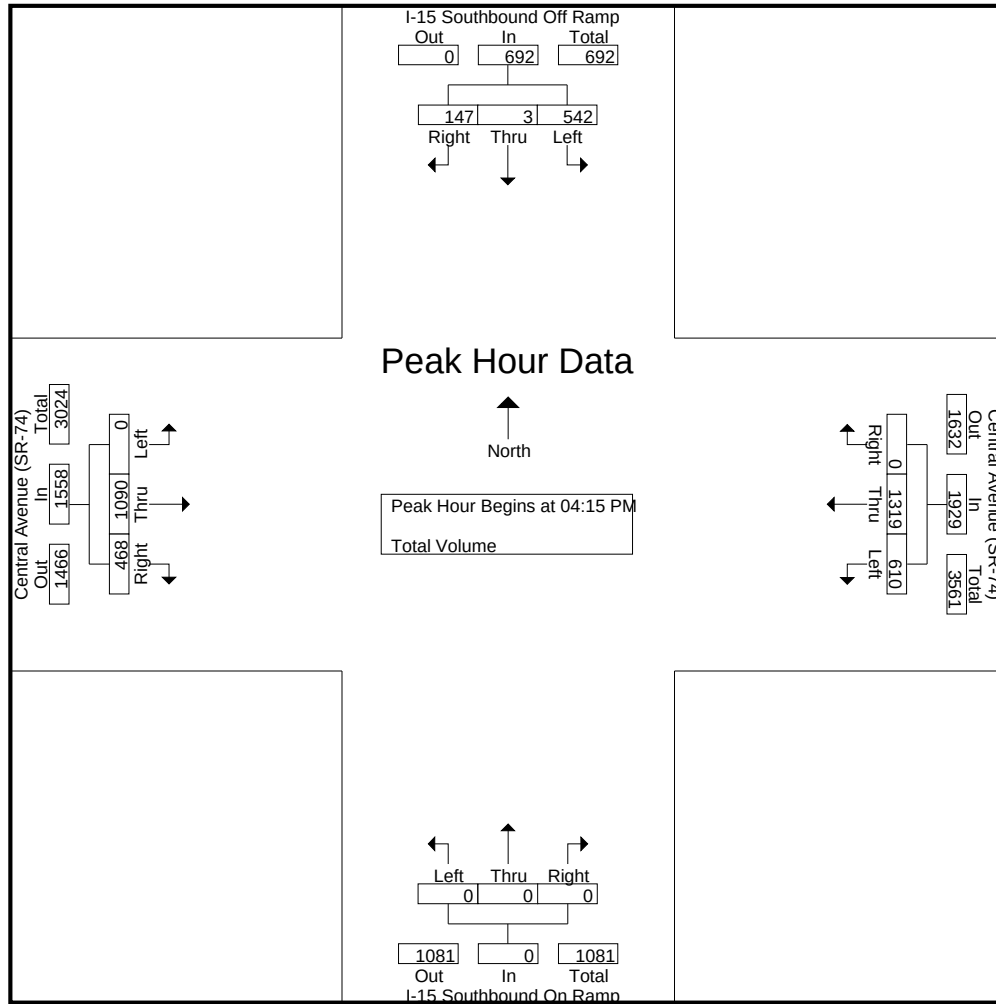
Groups Printed- Total Volume

|             | I-15 Southbound Off Ramp<br>Southbound |      |       |            | Central Avenue (SR-74)<br>Westbound |      |       |            | I-15 Southbound On Ramp<br>Northbound |      |       |            | Central Avenue (SR-74)<br>Eastbound |      |       |            |            |
|-------------|----------------------------------------|------|-------|------------|-------------------------------------|------|-------|------------|---------------------------------------|------|-------|------------|-------------------------------------|------|-------|------------|------------|
| Start Time  | Left                                   | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Left                                  | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 127                                    | 0    | 47    | 174        | 160                                 | 338  | 0     | 498        | 0                                     | 0    | 0     | 0          | 0                                   | 235  | 140   | 375        | 1047       |
| 04:15 PM    | 135                                    | 1    | 36    | 172        | 132                                 | 334  | 0     | 466        | 0                                     | 0    | 0     | 0          | 0                                   | 274  | 129   | 403        | 1041       |
| 04:30 PM    | 133                                    | 1    | 28    | 162        | 170                                 | 355  | 0     | 525        | 0                                     | 0    | 0     | 0          | 0                                   | 285  | 120   | 405        | 1092       |
| 04:45 PM    | 135                                    | 0    | 43    | 178        | 137                                 | 292  | 0     | 429        | 0                                     | 0    | 0     | 0          | 0                                   | 270  | 115   | 385        | 992        |
| Total       | 530                                    | 2    | 154   | 686        | 599                                 | 1319 | 0     | 1918       | 0                                     | 0    | 0     | 0          | 0                                   | 1064 | 504   | 1568       | 4172       |
| 05:00 PM    | 139                                    | 1    | 40    | 180        | 171                                 | 338  | 0     | 509        | 0                                     | 0    | 0     | 0          | 0                                   | 261  | 104   | 365        | 1054       |
| 05:15 PM    | 131                                    | 0    | 38    | 169        | 133                                 | 314  | 0     | 447        | 0                                     | 0    | 0     | 0          | 0                                   | 268  | 102   | 370        | 986        |
| 05:30 PM    | 167                                    | 1    | 27    | 195        | 146                                 | 299  | 0     | 445        | 0                                     | 0    | 0     | 0          | 0                                   | 241  | 106   | 347        | 987        |
| 05:45 PM    | 119                                    | 0    | 35    | 154        | 137                                 | 298  | 0     | 435        | 0                                     | 0    | 0     | 0          | 0                                   | 264  | 95    | 359        | 948        |
| Total       | 556                                    | 2    | 140   | 698        | 587                                 | 1249 | 0     | 1836       | 0                                     | 0    | 0     | 0          | 0                                   | 1034 | 407   | 1441       | 3975       |
| Grand Total | 1086                                   | 4    | 294   | 1384       | 1186                                | 2568 | 0     | 3754       | 0                                     | 0    | 0     | 0          | 0                                   | 2098 | 911   | 3009       | 8147       |
| Apprch %    | 78.5                                   | 0.3  | 21.2  |            | 31.6                                | 68.4 | 0     |            | 0                                     | 0    | 0     |            | 0                                   | 69.7 | 30.3  |            |            |
| Total %     | 13.3                                   | 0    | 3.6   | 17         | 14.6                                | 31.5 | 0     | 46.1       | 0                                     | 0    | 0     | 0          | 0                                   | 25.8 | 11.2  | 36.9       |            |

|                                                            | I-15 Southbound Off Ramp<br>Southbound |      |           |            | Central Avenue (SR-74)<br>Westbound |            |       |            | I-15 Southbound On Ramp<br>Northbound |      |       |            | Central Avenue (SR-74)<br>Eastbound |            |            |            |             |
|------------------------------------------------------------|----------------------------------------|------|-----------|------------|-------------------------------------|------------|-------|------------|---------------------------------------|------|-------|------------|-------------------------------------|------------|------------|------------|-------------|
| Start Time                                                 | Left                                   | Thru | Right     | App. Total | Left                                | Thru       | Right | App. Total | Left                                  | Thru | Right | App. Total | Left                                | Thru       | Right      | App. Total | Int. Total  |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                        |      |           |            |                                     |            |       |            |                                       |      |       |            |                                     |            |            |            |             |
| Peak Hour for Entire Intersection Begins at 04:15 PM       |                                        |      |           |            |                                     |            |       |            |                                       |      |       |            |                                     |            |            |            |             |
| 04:15 PM                                                   | 135                                    | 1    | 36        | 172        | 132                                 | 334        | 0     | 466        | 0                                     | 0    | 0     | 0          | 0                                   | 274        | <b>129</b> | 403        | 1041        |
| 04:30 PM                                                   | 133                                    | 1    | 28        | 162        | 170                                 | <b>355</b> | 0     | <b>525</b> | 0                                     | 0    | 0     | 0          | 0                                   | <b>285</b> | 120        | <b>405</b> | <b>1092</b> |
| 04:45 PM                                                   | 135                                    | 0    | <b>43</b> | 178        | 137                                 | 292        | 0     | 429        | 0                                     | 0    | 0     | 0          | 0                                   | 270        | 115        | 385        | 992         |
| 05:00 PM                                                   | <b>139</b>                             | 1    | 40        | <b>180</b> | <b>171</b>                          | 338        | 0     | 509        | 0                                     | 0    | 0     | 0          | 0                                   | 261        | 104        | 365        | 1054        |
| Total Volume                                               | 542                                    | 3    | 147       | 692        | 610                                 | 1319       | 0     | 1929       | 0                                     | 0    | 0     | 0          | 0                                   | 1090       | 468        | 1558       | 4179        |
| % App. Total                                               | 78.3                                   | 0.4  | 21.2      |            | 31.6                                | 68.4       | 0     |            | 0                                     | 0    | 0     |            | 0                                   | 70         | 30         |            |             |
| PHF                                                        | .975                                   | .750 | .855      | .961       | .892                                | .929       | .000  | .919       | .000                                  | .000 | .000  | .000       | .000                                | .956       | .907       | .962       | .957        |

City of Lake Elsinore  
N/S: I-15 Southbound Ramps  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKE15SCEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 04:45 PM   |          |           |            | 04:15 PM   |            |      |            | 04:00 PM |      |      |      | 04:00 PM |            |            |            |
|--------------|------------|----------|-----------|------------|------------|------------|------|------------|----------|------|------|------|----------|------------|------------|------------|
| +0 mins.     | 135        | 0        | <b>43</b> | 178        | 132        | 334        | 0    | 466        | 0        | 0    | 0    | 0    | 0        | 235        | <b>140</b> | 375        |
| +15 mins.    | 139        | <b>1</b> | 40        | 180        | 170        | <b>355</b> | 0    | <b>525</b> | 0        | 0    | 0    | 0    | 0        | 274        | 129        | 403        |
| +30 mins.    | 131        | 0        | 38        | 169        | 137        | 292        | 0    | 429        | 0        | 0    | 0    | 0    | 0        | <b>285</b> | 120        | <b>405</b> |
| +45 mins.    | <b>167</b> | 1        | 27        | <b>195</b> | <b>171</b> | 338        | 0    | 509        | 0        | 0    | 0    | 0    | 0        | 270        | 115        | 385        |
| Total Volume | 572        | 2        | 148       | 722        | 610        | 1319       | 0    | 1929       | 0        | 0    | 0    | 0    | 0        | 1064       | 504        | 1568       |
| % App. Total | 79.2       | 0.3      | 20.5      |            | 31.6       | 68.4       | 0    |            | 0        | 0    | 0    | 0    | 0        | 67.9       | 32.1       |            |
| PHF          | .856       | .500     | .860      | .926       | .892       | .929       | .000 | .919       | .000     | .000 | .000 | .000 | .000     | .933       | .900       | .968       |

City of Lake Elsinore  
N/S: I-15 Northbound Ramps  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKE15NCEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

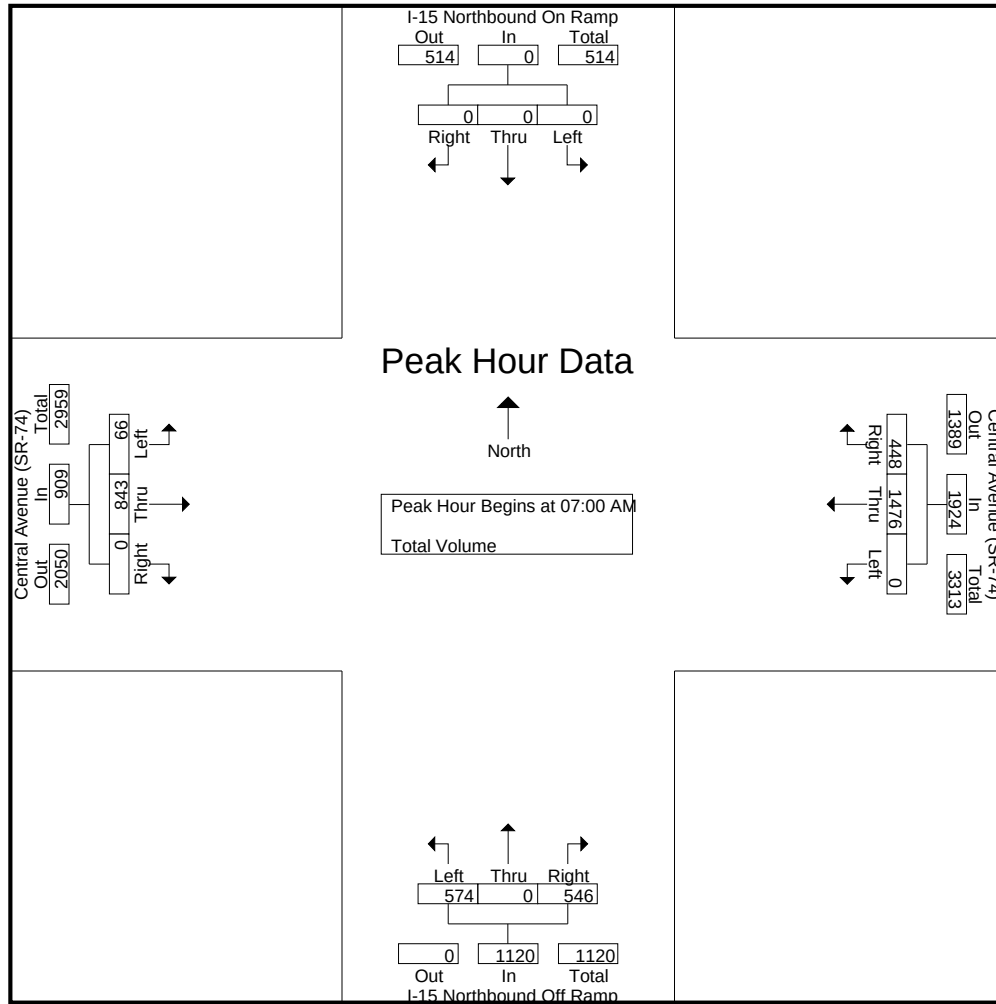
Groups Printed- Total Volume

|             | I-15 Northbound On Ramp Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | I-15 Northbound Off Ramp Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|-------------|------------------------------------|------|-------|------------|----------------------------------|------|-------|------------|-------------------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time  | Left                               | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 0                                  | 0    | 0     | 0          | 0                                | 364  | 135   | 499        | 119                                 | 0    | 167   | 286        | 16                               | 197  | 0     | 213        | 998        |
| 07:15 AM    | 0                                  | 0    | 0     | 0          | 0                                | 443  | 121   | 564        | 138                                 | 0    | 154   | 292        | 27                               | 228  | 0     | 255        | 1111       |
| 07:30 AM    | 0                                  | 0    | 0     | 0          | 0                                | 332  | 93    | 425        | 122                                 | 0    | 109   | 231        | 11                               | 217  | 0     | 228        | 884        |
| 07:45 AM    | 0                                  | 0    | 0     | 0          | 0                                | 337  | 99    | 436        | 195                                 | 0    | 116   | 311        | 12                               | 201  | 0     | 213        | 960        |
| Total       | 0                                  | 0    | 0     | 0          | 0                                | 1476 | 448   | 1924       | 574                                 | 0    | 546   | 1120       | 66                               | 843  | 0     | 909        | 3953       |
| 08:00 AM    | 0                                  | 0    | 0     | 0          | 0                                | 286  | 100   | 386        | 133                                 | 0    | 108   | 241        | 24                               | 163  | 0     | 187        | 814        |
| 08:15 AM    | 0                                  | 0    | 0     | 0          | 0                                | 272  | 95    | 367        | 132                                 | 1    | 110   | 243        | 25                               | 169  | 0     | 194        | 804        |
| 08:30 AM    | 0                                  | 0    | 0     | 0          | 0                                | 256  | 81    | 337        | 109                                 | 0    | 97    | 206        | 18                               | 166  | 0     | 184        | 727        |
| 08:45 AM    | 0                                  | 0    | 0     | 0          | 0                                | 186  | 88    | 274        | 117                                 | 0    | 110   | 227        | 19                               | 166  | 0     | 185        | 686        |
| Total       | 0                                  | 0    | 0     | 0          | 0                                | 1000 | 364   | 1364       | 491                                 | 1    | 425   | 917        | 86                               | 664  | 0     | 750        | 3031       |
| Grand Total | 0                                  | 0    | 0     | 0          | 0                                | 2476 | 812   | 3288       | 1065                                | 1    | 971   | 2037       | 152                              | 1507 | 0     | 1659       | 6984       |
| Apprch %    | 0                                  | 0    | 0     |            | 0                                | 75.3 | 24.7  |            | 52.3                                | 0    | 47.7  |            | 9.2                              | 90.8 | 0     |            |            |
| Total %     | 0                                  | 0    | 0     |            | 0                                | 35.5 | 11.6  | 47.1       | 15.2                                | 0    | 13.9  | 29.2       | 2.2                              | 21.6 | 0     | 23.8       |            |

|                                                            | I-15 Northbound On Ramp Southbound |      |       |            | Central Avenue (SR-74) Westbound |            |            |            | I-15 Northbound Off Ramp Northbound |      |            |            | Central Avenue (SR-74) Eastbound |            |       |            |             |
|------------------------------------------------------------|------------------------------------|------|-------|------------|----------------------------------|------------|------------|------------|-------------------------------------|------|------------|------------|----------------------------------|------------|-------|------------|-------------|
| Start Time                                                 | Left                               | Thru | Right | App. Total | Left                             | Thru       | Right      | App. Total | Left                                | Thru | Right      | App. Total | Left                             | Thru       | Right | App. Total | Int. Total  |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                                    |      |       |            |                                  |            |            |            |                                     |      |            |            |                                  |            |       |            |             |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                                    |      |       |            |                                  |            |            |            |                                     |      |            |            |                                  |            |       |            |             |
| 07:00 AM                                                   | 0                                  | 0    | 0     | 0          | 0                                | 364        | <b>135</b> | 499        | 119                                 | 0    | <b>167</b> | 286        | 16                               | 197        | 0     | 213        | 998         |
| 07:15 AM                                                   | 0                                  | 0    | 0     | 0          | 0                                | <b>443</b> | 121        | <b>564</b> | 138                                 | 0    | 154        | 292        | <b>27</b>                        | <b>228</b> | 0     | <b>255</b> | <b>1111</b> |
| 07:30 AM                                                   | 0                                  | 0    | 0     | 0          | 0                                | 332        | 93         | 425        | 122                                 | 0    | 109        | 231        | 11                               | 217        | 0     | 228        | 884         |
| 07:45 AM                                                   | 0                                  | 0    | 0     | 0          | 0                                | 337        | 99         | 436        | <b>195</b>                          | 0    | <b>116</b> | <b>311</b> | 12                               | 201        | 0     | 213        | 960         |
| Total Volume                                               | 0                                  | 0    | 0     | 0          | 0                                | 1476       | 448        | 1924       | 574                                 | 0    | 546        | 1120       | 66                               | 843        | 0     | 909        | 3953        |
| % App. Total                                               | 0                                  | 0    | 0     |            | 0                                | 76.7       | 23.3       |            | 51.2                                | 0    | 48.8       |            | 7.3                              | 92.7       | 0     |            |             |
| PHF                                                        | .000                               | .000 | .000  | .000       | .000                             | .833       | .830       | .853       | .736                                | .000 | .817       | .900       | .611                             | .924       | .000  | .891       | .890        |

City of Lake Elsinore  
N/S: I-15 Northbound Ramps  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKE15NCEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 07:00 AM |      |      |      | 07:00 AM |            |            |            | 07:00 AM   |      |            |            | 07:00 AM  |            |      |            |
|--------------|----------|------|------|------|----------|------------|------------|------------|------------|------|------------|------------|-----------|------------|------|------------|
| +0 mins.     | 0        | 0    | 0    | 0    | 0        | 364        | <b>135</b> | 499        | 119        | 0    | <b>167</b> | 286        | 16        | 197        | 0    | 213        |
| +15 mins.    | 0        | 0    | 0    | 0    | 0        | <b>443</b> | 121        | <b>564</b> | 138        | 0    | 154        | 292        | <b>27</b> | <b>228</b> | 0    | <b>255</b> |
| +30 mins.    | 0        | 0    | 0    | 0    | 0        | 332        | 93         | 425        | 122        | 0    | 109        | 231        | 11        | 217        | 0    | 228        |
| +45 mins.    | 0        | 0    | 0    | 0    | 0        | 337        | 99         | 436        | <b>195</b> | 0    | 116        | <b>311</b> | 12        | 201        | 0    | 213        |
| Total Volume | 0        | 0    | 0    | 0    | 0        | 1476       | 448        | 1924       | 574        | 0    | 546        | 1120       | 66        | 843        | 0    | 909        |
| % App. Total | 0        | 0    | 0    | 0    | 0        | 76.7       | 23.3       |            | 51.2       | 0    | 48.8       |            | 7.3       | 92.7       | 0    |            |
| PHF          | .000     | .000 | .000 | .000 | .000     | .833       | .830       | .853       | .736       | .000 | .817       | .900       | .611      | .924       | .000 | .891       |

City of Lake Elsinore  
N/S: I-15 Northbound Ramps  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKE15NCEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

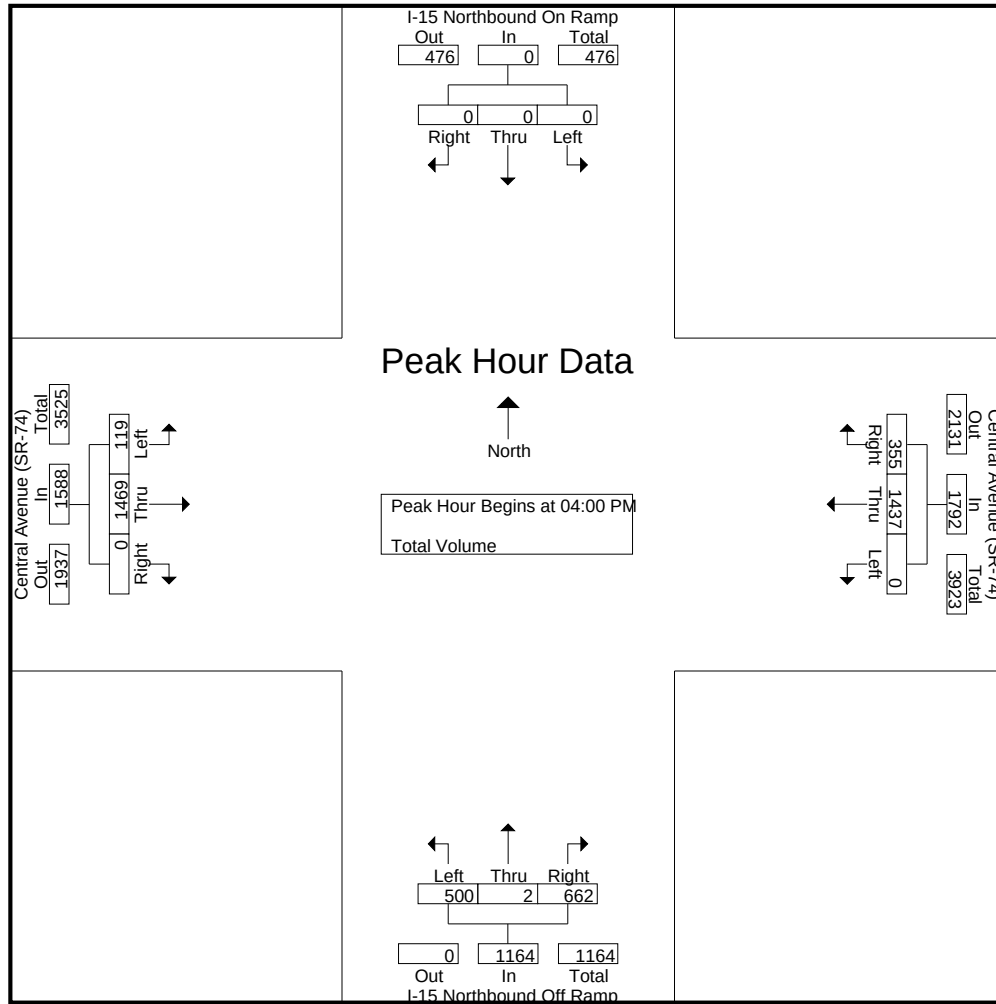
|             | I-15 Northbound On Ramp Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | I-15 Northbound Off Ramp Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|-------------|------------------------------------|------|-------|------------|----------------------------------|------|-------|------------|-------------------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time  | Left                               | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 0                                  | 0    | 0     | 0          | 0                                | 371  | 96    | 467        | 127                                 | 1    | 186   | 314        | 30                               | 358  | 0     | 388        | 1169       |
| 04:15 PM    | 0                                  | 0    | 0     | 0          | 0                                | 359  | 87    | 446        | 124                                 | 1    | 151   | 276        | 22                               | 364  | 0     | 386        | 1108       |
| 04:30 PM    | 0                                  | 0    | 0     | 0          | 0                                | 359  | 93    | 452        | 139                                 | 0    | 166   | 305        | 33                               | 374  | 0     | 407        | 1164       |
| 04:45 PM    | 0                                  | 0    | 0     | 0          | 0                                | 348  | 79    | 427        | 110                                 | 0    | 159   | 269        | 34                               | 373  | 0     | 407        | 1103       |
| Total       | 0                                  | 0    | 0     | 0          | 0                                | 1437 | 355   | 1792       | 500                                 | 2    | 662   | 1164       | 119                              | 1469 | 0     | 1588       | 4544       |
| 05:00 PM    | 0                                  | 0    | 0     | 0          | 0                                | 329  | 118   | 447        | 130                                 | 0    | 177   | 307        | 26                               | 381  | 0     | 407        | 1161       |
| 05:15 PM    | 0                                  | 0    | 0     | 0          | 0                                | 301  | 73    | 374        | 110                                 | 0    | 186   | 296        | 32                               | 376  | 0     | 408        | 1078       |
| 05:30 PM    | 0                                  | 0    | 0     | 0          | 0                                | 349  | 82    | 431        | 149                                 | 0    | 191   | 340        | 31                               | 351  | 0     | 382        | 1153       |
| 05:45 PM    | 0                                  | 0    | 0     | 0          | 0                                | 304  | 87    | 391        | 124                                 | 0    | 157   | 281        | 22                               | 361  | 0     | 383        | 1055       |
| Total       | 0                                  | 0    | 0     | 0          | 0                                | 1283 | 360   | 1643       | 513                                 | 0    | 711   | 1224       | 111                              | 1469 | 0     | 1580       | 4447       |
| Grand Total | 0                                  | 0    | 0     | 0          | 0                                | 2720 | 715   | 3435       | 1013                                | 2    | 1373  | 2388       | 230                              | 2938 | 0     | 3168       | 8991       |
| Apprch %    | 0                                  | 0    | 0     |            | 0                                | 79.2 | 20.8  |            | 42.4                                | 0.1  | 57.5  |            | 7.3                              | 92.7 | 0     |            |            |
| Total %     | 0                                  | 0    | 0     | 0          | 0                                | 30.3 | 8     | 38.2       | 11.3                                | 0    | 15.3  | 26.6       | 2.6                              | 32.7 | 0     | 35.2       |            |

|                                                            | I-15 Northbound On Ramp Southbound |      |       |            | Central Avenue (SR-74) Westbound |            |           |            | I-15 Northbound Off Ramp Northbound |          |            |            | Central Avenue (SR-74) Eastbound |            |       |            |             |
|------------------------------------------------------------|------------------------------------|------|-------|------------|----------------------------------|------------|-----------|------------|-------------------------------------|----------|------------|------------|----------------------------------|------------|-------|------------|-------------|
| Start Time                                                 | Left                               | Thru | Right | App. Total | Left                             | Thru       | Right     | App. Total | Left                                | Thru     | Right      | App. Total | Left                             | Thru       | Right | App. Total | Int. Total  |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                                    |      |       |            |                                  |            |           |            |                                     |          |            |            |                                  |            |       |            |             |
| Peak Hour for Entire Intersection Begins at 04:00 PM       |                                    |      |       |            |                                  |            |           |            |                                     |          |            |            |                                  |            |       |            |             |
| 04:00 PM                                                   | 0                                  | 0    | 0     | 0          | 0                                | <b>371</b> | <b>96</b> | <b>467</b> | 127                                 | <b>1</b> | <b>186</b> | <b>314</b> | 30                               | 358        | 0     | 388        | <b>1169</b> |
| 04:15 PM                                                   | 0                                  | 0    | 0     | 0          | 0                                | 359        | 87        | 446        | 124                                 | 1        | 151        | 276        | 22                               | 364        | 0     | 386        | 1108        |
| 04:30 PM                                                   | 0                                  | 0    | 0     | 0          | 0                                | 359        | 93        | 452        | <b>139</b>                          | 0        | 166        | 305        | 33                               | <b>374</b> | 0     | <b>407</b> | 1164        |
| 04:45 PM                                                   | 0                                  | 0    | 0     | 0          | 0                                | 348        | 79        | 427        | 110                                 | 0        | 159        | 269        | <b>34</b>                        | 373        | 0     | 407        | 1103        |
| Total Volume                                               | 0                                  | 0    | 0     | 0          | 0                                | 1437       | 355       | 1792       | 500                                 | 2        | 662        | 1164       | 119                              | 1469       | 0     | 1588       | 4544        |
| % App. Total                                               | 0                                  | 0    | 0     |            | 0                                | 80.2       | 19.8      |            | 43                                  | 0.2      | 56.9       |            | 7.5                              | 92.5       | 0     |            |             |
| PHF                                                        | .000                               | .000 | .000  | .000       | .000                             | .968       | .924      | .959       | .899                                | .500     | .890       | .927       | .875                             | .982       | .000  | .975       | .972        |



City of Lake Elsinore  
N/S: I-15 Northbound Ramps  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKE15NCEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 04:00 PM |      |      |      | 04:00 PM |            |           |            | 05:00 PM   |      |            |            | 04:30 PM  |            |      |            |
|--------------|----------|------|------|------|----------|------------|-----------|------------|------------|------|------------|------------|-----------|------------|------|------------|
| +0 mins.     | 0        | 0    | 0    | 0    | 0        | <b>371</b> | <b>96</b> | <b>467</b> | 130        | 0    | 177        | 307        | 33        | 374        | 0    | 407        |
| +15 mins.    | 0        | 0    | 0    | 0    | 0        | 359        | 87        | 446        | 110        | 0    | 186        | 296        | <b>34</b> | 373        | 0    | 407        |
| +30 mins.    | 0        | 0    | 0    | 0    | 0        | 359        | 93        | 452        | <b>149</b> | 0    | <b>191</b> | <b>340</b> | 26        | <b>381</b> | 0    | 407        |
| +45 mins.    | 0        | 0    | 0    | 0    | 0        | 348        | 79        | 427        | 124        | 0    | 157        | 281        | 32        | 376        | 0    | <b>408</b> |
| Total Volume | 0        | 0    | 0    | 0    | 0        | 1437       | 355       | 1792       | 513        | 0    | 711        | 1224       | 125       | 1504       | 0    | 1629       |
| % App. Total | 0        | 0    | 0    | 0    | 0        | 80.2       | 19.8      |            | 41.9       | 0    | 58.1       |            | 7.7       | 92.3       | 0    |            |
| PHF          | .000     | .000 | .000 | .000 | .000     | .968       | .924      | .959       | .861       | .000 | .931       | .900       | .919      | .987       | .000 | .998       |

City of Lake Elsinore  
N/S: Dexter Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKEDECEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

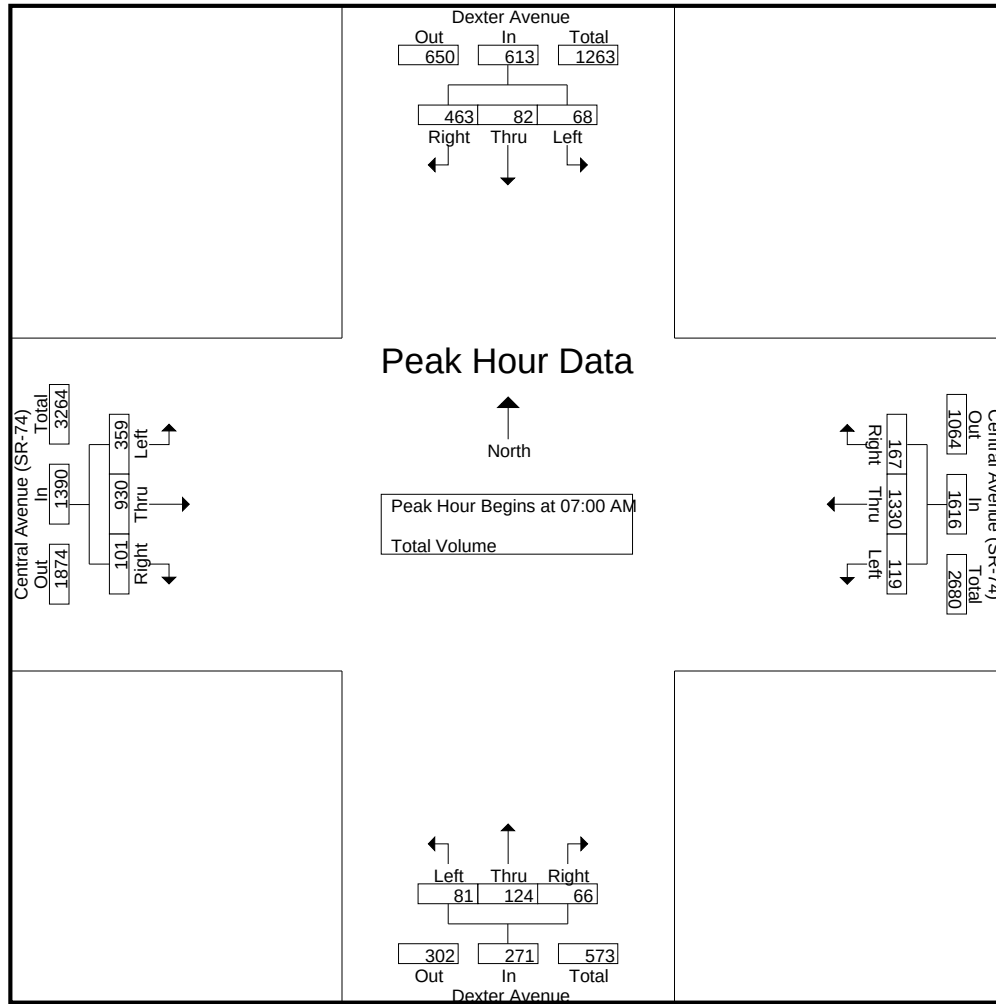
Groups Printed- Total Volume

|             | Dexter Avenue Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | Dexter Avenue Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|-------------|--------------------------|------|-------|------------|----------------------------------|------|-------|------------|--------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time  | Left                     | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                     | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 15                       | 27   | 134   | 176        | 24                               | 341  | 75    | 440        | 22                       | 62   | 12    | 96         | 125                              | 236  | 15    | 376        | 1088       |
| 07:15 AM    | 22                       | 29   | 165   | 216        | 21                               | 367  | 49    | 437        | 19                       | 33   | 15    | 67         | 105                              | 254  | 24    | 383        | 1103       |
| 07:30 AM    | 21                       | 22   | 112   | 155        | 35                               | 289  | 24    | 348        | 18                       | 12   | 17    | 47         | 58                               | 231  | 26    | 315        | 865        |
| 07:45 AM    | 10                       | 4    | 52    | 66         | 39                               | 333  | 19    | 391        | 22                       | 17   | 22    | 61         | 71                               | 209  | 36    | 316        | 834        |
| Total       | 68                       | 82   | 463   | 613        | 119                              | 1330 | 167   | 1616       | 81                       | 124  | 66    | 271        | 359                              | 930  | 101   | 1390       | 3890       |
| 08:00 AM    | 8                        | 3    | 53    | 64         | 31                               | 330  | 26    | 387        | 16                       | 14   | 21    | 51         | 67                               | 173  | 31    | 271        | 773        |
| 08:15 AM    | 8                        | 6    | 51    | 65         | 27                               | 294  | 28    | 349        | 25                       | 17   | 16    | 58         | 68                               | 165  | 38    | 271        | 743        |
| 08:30 AM    | 6                        | 5    | 58    | 69         | 19                               | 249  | 10    | 278        | 25                       | 11   | 20    | 56         | 63                               | 168  | 35    | 266        | 669        |
| 08:45 AM    | 7                        | 8    | 53    | 68         | 30                               | 214  | 14    | 258        | 16                       | 10   | 18    | 44         | 78                               | 152  | 52    | 282        | 652        |
| Total       | 29                       | 22   | 215   | 266        | 107                              | 1087 | 78    | 1272       | 82                       | 52   | 75    | 209        | 276                              | 658  | 156   | 1090       | 2837       |
| Grand Total | 97                       | 104  | 678   | 879        | 226                              | 2417 | 245   | 2888       | 163                      | 176  | 141   | 480        | 635                              | 1588 | 257   | 2480       | 6727       |
| Apprch %    | 11                       | 11.8 | 77.1  |            | 7.8                              | 83.7 | 8.5   |            | 34                       | 36.7 | 29.4  |            | 25.6                             | 64   | 10.4  |            |            |
| Total %     | 1.4                      | 1.5  | 10.1  | 13.1       | 3.4                              | 35.9 | 3.6   | 42.9       | 2.4                      | 2.6  | 2.1   | 7.1        | 9.4                              | 23.6 | 3.8   | 36.9       |            |

|                                                            | Dexter Avenue Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | Dexter Avenue Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|------------------------------------------------------------|--------------------------|------|-------|------------|----------------------------------|------|-------|------------|--------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                     | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                     | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                          |      |       |            |                                  |      |       |            |                          |      |       |            |                                  |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                          |      |       |            |                                  |      |       |            |                          |      |       |            |                                  |      |       |            |            |
| 07:00 AM                                                   | 15                       | 27   | 134   | 176        | 24                               | 341  | 75    | 440        | 22                       | 62   | 12    | 96         | 125                              | 236  | 15    | 376        | 1088       |
| 07:15 AM                                                   | 22                       | 29   | 165   | 216        | 21                               | 367  | 49    | 437        | 19                       | 33   | 15    | 67         | 105                              | 254  | 24    | 383        | 1103       |
| 07:30 AM                                                   | 21                       | 22   | 112   | 155        | 35                               | 289  | 24    | 348        | 18                       | 12   | 17    | 47         | 58                               | 231  | 26    | 315        | 865        |
| 07:45 AM                                                   | 10                       | 4    | 52    | 66         | 39                               | 333  | 19    | 391        | 22                       | 17   | 22    | 61         | 71                               | 209  | 36    | 316        | 834        |
| Total Volume                                               | 68                       | 82   | 463   | 613        | 119                              | 1330 | 167   | 1616       | 81                       | 124  | 66    | 271        | 359                              | 930  | 101   | 1390       | 3890       |
| % App. Total                                               | 11.1                     | 13.4 | 75.5  |            | 7.4                              | 82.3 | 10.3  |            | 29.9                     | 45.8 | 24.4  |            | 25.8                             | 66.9 | 7.3   |            |            |
| PHF                                                        | .773                     | .707 | .702  | .709       | .763                             | .906 | .557  | .918       | .920                     | .500 | .750  | .706       | .718                             | .915 | .701  | .907       | .882       |

City of Lake Elsinore  
N/S: Dexter Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKEDECEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 07:00 AM |      |      |      | 07:00 AM |      |      |      | 07:00 AM |      |      |      | 07:00 AM |      |      |      |
|--------------|----------|------|------|------|----------|------|------|------|----------|------|------|------|----------|------|------|------|
| +0 mins.     | 15       | 27   | 134  | 176  | 24       | 341  | 75   | 440  | 22       | 62   | 12   | 96   | 125      | 236  | 15   | 376  |
| +15 mins.    | 22       | 29   | 165  | 216  | 21       | 367  | 49   | 437  | 19       | 33   | 15   | 67   | 105      | 254  | 24   | 383  |
| +30 mins.    | 21       | 22   | 112  | 155  | 35       | 289  | 24   | 348  | 18       | 12   | 17   | 47   | 58       | 231  | 26   | 315  |
| +45 mins.    | 10       | 4    | 52   | 66   | 39       | 333  | 19   | 391  | 22       | 17   | 22   | 61   | 71       | 209  | 36   | 316  |
| Total Volume | 68       | 82   | 463  | 613  | 119      | 1330 | 167  | 1616 | 81       | 124  | 66   | 271  | 359      | 930  | 101  | 1390 |
| % App. Total | 11.1     | 13.4 | 75.5 |      | 7.4      | 82.3 | 10.3 |      | 29.9     | 45.8 | 24.4 |      | 25.8     | 66.9 | 7.3  |      |
| PHF          | .773     | .707 | .702 | .709 | .763     | .906 | .557 | .918 | .920     | .500 | .750 | .706 | .718     | .915 | .701 | .907 |

City of Lake Elsinore  
N/S: Dexter Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKEDECEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

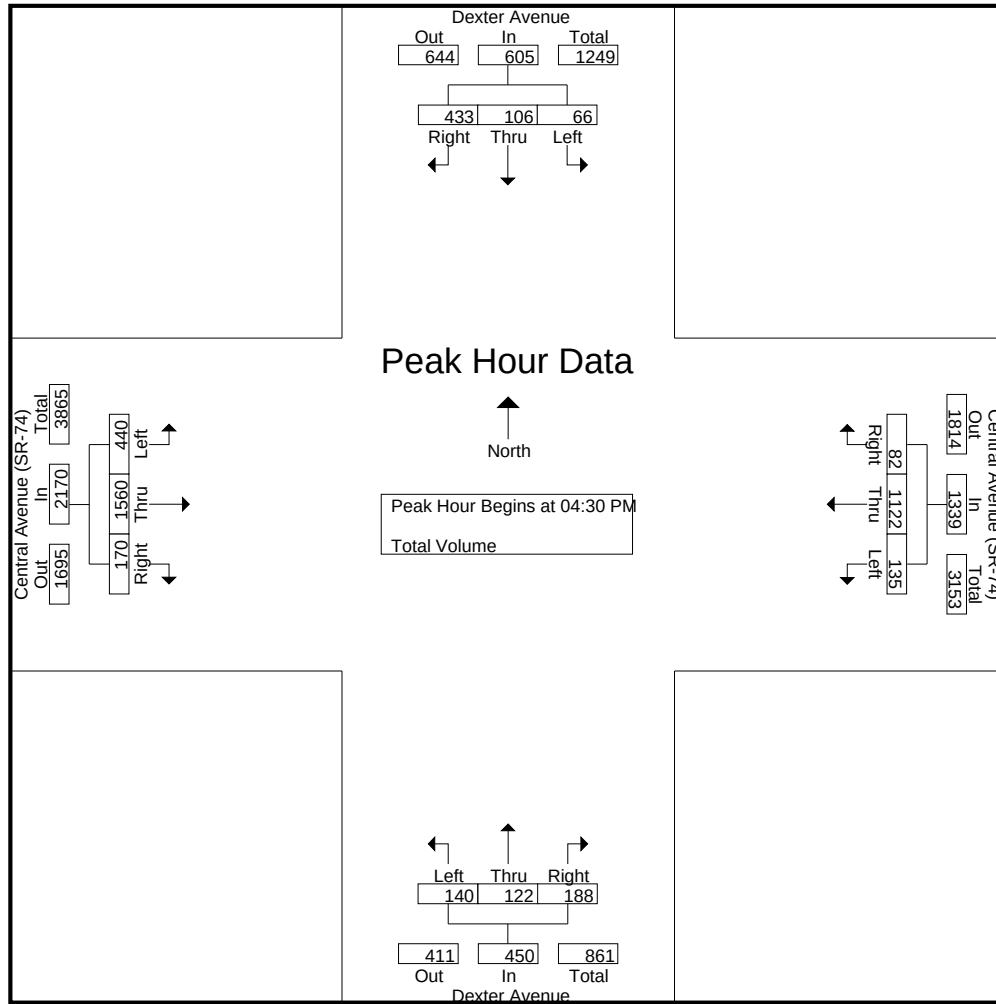
Groups Printed- Total Volume

|             | Dexter Avenue<br>Southbound |      |       |            | Central Avenue (SR-74)<br>Westbound |      |       |            | Dexter Avenue<br>Northbound |      |       |            | Central Avenue (SR-74)<br>Eastbound |      |       |            |            |
|-------------|-----------------------------|------|-------|------------|-------------------------------------|------|-------|------------|-----------------------------|------|-------|------------|-------------------------------------|------|-------|------------|------------|
| Start Time  | Left                        | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Left                                | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 18                          | 16   | 89    | 123        | 33                                  | 327  | 23    | 383        | 31                          | 31   | 35    | 97         | 96                                  | 370  | 40    | 506        | 1109       |
| 04:15 PM    | 14                          | 11   | 100   | 125        | 36                                  | 318  | 16    | 370        | 31                          | 18   | 38    | 87         | 111                                 | 369  | 40    | 520        | 1102       |
| 04:30 PM    | 13                          | 23   | 111   | 147        | 31                                  | 302  | 18    | 351        | 30                          | 34   | 38    | 102        | 111                                 | 386  | 41    | 538        | 1138       |
| 04:45 PM    | 16                          | 19   | 103   | 138        | 26                                  | 271  | 22    | 319        | 34                          | 31   | 50    | 115        | 104                                 | 388  | 42    | 534        | 1106       |
| Total       | 61                          | 69   | 403   | 533        | 126                                 | 1218 | 79    | 1423       | 126                         | 114  | 161   | 401        | 422                                 | 1513 | 163   | 2098       | 4455       |
| 05:00 PM    | 23                          | 31   | 130   | 184        | 32                                  | 288  | 27    | 347        | 40                          | 29   | 42    | 111        | 109                                 | 394  | 39    | 542        | 1184       |
| 05:15 PM    | 14                          | 33   | 89    | 136        | 46                                  | 261  | 15    | 322        | 36                          | 28   | 58    | 122        | 116                                 | 392  | 48    | 556        | 1136       |
| 05:30 PM    | 10                          | 17   | 76    | 103        | 33                                  | 277  | 15    | 325        | 49                          | 28   | 47    | 124        | 96                                  | 404  | 50    | 550        | 1102       |
| 05:45 PM    | 28                          | 14   | 89    | 131        | 34                                  | 275  | 19    | 328        | 22                          | 24   | 42    | 88         | 119                                 | 369  | 46    | 534        | 1081       |
| Total       | 75                          | 95   | 384   | 554        | 145                                 | 1101 | 76    | 1322       | 147                         | 109  | 189   | 445        | 440                                 | 1559 | 183   | 2182       | 4503       |
| Grand Total | 136                         | 164  | 787   | 1087       | 271                                 | 2319 | 155   | 2745       | 273                         | 223  | 350   | 846        | 862                                 | 3072 | 346   | 4280       | 8958       |
| Apprch %    | 12.5                        | 15.1 | 72.4  |            | 9.9                                 | 84.5 | 5.6   |            | 32.3                        | 26.4 | 41.4  |            | 20.1                                | 71.8 | 8.1   |            |            |
| Total %     | 1.5                         | 1.8  | 8.8   | 12.1       | 3                                   | 25.9 | 1.7   | 30.6       | 3                           | 2.5  | 3.9   | 9.4        | 9.6                                 | 34.3 | 3.9   | 47.8       |            |

|                                                            | Dexter Avenue<br>Southbound |           |            |            | Central Avenue (SR-74)<br>Westbound |            |           |            | Dexter Avenue<br>Northbound |           |           |            | Central Avenue (SR-74)<br>Eastbound |            |           |            |             |
|------------------------------------------------------------|-----------------------------|-----------|------------|------------|-------------------------------------|------------|-----------|------------|-----------------------------|-----------|-----------|------------|-------------------------------------|------------|-----------|------------|-------------|
| Start Time                                                 | Left                        | Thru      | Right      | App. Total | Left                                | Thru       | Right     | App. Total | Left                        | Thru      | Right     | App. Total | Left                                | Thru       | Right     | App. Total | Int. Total  |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                             |           |            |            |                                     |            |           |            |                             |           |           |            |                                     |            |           |            |             |
| Peak Hour for Entire Intersection Begins at 04:30 PM       |                             |           |            |            |                                     |            |           |            |                             |           |           |            |                                     |            |           |            |             |
| 04:30 PM                                                   | 13                          | 23        | 111        | 147        | 31                                  | <b>302</b> | 18        | <b>351</b> | 30                          | <b>34</b> | 38        | 102        | 111                                 | 386        | 41        | 538        | 1138        |
| 04:45 PM                                                   | 16                          | 19        | 103        | 138        | 26                                  | 271        | 22        | 319        | 34                          | 31        | 50        | 115        | 104                                 | 388        | 42        | 534        | 1106        |
| 05:00 PM                                                   | <b>23</b>                   | 31        | <b>130</b> | <b>184</b> | 32                                  | 288        | <b>27</b> | 347        | <b>40</b>                   | 29        | 42        | 111        | 109                                 | <b>394</b> | 39        | 542        | <b>1184</b> |
| 05:15 PM                                                   | 14                          | <b>33</b> | 89         | 136        | <b>46</b>                           | 261        | 15        | 322        | 36                          | 28        | <b>58</b> | <b>122</b> | <b>116</b>                          | 392        | <b>48</b> | <b>556</b> | 1136        |
| Total Volume                                               | 66                          | 106       | 433        | 605        | 135                                 | 1122       | 82        | 1339       | 140                         | 122       | 188       | 450        | 440                                 | 1560       | 170       | 2170       | 4564        |
| % App. Total                                               | 10.9                        | 17.5      | 71.6       |            | 10.1                                | 83.8       | 6.1       |            | 31.1                        | 27.1      | 41.8      |            | 20.3                                | 71.9       | 7.8       |            |             |
| PHF                                                        | .717                        | .803      | .833       | .822       | .734                                | .929       | .759      | .954       | .875                        | .897      | .810      | .922       | .948                                | .990       | .885      | .976       | .964        |

City of Lake Elsinore  
N/S: Dexter Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKEDECEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 04:30 PM  |           |            |            | 04:00 PM  |            |           |            | 04:45 PM  |           |           |            | 04:45 PM   |            |           |            |
|--------------|-----------|-----------|------------|------------|-----------|------------|-----------|------------|-----------|-----------|-----------|------------|------------|------------|-----------|------------|
| +0 mins.     | 13        | 23        | 111        | 147        | 33        | <b>327</b> | <b>23</b> | <b>383</b> | 34        | <b>31</b> | 50        | 115        | 104        | 388        | 42        | 534        |
| +15 mins.    | 16        | 19        | 103        | 138        | <b>36</b> | 318        | 16        | 370        | 40        | 29        | 42        | 111        | 109        | 394        | 39        | 542        |
| +30 mins.    | <b>23</b> | 31        | <b>130</b> | <b>184</b> | 31        | 302        | 18        | 351        | 36        | 28        | <b>58</b> | 122        | <b>116</b> | 392        | 48        | <b>556</b> |
| +45 mins.    | 14        | <b>33</b> | 89         | 136        | 26        | 271        | 22        | 319        | <b>49</b> | 28        | 47        | <b>124</b> | 96         | <b>404</b> | <b>50</b> | 550        |
| Total Volume | 66        | 106       | 433        | 605        | 126       | 1218       | 79        | 1423       | 159       | 116       | 197       | 472        | 425        | 1578       | 179       | 2182       |
| % App. Total | 10.9      | 17.5      | 71.6       |            | 8.9       | 85.6       | 5.6       |            | 33.7      | 24.6      | 41.7      |            | 19.5       | 72.3       | 8.2       |            |
| PHF          | .717      | .803      | .833       | .822       | .875      | .931       | .859      | .929       | .811      | .935      | .849      | .952       | .916       | .976       | .895      | .981       |

City of Lake Elsinore  
N/S: Cambern Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKECACEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

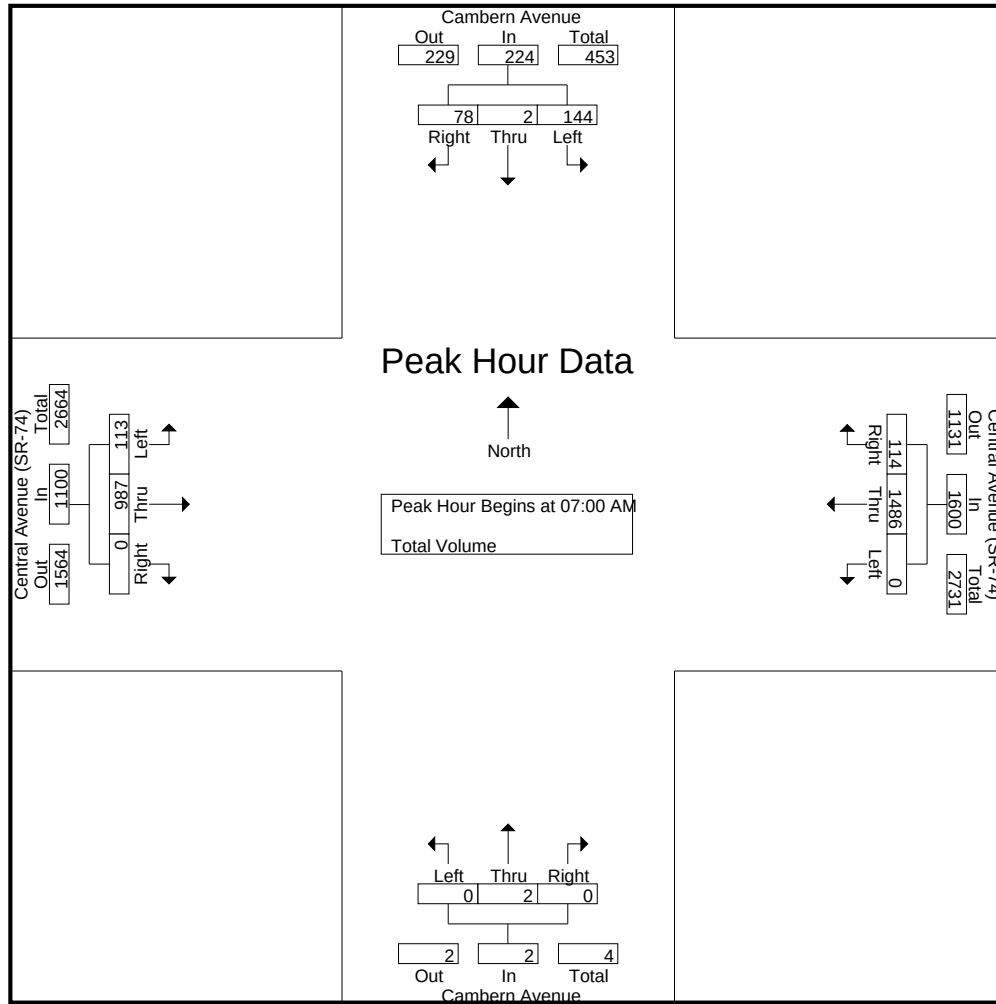
Groups Printed- Total Volume

|             | Cambern Avenue Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | Cambern Avenue Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 26                        | 1    | 21    | 48         | 0                                | 401  | 39    | 440        | 0                         | 0    | 0     | 0          | 33                               | 237  | 0     | 270        | 758        |
| 07:15 AM    | 54                        | 1    | 22    | 77         | 0                                | 375  | 34    | 409        | 0                         | 0    | 0     | 0          | 33                               | 272  | 0     | 305        | 791        |
| 07:30 AM    | 38                        | 0    | 24    | 62         | 0                                | 310  | 14    | 324        | 0                         | 1    | 0     | 1          | 22                               | 256  | 0     | 278        | 665        |
| 07:45 AM    | 26                        | 0    | 11    | 37         | 0                                | 400  | 27    | 427        | 0                         | 1    | 0     | 1          | 25                               | 222  | 0     | 247        | 712        |
| Total       | 144                       | 2    | 78    | 224        | 0                                | 1486 | 114   | 1600       | 0                         | 2    | 0     | 2          | 113                              | 987  | 0     | 1100       | 2926       |
| 08:00 AM    | 21                        | 1    | 18    | 40         | 0                                | 308  | 25    | 333        | 0                         | 0    | 0     | 0          | 24                               | 176  | 0     | 200        | 573        |
| 08:15 AM    | 14                        | 0    | 10    | 24         | 0                                | 297  | 26    | 323        | 0                         | 0    | 1     | 1          | 15                               | 180  | 0     | 195        | 543        |
| 08:30 AM    | 15                        | 0    | 9     | 24         | 0                                | 262  | 25    | 287        | 0                         | 0    | 0     | 0          | 25                               | 167  | 1     | 193        | 504        |
| 08:45 AM    | 14                        | 0    | 11    | 25         | 0                                | 218  | 21    | 239        | 0                         | 0    | 2     | 2          | 27                               | 151  | 1     | 179        | 445        |
| Total       | 64                        | 1    | 48    | 113        | 0                                | 1085 | 97    | 1182       | 0                         | 0    | 3     | 3          | 91                               | 674  | 2     | 767        | 2065       |
| Grand Total | 208                       | 3    | 126   | 337        | 0                                | 2571 | 211   | 2782       | 0                         | 2    | 3     | 5          | 204                              | 1661 | 2     | 1867       | 4991       |
| Apprch %    | 61.7                      | 0.9  | 37.4  |            | 0                                | 92.4 | 7.6   |            | 0                         | 40   | 60    |            | 10.9                             | 89   | 0.1   |            |            |
| Total %     | 4.2                       | 0.1  | 2.5   | 6.8        | 0                                | 51.5 | 4.2   | 55.7       | 0                         | 0    | 0.1   | 0.1        | 4.1                              | 33.3 | 0     | 37.4       |            |

|                                                            | Cambern Avenue Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | Cambern Avenue Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |                           |      |       |            |                                  |      |       |            |                           |      |       |            |                                  |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 07:00 AM       |                           |      |       |            |                                  |      |       |            |                           |      |       |            |                                  |      |       |            |            |
| 07:00 AM                                                   | 26                        | 1    | 21    | 48         | 0                                | 401  | 39    | 440        | 0                         | 0    | 0     | 0          | 33                               | 237  | 0     | 270        | 758        |
| 07:15 AM                                                   | 54                        | 1    | 22    | 77         | 0                                | 375  | 34    | 409        | 0                         | 0    | 0     | 0          | 33                               | 272  | 0     | 305        | 791        |
| 07:30 AM                                                   | 38                        | 0    | 24    | 62         | 0                                | 310  | 14    | 324        | 0                         | 1    | 0     | 1          | 22                               | 256  | 0     | 278        | 665        |
| 07:45 AM                                                   | 26                        | 0    | 11    | 37         | 0                                | 400  | 27    | 427        | 0                         | 1    | 0     | 1          | 25                               | 222  | 0     | 247        | 712        |
| Total Volume                                               | 144                       | 2    | 78    | 224        | 0                                | 1486 | 114   | 1600       | 0                         | 2    | 0     | 2          | 113                              | 987  | 0     | 1100       | 2926       |
| % App. Total                                               | 64.3                      | 0.9  | 34.8  |            | 0                                | 92.9 | 7.1   |            | 0                         | 100  | 0     |            | 10.3                             | 89.7 | 0     |            |            |
| PHF                                                        | .667                      | .500 | .813  | .727       | .000                             | .926 | .731  | .909       | .000                      | .500 | .000  | .500       | .856                             | .907 | .000  | .902       | .925       |

City of Lake Elsinore  
N/S: Cambern Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKECACEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 07:00 AM |      |      |      | 07:00 AM |      |      |      | 07:30 AM |      |      |      | 07:00 AM |      |      |      |
|--------------|----------|------|------|------|----------|------|------|------|----------|------|------|------|----------|------|------|------|
| +0 mins.     | 26       | 1    | 21   | 48   | 0        | 401  | 39   | 440  | 0        | 1    | 0    | 1    | 33       | 237  | 0    | 270  |
| +15 mins.    | 54       | 1    | 22   | 77   | 0        | 375  | 34   | 409  | 0        | 1    | 0    | 1    | 33       | 272  | 0    | 305  |
| +30 mins.    | 38       | 0    | 24   | 62   | 0        | 310  | 14   | 324  | 0        | 0    | 0    | 0    | 22       | 256  | 0    | 278  |
| +45 mins.    | 26       | 0    | 11   | 37   | 0        | 400  | 27   | 427  | 0        | 0    | 1    | 1    | 25       | 222  | 0    | 247  |
| Total Volume | 144      | 2    | 78   | 224  | 0        | 1486 | 114  | 1600 | 0        | 2    | 1    | 3    | 113      | 987  | 0    | 1100 |
| % App. Total | 64.3     | 0.9  | 34.8 |      | 0        | 92.9 | 7.1  |      | 0        | 66.7 | 33.3 |      | 10.3     | 89.7 | 0    |      |
| PHF          | .667     | .500 | .813 | .727 | .000     | .926 | .731 | .909 | .000     | .500 | .250 | .750 | .856     | .907 | .000 | .902 |

City of Lake Elsinore  
N/S: Cambern Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKECACEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

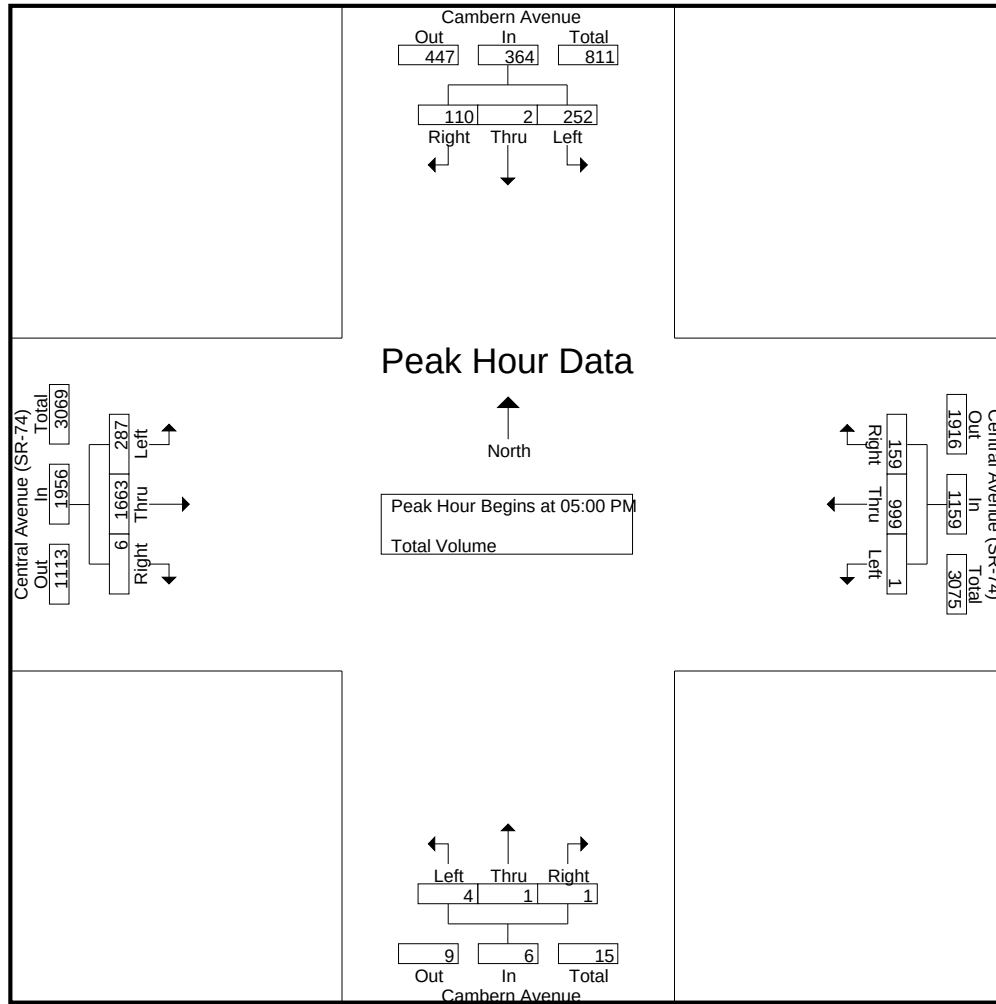
|             | Cambern Avenue Southbound |      |       |            | Central Avenue (SR-74) Westbound |      |       |            | Cambern Avenue Northbound |      |       |            | Central Avenue (SR-74) Eastbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|---------------------------|------|-------|------------|----------------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                             | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 54                        | 1    | 34    | 89         | 1                                | 260  | 33    | 294        | 0                         | 0    | 0     | 0          | 72                               | 375  | 0     | 447        | 830        |
| 04:15 PM    | 53                        | 1    | 27    | 81         | 0                                | 291  | 43    | 334        | 0                         | 1    | 0     | 1          | 74                               | 350  | 1     | 425        | 841        |
| 04:30 PM    | 49                        | 0    | 37    | 86         | 1                                | 237  | 39    | 277        | 0                         | 0    | 0     | 0          | 81                               | 343  | 1     | 425        | 788        |
| 04:45 PM    | 50                        | 0    | 25    | 75         | 0                                | 266  | 30    | 296        | 0                         | 0    | 0     | 0          | 59                               | 412  | 0     | 471        | 842        |
| Total       | 206                       | 2    | 123   | 331        | 2                                | 1054 | 145   | 1201       | 0                         | 1    | 0     | 1          | 286                              | 1480 | 2     | 1768       | 3301       |
| 05:00 PM    | 60                        | 2    | 31    | 93         | 1                                | 243  | 42    | 286        | 0                         | 0    | 1     | 1          | 65                               | 419  | 4     | 488        | 868        |
| 05:15 PM    | 55                        | 0    | 31    | 86         | 0                                | 277  | 46    | 323        | 2                         | 0    | 0     | 2          | 92                               | 413  | 1     | 506        | 917        |
| 05:30 PM    | 78                        | 0    | 22    | 100        | 0                                | 214  | 30    | 244        | 1                         | 1    | 0     | 2          | 72                               | 411  | 0     | 483        | 829        |
| 05:45 PM    | 59                        | 0    | 26    | 85         | 0                                | 265  | 41    | 306        | 1                         | 0    | 0     | 1          | 58                               | 420  | 1     | 479        | 871        |
| Total       | 252                       | 2    | 110   | 364        | 1                                | 999  | 159   | 1159       | 4                         | 1    | 1     | 6          | 287                              | 1663 | 6     | 1956       | 3485       |
| Grand Total | 458                       | 4    | 233   | 695        | 3                                | 2053 | 304   | 2360       | 4                         | 2    | 1     | 7          | 573                              | 3143 | 8     | 3724       | 6786       |
| Apprch %    | 65.9                      | 0.6  | 33.5  |            | 0.1                              | 87   | 12.9  |            | 57.1                      | 28.6 | 14.3  |            | 15.4                             | 84.4 | 0.2   |            |            |
| Total %     | 6.7                       | 0.1  | 3.4   | 10.2       | 0                                | 30.3 | 4.5   | 34.8       | 0.1                       | 0    | 0     | 0.1        | 8.4                              | 46.3 | 0.1   | 54.9       |            |

|                                                            | Cambern Avenue Southbound |          |           |            | Central Avenue (SR-74) Westbound |            |           |            | Cambern Avenue Northbound |          |          |            | Central Avenue (SR-74) Eastbound |            |          |            |            |
|------------------------------------------------------------|---------------------------|----------|-----------|------------|----------------------------------|------------|-----------|------------|---------------------------|----------|----------|------------|----------------------------------|------------|----------|------------|------------|
| Start Time                                                 | Left                      | Thru     | Right     | App. Total | Left                             | Thru       | Right     | App. Total | Left                      | Thru     | Right    | App. Total | Left                             | Thru       | Right    | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |                           |          |           |            |                                  |            |           |            |                           |          |          |            |                                  |            |          |            |            |
| Peak Hour for Entire Intersection Begins at 05:00 PM       |                           |          |           |            |                                  |            |           |            |                           |          |          |            |                                  |            |          |            |            |
| 05:00 PM                                                   | 60                        | <b>2</b> | <b>31</b> | 93         | <b>1</b>                         | 243        | 42        | 286        | 0                         | 0        | <b>1</b> | 1          | 65                               | 419        | <b>4</b> | 488        | 868        |
| 05:15 PM                                                   | 55                        | 0        | 31        | 86         | 0                                | <b>277</b> | <b>46</b> | <b>323</b> | <b>2</b>                  | 0        | 0        | <b>2</b>   | <b>92</b>                        | 413        | 1        | <b>506</b> | <b>917</b> |
| 05:30 PM                                                   | <b>78</b>                 | 0        | 22        | <b>100</b> | 0                                | 214        | 30        | 244        | 1                         | <b>1</b> | 0        | 2          | 72                               | 411        | 0        | 483        | 829        |
| 05:45 PM                                                   | 59                        | 0        | 26        | 85         | 0                                | 265        | 41        | 306        | 1                         | 0        | 0        | 1          | 58                               | <b>420</b> | 1        | 479        | 871        |
| Total Volume                                               | 252                       | 2        | 110       | 364        | 1                                | 999        | 159       | 1159       | 4                         | 1        | 1        | 6          | 287                              | 1663       | 6        | 1956       | 3485       |
| % App. Total                                               | 69.2                      | 0.5      | 30.2      |            | 0.1                              | 86.2       | 13.7      |            | 66.7                      | 16.7     | 16.7     |            | 14.7                             | 85         | 0.3      |            |            |
| PHF                                                        | .808                      | .250     | .887      | .910       | .250                             | .902       | .864      | .897       | .500                      | .250     | .250     | .750       | .780                             | .990       | .375     | .966       | .950       |



City of Lake Elsinore  
N/S: Cambern Avenue  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKECACEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 05:00 PM |      |      |      | 04:00 PM |      |      |      | 05:00 PM |      |      |      | 05:00 PM |      |      |      |
|--------------|----------|------|------|------|----------|------|------|------|----------|------|------|------|----------|------|------|------|
| +0 mins.     | 60       | 2    | 31   | 93   | 1        | 260  | 33   | 294  | 0        | 0    | 1    | 1    | 65       | 419  | 4    | 488  |
| +15 mins.    | 55       | 0    | 31   | 86   | 0        | 291  | 43   | 334  | 2        | 0    | 0    | 2    | 92       | 413  | 1    | 506  |
| +30 mins.    | 78       | 0    | 22   | 100  | 1        | 237  | 39   | 277  | 1        | 1    | 0    | 2    | 72       | 411  | 0    | 483  |
| +45 mins.    | 59       | 0    | 26   | 85   | 0        | 266  | 30   | 296  | 1        | 0    | 0    | 1    | 58       | 420  | 1    | 479  |
| Total Volume | 252      | 2    | 110  | 364  | 2        | 1054 | 145  | 1201 | 4        | 1    | 1    | 6    | 287      | 1663 | 6    | 1956 |
| % App. Total | 69.2     | 0.5  | 30.2 |      | 0.2      | 87.8 | 12.1 |      | 66.7     | 16.7 | 16.7 |      | 14.7     | 85   | 0.3  |      |
| PHF          | .808     | .250 | .887 | .910 | .500     | .905 | .843 | .899 | .500     | .250 | .250 | .750 | .780     | .990 | .375 | .966 |

City of Lake Elsinore  
N/S: Rosetta Canyon Drive  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKERCEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

|             | Central Avenue (SR-74)<br>Westbound |      |            | Rosetta Canyon Drive<br>Northbound |       |            | Central Avenue (SR-74)<br>Eastbound |       |            |            |
|-------------|-------------------------------------|------|------------|------------------------------------|-------|------------|-------------------------------------|-------|------------|------------|
| Start Time  | Left                                | Thru | App. Total | Left                               | Right | App. Total | Thru                                | Right | App. Total | Int. Total |
| 07:00 AM    | 5                                   | 325  | 330        | 92                                 | 11    | 103        | 224                                 | 44    | 268        | 701        |
| 07:15 AM    | 18                                  | 362  | 380        | 51                                 | 13    | 64         | 265                                 | 92    | 357        | 801        |
| 07:30 AM    | 76                                  | 247  | 323        | 55                                 | 29    | 84         | 232                                 | 108   | 340        | 747        |
| 07:45 AM    | 75                                  | 245  | 320        | 117                                | 65    | 182        | 188                                 | 55    | 243        | 745        |
| Total       | 174                                 | 1179 | 1353       | 315                                | 118   | 433        | 909                                 | 299   | 1208       | 2994       |
| 08:00 AM    | 14                                  | 244  | 258        | 77                                 | 50    | 127        | 191                                 | 27    | 218        | 603        |
| 08:15 AM    | 4                                   | 261  | 265        | 38                                 | 13    | 51         | 184                                 | 12    | 196        | 512        |
| 08:30 AM    | 4                                   | 209  | 213        | 42                                 | 8     | 50         | 168                                 | 11    | 179        | 442        |
| 08:45 AM    | 5                                   | 185  | 190        | 22                                 | 3     | 25         | 156                                 | 16    | 172        | 387        |
| Total       | 27                                  | 899  | 926        | 179                                | 74    | 253        | 699                                 | 66    | 765        | 1944       |
| Grand Total | 201                                 | 2078 | 2279       | 494                                | 192   | 686        | 1608                                | 365   | 1973       | 4938       |
| Apprch %    | 8.8                                 | 91.2 |            | 72                                 | 28    |            | 81.5                                | 18.5  |            |            |
| Total %     | 4.1                                 | 42.1 | 46.2       | 10                                 | 3.9   | 13.9       | 32.6                                | 7.4   | 40         |            |

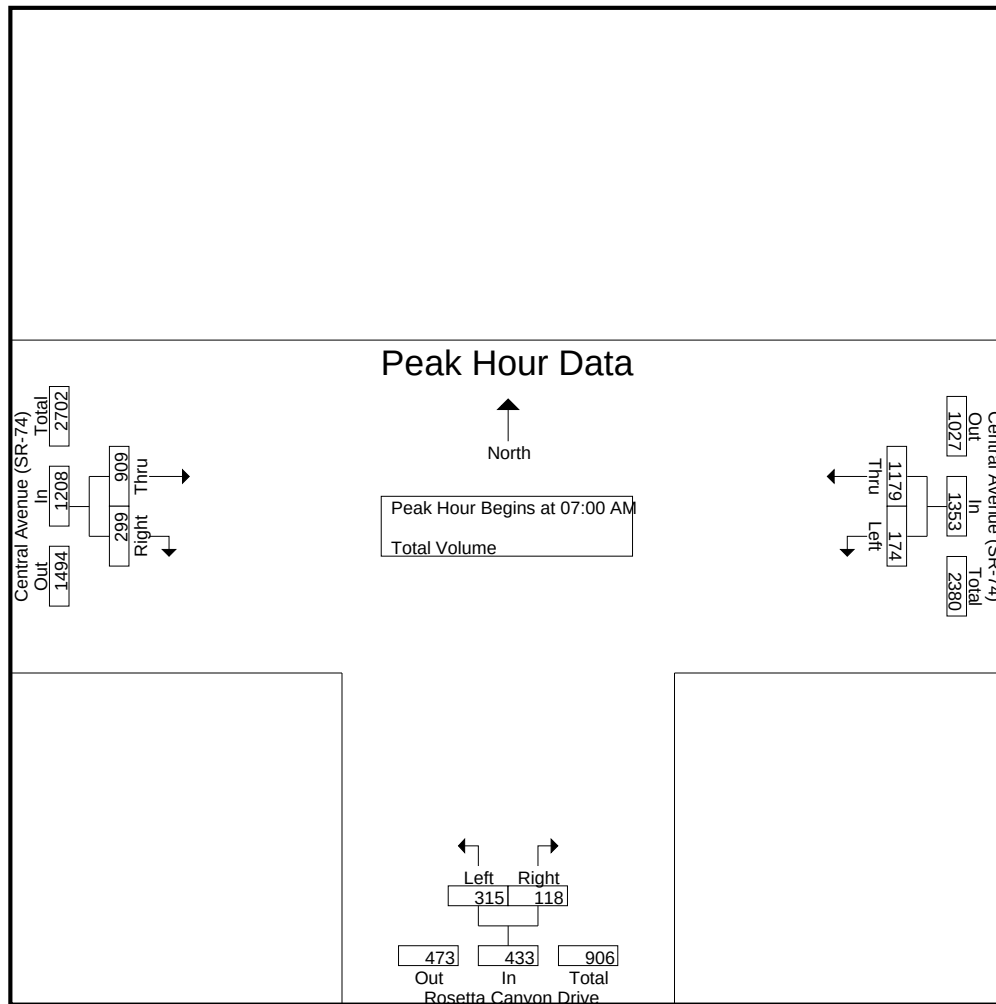
|              | Central Avenue (SR-74)<br>Westbound |            |            | Rosetta Canyon Drive<br>Northbound |           |            | Central Avenue (SR-74)<br>Eastbound |            |            |            |
|--------------|-------------------------------------|------------|------------|------------------------------------|-----------|------------|-------------------------------------|------------|------------|------------|
| Start Time   | Left                                | Thru       | App. Total | Left                               | Right     | App. Total | Thru                                | Right      | App. Total | Int. Total |
| 07:00 AM     | 5                                   | 325        | 330        | 92                                 | 11        | 103        | 224                                 | 44         | 268        | 701        |
| 07:15 AM     | 18                                  | <b>362</b> | <b>380</b> | 51                                 | 13        | 64         | <b>265</b>                          | 92         | <b>357</b> | <b>801</b> |
| 07:30 AM     | <b>76</b>                           | 247        | 323        | 55                                 | 29        | 84         | 232                                 | <b>108</b> | 340        | 747        |
| 07:45 AM     | 75                                  | 245        | 320        | <b>117</b>                         | <b>65</b> | <b>182</b> | 188                                 | 55         | 243        | 745        |
| Total Volume | 174                                 | 1179       | 1353       | 315                                | 118       | 433        | 909                                 | 299        | 1208       | 2994       |
| % App. Total | 12.9                                | 87.1       |            | 72.7                               | 27.3      |            | 75.2                                | 24.8       |            |            |
| PHF          | .572                                | .814       | .890       | .673                               | .454      | .595       | .858                                | .692       | .846       | .934       |

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

City of Lake Elsinore  
N/S: Rosetta Canyon Drive  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKERCCCEAM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 07:00 AM  |            |            | 07:15 AM   |           |            | 07:00 AM   |            |            |
|--------------|-----------|------------|------------|------------|-----------|------------|------------|------------|------------|
| +0 mins.     | 5         | 325        | 330        | 51         | 13        | 64         | 224        | 44         | 268        |
| +15 mins.    | 18        | <b>362</b> | <b>380</b> | 55         | 29        | 84         | <b>265</b> | 92         | <b>357</b> |
| +30 mins.    | <b>76</b> | 247        | 323        | <b>117</b> | <b>65</b> | <b>182</b> | 232        | <b>108</b> | 340        |
| +45 mins.    | 75        | 245        | 320        | 77         | 50        | 127        | 188        | 55         | 243        |
| Total Volume | 174       | 1179       | 1353       | 300        | 157       | 457        | 909        | 299        | 1208       |
| % App. Total | 12.9      | 87.1       |            | 65.6       | 34.4      |            | 75.2       | 24.8       |            |
| PHF          | .572      | .814       | .890       | .641       | .604      | .628       | .858       | .692       | .846       |

City of Lake Elsinore  
N/S: Rosetta Canyon Drive  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKERCEPM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 1

Groups Printed- Total Volume

|             | Central Avenue (SR-74)<br>Westbound |      |            | Rosetta Canyon Drive<br>Northbound |       |            | Central Avenue (SR-74)<br>Eastbound |       |            |            |
|-------------|-------------------------------------|------|------------|------------------------------------|-------|------------|-------------------------------------|-------|------------|------------|
| Start Time  | Left                                | Thru | App. Total | Left                               | Right | App. Total | Thru                                | Right | App. Total | Int. Total |
| 04:00 PM    | 6                                   | 250  | 256        | 29                                 | 6     | 35         | 371                                 | 40    | 411        | 702        |
| 04:15 PM    | 7                                   | 265  | 272        | 36                                 | 5     | 41         | 361                                 | 22    | 383        | 696        |
| 04:30 PM    | 2                                   | 231  | 233        | 36                                 | 4     | 40         | 320                                 | 36    | 356        | 629        |
| 04:45 PM    | 5                                   | 240  | 245        | 26                                 | 2     | 28         | 384                                 | 44    | 428        | 701        |
| Total       | 20                                  | 986  | 1006       | 127                                | 17    | 144        | 1436                                | 142   | 1578       | 2728       |
| 05:00 PM    | 6                                   | 240  | 246        | 32                                 | 5     | 37         | 394                                 | 42    | 436        | 719        |
| 05:15 PM    | 12                                  | 261  | 273        | 24                                 | 9     | 33         | 363                                 | 52    | 415        | 721        |
| 05:30 PM    | 9                                   | 218  | 227        | 33                                 | 5     | 38         | 414                                 | 53    | 467        | 732        |
| 05:45 PM    | 8                                   | 230  | 238        | 26                                 | 6     | 32         | 376                                 | 60    | 436        | 706        |
| Total       | 35                                  | 949  | 984        | 115                                | 25    | 140        | 1547                                | 207   | 1754       | 2878       |
| Grand Total | 55                                  | 1935 | 1990       | 242                                | 42    | 284        | 2983                                | 349   | 3332       | 5606       |
| Apprch %    | 2.8                                 | 97.2 |            | 85.2                               | 14.8  |            | 89.5                                | 10.5  |            |            |
| Total %     | 1                                   | 34.5 | 35.5       | 4.3                                | 0.7   | 5.1        | 53.2                                | 6.2   | 59.4       |            |

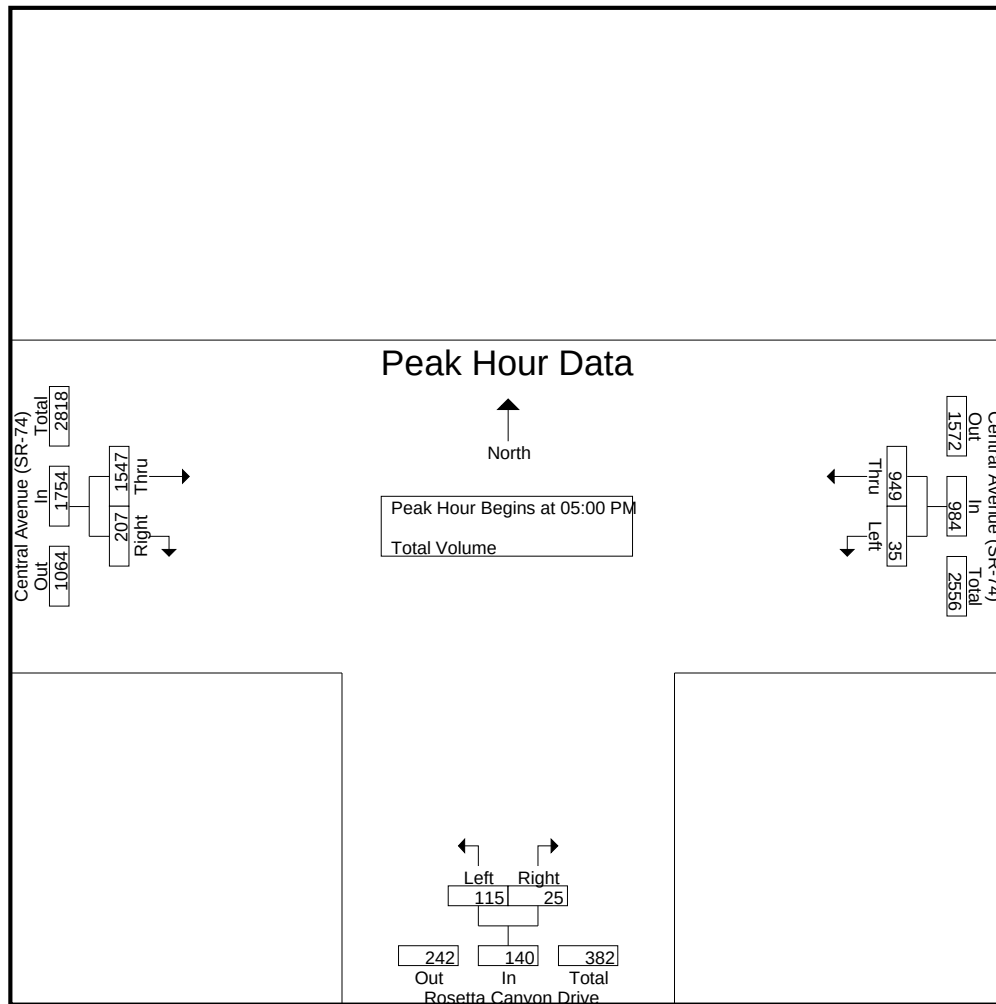
|              | Central Avenue (SR-74)<br>Westbound |            |            | Rosetta Canyon Drive<br>Northbound |          |            | Central Avenue (SR-74)<br>Eastbound |           |            |            |
|--------------|-------------------------------------|------------|------------|------------------------------------|----------|------------|-------------------------------------|-----------|------------|------------|
| Start Time   | Left                                | Thru       | App. Total | Left                               | Right    | App. Total | Thru                                | Right     | App. Total | Int. Total |
| 05:00 PM     | 6                                   | 240        | 246        | 32                                 | 5        | 37         | 394                                 | 42        | 436        | 719        |
| 05:15 PM     | <b>12</b>                           | <b>261</b> | <b>273</b> | 24                                 | <b>9</b> | 33         | 363                                 | 52        | 415        | 721        |
| 05:30 PM     | 9                                   | 218        | 227        | <b>33</b>                          | 5        | <b>38</b>  | <b>414</b>                          | 53        | <b>467</b> | <b>732</b> |
| 05:45 PM     | 8                                   | 230        | 238        | 26                                 | 6        | 32         | 376                                 | <b>60</b> | 436        | 706        |
| Total Volume | 35                                  | 949        | 984        | 115                                | 25       | 140        | 1547                                | 207       | 1754       | 2878       |
| % App. Total | 3.6                                 | 96.4       |            | 82.1                               | 17.9     |            | 88.2                                | 11.8      |            |            |
| PHF          | .729                                | .909       | .901       | .871                               | .694     | .921       | .934                                | .863      | .939       | .983       |

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

City of Lake Elsinore  
N/S: Rosetta Canyon Drive  
E/W: Central Avenue (SR-74)  
Weather: Clear

File Name : LKERCCPEM  
Site Code : 10515000  
Start Date : 11/19/2015  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

|              | 04:00 PM |            |            | 04:15 PM  |          |           | 05:00 PM   |           |            |
|--------------|----------|------------|------------|-----------|----------|-----------|------------|-----------|------------|
| +0 mins.     | 6        | 250        | 256        | <b>36</b> | <b>5</b> | <b>41</b> | 394        | 42        | 436        |
| +15 mins.    | <b>7</b> | <b>265</b> | <b>272</b> | 36        | 4        | 40        | 363        | 52        | 415        |
| +30 mins.    | 2        | 231        | 233        | 26        | 2        | 28        | <b>414</b> | 53        | <b>467</b> |
| +45 mins.    | 5        | 240        | 245        | 32        | 5        | 37        | 376        | <b>60</b> | 436        |
| Total Volume | 20       | 986        | 1006       | 130       | 16       | 146       | 1547       | 207       | 1754       |
| % App. Total | 2        | 98         |            | 89        | 11       |           | 88.2       | 11.8      |            |
| PHF          | .714     | .930       | .925       | .903      | .800     | .890      | .934       | .863      | .939       |

## **Appendix C**

MUTCD Signal Warrant Worksheets

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing Conditions**MAJOR STREET: **Riverside Dr** ADT = **23,598** Lanes= **1**MINOR STREET: **Strickland Ave - Gunnerson St** ADT = **852** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                                | RURAL                      | XX           | Minimum Requirements<br>EADT                                      |        |                                                                                       |       |
|--------------------------------------------------------------------------------------|----------------------------|--------------|-------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|-------|
| <b>1A - Minimum Vehicular Traffic</b>                                                |                            |              | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |       |
| Number of lanes for moving<br>traffic on each approach.                              |                            |              |                                                                   |        |                                                                                       |       |
| Major Street                                                                         |                            | Minor Street | Urban                                                             | Rural  | Urban                                                                                 | Rural |
| 1                                                                                    | 23,598                     | 1            | 852                                                               | 8,000  | 5,600 *                                                                               | 2,400 |
| 2 or More                                                                            |                            | 1            |                                                                   | 9,600  | 6,720                                                                                 | 2,400 |
| 2 or More                                                                            |                            | 2 or More    |                                                                   | 9,600  | 6,720                                                                                 | 3,200 |
| 1                                                                                    |                            | 2 or More    |                                                                   | 8,000  | 5,600                                                                                 | 3,200 |
| <b>1B - Interruption of Continuous Traffic</b>                                       |                            |              | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |       |
| Number of lanes for moving<br>traffic on each approach.                              |                            |              |                                                                   |        |                                                                                       |       |
| Major Street                                                                         |                            | Minor Street | Urban                                                             | Rural  | Urban                                                                                 | Rural |
| 1                                                                                    | 23,598                     | 1            | 852                                                               | 12,000 | 8,400 *                                                                               | 1,200 |
| 2 or More                                                                            |                            | 1            |                                                                   | 14,400 | 10,080                                                                                | 1,200 |
| 2 or More                                                                            |                            | 2 or More    |                                                                   | 14,400 | 10,080                                                                                | 1,600 |
| 1                                                                                    |                            | 2 or More    |                                                                   | 12,000 | 8,400                                                                                 | 1,600 |
| <b>1A&amp;B - Combinations</b>                                                       |                            |              |                                                                   |        |                                                                                       |       |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |       |
| <u>No one warrant satisfied</u> , but following<br>warrants fulfilled 80% or more... |                            |              | 2 Warrants                                                        |        | 2 Warrants                                                                            |       |
| 51%                                                                                  | 100%                       |              |                                                                   |        |                                                                                       |       |
| 1A                                                                                   | 1B                         |              |                                                                   |        |                                                                                       |       |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions - AM Peak Hour**

Major Street Name = **Riverside Drive**

Total of Both Approaches (VPH) = **1509**

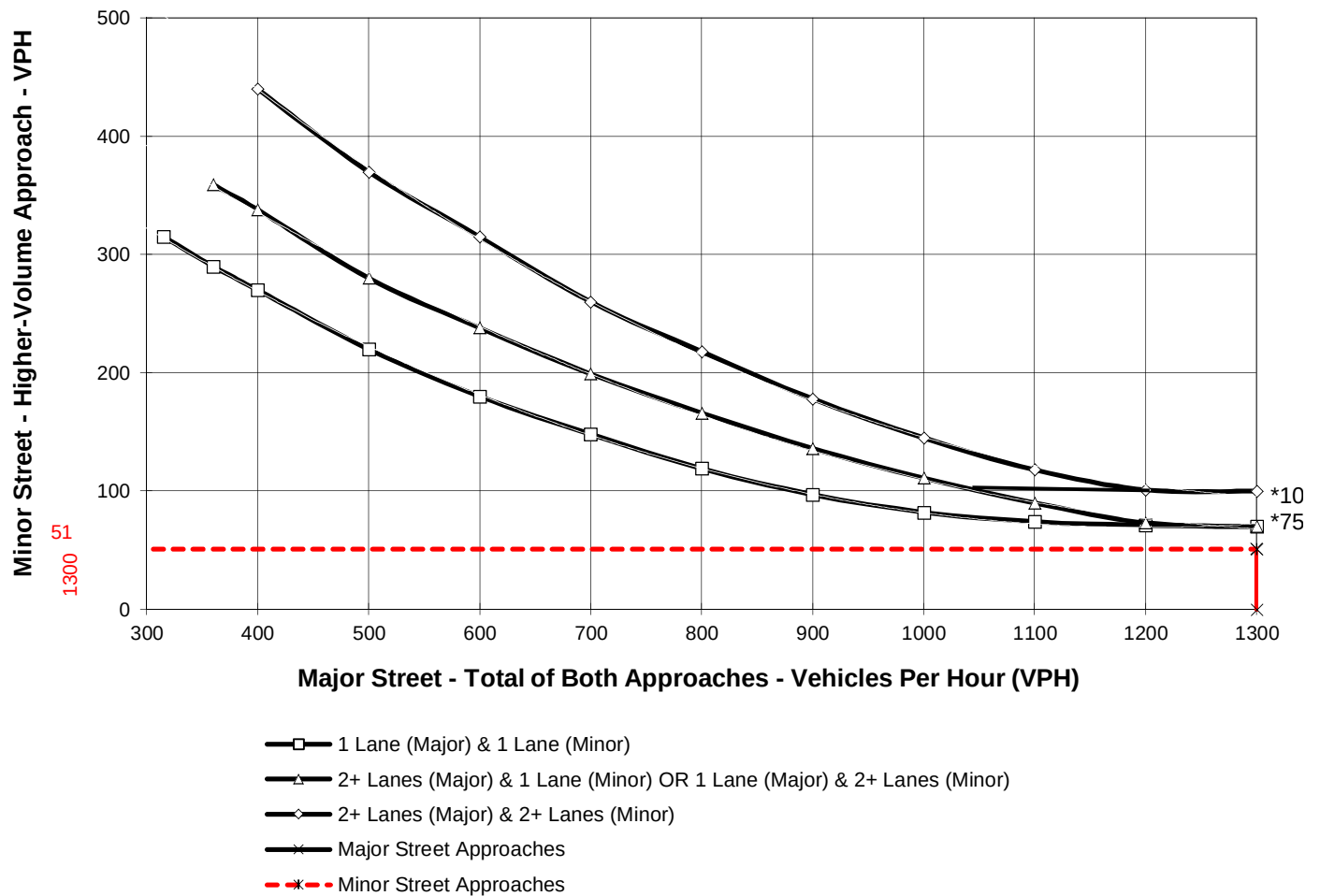
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Strickland Ave - Gunnerson**

High Volume Approach (VPH) = **51**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.



## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions - PM Peak Hour**

Major Street Name = **Riverside Drive**

Total of Both Approaches (VPH) = **2010**

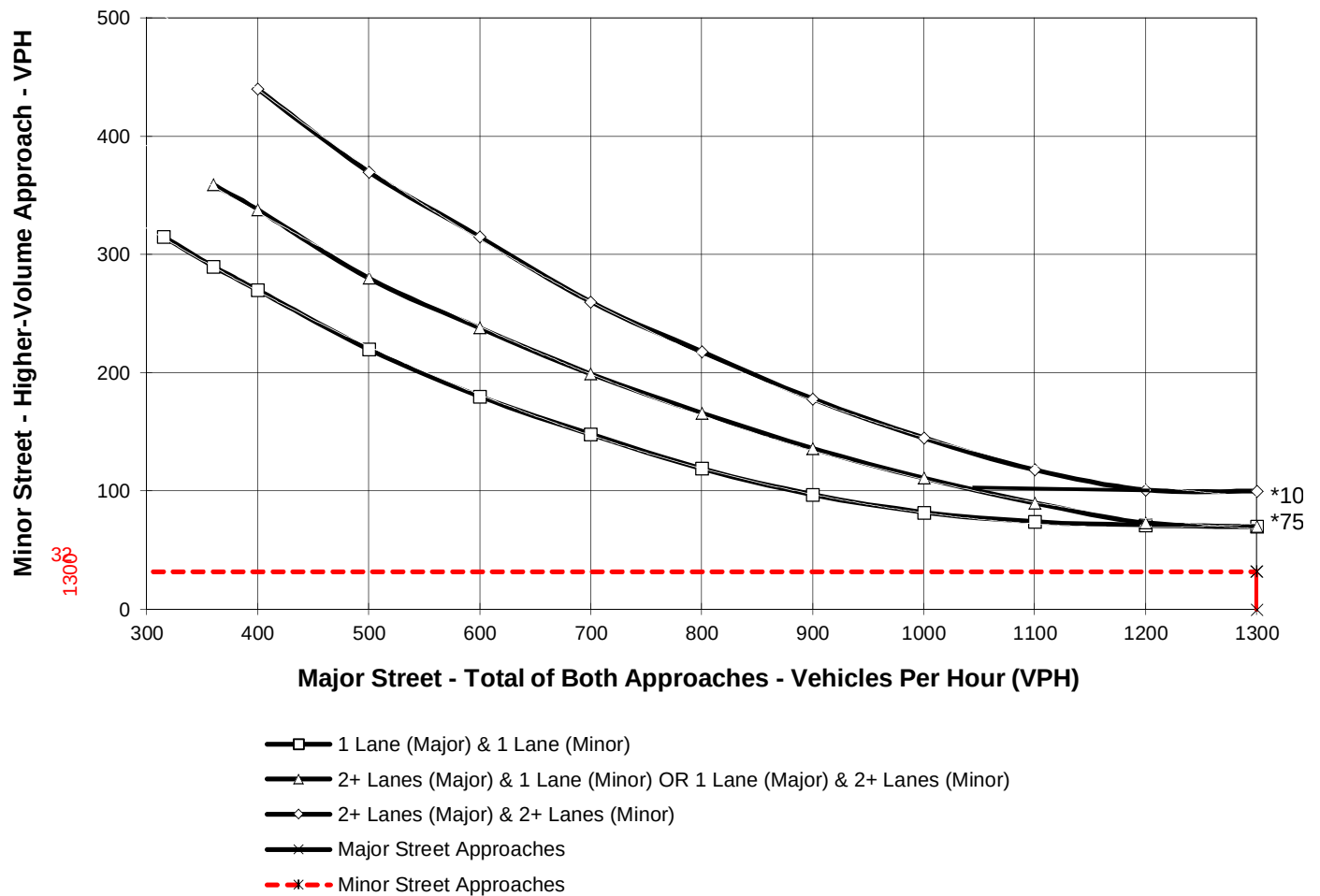
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Strickland Ave - Gunnerson**

High Volume Approach (VPH) = **32**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## Traffic Signal Warrants Worksheet

(Average Traffic Estimate Form)

Urban/Rural (1/2) = 2

SCENARIO: **Existing Conditions**

MAJOR STREET: **Collier Ave** ADT = **12,624** Lanes= **1**

MINOR STREET: **Crane St** ADT = **498** Lanes= **1**

**(Based on Estimated Average Daily Traffic-See Note)**

| URBAN                                                                             |        |           |     | RURAL               |        |   |       | XX                                                                |  |       |  | Minimum Requirements<br>EADT                                                          |  |       |  |  |  |  |  |
|-----------------------------------------------------------------------------------|--------|-----------|-----|---------------------|--------|---|-------|-------------------------------------------------------------------|--|-------|--|---------------------------------------------------------------------------------------|--|-------|--|--|--|--|--|
| 1A - Minimum Vehicular Traffic                                                    |        |           |     |                     |        |   |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |  |       |  | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |  |       |  |  |  |  |  |
| Satisfied                                                                         |        |           |     | Not Satisfied<br>XX |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Number of lanes for moving traffic on each approach.                              |        |           |     |                     |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Major Street                                                                      |        |           |     | Minor Street        |        |   |       | Urban                                                             |  | Rural |  | Urban                                                                                 |  | Rural |  |  |  |  |  |
| 1                                                                                 | 12,624 | 1         | 498 | 8,000               | 5,600  | * | 2,400 | 1,680                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 2 or More                                                                         |        | 1         |     | 9,600               | 6,720  |   | 2,400 | 1,680                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 2 or More                                                                         |        | 2 or More |     | 9,600               | 6,720  |   | 3,200 | 2,240                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1                                                                                 |        | 2 or More |     | 8,000               | 5,600  |   | 3,200 | 2,240                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1B - Interruption of Continuous Traffic                                           |        |           |     |                     |        |   |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |  |       |  | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |  |       |  |  |  |  |  |
| Satisfied                                                                         |        |           |     | Not Satisfied<br>XX |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Number of lanes for moving traffic on each approach.                              |        |           |     |                     |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Major Street                                                                      |        |           |     | Minor Street        |        |   |       | Urban                                                             |  | Rural |  | Urban                                                                                 |  | Rural |  |  |  |  |  |
| 1                                                                                 | 12,624 | 1         | 498 | 12,000              | 8,400  | * | 1,200 | 850                                                               |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 2 or More                                                                         |        | 1         |     | 14,400              | 10,080 |   | 1,200 | 850                                                               |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 2 or More                                                                         |        | 2 or More |     | 14,400              | 10,080 |   | 1,600 | 1,120                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1                                                                                 |        | 2 or More |     | 12,000              | 8,400  |   | 1,600 | 1,120                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1A&B - Combinations                                                               |        |           |     |                     |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Satisfied                                                                         |        |           |     | Not Satisfied<br>XX |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |        |           |     |                     |        |   |       | 2 Warrants                                                        |  |       |  | 2 Warrants                                                                            |  |       |  |  |  |  |  |
| 30%                                                                               |        | 59%       |     |                     |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1A                                                                                |        | 1B        |     |                     |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions - AM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1033**

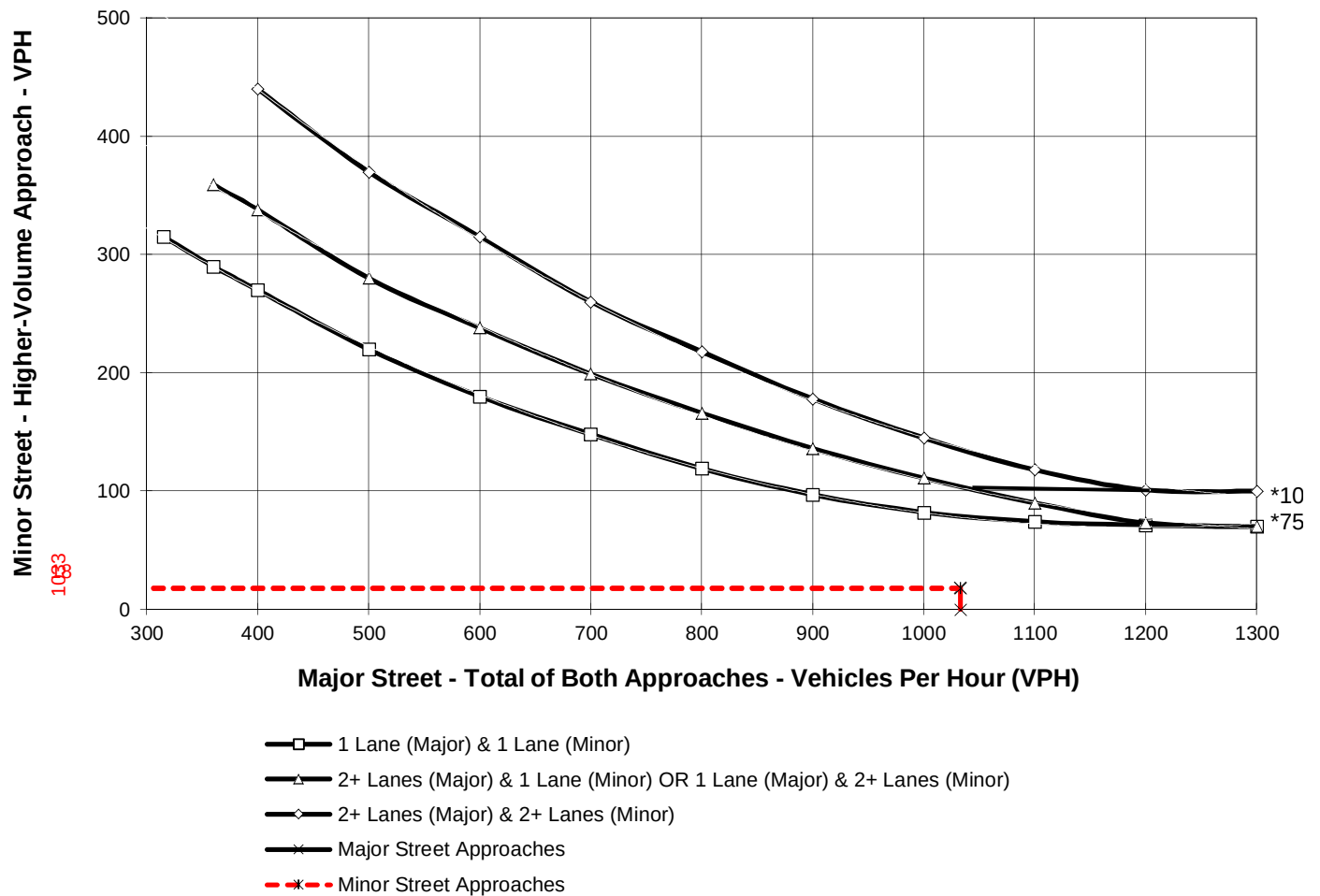
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Crane St**

High Volume Approach (VPH) = **18**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions - PM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1000**

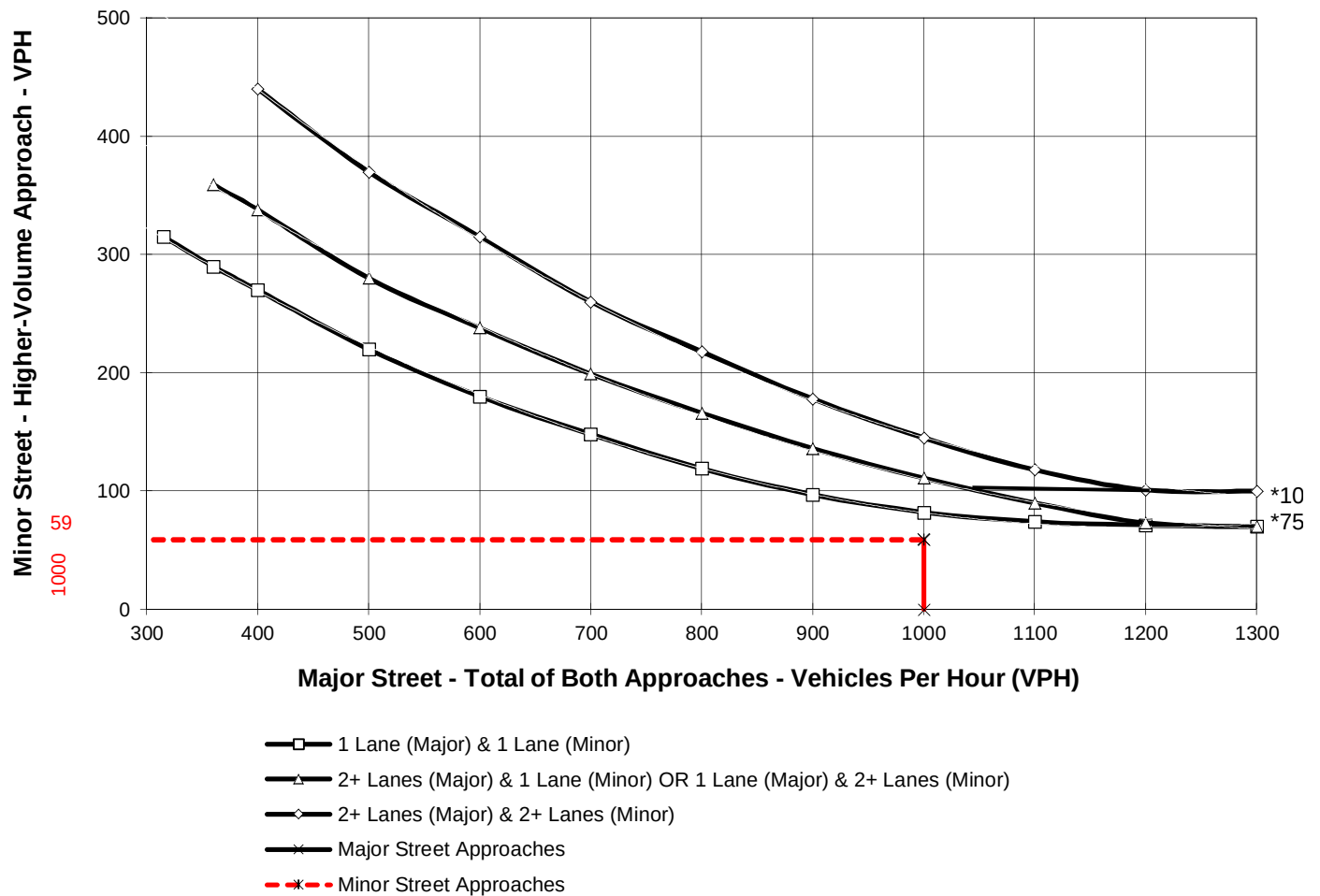
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Crane St**

High Volume Approach (VPH) = **59**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing Conditions**MAJOR STREET: **Collier Ave**ADT = **9,300**Lanes= **1**MINOR STREET: **Chaney St**ADT = **3,612**Lanes= **2**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                                | RURAL           | XX    | Minimum Requirements<br>EADT                                      |         |                                                                                       |         |
|--------------------------------------------------------------------------------------|-----------------|-------|-------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|---------|
| <b>1A - Minimum Vehicular Traffic</b>                                                |                 |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied<br><b>XX</b>                                                               | Not Satisfied   |       |                                                                   |         |                                                                                       |         |
| Number of lanes for moving<br>traffic on each approach.                              |                 |       |                                                                   |         |                                                                                       |         |
| Major Street                                                                         | Minor Street    |       | Urban                                                             | Rural   | Urban                                                                                 | Rural   |
| 1                                                                                    | 1               |       | 8,000                                                             | 5,600   | 2,400                                                                                 | 1,680   |
| 2 or More                                                                            | 1               |       | 9,600                                                             | 6,720   | 2,400                                                                                 | 1,680   |
| 2 or More                                                                            | 2 or More       |       | 9,600                                                             | 6,720   | 3,200                                                                                 | 2,240   |
| 1                                                                                    | 9,300 2 or More | 3,612 | 8,000                                                             | 5,600 * | 3,200                                                                                 | 2,240 * |
| <b>1B - Interruption of Continuous Traffic</b>                                       |                 |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied<br><b>XX</b>                                                               | Not Satisfied   |       |                                                                   |         |                                                                                       |         |
| Number of lanes for moving<br>traffic on each approach.                              |                 |       |                                                                   |         |                                                                                       |         |
| Major Street                                                                         | Minor Street    |       | Urban                                                             | Rural   | Urban                                                                                 | Rural   |
| 1                                                                                    | 1               |       | 12,000                                                            | 8,400   | 1,200                                                                                 | 850     |
| 2 or More                                                                            | 1               |       | 14,400                                                            | 10,080  | 1,200                                                                                 | 850     |
| 2 or More                                                                            | 2 or More       |       | 14,400                                                            | 10,080  | 1,600                                                                                 | 1,120   |
| 1                                                                                    | 9,300 2 or More | 3,612 | 12,000                                                            | 8,400 * | 1,600                                                                                 | 1,120 * |
| <b>1A&amp;B - Combinations</b>                                                       |                 |       |                                                                   |         |                                                                                       |         |
| Satisfied<br><b>XX</b>                                                               | Not Satisfied   |       |                                                                   |         |                                                                                       |         |
| <u>No one warrant satisfied</u> , but following<br>warrants fulfilled 80% or more... |                 |       | 2 Warrants                                                        |         | 2 Warrants                                                                            |         |
| 100%                                                                                 | 100%            |       |                                                                   |         |                                                                                       |         |
| 1A                                                                                   | 1B              |       |                                                                   |         |                                                                                       |         |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions - AM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **739**

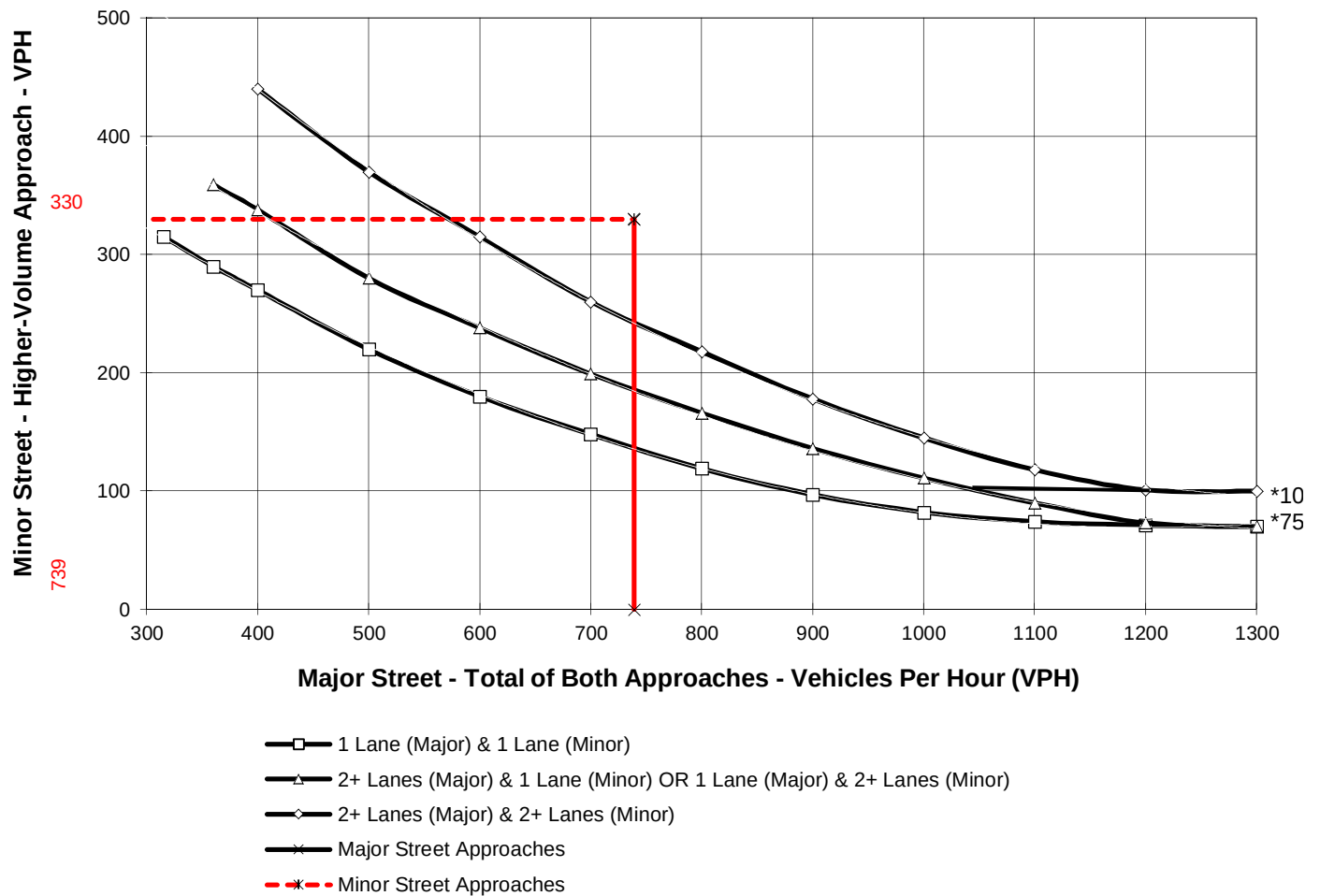
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St**

High Volume Approach (VPH) = **330**

Number of Approach Lanes Minor Street = **2**

### WARRANTED FOR A SIGNAL



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions - PM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **547**

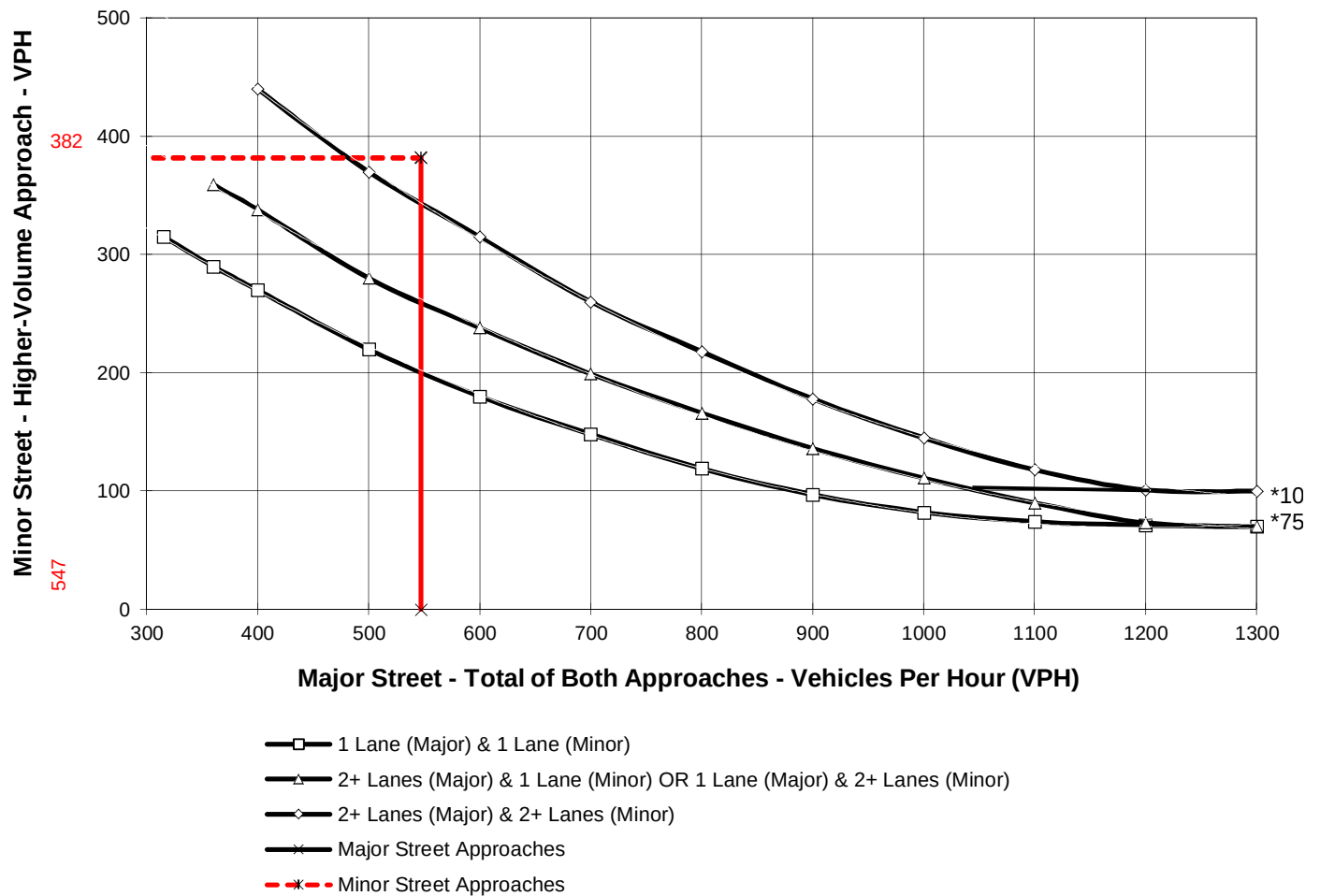
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St**

High Volume Approach (VPH) = **382**

Number of Approach Lanes Minor Street = **2**

### WARRANTED FOR A SIGNAL



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing Conditions**MAJOR STREET: **Collier Ave**ADT = **3,132**Lanes= **1**MINOR STREET: **Srping St**ADT = **3,114**Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                             | RURAL                      | XX        | Minimum Requirements<br>EADT                                      |        |                                                                                       |         |
|-----------------------------------------------------------------------------------|----------------------------|-----------|-------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|---------|
| <b>1A - Minimum Vehicular Traffic</b>                                             |                            |           | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |           |                                                                   |        |                                                                                       |         |
| Number of lanes for moving traffic on each approach.                              |                            |           |                                                                   |        |                                                                                       |         |
| Major Street                                                                      | Minor Street               |           | Urban                                                             | Rural  | Urban                                                                                 | Rural   |
| 1                                                                                 | 3,132                      | 1         | 8,000                                                             | 5,600  | 2,400                                                                                 | 1,680 * |
| 2 or More                                                                         |                            | 1         | 9,600                                                             | 6,720  | 2,400                                                                                 | 1,680   |
| 2 or More                                                                         |                            | 2 or More | 9,600                                                             | 6,720  | 3,200                                                                                 | 2,240   |
| 1                                                                                 |                            | 2 or More | 8,000                                                             | 5,600  | 3,200                                                                                 | 2,240   |
| <b>1B - Interruption of Continuous Traffic</b>                                    |                            |           | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |           |                                                                   |        |                                                                                       |         |
| Number of lanes for moving traffic on each approach.                              |                            |           |                                                                   |        |                                                                                       |         |
| Major Street                                                                      | Minor Street               |           | Urban                                                             | Rural  | Urban                                                                                 | Rural   |
| 1                                                                                 | 3,132                      | 1         | 12,000                                                            | 8,400  | 1,200                                                                                 | 850 *   |
| 2 or More                                                                         |                            | 1         | 14,400                                                            | 10,080 | 1,200                                                                                 | 850     |
| 2 or More                                                                         |                            | 2 or More | 14,400                                                            | 10,080 | 1,600                                                                                 | 1,120   |
| 1                                                                                 |                            | 2 or More | 12,000                                                            | 8,400  | 1,600                                                                                 | 1,120   |
| <b>1A&amp;B - Combinations</b>                                                    |                            |           |                                                                   |        |                                                                                       |         |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |           |                                                                   |        |                                                                                       |         |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |                            |           | 2 Warrants                                                        |        | 2 Warrants                                                                            |         |
| 56%                                                                               | 37%                        |           |                                                                   |        |                                                                                       |         |
| 1A                                                                                | 1B                         |           |                                                                   |        |                                                                                       |         |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.



## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions - AM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **374**

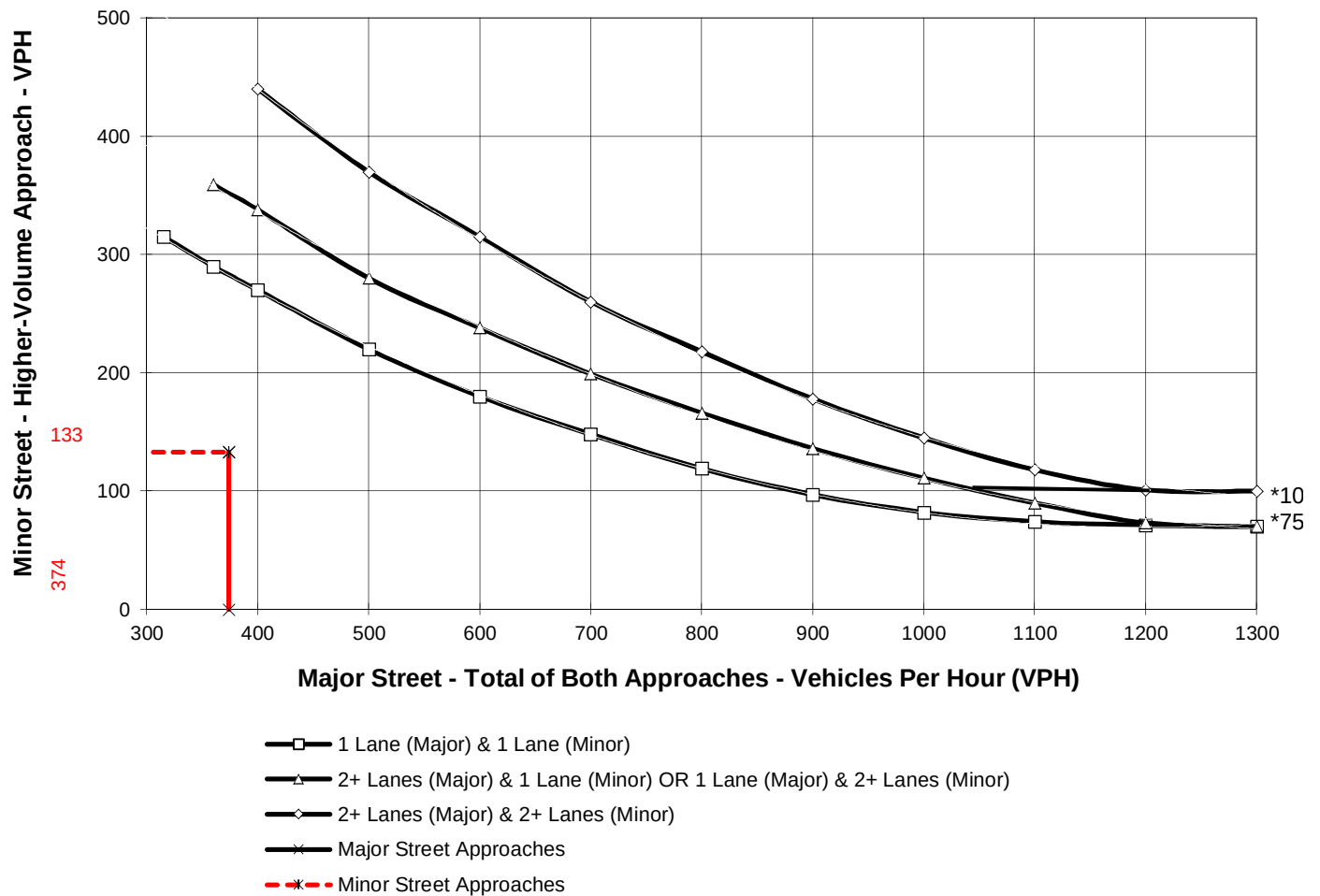
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Spring St**

High Volume Approach (VPH) = **133**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions - PM Peak Hour**

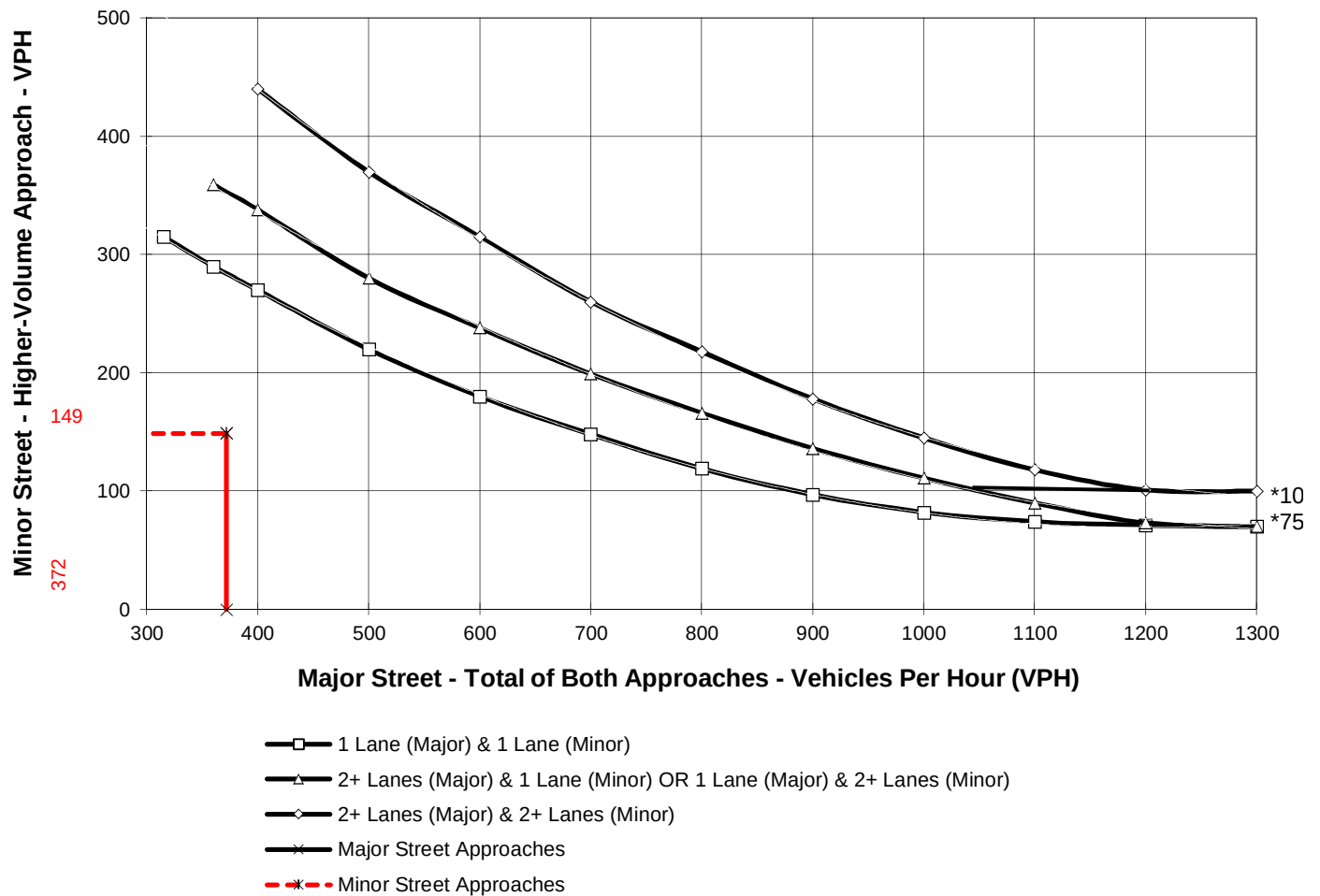
Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **372**  
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Spring St**

High Volume Approach (VPH) = **149**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing Plus Project Conditions**MAJOR STREET: **Riverside Dr** ADT = **24,850** Lanes= **1**MINOR STREET: **Strickland Ave - Gunnerson St** ADT = **1,050** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                             | RURAL         | XX        | Minimum Requirements<br>EADT                                      |         |                                                                                       |       |
|-----------------------------------------------------------------------------------|---------------|-----------|-------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|-------|
| <b>1A - Minimum Vehicular Traffic</b>                                             |               |           | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| Number of lanes for moving traffic on each approach.                              |               |           |                                                                   |         |                                                                                       |       |
| Major Street                                                                      | Minor Street  |           | Urban                                                             | Rural   | Urban                                                                                 | Rural |
| 1                                                                                 | 24,850        | 1         | 8,000                                                             | 5,600 * | 2,400                                                                                 | 1,680 |
| 2 or More                                                                         |               | 1         | 9,600                                                             | 6,720   | 2,400                                                                                 | 1,680 |
| 2 or More                                                                         |               | 2 or More | 9,600                                                             | 6,720   | 3,200                                                                                 | 2,240 |
| 1                                                                                 |               | 2 or More | 8,000                                                             | 5,600   | 3,200                                                                                 | 2,240 |
| <b>1B - Interruption of Continuous Traffic</b>                                    |               |           | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| Number of lanes for moving traffic on each approach.                              |               |           |                                                                   |         |                                                                                       |       |
| Major Street                                                                      | Minor Street  |           | Urban                                                             | Rural   | Urban                                                                                 | Rural |
| 1                                                                                 | 24,850        | 1         | 12,000                                                            | 8,400 * | 1,200                                                                                 | 850 * |
| 2 or More                                                                         |               | 1         | 14,400                                                            | 10,080  | 1,200                                                                                 | 850   |
| 2 or More                                                                         |               | 2 or More | 14,400                                                            | 10,080  | 1,600                                                                                 | 1,120 |
| 1                                                                                 |               | 2 or More | 12,000                                                            | 8,400   | 1,600                                                                                 | 1,120 |
| <b>1A&amp;B - Combinations</b>                                                    |               |           |                                                                   |         |                                                                                       |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |               |           | 2 Warrants                                                        |         | 2 Warrants                                                                            |       |
| 63%                                                                               | 100%          |           |                                                                   |         |                                                                                       |       |
| 1A                                                                                | 1B            |           |                                                                   |         |                                                                                       |       |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions - AM Peak Hour**

Major Street Name = **Riverside Drive**

Total of Both Approaches (VPH) = **1564**

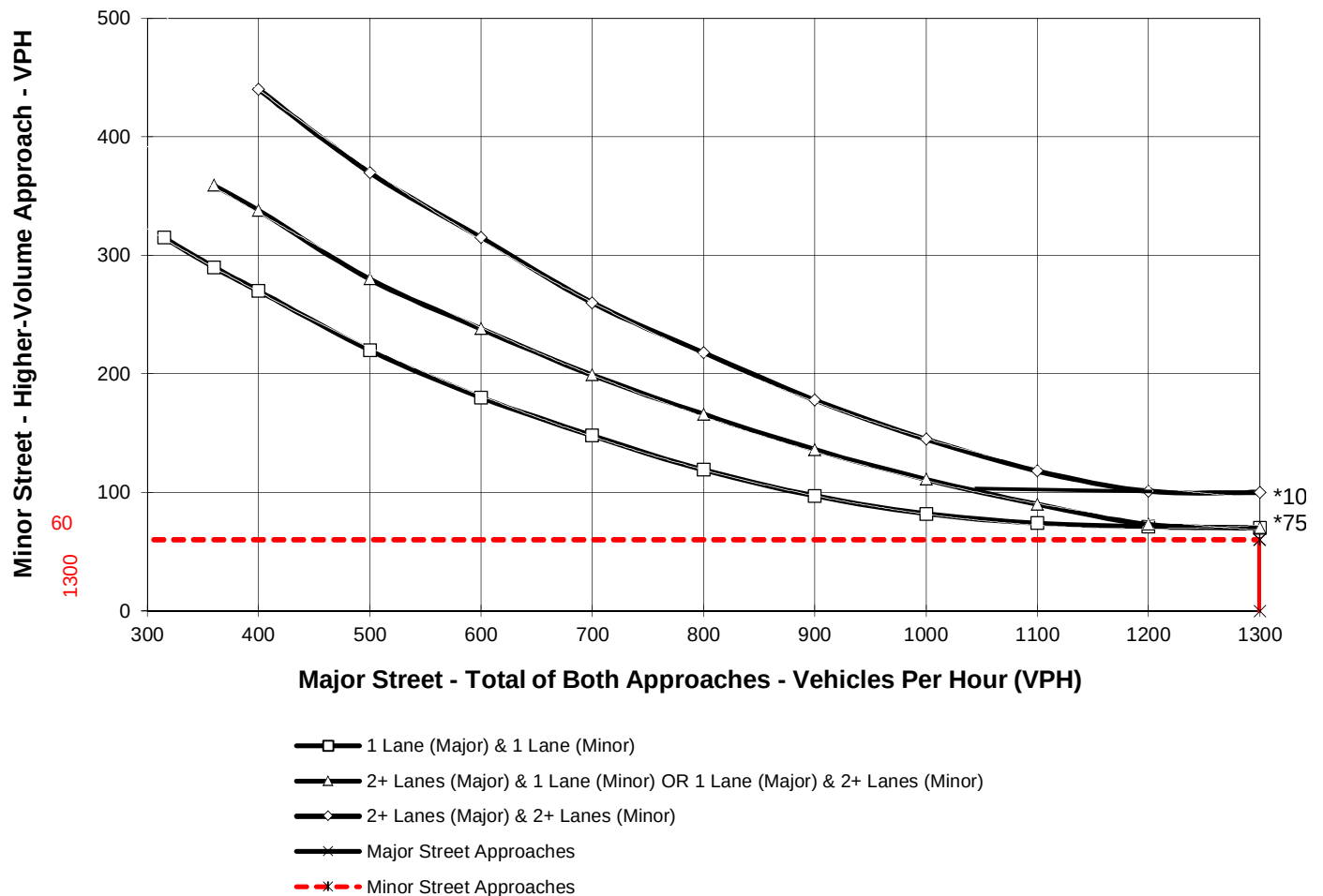
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Strickland Ave - Gunnerson**

High Volume Approach (VPH) = **60**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions - PM Peak Hour**

Major Street Name = **Riverside Drive**

Total of Both Approaches (VPH) = **2062**

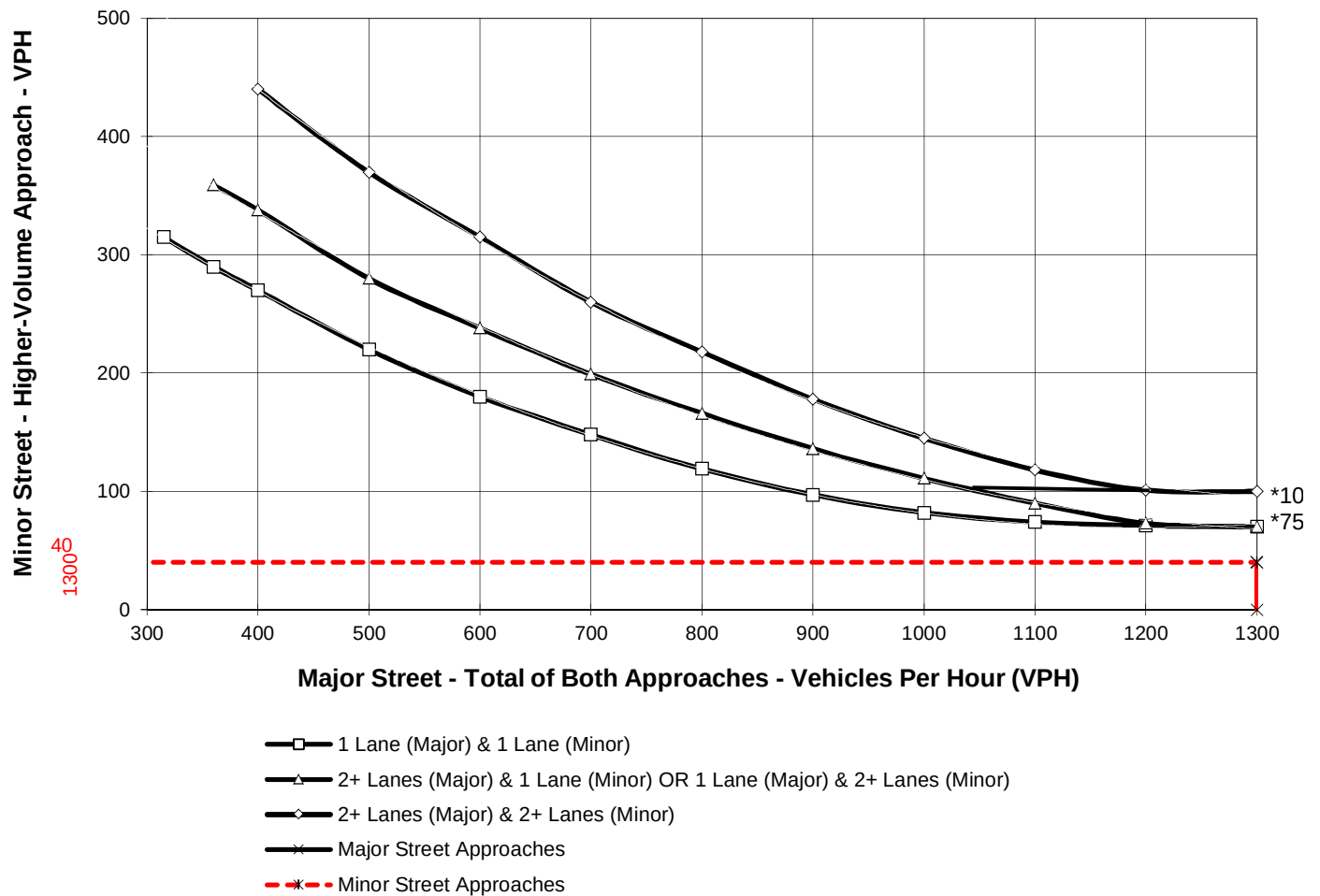
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Strickland Ave - Gunnerson**

High Volume Approach (VPH) = **40**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing Plus Project Conditions**MAJOR STREET: **Collier Ave** ADT = **13,450** Lanes= **1**MINOR STREET: **Crane St** ADT = **500** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                             | RURAL                      | XX  | Minimum Requirements<br>EADT                                      |         |                                                                                       |       |
|-----------------------------------------------------------------------------------|----------------------------|-----|-------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|-------|
| <b>1A - Minimum Vehicular Traffic</b>                                             |                            |     | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |     |                                                                   |         |                                                                                       |       |
| Number of lanes for moving traffic on each approach.                              |                            |     |                                                                   |         |                                                                                       |       |
| Major Street                                                                      | Minor Street               |     | Urban                                                             | Rural   | Urban                                                                                 | Rural |
| 1                                                                                 | 1                          | 500 | 8,000                                                             | 5,600 * | 2,400                                                                                 | 1,680 |
| 2 or More                                                                         | 1                          |     | 9,600                                                             | 6,720   | 2,400                                                                                 | 1,680 |
| 2 or More                                                                         | 2 or More                  |     | 9,600                                                             | 6,720   | 3,200                                                                                 | 2,240 |
| 1                                                                                 | 2 or More                  |     | 8,000                                                             | 5,600   | 3,200                                                                                 | 2,240 |
| <b>1B - Interruption of Continuous Traffic</b>                                    |                            |     | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |     |                                                                   |         |                                                                                       |       |
| Number of lanes for moving traffic on each approach.                              |                            |     |                                                                   |         |                                                                                       |       |
| Major Street                                                                      | Minor Street               |     | Urban                                                             | Rural   | Urban                                                                                 | Rural |
| 1                                                                                 | 1                          | 500 | 12,000                                                            | 8,400 * | 1,200                                                                                 | 850   |
| 2 or More                                                                         | 1                          |     | 14,400                                                            | 10,080  | 1,200                                                                                 | 850   |
| 2 or More                                                                         | 2 or More                  |     | 14,400                                                            | 10,080  | 1,600                                                                                 | 1,120 |
| 1                                                                                 | 2 or More                  |     | 12,000                                                            | 8,400   | 1,600                                                                                 | 1,120 |
| <b>1A&amp;B - Combinations</b>                                                    |                            |     |                                                                   |         |                                                                                       |       |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |     |                                                                   |         |                                                                                       |       |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |                            |     | 2 Warrants                                                        |         | 2 Warrants                                                                            |       |
| 30%                                                                               | 59%                        |     |                                                                   |         |                                                                                       |       |
| 1A                                                                                | 1B                         |     |                                                                   |         |                                                                                       |       |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions - AM Peak Hour**

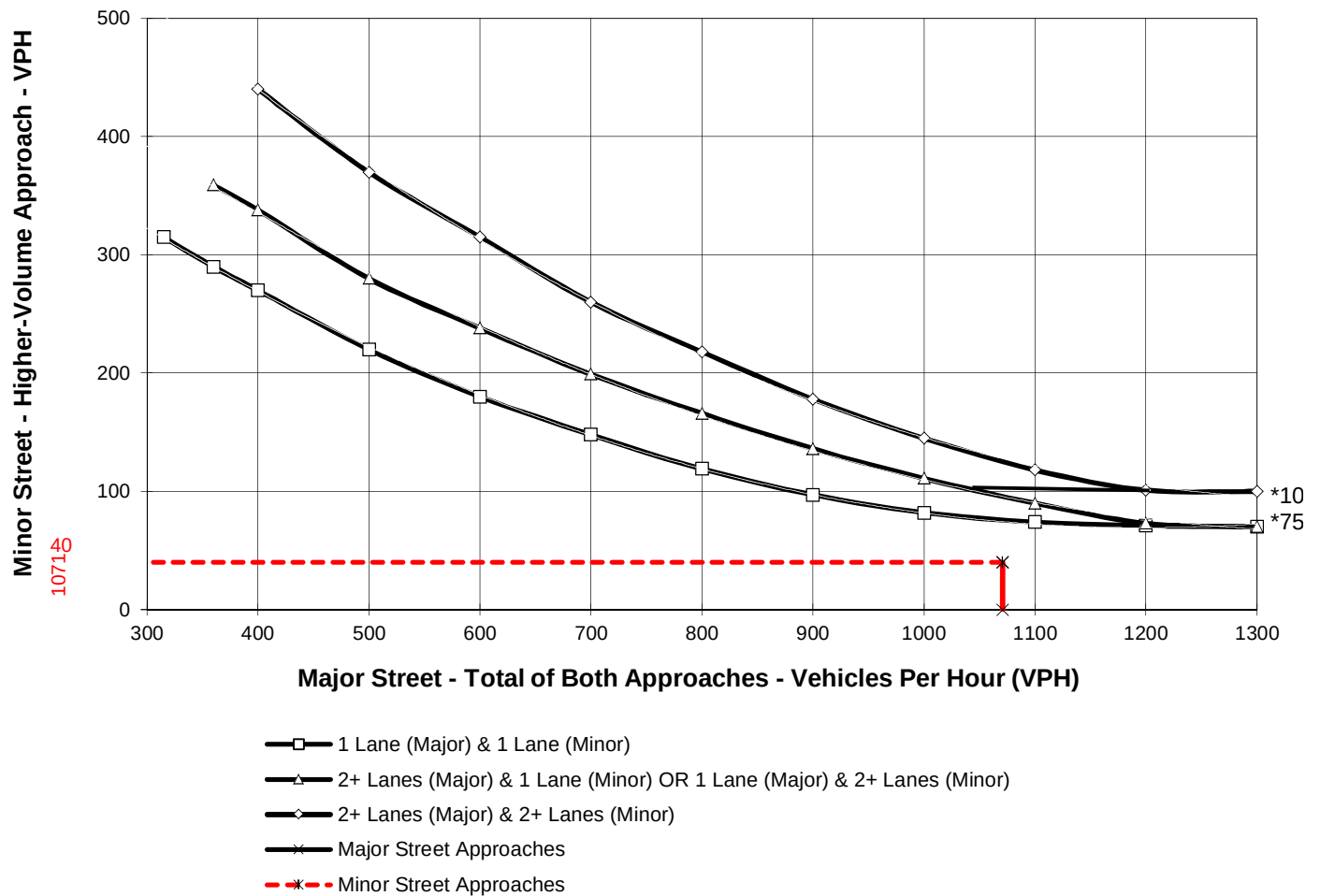
Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1071**  
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Crane St**

High Volume Approach (VPH) = **40**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions - PM Peak Hour**

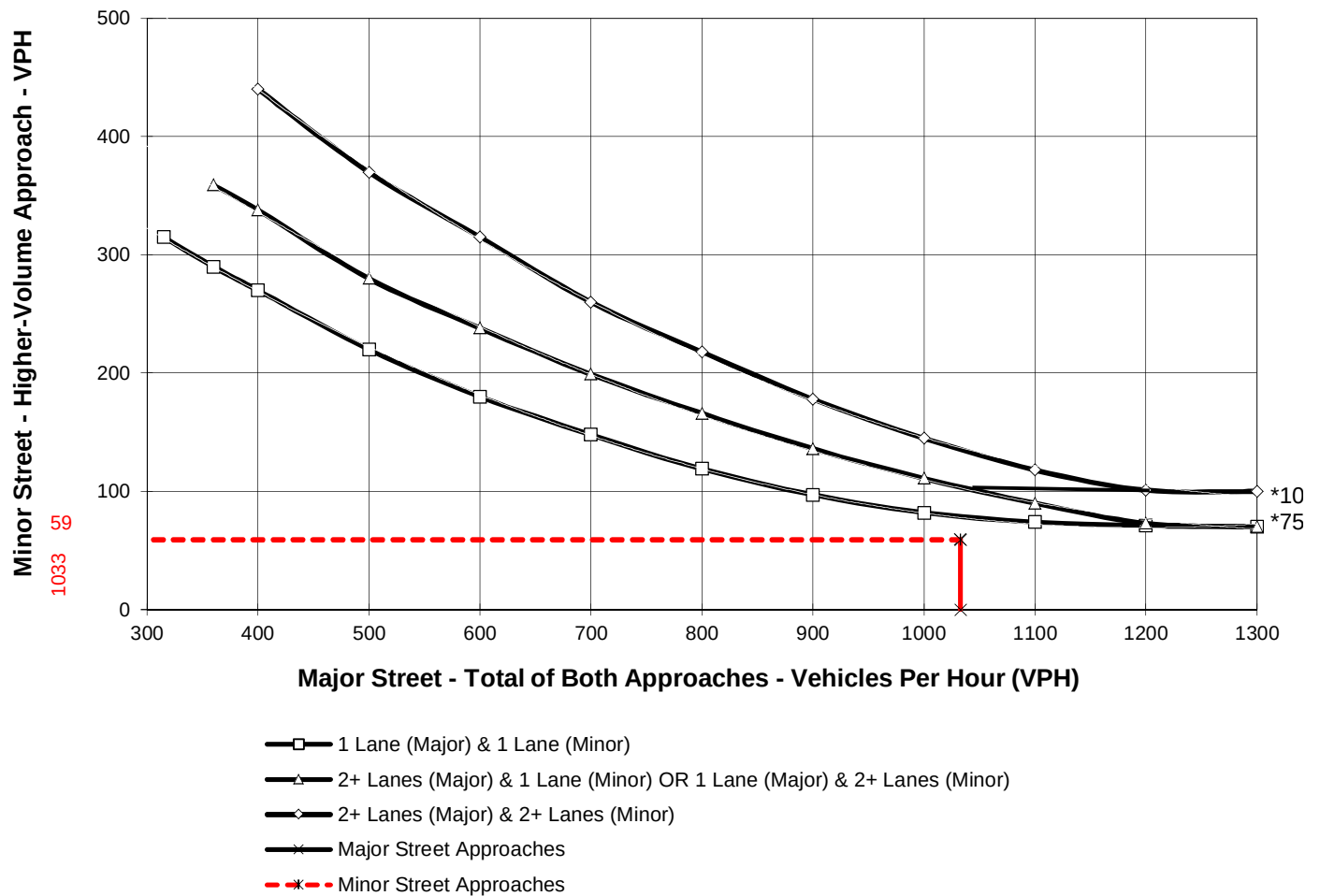
Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1033**  
Number of Approach Lanes Major Street = **59**

Minor Street Name = **Crane St**

High Volume Approach (VPH) = **59**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.



# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing Plus Project Conditions**MAJOR STREET: **Collier Ave** ADT = **10,050** Lanes= **1**MINOR STREET: **Chaney St** ADT = **4,000** Lanes= **2**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                             | RURAL            | XX    | Minimum Requirements<br>EADT                                      |         |                                                                                       |         |
|-----------------------------------------------------------------------------------|------------------|-------|-------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|---------|
| <b>1A - Minimum Vehicular Traffic</b>                                             |                  |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied<br><b>XX</b>                                                            | Not Satisfied    |       |                                                                   |         |                                                                                       |         |
| Number of lanes for moving traffic on each approach.                              |                  |       |                                                                   |         |                                                                                       |         |
| Major Street                                                                      | Minor Street     |       | Urban                                                             | Rural   | Urban                                                                                 | Rural   |
| 1                                                                                 | 1                |       | 8,000                                                             | 5,600   | 2,400                                                                                 | 1,680   |
| 2 or More                                                                         | 1                |       | 9,600                                                             | 6,720   | 2,400                                                                                 | 1,680   |
| 2 or More                                                                         | 2 or More        |       | 9,600                                                             | 6,720   | 3,200                                                                                 | 2,240   |
| 1                                                                                 | 10,050 2 or More | 4,000 | 8,000                                                             | 5,600 * | 3,200                                                                                 | 2,240 * |
| <b>1B - Interruption of Continuous Traffic</b>                                    |                  |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied<br><b>XX</b>                                                            | Not Satisfied    |       |                                                                   |         |                                                                                       |         |
| Number of lanes for moving traffic on each approach.                              |                  |       |                                                                   |         |                                                                                       |         |
| Major Street                                                                      | Minor Street     |       | Urban                                                             | Rural   | Urban                                                                                 | Rural   |
| 1                                                                                 | 1                |       | 12,000                                                            | 8,400   | 1,200                                                                                 | 850     |
| 2 or More                                                                         | 1                |       | 14,400                                                            | 10,080  | 1,200                                                                                 | 850     |
| 2 or More                                                                         | 2 or More        |       | 14,400                                                            | 10,080  | 1,600                                                                                 | 1,120   |
| 1                                                                                 | 10,050 2 or More | 4,000 | 12,000                                                            | 8,400 * | 1,600                                                                                 | 1,120 * |
| <b>1A&amp;B - Combinations</b>                                                    |                  |       |                                                                   |         |                                                                                       |         |
| Satisfied<br><b>XX</b>                                                            | Not Satisfied    |       |                                                                   |         |                                                                                       |         |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |                  |       | 2 Warrants                                                        |         | 2 Warrants                                                                            |         |
| 100%                                                                              | 100%             |       |                                                                   |         |                                                                                       |         |
| 1A                                                                                | 1B               |       |                                                                   |         |                                                                                       |         |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions - AM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **769**

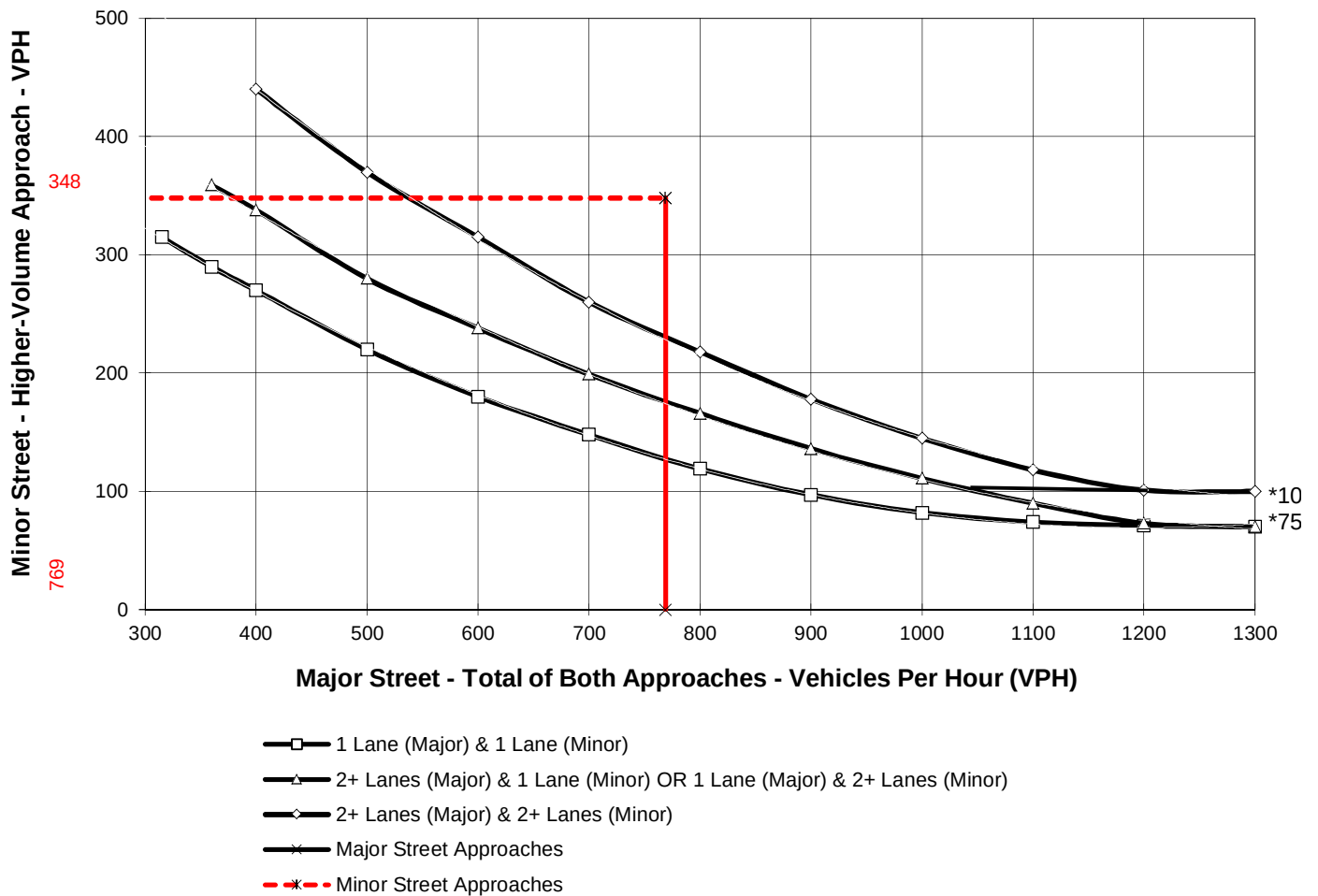
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St**

High Volume Approach (VPH) = **348**

Number of Approach Lanes Minor Street = **2**

### WARRANTED FOR A SIGNAL



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions - PM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **577**

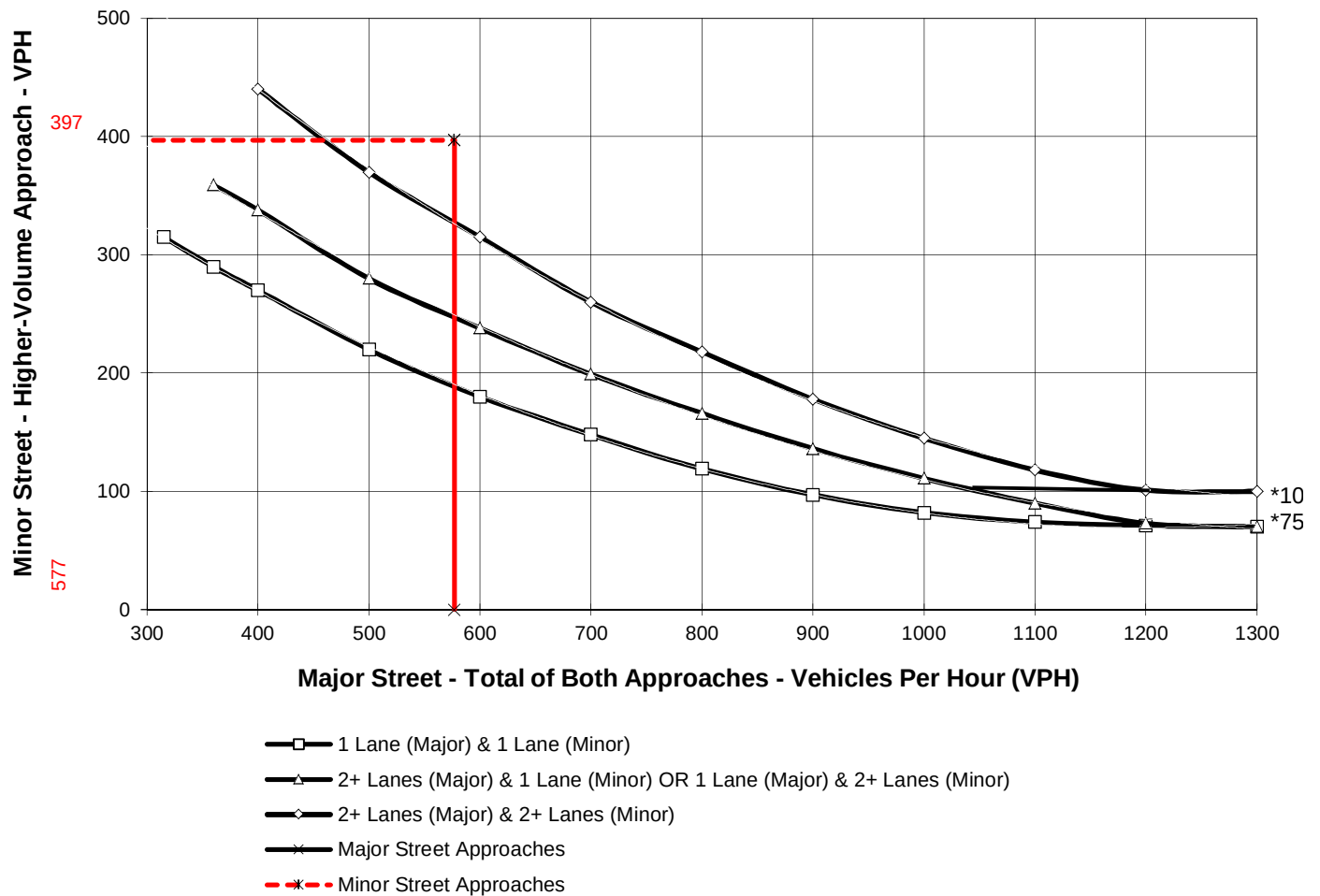
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St**

High Volume Approach (VPH) = **397**

Number of Approach Lanes Minor Street = **2**

### WARRANTED FOR A SIGNAL



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing Plus Project Conditions**MAJOR STREET: **Collier Ave** ADT = **3,350** Lanes= **1**MINOR STREET: **Srping St** ADT = **3,300** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                                | RURAL                      | XX           | Minimum Requirements<br>EADT                                      |        |                                                                                       |       |         |
|--------------------------------------------------------------------------------------|----------------------------|--------------|-------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|-------|---------|
| <b>1A - Minimum Vehicular Traffic</b>                                                |                            |              | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |         |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |       |         |
| Number of lanes for moving<br>traffic on each approach.                              |                            |              |                                                                   |        |                                                                                       |       |         |
| Major Street                                                                         |                            | Minor Street | Urban                                                             | Rural  | Urban                                                                                 | Rural |         |
| 1                                                                                    | 3,350                      | 1            | 3,300                                                             | 8,000  | 5,600                                                                                 | 2,400 | 1,680 * |
| 2 or More                                                                            |                            | 1            |                                                                   | 9,600  | 6,720                                                                                 | 2,400 | 1,680   |
| 2 or More                                                                            |                            | 2 or More    |                                                                   | 9,600  | 6,720                                                                                 | 3,200 | 2,240   |
| 1                                                                                    |                            | 2 or More    |                                                                   | 8,000  | 5,600                                                                                 | 3,200 | 2,240   |
| <b>1B - Interruption of Continuous Traffic</b>                                       |                            |              | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |         |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |       |         |
| Number of lanes for moving<br>traffic on each approach.                              |                            |              |                                                                   |        |                                                                                       |       |         |
| Major Street                                                                         |                            | Minor Street |                                                                   | Urban  | Rural                                                                                 | Urban | Rural   |
| 1                                                                                    | 3,350                      | 1            | 3,300                                                             | 12,000 | 8,400                                                                                 | 1,200 | 850 *   |
| 2 or More                                                                            |                            | 1            |                                                                   | 14,400 | 10,080                                                                                | 1,200 | 850     |
| 2 or More                                                                            |                            | 2 or More    |                                                                   | 14,400 | 10,080                                                                                | 1,600 | 1,120   |
| 1                                                                                    |                            | 2 or More    |                                                                   | 12,000 | 8,400                                                                                 | 1,600 | 1,120   |
| <b>1A&amp;B - Combinations</b>                                                       |                            |              |                                                                   |        |                                                                                       |       |         |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |       |         |
| <u>No one warrant satisfied</u> , but following<br>warrants fulfilled 80% or more... |                            |              | 2 Warrants                                                        |        | 2 Warrants                                                                            |       |         |
| 60%                                                                                  | 40%                        |              |                                                                   |        |                                                                                       |       |         |
| 1A                                                                                   | 1B                         |              |                                                                   |        |                                                                                       |       |         |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions - AM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **142**

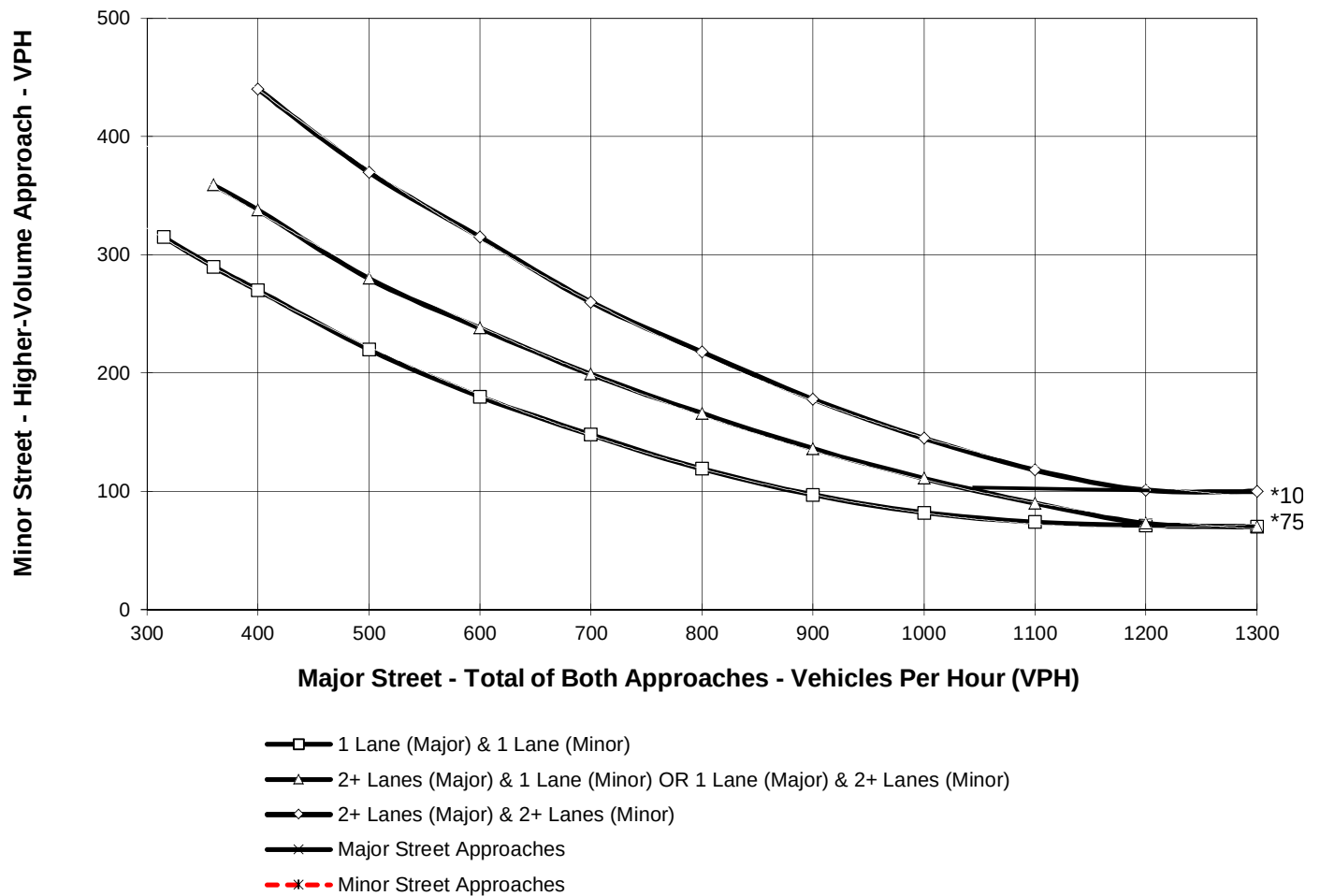
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Spring St**

High Volume Approach (VPH) = **383**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions - PM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **379**

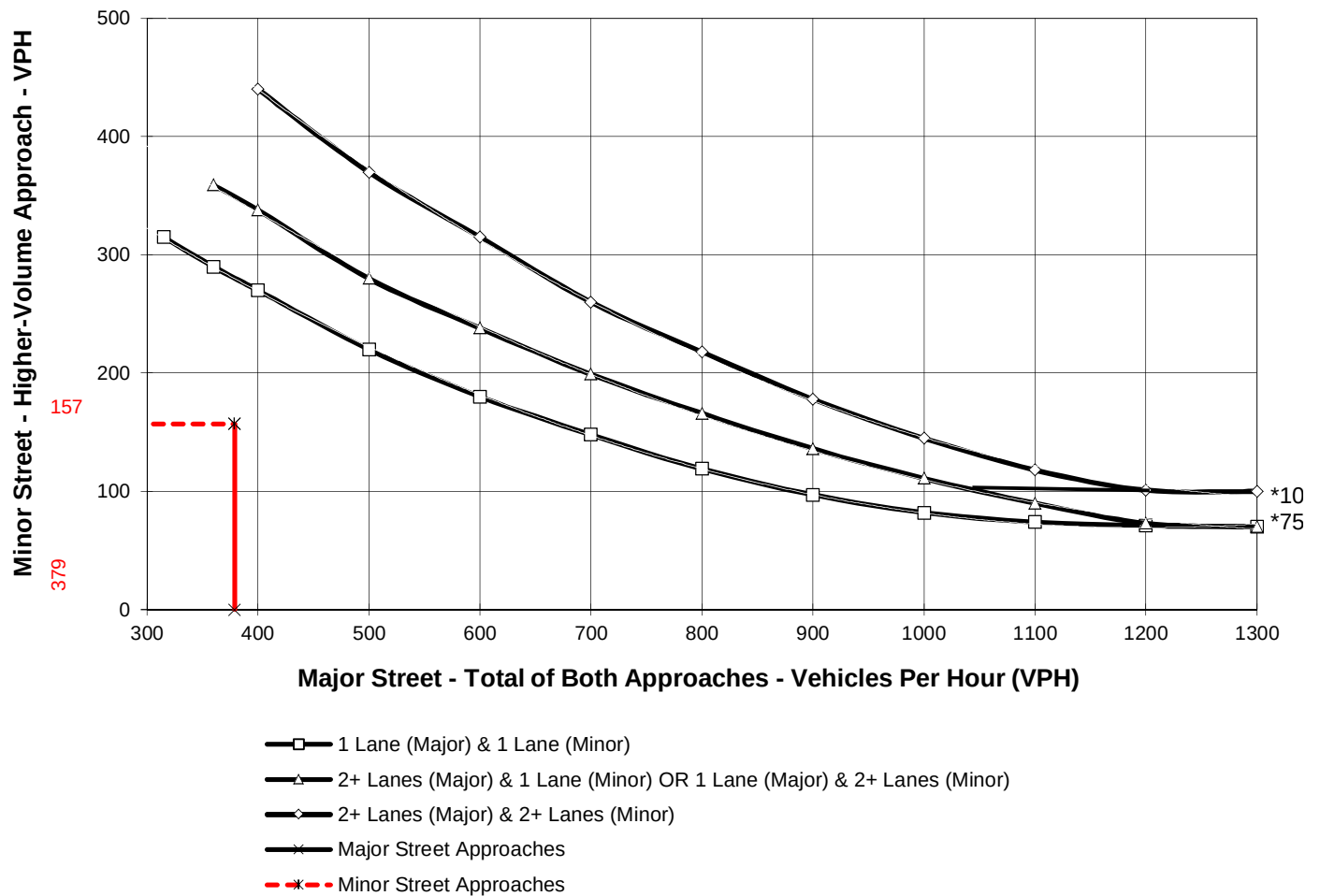
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Spring St**

High Volume Approach (VPH) = **157**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing+Ambient+Project Conditions**MAJOR STREET: **Riverside Dr** ADT = **39,070** Lanes= **1**MINOR STREET: **Strickland Ave - Gunnerson St** ADT = **1,050** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                             | RURAL         | XX        | Minimum Requirements<br>EADT                                      |         |                                                                                       |       |
|-----------------------------------------------------------------------------------|---------------|-----------|-------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|-------|
| <b>1A - Minimum Vehicular Traffic</b>                                             |               |           | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| Number of lanes for moving traffic on each approach.                              |               |           |                                                                   |         |                                                                                       |       |
| Major Street                                                                      | Minor Street  |           | Urban                                                             | Rural   | Urban                                                                                 | Rural |
| 1                                                                                 | 39,070        | 1         | 8,000                                                             | 5,600 * | 2,400                                                                                 | 1,680 |
| 2 or More                                                                         |               | 1         | 9,600                                                             | 6,720   | 2,400                                                                                 | 1,680 |
| 2 or More                                                                         |               | 2 or More | 9,600                                                             | 6,720   | 3,200                                                                                 | 2,240 |
| 1                                                                                 |               | 2 or More | 8,000                                                             | 5,600   | 3,200                                                                                 | 2,240 |
| <b>1B - Interruption of Continuous Traffic</b>                                    |               |           | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| Number of lanes for moving traffic on each approach.                              |               |           |                                                                   |         |                                                                                       |       |
| Major Street                                                                      | Minor Street  |           | Urban                                                             | Rural   | Urban                                                                                 | Rural |
| 1                                                                                 | 39,070        | 1         | 12,000                                                            | 8,400 * | 1,200                                                                                 | 850 * |
| 2 or More                                                                         |               | 1         | 14,400                                                            | 10,080  | 1,200                                                                                 | 850   |
| 2 or More                                                                         |               | 2 or More | 14,400                                                            | 10,080  | 1,600                                                                                 | 1,120 |
| 1                                                                                 |               | 2 or More | 12,000                                                            | 8,400   | 1,600                                                                                 | 1,120 |
| <b>1A&amp;B - Combinations</b>                                                    |               |           |                                                                   |         |                                                                                       |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |               |           | 2 Warrants                                                        |         | 2 Warrants                                                                            |       |
| 63%                                                                               | 100%          |           |                                                                   |         |                                                                                       |       |
| 1A                                                                                | 1B            |           |                                                                   |         |                                                                                       |       |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing+Ambient+Project Conditions - AM Peak Hour**

Major Street Name = **Riverside Drive**

Total of Both Approaches (VPH) = **1624**

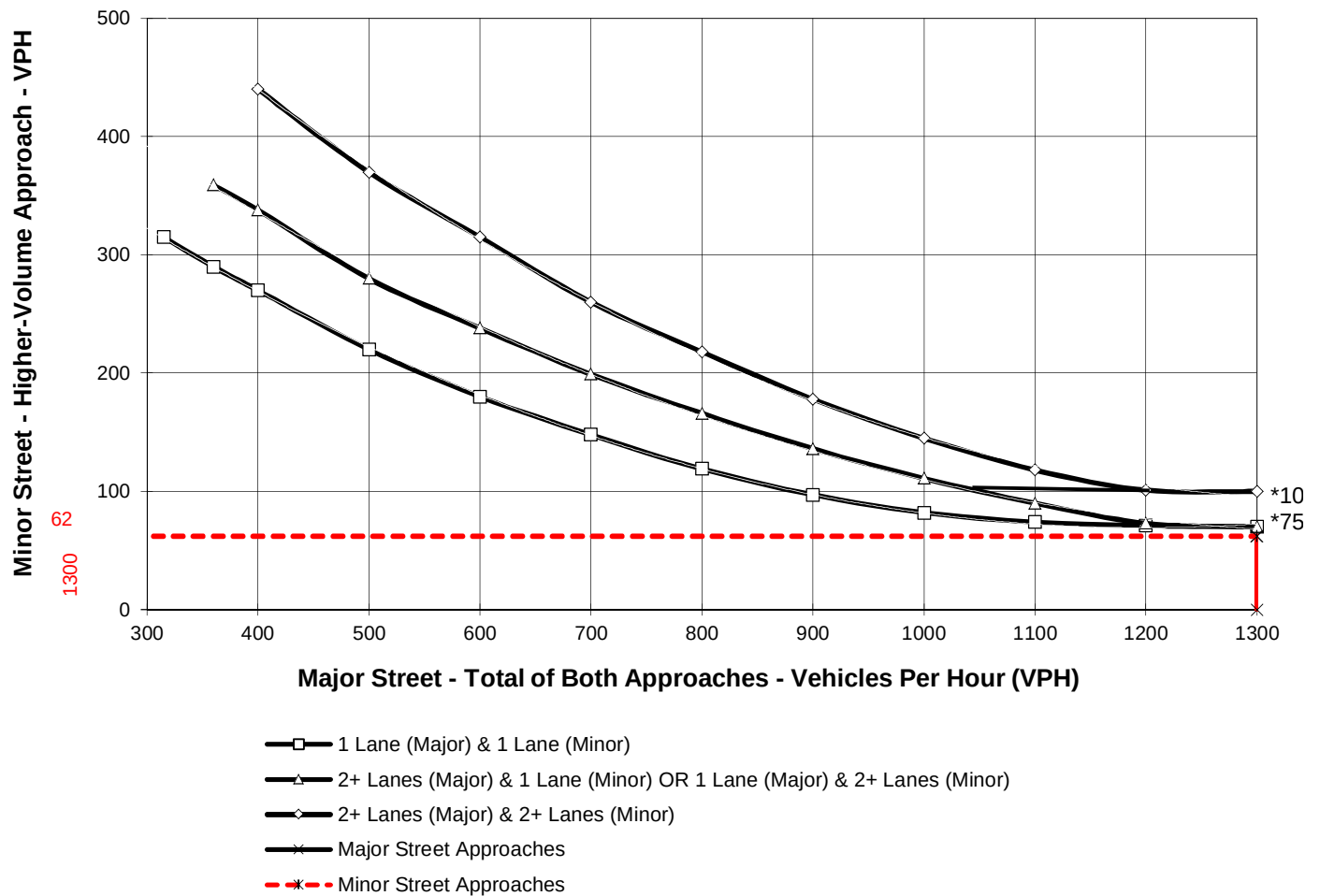
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Strickland Ave - Gunnerson**

High Volume Approach (VPH) = **62**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.



## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing+Ambient+Project Conditions - PM Peak Hour**

Major Street Name = **Riverside Drive**

Total of Both Approaches (VPH) = **2141**

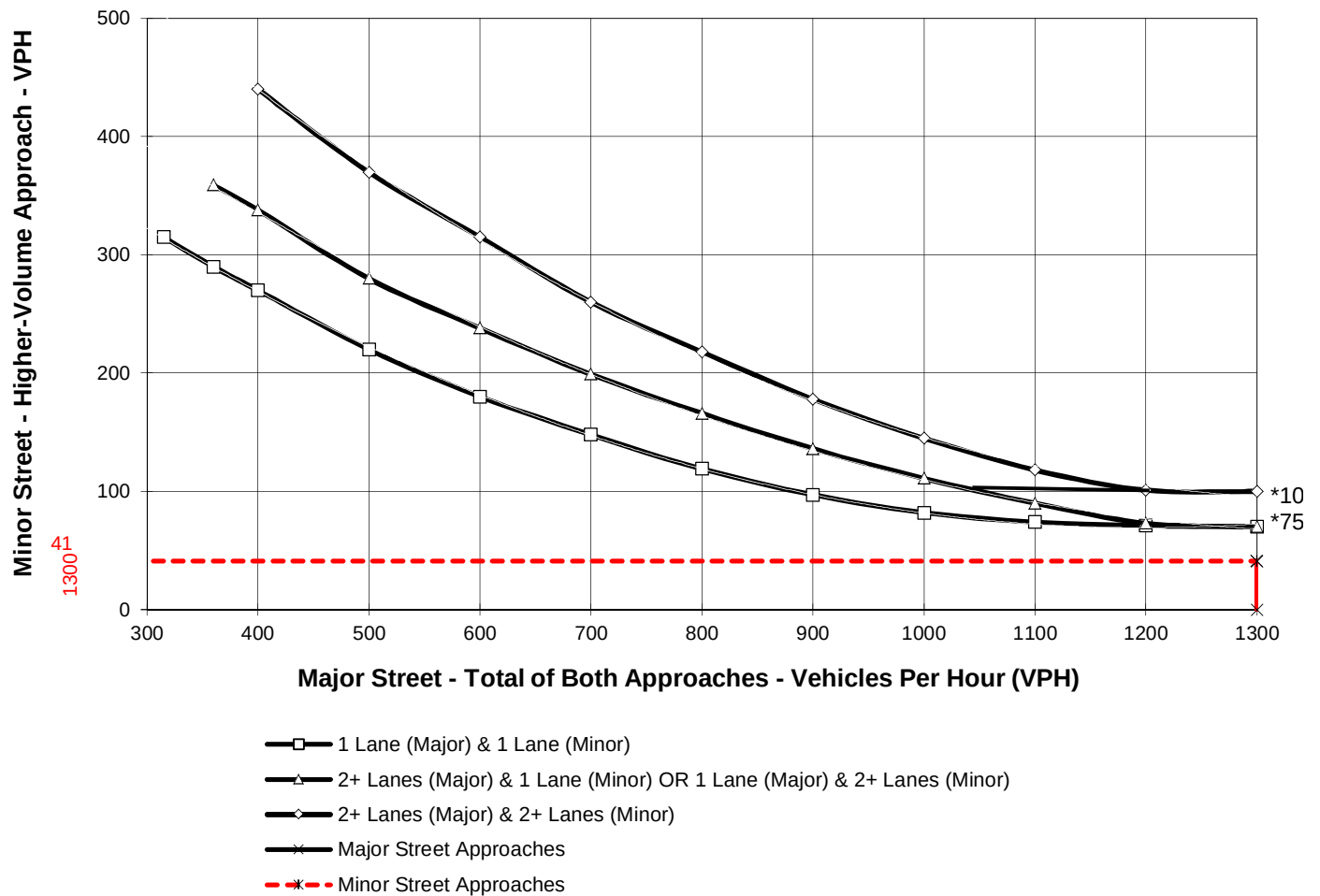
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Strickland Ave - Gunnerson**

High Volume Approach (VPH) = **41**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## Traffic Signal Warrants Worksheet

(Average Traffic Estimate Form)

Urban/Rural (1/2) = 2

SCENARIO: **Existing+Ambient+Project Conditions**

MAJOR STREET: **Collier Ave** ADT = **13,950** Lanes= **1**

MINOR STREET: **Crane St** ADT = **500** Lanes= **1**

**(Based on Estimated Average Daily Traffic-See Note)**

| URBAN                                                                             |        |           |     | RURAL               |        |   |       | XX                                                                |  |       |  | Minimum Requirements<br>EADT                                                          |  |       |  |  |  |  |  |
|-----------------------------------------------------------------------------------|--------|-----------|-----|---------------------|--------|---|-------|-------------------------------------------------------------------|--|-------|--|---------------------------------------------------------------------------------------|--|-------|--|--|--|--|--|
| 1A - Minimum Vehicular Traffic                                                    |        |           |     |                     |        |   |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |  |       |  | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |  |       |  |  |  |  |  |
| Satisfied                                                                         |        |           |     | Not Satisfied<br>XX |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Number of lanes for moving traffic on each approach.                              |        |           |     |                     |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Major Street                                                                      |        |           |     | Minor Street        |        |   |       | Urban                                                             |  | Rural |  | Urban                                                                                 |  | Rural |  |  |  |  |  |
| 1                                                                                 | 13,950 | 1         | 500 | 8,000               | 5,600  | * | 2,400 | 1,680                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 2 or More                                                                         |        | 1         |     | 9,600               | 6,720  |   | 2,400 | 1,680                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 2 or More                                                                         |        | 2 or More |     | 9,600               | 6,720  |   | 3,200 | 2,240                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1                                                                                 |        | 2 or More |     | 8,000               | 5,600  |   | 3,200 | 2,240                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1B - Interruption of Continuous Traffic                                           |        |           |     |                     |        |   |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |  |       |  | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |  |       |  |  |  |  |  |
| Satisfied                                                                         |        |           |     | Not Satisfied<br>XX |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Number of lanes for moving traffic on each approach.                              |        |           |     |                     |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Major Street                                                                      |        |           |     | Minor Street        |        |   |       | Urban                                                             |  | Rural |  | Urban                                                                                 |  | Rural |  |  |  |  |  |
| 1                                                                                 | 13,950 | 1         | 500 | 12,000              | 8,400  | * | 1,200 | 850                                                               |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 2 or More                                                                         |        | 1         |     | 14,400              | 10,080 |   | 1,200 | 850                                                               |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 2 or More                                                                         |        | 2 or More |     | 14,400              | 10,080 |   | 1,600 | 1,120                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1                                                                                 |        | 2 or More |     | 12,000              | 8,400  |   | 1,600 | 1,120                                                             |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1A&B - Combinations                                                               |        |           |     |                     |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| Satisfied                                                                         |        |           |     | Not Satisfied<br>XX |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |        |           |     |                     |        |   |       | 2 Warrants                                                        |  |       |  | 2 Warrants                                                                            |  |       |  |  |  |  |  |
| 30%                                                                               |        |           |     | 59%                 |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |
| 1A                                                                                |        |           |     | 1B                  |        |   |       |                                                                   |  |       |  |                                                                                       |  |       |  |  |  |  |  |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing+Ambient+Project Conditions - AM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1112**

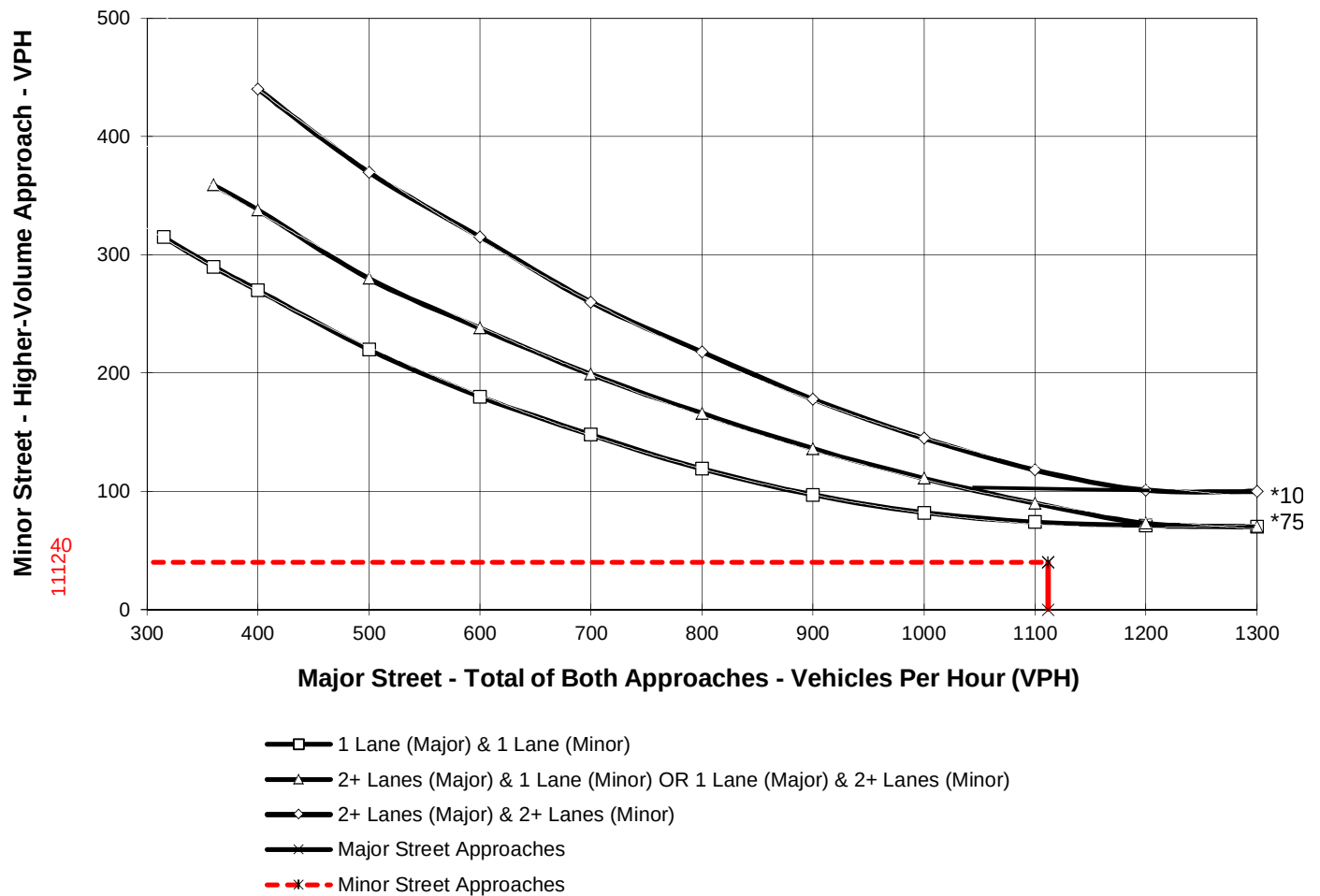
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Crane St**

High Volume Approach (VPH) = **40**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing+Ambient+Project Conditions - PM Peak Hour**

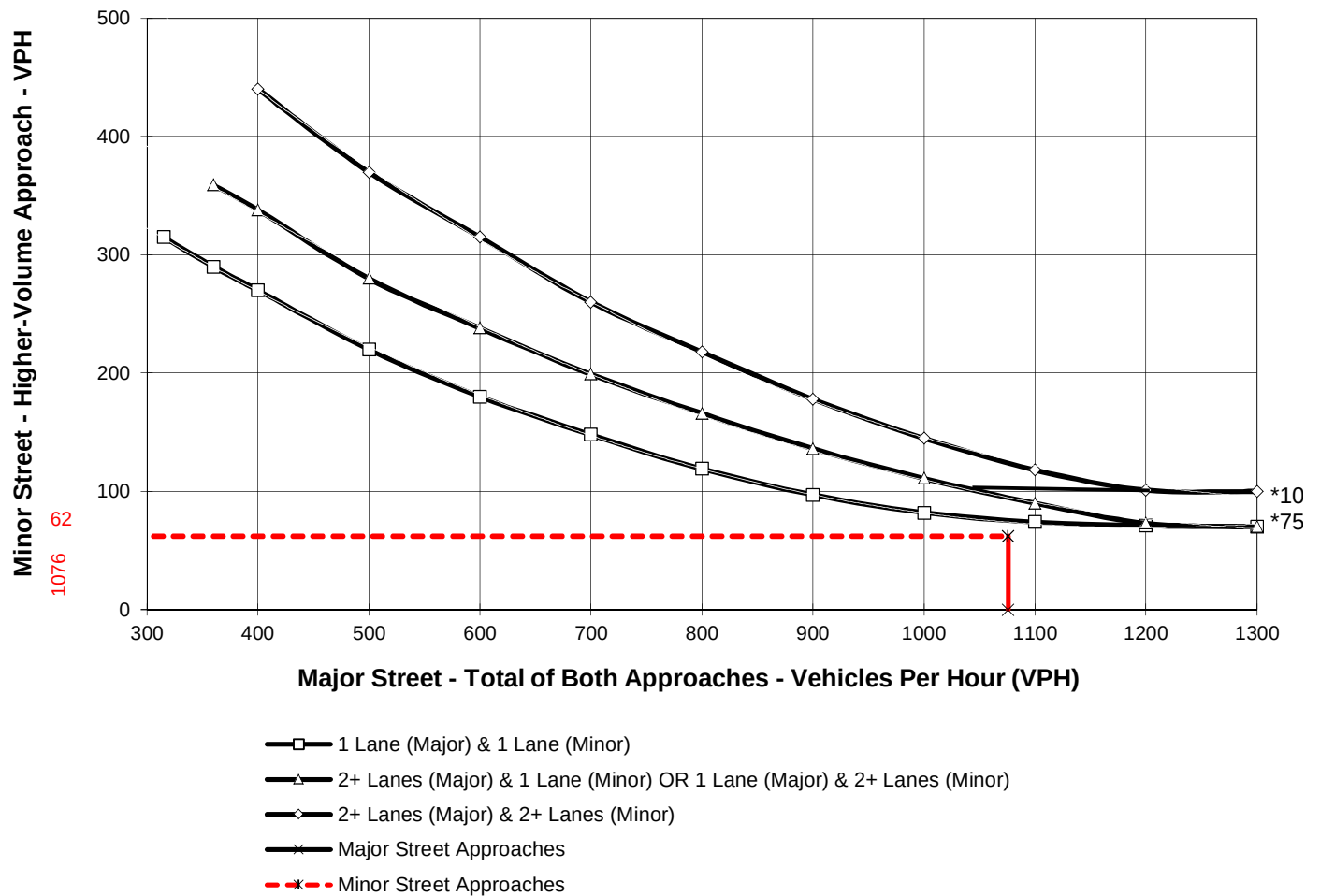
Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1076**  
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Crane St**

High Volume Approach (VPH) = **62**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing+Ambient+Project Conditions**MAJOR STREET: **Collier Ave** ADT = **10,400** Lanes= **1**MINOR STREET: **Chaney St** ADT = **4,100** Lanes= **2**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                             | RURAL            | XX    | Minimum Requirements<br>EADT                                      |         |                                                                                       |         |
|-----------------------------------------------------------------------------------|------------------|-------|-------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|---------|
| <b>1A - Minimum Vehicular Traffic</b>                                             |                  |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied<br><b>XX</b>                                                            | Not Satisfied    |       |                                                                   |         |                                                                                       |         |
| Number of lanes for moving traffic on each approach.                              |                  |       |                                                                   |         |                                                                                       |         |
| Major Street                                                                      | Minor Street     |       | Urban                                                             | Rural   | Urban                                                                                 | Rural   |
| 1                                                                                 | 1                |       | 8,000                                                             | 5,600   | 2,400                                                                                 | 1,680   |
| 2 or More                                                                         | 1                |       | 9,600                                                             | 6,720   | 2,400                                                                                 | 1,680   |
| 2 or More                                                                         | 2 or More        |       | 9,600                                                             | 6,720   | 3,200                                                                                 | 2,240   |
| 1                                                                                 | 10,400 2 or More | 4,100 | 8,000                                                             | 5,600 * | 3,200                                                                                 | 2,240 * |
| <b>1B - Interruption of Continuous Traffic</b>                                    |                  |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied<br><b>XX</b>                                                            | Not Satisfied    |       |                                                                   |         |                                                                                       |         |
| Number of lanes for moving traffic on each approach.                              |                  |       |                                                                   |         |                                                                                       |         |
| Major Street                                                                      | Minor Street     |       | Urban                                                             | Rural   | Urban                                                                                 | Rural   |
| 1                                                                                 | 1                |       | 12,000                                                            | 8,400   | 1,200                                                                                 | 850     |
| 2 or More                                                                         | 1                |       | 14,400                                                            | 10,080  | 1,200                                                                                 | 850     |
| 2 or More                                                                         | 2 or More        |       | 14,400                                                            | 10,080  | 1,600                                                                                 | 1,120   |
| 1                                                                                 | 10,400 2 or More | 4,100 | 12,000                                                            | 8,400 * | 1,600                                                                                 | 1,120 * |
| <b>1A&amp;B - Combinations</b>                                                    |                  |       |                                                                   |         |                                                                                       |         |
| Satisfied<br><b>XX</b>                                                            | Not Satisfied    |       |                                                                   |         |                                                                                       |         |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |                  |       | 2 Warrants                                                        |         | 2 Warrants                                                                            |         |
| 100%                                                                              | 100%             |       |                                                                   |         |                                                                                       |         |
| 1A                                                                                | 1B               |       |                                                                   |         |                                                                                       |         |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing+Ambient+Project Conditions - AM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **798**

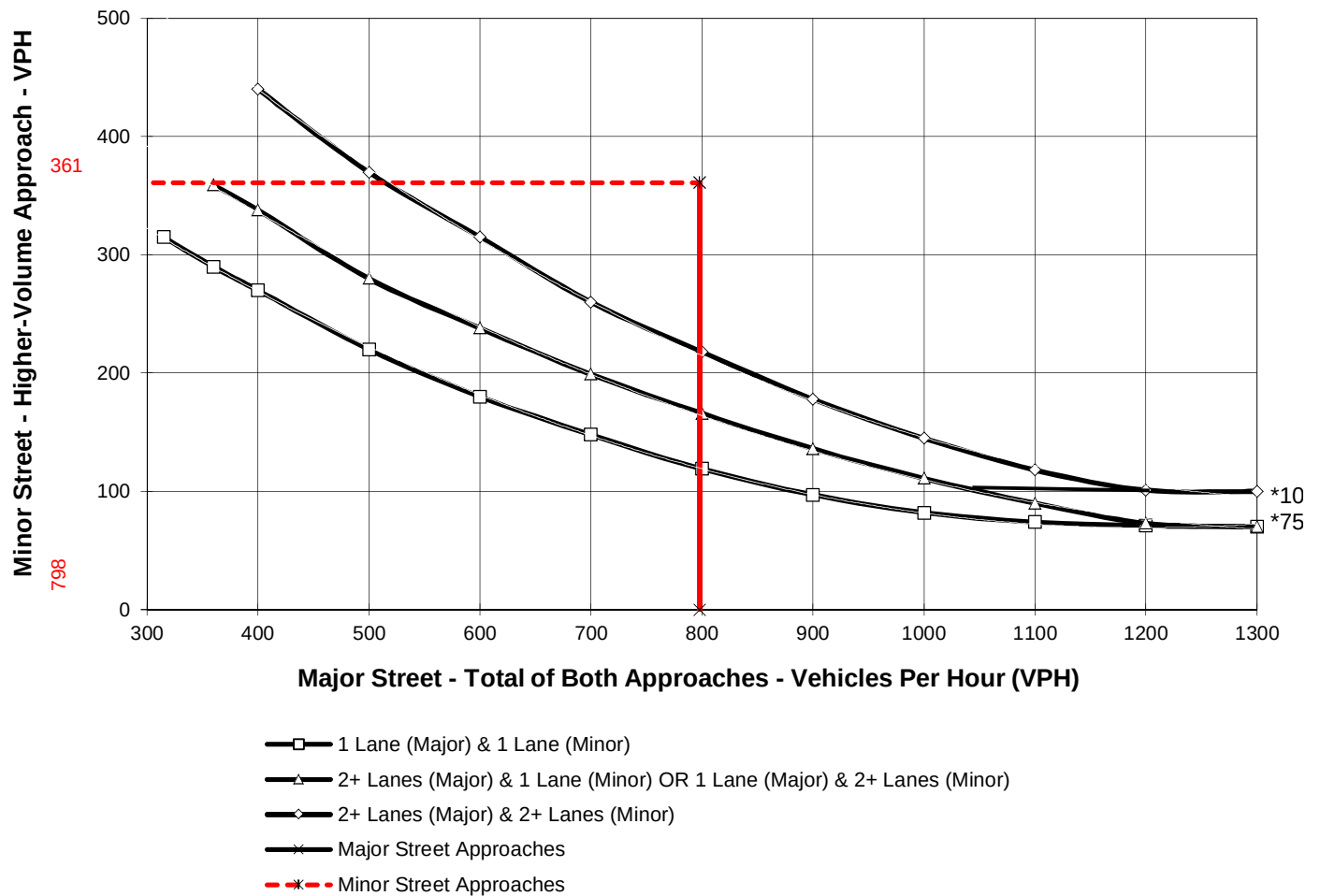
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St**

High Volume Approach (VPH) = **361**

Number of Approach Lanes Minor Street = **2**

### WARRANTED FOR A SIGNAL



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing+Ambient+Project Conditions - PM Peak Hour**

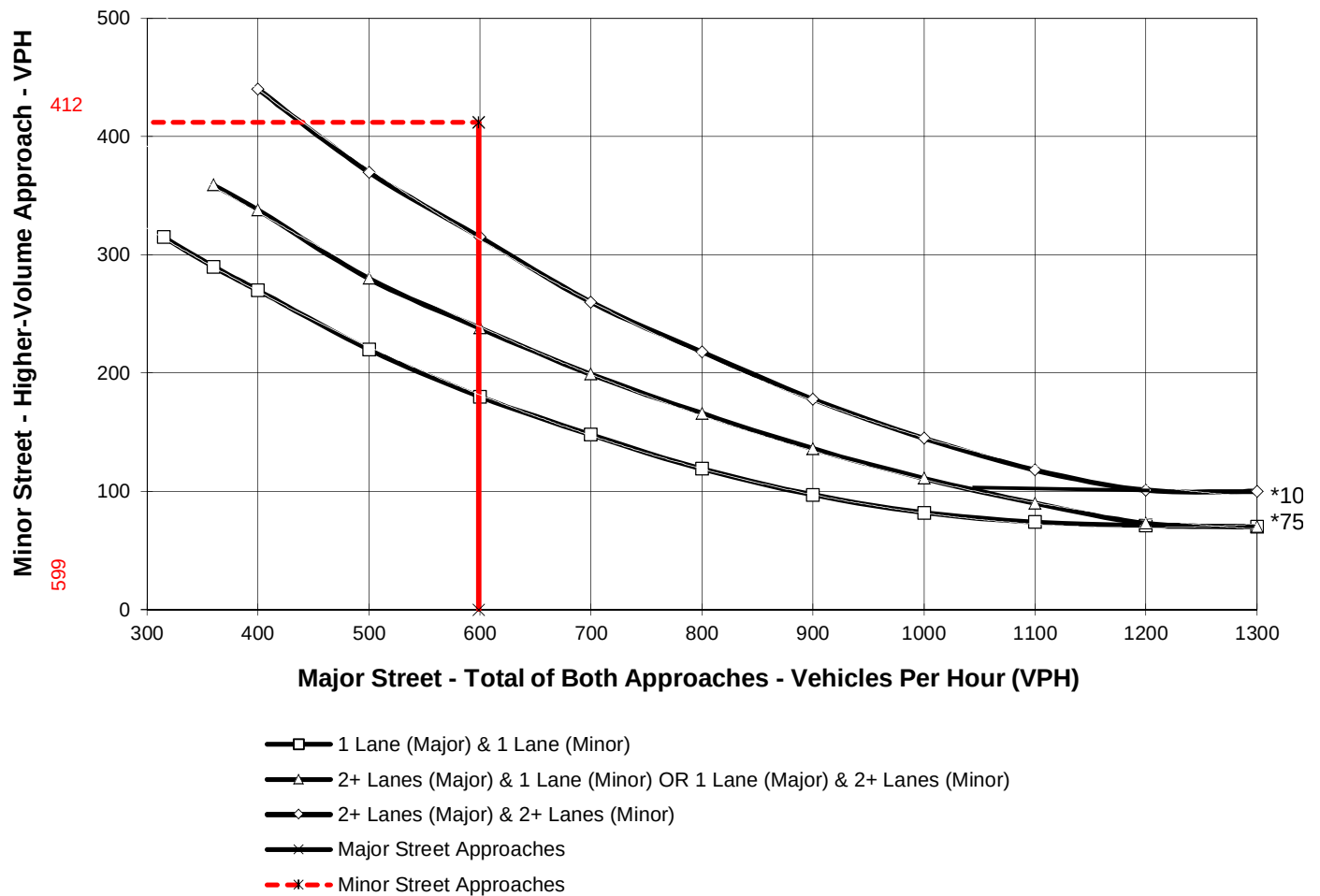
Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **599**  
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St**

High Volume Approach (VPH) = **412**  
Number of Approach Lanes Minor Street = **2**

**WARRANTED FOR A SIGNAL**



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Existing+Ambient+Project Conditions**MAJOR STREET: **Collier Ave** ADT = **3,500** Lanes= **1**MINOR STREET: **Srping St** ADT = **3,400** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                                | RURAL                      | XX           | Minimum Requirements<br>EADT                                      |        |                                                                                       |         |
|--------------------------------------------------------------------------------------|----------------------------|--------------|-------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|---------|
| <b>1A - Minimum Vehicular Traffic</b>                                                |                            |              | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |         |
| Number of lanes for moving<br>traffic on each approach.                              |                            |              |                                                                   |        |                                                                                       |         |
| Major Street                                                                         |                            | Minor Street | Urban                                                             | Rural  | Urban                                                                                 | Rural   |
| 1                                                                                    | 3,500                      | 1            | 8,000                                                             | 5,600  | 2,400                                                                                 | 1,680 * |
| 2 or More                                                                            |                            | 1            | 9,600                                                             | 6,720  | 2,400                                                                                 | 1,680   |
| 2 or More                                                                            |                            | 2 or More    | 9,600                                                             | 6,720  | 3,200                                                                                 | 2,240   |
| 1                                                                                    |                            | 2 or More    | 8,000                                                             | 5,600  | 3,200                                                                                 | 2,240   |
| <b>1B - Interruption of Continuous Traffic</b>                                       |                            |              | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |         |
| Number of lanes for moving<br>traffic on each approach.                              |                            |              |                                                                   |        |                                                                                       |         |
| Major Street                                                                         |                            | Minor Street | Urban                                                             | Rural  | Urban                                                                                 | Rural   |
| 1                                                                                    | 3,500                      | 1            | 12,000                                                            | 8,400  | 1,200                                                                                 | 850 *   |
| 2 or More                                                                            |                            | 1            | 14,400                                                            | 10,080 | 1,200                                                                                 | 850     |
| 2 or More                                                                            |                            | 2 or More    | 14,400                                                            | 10,080 | 1,600                                                                                 | 1,120   |
| 1                                                                                    |                            | 2 or More    | 12,000                                                            | 8,400  | 1,600                                                                                 | 1,120   |
| <b>1A&amp;B - Combinations</b>                                                       |                            |              |                                                                   |        |                                                                                       |         |
| Satisfied                                                                            | Not Satisfied<br><b>XX</b> |              |                                                                   |        |                                                                                       |         |
| <u>No one warrant satisfied</u> , but following<br>warrants fulfilled 80% or more... |                            |              | 2 Warrants                                                        |        | 2 Warrants                                                                            |         |
| 63%                                                                                  | 42%                        |              |                                                                   |        |                                                                                       |         |
| 1A                                                                                   | 1B                         |              |                                                                   |        |                                                                                       |         |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.



## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing+Ambient+Project Conditions - AM Peak Hour**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **147**

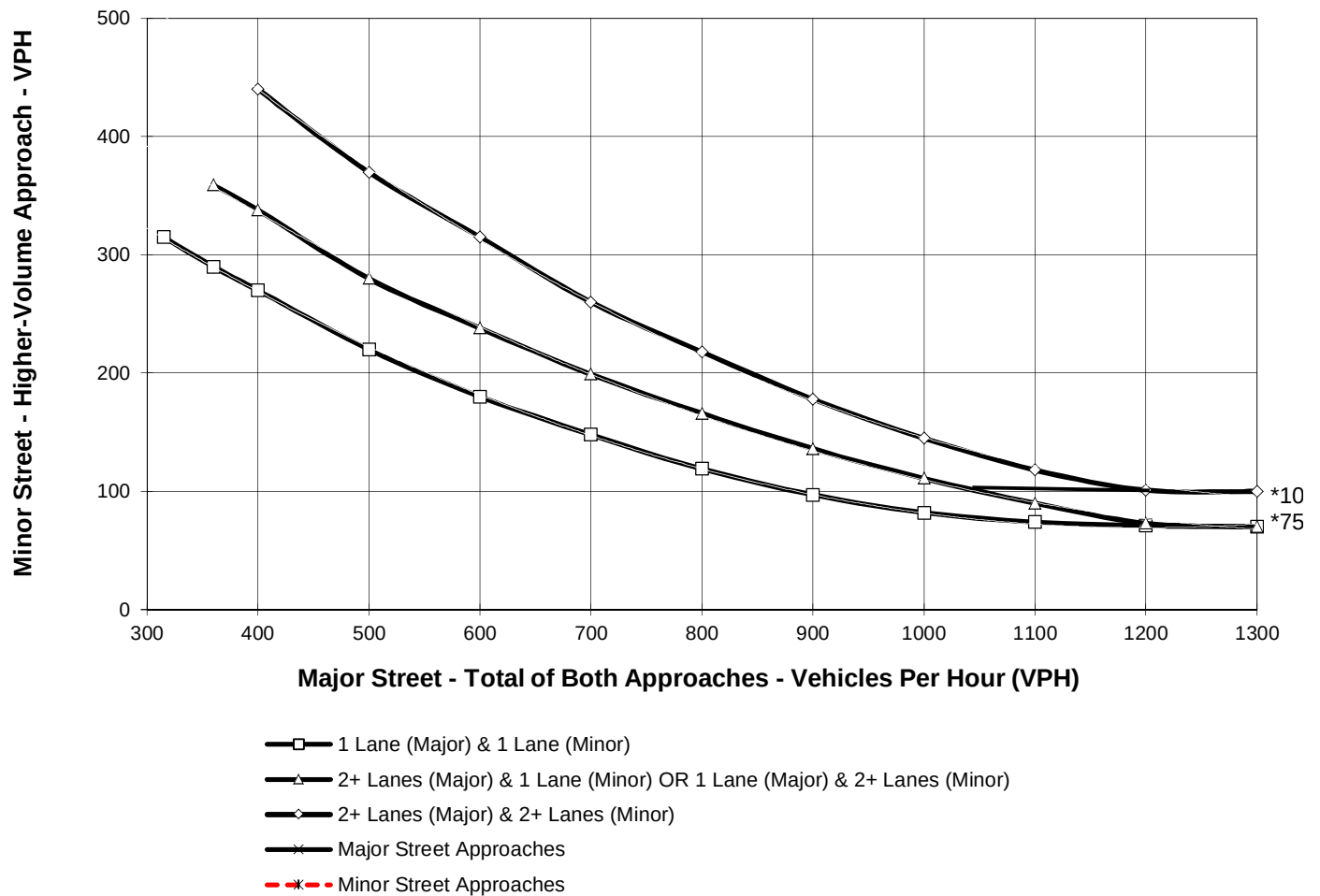
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Spring St**

High Volume Approach (VPH) = **398**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing+Ambient+Project Conditions - PM Peak Hour**

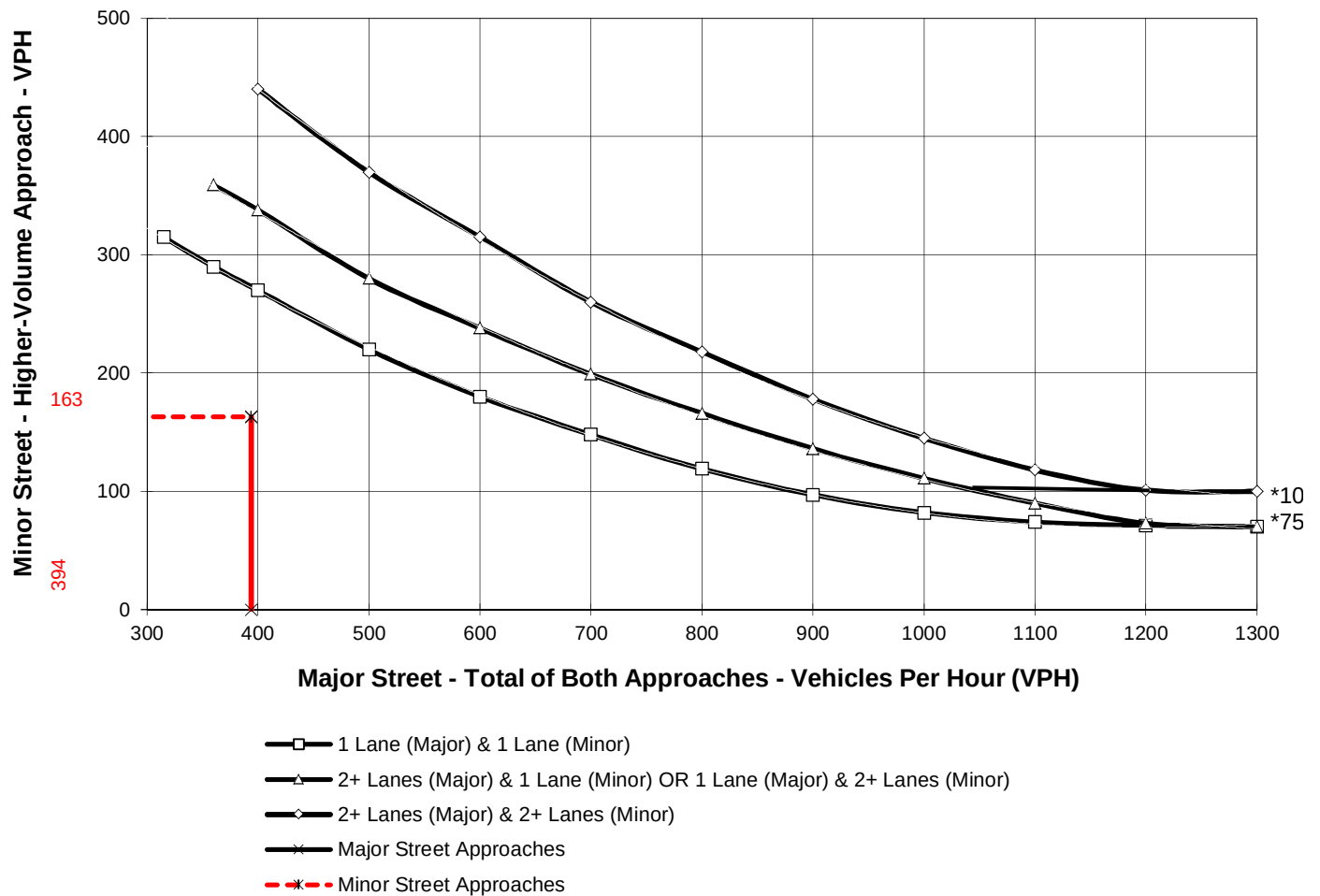
Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **394**  
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Spring St**

High Volume Approach (VPH) = **163**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Ex+Ambient+Cumulative+Project Conditions**MAJOR STREET: **Riverside Dr** ADT = **32,750** Lanes= **1**MINOR STREET: **Strickland Ave - Gunnerson St** ADT = **1,050** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                             | RURAL         | XX        | Minimum Requirements<br>EADT                                      |         |                                                                                       |       |
|-----------------------------------------------------------------------------------|---------------|-----------|-------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|-------|
| <b>1A - Minimum Vehicular Traffic</b>                                             |               |           | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| Number of lanes for moving traffic on each approach.                              |               |           |                                                                   |         |                                                                                       |       |
| Major Street                                                                      | Minor Street  |           | Urban                                                             | Rural   | Urban                                                                                 | Rural |
| 1                                                                                 | 32,750        | 1         | 8,000                                                             | 5,600 * | 2,400                                                                                 | 1,680 |
| 2 or More                                                                         |               | 1         | 9,600                                                             | 6,720   | 2,400                                                                                 | 1,680 |
| 2 or More                                                                         |               | 2 or More | 9,600                                                             | 6,720   | 3,200                                                                                 | 2,240 |
| 1                                                                                 |               | 2 or More | 8,000                                                             | 5,600   | 3,200                                                                                 | 2,240 |
| <b>1B - Interruption of Continuous Traffic</b>                                    |               |           | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| Number of lanes for moving traffic on each approach.                              |               |           |                                                                   |         |                                                                                       |       |
| Major Street                                                                      | Minor Street  |           | Urban                                                             | Rural   | Urban                                                                                 | Rural |
| 1                                                                                 | 32,750        | 1         | 12,000                                                            | 8,400 * | 1,200                                                                                 | 850 * |
| 2 or More                                                                         |               | 1         | 14,400                                                            | 10,080  | 1,200                                                                                 | 850   |
| 2 or More                                                                         |               | 2 or More | 14,400                                                            | 10,080  | 1,600                                                                                 | 1,120 |
| 1                                                                                 |               | 2 or More | 12,000                                                            | 8,400   | 1,600                                                                                 | 1,120 |
| <b>1A&amp;B - Combinations</b>                                                    |               |           |                                                                   |         |                                                                                       |       |
| Satisfied                                                                         | Not Satisfied | XX        |                                                                   |         |                                                                                       |       |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |               |           | 2 Warrants                                                        |         | 2 Warrants                                                                            |       |
| 63%                                                                               | 100%          |           |                                                                   |         |                                                                                       |       |
| 1A                                                                                | 1B            |           |                                                                   |         |                                                                                       |       |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Ex+Ambient+Cumulative+Project Conditions - AM**

Major Street Name = **Riverside Drive**

Total of Both Approaches (VPH) = **2064**

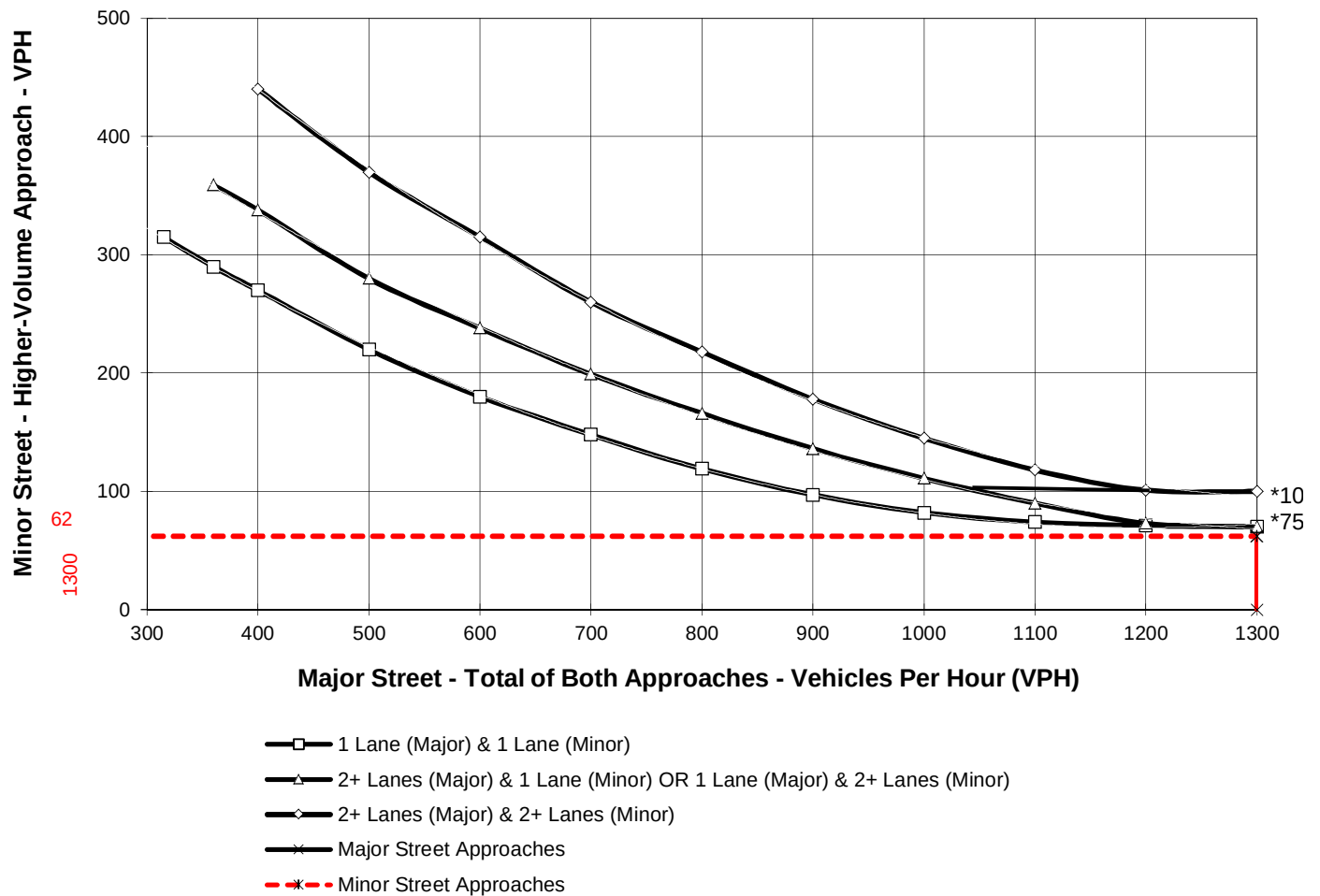
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Strickland Ave - Gunnerson**

High Volume Approach (VPH) = **62**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Ex+Ambient+Cumulative+Project Conditions - PM**

Major Street Name = **Riverside Drive**

Total of Both Approaches (VPH) = **2733**

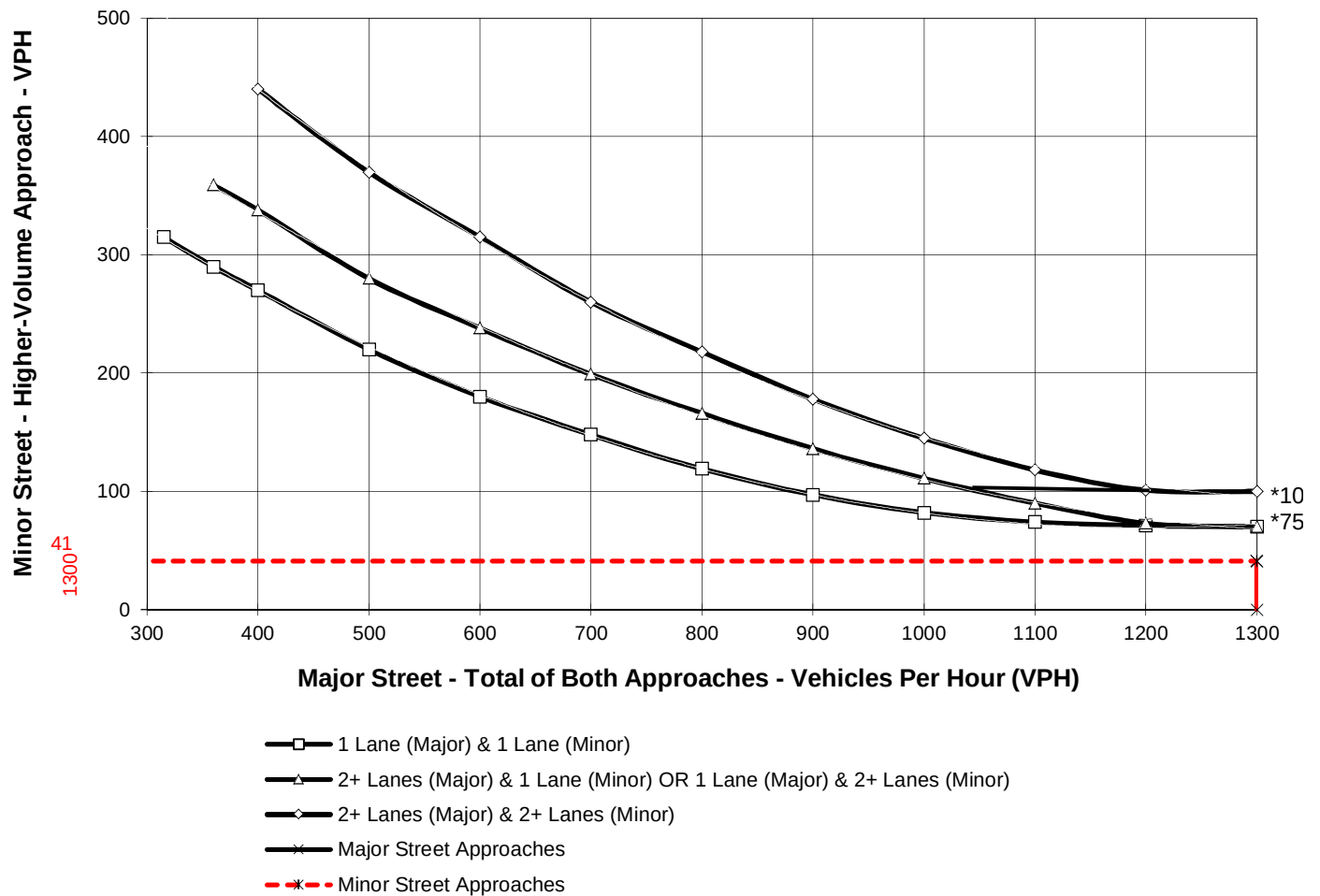
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Strickland Ave - Gunnerson**

High Volume Approach (VPH) = **41**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Ex+Ambient+Cumulative+Project Conditions**MAJOR STREET: **Collier Ave** ADT = **17,350** Lanes= **1**MINOR STREET: **Crane St** ADT = **500** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | RURAL                      | XX | Minimum Requirements<br>EADT                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                              |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>1A - Minimum Vehicular Traffic</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |    | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches)                                                                                                                                                                                                                                                                                    |  | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only)                                                                                                                                                                                                                                                        |  |
| Satisfied                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Not Satisfied<br><b>XX</b> |    |                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                                                                                                                                                              |  |
| Number of lanes for moving traffic on each approach.<br><br><div style="display: flex; justify-content: space-between;"> <div>             Major Street<br/>             1<br/>             2 or More<br/>             2 or More<br/>             1           </div> <div>             17,350<br/> <br/> <br/> <br/> <br/> </div> <div>             Minor Street<br/>             1<br/>             2 or More<br/>             2 or More<br/>             2 or More           </div> <div>             500<br/> <br/> <br/> <br/> <br/> </div> </div> |                            |    | <div style="display: flex; justify-content: space-around;"> <div>             Urban<br/>             8,000<br/>             9,600<br/>             9,600<br/>             8,000           </div> <div>             Rural<br/>             5,600 *<br/>             6,720<br/>             6,720<br/>             5,600           </div> </div>       |  | <div style="display: flex; justify-content: space-around;"> <div>             Urban<br/>             2,400<br/>             2,400<br/>             3,200<br/>             3,200           </div> <div>             Rural<br/>             1,680<br/>             1,680<br/>             2,240<br/>             2,240           </div> </div> |  |
| <b>1B - Interruption of Continuous Traffic</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |    | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches)                                                                                                                                                                                                                                                                                    |  | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only)                                                                                                                                                                                                                                                        |  |
| Satisfied                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Not Satisfied<br><b>XX</b> |    |                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                                                                                                                                                              |  |
| Number of lanes for moving traffic on each approach.<br><br><div style="display: flex; justify-content: space-between;"> <div>             Major Street<br/>             1<br/>             2 or More<br/>             2 or More<br/>             1           </div> <div>             17,350<br/> <br/> <br/> <br/> <br/> </div> <div>             Minor Street<br/>             1<br/>             2 or More<br/>             2 or More<br/>             2 or More           </div> <div>             500<br/> <br/> <br/> <br/> <br/> </div> </div> |                            |    | <div style="display: flex; justify-content: space-around;"> <div>             Urban<br/>             12,000<br/>             14,400<br/>             14,400<br/>             12,000           </div> <div>             Rural<br/>             8,400 *<br/>             10,080<br/>             10,080<br/>             8,400           </div> </div> |  | <div style="display: flex; justify-content: space-around;"> <div>             Urban<br/>             1,200<br/>             1,200<br/>             1,600<br/>             1,600           </div> <div>             Rural<br/>             850<br/>             850<br/>             1,120<br/>             1,120           </div> </div>     |  |
| <b>1A&amp;B - Combinations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |    |                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                                                                                                                                                              |  |
| Satisfied                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Not Satisfied<br><b>XX</b> |    |                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                                                                                                                                                              |  |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more...<br><div style="display: flex; justify-content: space-around;"> <div>             30%<br/>             1A           </div> <div>             59%<br/>             1B           </div> </div>                                                                                                                                                                                                                                                                          |                            |    | 2 Warrants                                                                                                                                                                                                                                                                                                                                           |  | 2 Warrants                                                                                                                                                                                                                                                                                                                                   |  |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Ex+Ambient+Cumulative+Project Conditions - AM**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1417**

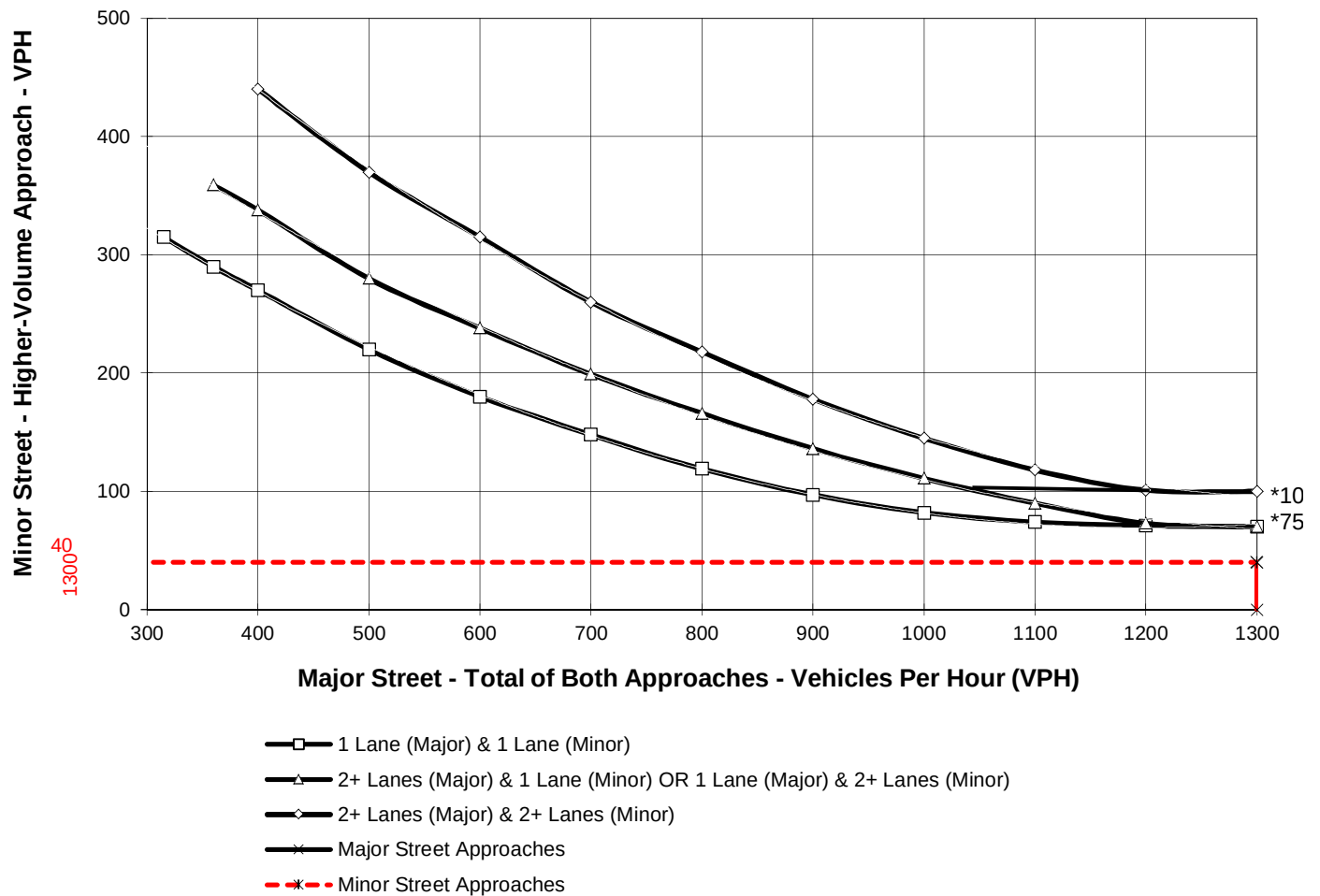
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Crane St**

High Volume Approach (VPH) = **40**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Ex+Ambient+Cumulative+Project Conditions - PM**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1464**

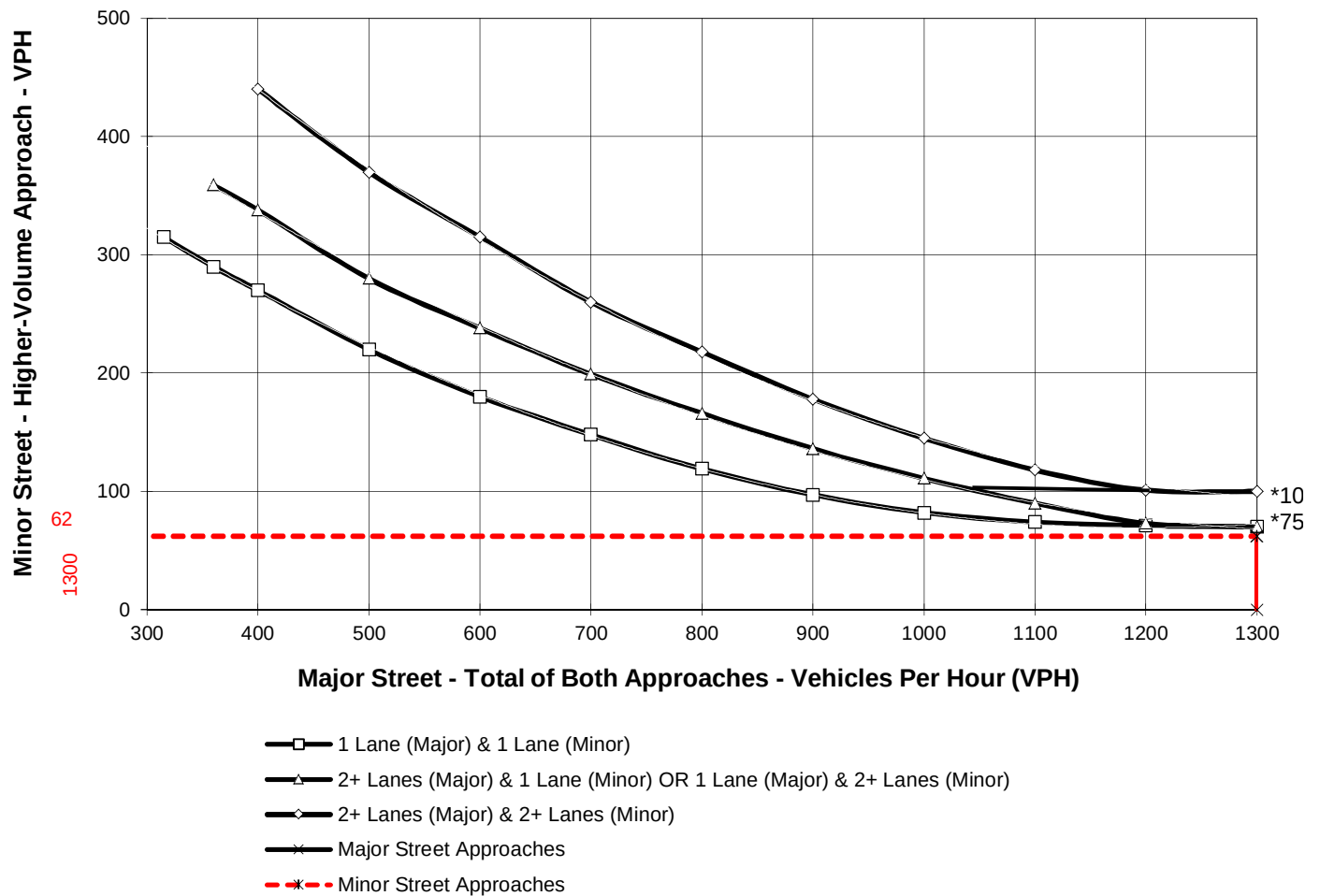
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Crane St**

High Volume Approach (VPH) = **62**

Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.



# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Ex+Ambient+Cumulative+Project Conditions**MAJOR STREET: **Collier Ave** ADT = **12,850** Lanes= **1**MINOR STREET: **Chaney St** ADT = **5,150** Lanes= **2**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                                | RURAL         | XX              | Minimum Requirements<br>EADT                                      |         |                                                                                       |         |
|--------------------------------------------------------------------------------------|---------------|-----------------|-------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|---------|
| <b>1A - Minimum Vehicular Traffic</b>                                                |               |                 | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied<br><b>XX</b>                                                               | Not Satisfied |                 |                                                                   |         |                                                                                       |         |
| Number of lanes for moving<br>traffic on each approach.                              |               |                 |                                                                   |         |                                                                                       |         |
| Major Street                                                                         | Minor Street  |                 | Urban                                                             | Rural   | Urban                                                                                 | Rural   |
| 1                                                                                    | 1             |                 | 8,000                                                             | 5,600   | 2,400                                                                                 | 1,680   |
| 2 or More                                                                            | 1             |                 | 9,600                                                             | 6,720   | 2,400                                                                                 | 1,680   |
| 2 or More                                                                            | 2 or More     |                 | 9,600                                                             | 6,720   | 3,200                                                                                 | 2,240   |
| 1                                                                                    | 12,850        | 2 or More 5,150 | 8,000                                                             | 5,600 * | 3,200                                                                                 | 2,240 * |
| <b>1B - Interruption of Continuous Traffic</b>                                       |               |                 | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |         | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied<br><b>XX</b>                                                               | Not Satisfied |                 |                                                                   |         |                                                                                       |         |
| Number of lanes for moving<br>traffic on each approach.                              |               |                 |                                                                   |         |                                                                                       |         |
| Major Street                                                                         | Minor Street  |                 | Urban                                                             | Rural   | Urban                                                                                 | Rural   |
| 1                                                                                    | 1             |                 | 12,000                                                            | 8,400   | 1,200                                                                                 | 850     |
| 2 or More                                                                            | 1             |                 | 14,400                                                            | 10,080  | 1,200                                                                                 | 850     |
| 2 or More                                                                            | 2 or More     |                 | 14,400                                                            | 10,080  | 1,600                                                                                 | 1,120   |
| 1                                                                                    | 12,850        | 2 or More 5,150 | 12,000                                                            | 8,400 * | 1,600                                                                                 | 1,120 * |
| <b>1A&amp;B - Combinations</b>                                                       |               |                 |                                                                   |         |                                                                                       |         |
| Satisfied<br><b>XX</b>                                                               | Not Satisfied |                 |                                                                   |         |                                                                                       |         |
| <u>No one warrant satisfied</u> , but following<br>warrants fulfilled 80% or more... |               |                 | 2 Warrants                                                        |         | 2 Warrants                                                                            |         |
| 100%                                                                                 | 100%          |                 |                                                                   |         |                                                                                       |         |
| 1A                                                                                   | 1B            |                 |                                                                   |         |                                                                                       |         |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Ex+Ambient+Cumulative+Project Conditions - AM**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **1083**

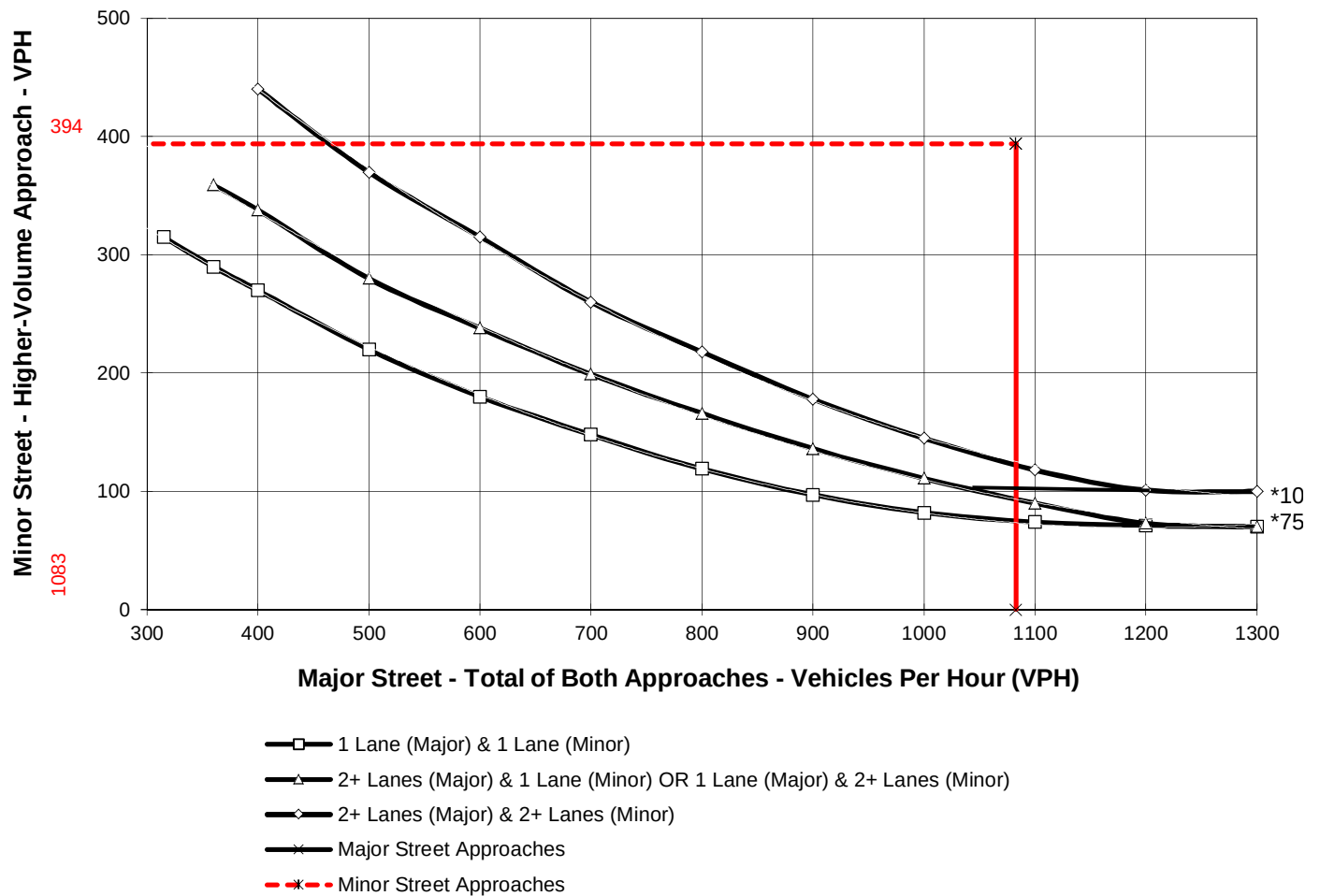
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St**

High Volume Approach (VPH) = **394**

Number of Approach Lanes Minor Street = **2**

### WARRANTED FOR A SIGNAL



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Ex+Ambient+Cumulative+Project Conditions - PM**

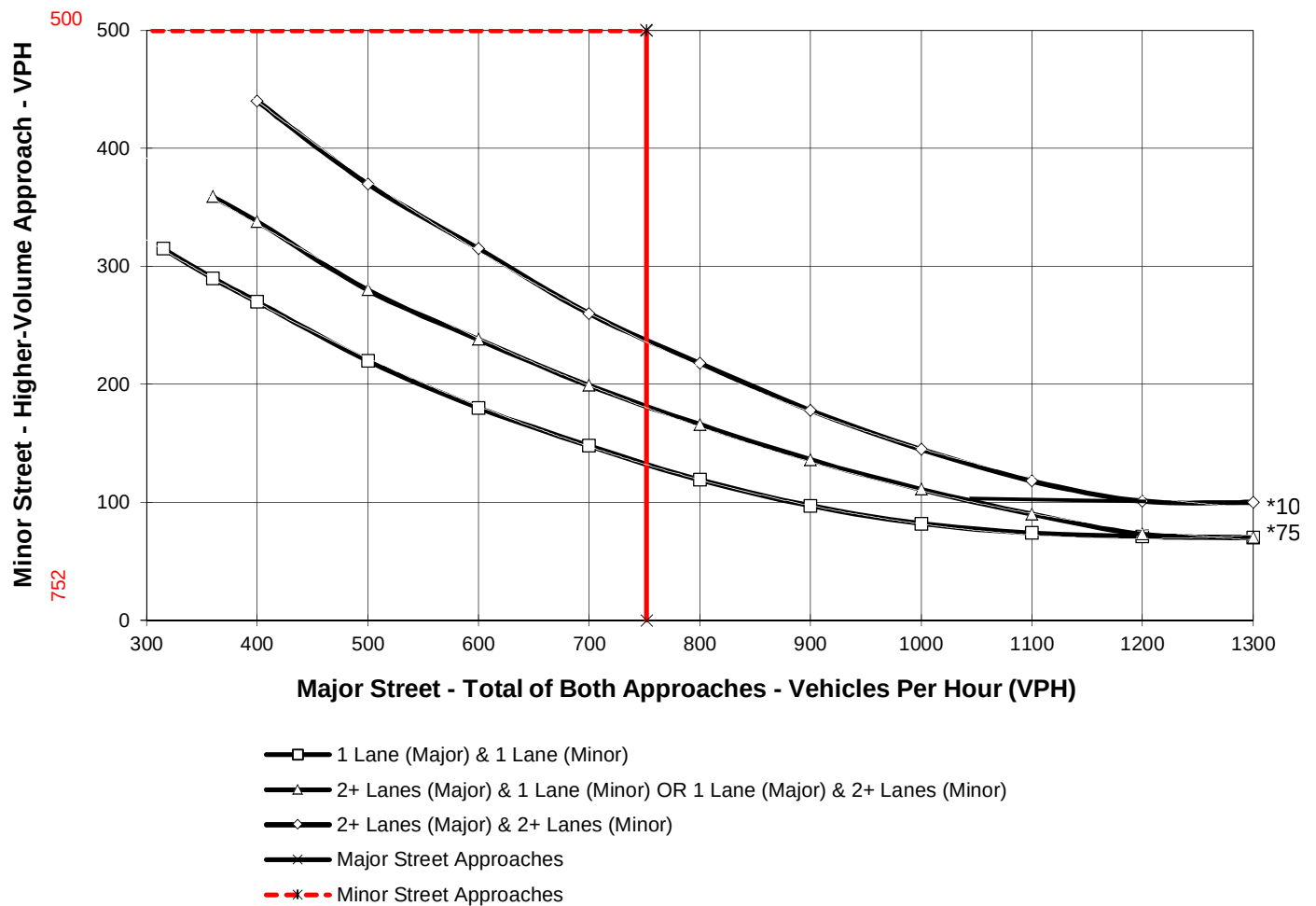
Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **752**  
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St**

High Volume Approach (VPH) = **661**  
Number of Approach Lanes Minor Street = **2**

### WARRANTED FOR A SIGNAL



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

# Traffic Signal Warrants Worksheet

## (Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**SCENARIO: **Ex+Ambient+Cumulative+Project Conditions**MAJOR STREET: **Collier Ave** ADT = **4,200** Lanes= **1**MINOR STREET: **Srping St** ADT = **4,200** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

| URBAN                                                                             | RURAL                      | XX    | Minimum Requirements<br>EADT                                      |        |                                                                                       |         |
|-----------------------------------------------------------------------------------|----------------------------|-------|-------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|---------|
| <b>1A - Minimum Vehicular Traffic</b>                                             |                            |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |       |                                                                   |        |                                                                                       |         |
| Number of lanes for moving traffic on each approach.                              |                            |       |                                                                   |        |                                                                                       |         |
| Major Street                                                                      | Minor Street               |       | Urban                                                             | Rural  | Urban                                                                                 | Rural   |
| 1                                                                                 | 1                          | 4,200 | 8,000                                                             | 5,600  | 2,400                                                                                 | 1,680 * |
| 2 or More                                                                         | 1                          |       | 9,600                                                             | 6,720  | 2,400                                                                                 | 1,680   |
| 2 or More                                                                         | 2 or More                  |       | 9,600                                                             | 6,720  | 3,200                                                                                 | 2,240   |
| 1                                                                                 | 2 or More                  |       | 8,000                                                             | 5,600  | 3,200                                                                                 | 2,240   |
| <b>1B - Interruption of Continuous Traffic</b>                                    |                            |       | Vehicles Per Day<br>on Major Street<br>(Total of Both Approaches) |        | Vehicles Per Day<br>on Higher-Volume<br>Minor Street Approach<br>(One Direction Only) |         |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |       |                                                                   |        |                                                                                       |         |
| Number of lanes for moving traffic on each approach.                              |                            |       |                                                                   |        |                                                                                       |         |
| Major Street                                                                      | Minor Street               |       | Urban                                                             | Rural  | Urban                                                                                 | Rural   |
| 1                                                                                 | 1                          | 4,200 | 12,000                                                            | 8,400  | 1,200                                                                                 | 850 *   |
| 2 or More                                                                         | 1                          |       | 14,400                                                            | 10,080 | 1,200                                                                                 | 850     |
| 2 or More                                                                         | 2 or More                  |       | 14,400                                                            | 10,080 | 1,600                                                                                 | 1,120   |
| 1                                                                                 | 2 or More                  |       | 12,000                                                            | 8,400  | 1,600                                                                                 | 1,120   |
| <b>1A&amp;B - Combinations</b>                                                    |                            |       |                                                                   |        |                                                                                       |         |
| Satisfied                                                                         | Not Satisfied<br><b>XX</b> |       |                                                                   |        |                                                                                       |         |
| <u>No one warrant satisfied</u> , but following warrants fulfilled 80% or more... |                            |       | 2 Warrants                                                        |        | 2 Warrants                                                                            |         |
| 75%                                                                               | 50%                        |       |                                                                   |        |                                                                                       |         |
| 1A                                                                                | 1B                         |       |                                                                   |        |                                                                                       |         |

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Ex+Ambient+Cumulative+Project Conditions - AM**

Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **173**

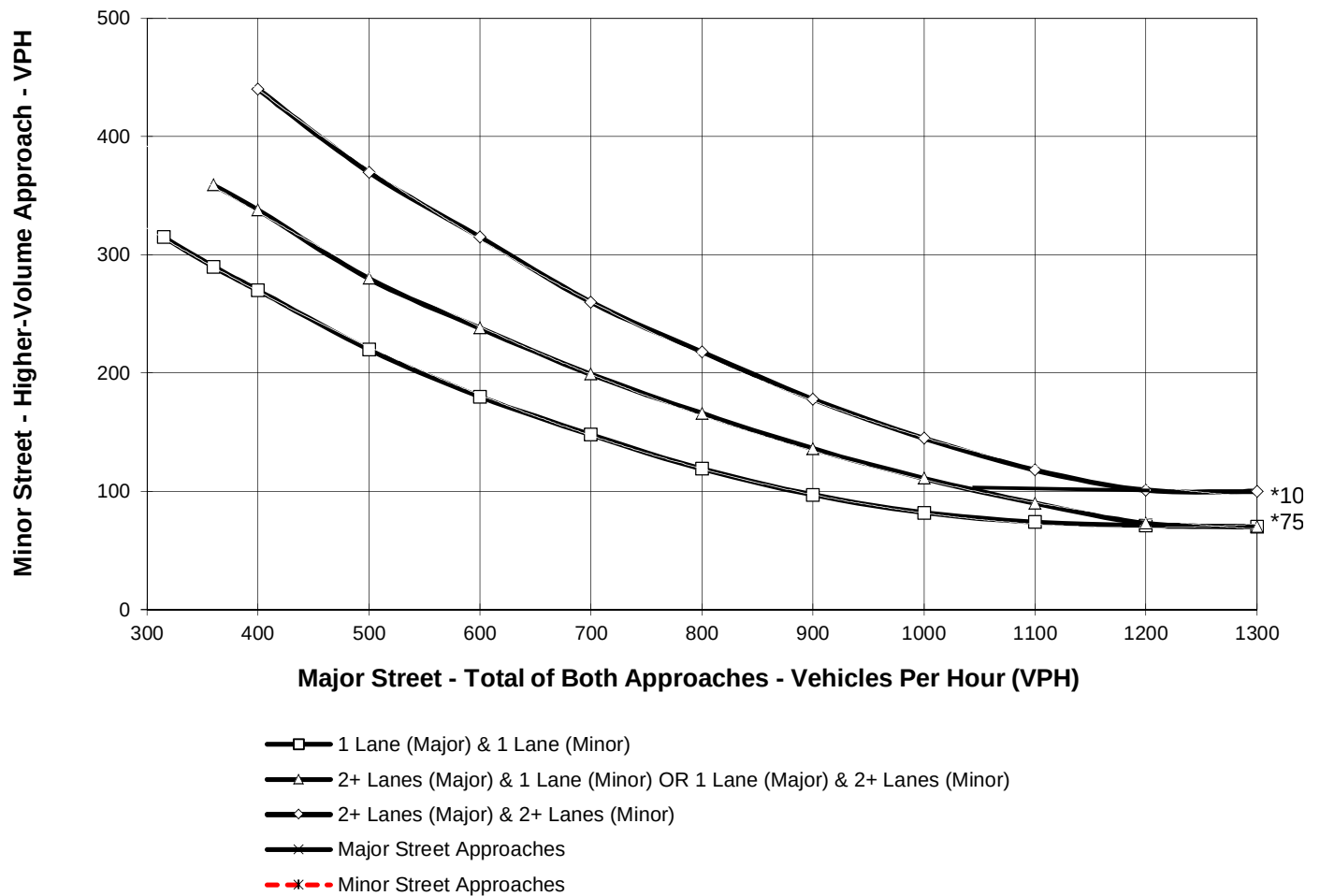
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Spring St**

High Volume Approach (VPH) = **433**

Number of Approach Lanes Minor Street = **1**

### WARRANTED FOR A SIGNAL



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Ex+Ambient+Cumulative+Project Conditions - PM**

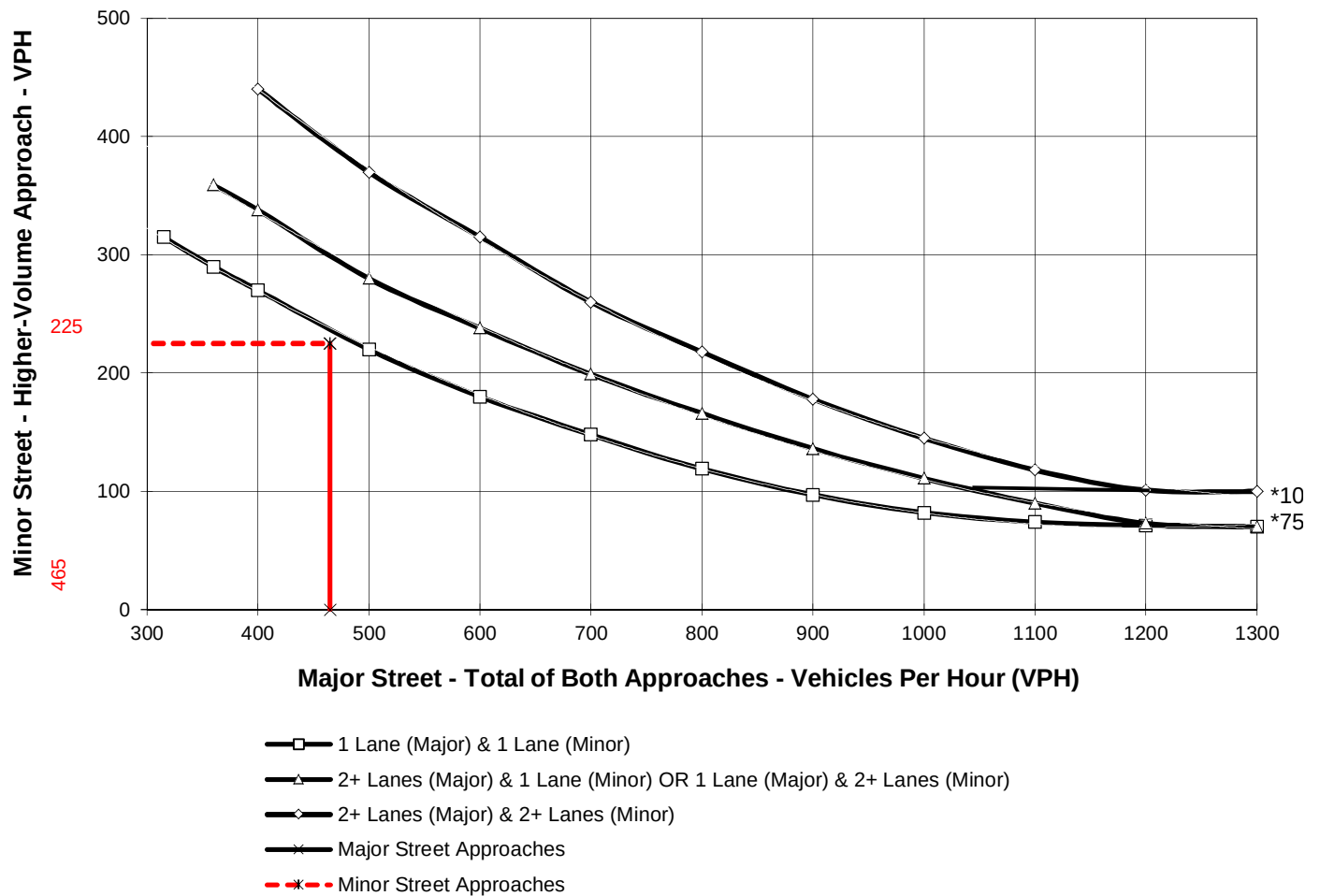
Major Street Name = **Collier Ave**

Total of Both Approaches (VPH) = **465**  
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Spring St**

High Volume Approach (VPH) = **225**  
Number of Approach Lanes Minor Street = **1**

### SIGNAL WARRANT NOT SATISFIED



\* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

## **Appendix D**

Existing Conditions Intersection Analysis Worksheets

**Intersection**

Int Delay, s/veh 2.7

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 836  | 1    | 5    | 644  | 23   | 43   | 2    | 6    | 0    | 1    | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | 50   | -    | -    | 50   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 880  | 1    | 5    | 678  | 24   | 45   | 2    | 6    | 0    | 1    | 7    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor2 |       |       | Minor1 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 702    | 0 | 0 | 881    | 0 | 0 | 1582   | 1582  | 690   | 1583   | 1594  | 881   |
| Stage 1              | -      | - | - | -      | - | - | 701    | 701   | -     | 881    | 881   | -     |
| Stage 2              | -      | - | - | -      | - | - | 881    | 881   | -     | 702    | 713   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 895    | - | - | 767    | - | - | 88     | 109   | 445   | 88     | 107   | 346   |
| Stage 1              | -      | - | - | -      | - | - | 429    | 441   | -     | 341    | 365   | -     |
| Stage 2              | -      | - | - | -      | - | - | 341    | 365   | -     | 429    | 435   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 895    | - | - | 767    | - | - | 85     | 108   | 445   | 85     | 106   | 346   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 85     | 108   | -     | 85     | 106   | -     |
| Stage 1              | -      | - | - | -      | - | - | 429    | 436   | -     | 341    | 365   | -     |
| Stage 2              | -      | - | - | -      | - | - | 333    | 365   | -     | 416    | 430   | -     |

| Approach             | EB | WB  | SE   | NW   |
|----------------------|----|-----|------|------|
| HCM Control Delay, s | 0  | 0.1 | 80.3 | 18.6 |
| HCM LOS              |    |     | F    | C    |

| Minor Lane/Major Mvmt | NWLn1 | NWLn2 | EBL | EBT | EBR | WBL   | WBT | WBR | SELn1 | SELn2 |
|-----------------------|-------|-------|-----|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 106   | 346   | 895 | -   | -   | 767   | -   | -   | 86    | 445   |
| HCM Lane V/C Ratio    | 0.01  | 0.021 | -   | -   | -   | 0.007 | -   | -   | 0.551 | 0.014 |
| HCM Control Delay (s) | 39.3  | 15.6  | 0   | -   | -   | 9.7   | 0   | -   | 89.3  | 13.2  |
| HCM Lane LOS          | E     | C     | A   | -   | -   | A     | A   | -   | F     | B     |
| HCM 95th %tile Q(veh) | 0     | 0.1   | 0   | -   | -   | 0     | -   | -   | 2.4   | 0     |



# Lanes and Geometrics

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

11/10/2016

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 50                                                                                  | 0                                                                                   |                                                                                     | 50                                                                                  |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 1687                                                                              |                                                                                   |                                                                                   | 935                                                                               |                                                                                   |                                                                                    | 885                                                                                 |                                                                                     |                                                                                     | 1732                                                                                |                                                                                     |
| Travel Time (s)      |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: RIVERSIDE DR & COLLIER AVE

10/5/2016

|                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Volume (veh/h)                                                                                      | 1                                                                                 | 38                                                                                | 32                                                                                | 637                                                                               | 59                                                                                | 7                                                                                 | 68                                                                                 | 6                                                                                   | 806                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                                                | 1                                                                                 | 42                                                                                | 35                                                                                | 700                                                                               | 65                                                                                | 8                                                                                 | 75                                                                                 | 7                                                                                   | 886                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Adj No. of Lanes                                                                                    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                                                    | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 290                                                                               | 304                                                                               | 259                                                                               | 1141                                                                              | 1047                                                                              | 129                                                                               | 283                                                                                | 23                                                                                  | 1284                                                                                | 0                                                                                   | 0                                                                                   | 266                                                                                 |
| Arrive On Green                                                                                     | 0.16                                                                              | 0.16                                                                              | 0.16                                                                              | 0.64                                                                              | 0.64                                                                              | 0.64                                                                              | 0.17                                                                               | 0.17                                                                                | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                | 0.17                                                                                |
| Sat Flow, veh/h                                                                                     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1627                                                                              | 200                                                                               | 1228                                                                               | 138                                                                                 | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h                                                                                | 1                                                                                 | 42                                                                                | 35                                                                                | 700                                                                               | 0                                                                                 | 73                                                                                | 82                                                                                 | 0                                                                                   | 886                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 0                                                                                 | 1827                                                                              | 1366                                                                               | 0                                                                                   | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s                                                                                     | 0.0                                                                               | 1.7                                                                               | 1.7                                                                               | 20.9                                                                              | 0.0                                                                               | 1.3                                                                               | 4.3                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 0.0                                                                               | 1.7                                                                               | 1.7                                                                               | 20.9                                                                              | 0.0                                                                               | 1.3                                                                               | 5.3                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| Prop In Lane                                                                                        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.11                                                                              | 0.91                                                                               |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 290                                                                               | 304                                                                               | 259                                                                               | 1141                                                                              | 0                                                                                 | 1176                                                                              | 306                                                                                | 0                                                                                   | 1284                                                                                | 0                                                                                   | 0                                                                                   | 266                                                                                 |
| V/C Ratio(X)                                                                                        | 0.00                                                                              | 0.14                                                                              | 0.14                                                                              | 0.61                                                                              | 0.00                                                                              | 0.06                                                                              | 0.27                                                                               | 0.00                                                                                | 0.69                                                                                | 0.00                                                                                | 0.00                                                                                | 0.01                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 290                                                                               | 304                                                                               | 259                                                                               | 1141                                                                              | 0                                                                                 | 1176                                                                              | 306                                                                                | 0                                                                                   | 1284                                                                                | 0                                                                                   | 0                                                                                   | 266                                                                                 |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 31.5                                                                              | 32.2                                                                              | 32.2                                                                              | 9.5                                                                               | 0.0                                                                               | 6.0                                                                               | 33.7                                                                               | 0.0                                                                                 | 3.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 31.2                                                                                |
| Incr Delay (d2), s/veh                                                                              | 0.0                                                                               | 0.9                                                                               | 1.1                                                                               | 2.5                                                                               | 0.0                                                                               | 0.1                                                                               | 0.2                                                                                | 0.0                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 0.0                                                                               | 1.0                                                                               | 0.8                                                                               | 10.9                                                                              | 0.0                                                                               | 0.7                                                                               | 1.8                                                                                | 0.0                                                                                 | 22.4                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 31.5                                                                              | 33.2                                                                              | 33.3                                                                              | 11.9                                                                              | 0.0                                                                               | 6.1                                                                               | 33.9                                                                               | 0.0                                                                                 | 4.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 31.2                                                                                |
| LnGrp LOS                                                                                           | C                                                                                 | C                                                                                 | C                                                                                 | B                                                                                 |                                                                                   | A                                                                                 | C                                                                                  |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Approach Vol, veh/h                                                                                 |                                                                                   | 78                                                                                |                                                                                   |                                                                                   | 773                                                                               |                                                                                   |                                                                                    | 968                                                                                 |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 33.2                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 6.9                                                                                 |                                                                                     |                                                                                     | 31.2                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 63.6                                                                              |                                                                                   | 20.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                    | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 5.3                                                                               |                                                                                   | * 5.3                                                                             |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 44.7                                                                              |                                                                                   | * 15                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                        |                                                                                   | 23.9                                                                              |                                                                                   | 18.1                                                                              |                                                                                   | 4.7                                                                               |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 1.4                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.1                                                                               |                                                                                    | 2.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 2: RIVERSIDE DR & COLLIER AVE

10/5/2016



| Lane Group           | SEL   | SET   | SER   | NWL   | NWT   | NEL   | NET   | NER   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |
| Volume (vph)         | 1     | 38    | 32    | 637   | 59    | 68    | 6     | 806   | 0     |
| Turn Type            | Split | NA    | Perm  | Split | NA    | Perm  | NA    | pm+ov | NA    |
| Protected Phases     | 6     | 6     |       | 2     | 2     |       | 4     | 2     | 8     |
| Permitted Phases     |       |       | 6     |       |       | 4     |       | 4     |       |
| Detector Phase       | 6     | 6     | 6     | 2     | 2     | 4     | 4     | 2     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 6.0   | 6.0   | 6.0   | 7.0   | 7.0   | 9.0   | 9.0   | 7.0   | 9.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 20.0  | 20.0  | 50.0  | 50.0  | 20.0  | 20.0  | 50.0  | 20.0  |
| Total Split (%)      | 22.2% | 22.2% | 22.2% | 55.6% | 55.6% | 22.2% | 22.2% | 55.6% | 22.2% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 3.9   | 3.9   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |       | 4.9   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |       |
| Recall Mode          | Max   | Max   | Max   | C-Max | C-Max | None  | None  | C-Max | None  |
| Act Effct Green (s)  | 14.7  | 14.7  | 14.7  | 51.8  | 51.8  |       | 10.8  | 64.7  | 10.5  |
| Actuated g/C Ratio   | 0.16  | 0.16  | 0.16  | 0.58  | 0.58  |       | 0.12  | 0.72  | 0.12  |
| v/c Ratio            | 0.00  | 0.14  | 0.10  | 0.69  | 0.07  |       | 0.50  | 0.65  | 0.00  |
| Control Delay        | 32.0  | 33.7  | 0.6   | 15.1  | 5.7   |       | 47.1  | 3.2   | 0.0   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 32.0  | 33.7  | 0.6   | 15.1  | 5.7   |       | 47.1  | 3.2   | 0.0   |
| LOS                  | C     | C     | A     | B     | A     |       | D     | A     | A     |
| Approach Delay       |       | 18.8  |       |       | 14.2  |       | 6.9   |       | 0.0   |
| Approach LOS         |       | B     |       |       | B     |       | A     |       | A     |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 14 (16%), Referenced to phase 2:NWTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 10.5

Intersection LOS: B

Intersection Capacity Utilization 75.7%

ICU Level of Service D

Analysis Period (min) 15

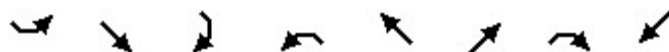
Splits and Phases: 2: RIVERSIDE DR & COLLIER AVE

|      |      |      |
|------|------|------|
|      |      |      |
| 50 s | 20 s | 20 s |
|      |      |      |
|      |      | 20 s |

## Queues

## 2: RIVERSIDE DR &amp; COLLIER AVE

10/5/2016



| Lane Group              | SEL  | SET  | SER  | NWL  | NWT  | NET  | NER  | SWT  |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 1    | 42   | 35   | 700  | 73   | 82   | 886  | 3    |
| v/c Ratio               | 0.00 | 0.14 | 0.10 | 0.69 | 0.07 | 0.50 | 0.65 | 0.00 |
| Control Delay           | 32.0 | 33.7 | 0.6  | 15.1 | 5.7  | 47.1 | 3.2  | 0.0  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 32.0 | 33.7 | 0.6  | 15.1 | 5.7  | 47.1 | 3.2  | 0.0  |
| Queue Length 50th (ft)  | 1    | 21   | 0    | 259  | 7    | 45   | 14   | 0    |
| Queue Length 95th (ft)  | 5    | 50   | 0    | 498  | 20   | 86   | 47   | 0    |
| Internal Link Dist (ft) |      | 1295 |      |      | 623  | 2459 |      | 691  |
| Turn Bay Length (ft)    | 200  |      | 200  |      |      |      | 360  |      |
| Base Capacity (vph)     | 289  | 304  | 335  | 1018 | 1057 | 231  | 1359 | 1070 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.00 | 0.14 | 0.10 | 0.69 | 0.07 | 0.35 | 0.65 | 0.00 |
| Intersection Summary    |      |      |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 3: CENTRAL AVE & COLLIER AVE

10/5/2016

|                                           |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                  | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                       |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)                            | 767                                                                               | 66                                                                                | 21                                                                                | 27                                                                                | 48                                                                                | 318                                                                               | 40                                                                                 | 83                                                                                  | 36                                                                                  | 580                                                                                 | 246                                                                                 | 675                                                                                 |
| Number                                    | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                    | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                      | 852                                                                               | 73                                                                                | 23                                                                                | 30                                                                                | 53                                                                                | 353                                                                               | 44                                                                                 | 92                                                                                  | 40                                                                                  | 644                                                                                 | 273                                                                                 | 750                                                                                 |
| Adj No. of Lanes                          | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   |
| Peak Hour Factor                          | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %                      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                | 1117                                                                              | 1559                                                                              | 697                                                                               | 47                                                                                | 265                                                                               | 556                                                                               | 105                                                                                | 255                                                                                 | 105                                                                                 | 719                                                                                 | 526                                                                                 | 1692                                                                                |
| Arrive On Green                           | 0.32                                                                              | 0.44                                                                              | 0.44                                                                              | 0.03                                                                              | 0.14                                                                              | 0.14                                                                              | 0.03                                                                               | 0.10                                                                                | 0.10                                                                                | 0.07                                                                                | 0.09                                                                                | 0.09                                                                                |
| Sat Flow, veh/h                           | 3442                                                                              | 3539                                                                              | 1583                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 3442                                                                               | 2446                                                                                | 1009                                                                                | 3442                                                                                | 1863                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h                      | 852                                                                               | 73                                                                                | 23                                                                                | 30                                                                                | 53                                                                                | 353                                                                               | 44                                                                                 | 65                                                                                  | 67                                                                                  | 644                                                                                 | 273                                                                                 | 750                                                                                 |
| Grp Sat Flow(s),veh/h/ln                  | 1721                                                                              | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                               | 1770                                                                                | 1685                                                                                | 1721                                                                                | 1863                                                                                | 1393                                                                                |
| Q Serve(g_s), s                           | 20.0                                                                              | 1.1                                                                               | 0.7                                                                               | 1.5                                                                               | 2.3                                                                               | 12.8                                                                              | 1.1                                                                                | 3.1                                                                                 | 3.3                                                                                 | 16.7                                                                                | 12.6                                                                                | 13.2                                                                                |
| Cycle Q Clear(g_c), s                     | 20.0                                                                              | 1.1                                                                               | 0.7                                                                               | 1.5                                                                               | 2.3                                                                               | 12.8                                                                              | 1.1                                                                                | 3.1                                                                                 | 3.3                                                                                 | 16.7                                                                                | 12.6                                                                                | 13.2                                                                                |
| Prop In Lane                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.60                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                    | 1117                                                                              | 1559                                                                              | 697                                                                               | 47                                                                                | 265                                                                               | 556                                                                               | 105                                                                                | 185                                                                                 | 176                                                                                 | 719                                                                                 | 526                                                                                 | 1692                                                                                |
| V/C Ratio(X)                              | 0.76                                                                              | 0.05                                                                              | 0.03                                                                              | 0.64                                                                              | 0.20                                                                              | 0.63                                                                              | 0.42                                                                               | 0.35                                                                                | 0.38                                                                                | 0.90                                                                                | 0.52                                                                                | 0.44                                                                                |
| Avail Cap(c_a), veh/h                     | 1117                                                                              | 1559                                                                              | 697                                                                               | 79                                                                                | 265                                                                               | 556                                                                               | 153                                                                                | 437                                                                                 | 416                                                                                 | 719                                                                                 | 766                                                                                 | 2050                                                                                |
| HCM Platoon Ratio                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                  | 27.3                                                                              | 14.4                                                                              | 14.3                                                                              | 43.4                                                                              | 34.1                                                                              | 24.4                                                                              | 42.8                                                                               | 37.5                                                                                | 37.6                                                                                | 40.9                                                                                | 35.0                                                                                | 12.1                                                                                |
| Incr Delay (d2), s/veh                    | 2.8                                                                               | 0.1                                                                               | 0.1                                                                               | 5.3                                                                               | 1.7                                                                               | 5.5                                                                               | 1.0                                                                                | 0.4                                                                                 | 0.5                                                                                 | 13.5                                                                                | 0.3                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                  | 9.9                                                                               | 0.5                                                                               | 0.3                                                                               | 0.8                                                                               | 1.3                                                                               | 8.1                                                                               | 0.6                                                                                | 1.5                                                                                 | 1.6                                                                                 | 9.3                                                                                 | 6.5                                                                                 | 5.1                                                                                 |
| LnGrp Delay(d),s/veh                      | 30.1                                                                              | 14.4                                                                              | 14.4                                                                              | 48.7                                                                              | 35.8                                                                              | 29.8                                                                              | 43.8                                                                               | 37.9                                                                                | 38.1                                                                                | 54.4                                                                                | 35.3                                                                                | 12.1                                                                                |
| LnGrp LOS                                 | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | D                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h                       |                                                                                   | 948                                                                               |                                                                                   |                                                                                   | 436                                                                               |                                                                                   |                                                                                    | 176                                                                                 |                                                                                     |                                                                                     | 1667                                                                                |                                                                                     |
| Approach Delay, s/veh                     |                                                                                   | 28.5                                                                              |                                                                                   |                                                                                   | 31.9                                                                              |                                                                                   |                                                                                    | 39.5                                                                                |                                                                                     |                                                                                     | 32.3                                                                                |                                                                                     |
| Approach LOS                              |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                  | 33.8                                                                              | 18.1                                                                              | 23.4                                                                              | 14.7                                                                              | 7.0                                                                               | 44.9                                                                              | 7.4                                                                                | 30.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                   | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s               | 16.4                                                                              | 12.8                                                                              | 18.8                                                                              | 22.2                                                                              | 4.0                                                                               | 25.2                                                                              | 4.0                                                                                | 37.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s              | 23.0                                                                              | 15.8                                                                              | 19.7                                                                              | 6.1                                                                               | 4.5                                                                               | 4.1                                                                               | 4.1                                                                                | 16.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                               | 1.1                                                                               | 0.0                                                                                | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                       |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                              |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved changes to right turn type. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 3: CENTRAL AVE & COLLIER AVE

10/5/2016

|                      |  |  |  |  |  |  |   |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 767                                                                               | 66                                                                                | 21                                                                                | 27                                                                                | 48                                                                                | 318                                                                               | 40                                                                                  | 83                                                                                  | 580                                                                                 | 246                                                                                 | 675                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                | NA                                                                                  | Prot                                                                                | NA                                                                                  | pm+ov                                                                               |
| Protected Phases     | 1                                                                                 | 6                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 1                                                                                 | 6                                                                                 | 6                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 11.6                                                                              | 30.5                                                                              | 30.5                                                                              | 8.6                                                                               | 18.0                                                                              | 11.6                                                                              | 8.6                                                                                 | 20.0                                                                                | 11.6                                                                                | 42.3                                                                                | 11.6                                                                                |
| Total Split (s)      | 21.0                                                                              | 30.5                                                                              | 30.5                                                                              | 8.6                                                                               | 18.1                                                                              | 23.4                                                                              | 8.6                                                                                 | 27.5                                                                                | 23.4                                                                                | 42.3                                                                                | 21.0                                                                                |
| Total Split (%)      | 23.3%                                                                             | 33.9%                                                                             | 33.9%                                                                             | 9.6%                                                                              | 20.1%                                                                             | 26.0%                                                                             | 9.6%                                                                                | 30.6%                                                                               | 26.0%                                                                               | 47.0%                                                                               | 23.3%                                                                               |
| Yellow Time (s)      | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 3.6                                                                               | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | C-Max                                                                             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | C-Max                                                                               |
| Act Effct Green (s)  | 31.9                                                                              | 42.4                                                                              | 42.4                                                                              | 6.1                                                                               | 12.8                                                                              | 36.5                                                                              | 4.0                                                                                 | 7.0                                                                                 | 18.4                                                                                | 24.9                                                                                | 62.1                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.47                                                                              | 0.47                                                                              | 0.07                                                                              | 0.14                                                                              | 0.41                                                                              | 0.04                                                                                | 0.08                                                                                | 0.20                                                                                | 0.28                                                                                | 0.69                                                                                |
| v/c Ratio            | 0.70                                                                              | 0.04                                                                              | 0.03                                                                              | 0.25                                                                              | 0.20                                                                              | 0.41                                                                              | 0.29                                                                                | 0.44                                                                                | 0.92                                                                                | 0.53                                                                                | 0.35                                                                                |
| Control Delay        | 27.7                                                                              | 15.1                                                                              | 0.0                                                                               | 44.4                                                                              | 36.3                                                                              | 3.6                                                                               | 46.7                                                                                | 31.8                                                                                | 58.1                                                                                | 46.1                                                                                | 0.4                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 27.7                                                                              | 15.1                                                                              | 0.0                                                                               | 44.4                                                                              | 36.3                                                                              | 3.6                                                                               | 46.7                                                                                | 31.8                                                                                | 58.1                                                                                | 46.1                                                                                | 0.4                                                                                 |
| LOS                  | C                                                                                 | B                                                                                 | A                                                                                 | D                                                                                 | D                                                                                 | A                                                                                 | D                                                                                   | C                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 26.1                                                                              |                                                                                   |                                                                                   | 10.4                                                                              |                                                                                   |                                                                                     | 35.5                                                                                |                                                                                     | 30.2                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 52 (58%), Referenced to phase 1:SEL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 60.6%

ICU Level of Service B

Analysis Period (min) 15

### Splits and Phases: 3: CENTRAL AVE & COLLIER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| ø1 (R)                                                                              | ø2                                                                                  | ø3                                                                                  | ø4                                                                                    |
| 21 s                                                                                | 18.1 s                                                                              | 23.4 s                                                                              | 27.5 s                                                                                |
|  |  |  |    |
| ø5                                                                                  | ø6                                                                                  | ø7                                                                                  | ø8                                                                                    |
| 8.6 s                                                                               | 30.5 s                                                                              | 8.6 s                                                                               | 42.3 s                                                                                |

## Queues

## 3: CENTRAL AVE &amp; COLLIER AVE

10/5/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 852                                                                               | 73                                                                                | 23                                                                                | 30                                                                                | 53                                                                                | 353                                                                               | 44                                                                                 | 132                                                                                 | 644                                                                                 | 273                                                                                 | 750                                                                                 |
| v/c Ratio               | 0.70                                                                              | 0.04                                                                              | 0.03                                                                              | 0.25                                                                              | 0.20                                                                              | 0.41                                                                              | 0.29                                                                               | 0.44                                                                                | 0.92                                                                                | 0.53                                                                                | 0.35                                                                                |
| Control Delay           | 27.7                                                                              | 15.1                                                                              | 0.0                                                                               | 44.4                                                                              | 36.3                                                                              | 3.6                                                                               | 46.7                                                                               | 31.8                                                                                | 58.1                                                                                | 46.1                                                                                | 0.4                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 27.7                                                                              | 15.1                                                                              | 0.0                                                                               | 44.4                                                                              | 36.3                                                                              | 3.6                                                                               | 46.7                                                                               | 31.8                                                                                | 58.1                                                                                | 46.1                                                                                | 0.4                                                                                 |
| Queue Length 50th (ft)  | 208                                                                               | 12                                                                                | 0                                                                                 | 17                                                                                | 27                                                                                | 0                                                                                 | 12                                                                                 | 26                                                                                  | 204                                                                                 | 164                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | 269                                                                               | m20                                                                               | m0                                                                                | 43                                                                                | 61                                                                                | 50                                                                                | 29                                                                                 | 54                                                                                  | #292                                                                                | 232                                                                                 | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 1881                                                                              |                                                                                   |                                                                                   | 463                                                                               |                                                                                   |                                                                                    | 1625                                                                                |                                                                                     | 251                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 650                                                                               |                                                                                   | 220                                                                               | 100                                                                               |                                                                                   | 100                                                                               | 140                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 1218                                                                              | 1668                                                                              | 849                                                                               | 119                                                                               | 264                                                                               | 857                                                                               | 152                                                                                | 863                                                                                 | 717                                                                                 | 765                                                                                 | 2156                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.70                                                                              | 0.04                                                                              | 0.03                                                                              | 0.25                                                                              | 0.20                                                                              | 0.41                                                                              | 0.29                                                                               | 0.15                                                                                | 0.90                                                                                | 0.36                                                                                | 0.35                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

| Intersection             |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
|--------------------------|--------|-------|-------|-----|--------|------|------|-----|--------|-------|-------|--|------|------|------|
| Int Delay, s/veh         | 0.4    |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
|                          |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
| Movement                 | SEL    | SET   | SER   |     | NWL    | NWT  | NWR  |     | NEL    | NET   | NER   |  | SWL  | SWT  | SWR  |
| Vol, veh/h               | 0      | 604   | 24    |     | 11     | 394  | 0    |     | 4      | 0     | 14    |  | 0    | 0    | 0    |
| Conflicting Peds, #/hr   | 0      | 0     | 0     |     | 0      | 0    | 0    |     | 0      | 0     | 0     |  | 0    | 0    | 0    |
| Sign Control             | Free   | Free  | Free  |     | Free   | Free | Free |     | Stop   | Stop  | Stop  |  | Stop | Stop | Stop |
| RT Channelized           | -      | -     | None  |     | -      | -    | None |     | -      | -     | None  |  | -    | -    | None |
| Storage Length           | -      | -     | -     |     | 150    | -    | -    |     | 90     | -     | 0     |  | -    | -    | -    |
| Veh in Median Storage, # | -      | 0     | -     |     | -      | 0    | -    |     | -      | 0     | -     |  | -    | 0    | -    |
| Grade, %                 | -      | 0     | -     |     | -      | 0    | -    |     | -      | 0     | -     |  | -    | 0    | -    |
| Peak Hour Factor         | 85     | 85    | 85    |     | 85     | 85   | 85   |     | 85     | 85    | 85    |  | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2      | 2     | 2     |     | 2      | 2    | 2    |     | 2      | 2     | 2     |  | 2    | 2    | 2    |
| Mvmt Flow                | 0      | 711   | 28    |     | 13     | 464  | 0    |     | 5      | 0     | 16    |  | 0    | 0    | 0    |
|                          |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
| Major/Minor              | Major1 |       |       |     | Major2 |      |      |     | Minor1 |       |       |  |      |      |      |
| Conflicting Flow All     | 464    | 0     | 0     |     | 739    | 0    | 0    |     | 1214   | 1214  | 369   |  |      |      |      |
| Stage 1                  | -      | -     | -     |     | -      | -    | -    |     | 725    | 725   | -     |  |      |      |      |
| Stage 2                  | -      | -     | -     |     | -      | -    | -    |     | 489    | 489   | -     |  |      |      |      |
| Critical Hdwy            | 4.12   | -     | -     |     | 4.14   | -    | -    |     | 6.63   | 6.53  | 6.93  |  |      |      |      |
| Critical Hdwy Stg 1      | -      | -     | -     |     | -      | -    | -    |     | 5.83   | 5.53  | -     |  |      |      |      |
| Critical Hdwy Stg 2      | -      | -     | -     |     | -      | -    | -    |     | 5.43   | 5.53  | -     |  |      |      |      |
| Follow-up Hdwy           | 2.218  | -     | -     |     | 2.22   | -    | -    |     | 3.519  | 4.019 | 3.319 |  |      |      |      |
| Pot Cap-1 Maneuver       | 1097   | -     | -     |     | 863    | -    | -    |     | 187    | 181   | 629   |  |      |      |      |
| Stage 1                  | -      | -     | -     |     | -      | -    | -    |     | 441    | 429   | -     |  |      |      |      |
| Stage 2                  | -      | -     | -     |     | -      | -    | -    |     | 615    | 548   | -     |  |      |      |      |
| Platoon blocked, %       |        | -     | -     |     |        | -    | -    |     |        |       |       |  |      |      |      |
| Mov Cap-1 Maneuver       | 1097   | -     | -     |     | 863    | -    | -    |     | 184    | 0     | 629   |  |      |      |      |
| Mov Cap-2 Maneuver       | -      | -     | -     |     | -      | -    | -    |     | 184    | 0     | -     |  |      |      |      |
| Stage 1                  | -      | -     | -     |     | -      | -    | -    |     | 441    | 0     | -     |  |      |      |      |
| Stage 2                  | -      | -     | -     |     | -      | -    | -    |     | 606    | 0     | -     |  |      |      |      |
|                          |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
| Approach                 | SE     |       |       |     | NW     |      |      |     | NE     |       |       |  |      |      |      |
| HCM Control Delay, s     | 0      |       |       |     | 0.3    |      |      |     | 14.1   |       |       |  |      |      |      |
| HCM LOS                  |        |       |       |     |        |      |      |     | B      |       |       |  |      |      |      |
|                          |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL   | NWT | NWR    | SEL  | SET  | SER |        |       |       |  |      |      |      |
| Capacity (veh/h)         | 184    | 629   | 863   | -   | -      | 1097 | -    | -   |        |       |       |  |      |      |      |
| HCM Lane V/C Ratio       | 0.026  | 0.026 | 0.015 | -   | -      | -    | -    | -   |        |       |       |  |      |      |      |
| HCM Control Delay (s)    | 25.1   | 10.9  | 9.2   | -   | -      | 0    | -    | -   |        |       |       |  |      |      |      |
| HCM Lane LOS             | D      | B     | A     | -   | -      | A    | -    | -   |        |       |       |  |      |      |      |
| HCM 95th %tile Q(veh)    | 0.1    | 0.1   | 0     | -   | -      | 0    | -    | -   |        |       |       |  |      |      |      |



# Lanes and Geometrics

## 4: CRANE ST & COLLIER AVE

11/10/2016

|                      |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 90                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 118                                                                               |                                                                                   |                                                                                   | 1997                                                                              |                                                                                   |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     | 341                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection

Int Delay, s/veh 11.8

| Movement                 | SET  | SER  | NWL  | NWT  | NEL  | NER  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 58   | 456  | 149  | 76   | 299  | 31   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | 0    | -    | -    | 0    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 83   | 83   | 83   | 83   | 83   | 83   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 70   | 549  | 180  | 92   | 360  | 37   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 70     |
| Stage 1              | -      | -      | 70     |
| Stage 2              | -      | -      | 451    |
| Critical Hdwy        | -      | 4.12   | 6.42   |
| Critical Hdwy Stg 1  | -      | -      | 5.42   |
| Critical Hdwy Stg 2  | -      | -      | 5.42   |
| Follow-up Hdwy       | -      | 2.218  | 3.518  |
| Pot Cap-1 Maneuver   | -      | 1531   | 516    |
| Stage 1              | -      | -      | 953    |
| Stage 2              | -      | -      | 642    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | 1531   | 452    |
| Mov Cap-2 Maneuver   | -      | -      | 452    |
| Stage 1              | -      | -      | 953    |
| Stage 2              | -      | -      | 562    |

| Approach             | SE | NW  | NE   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 5.1 | 34.9 |
| HCM LOS              |    |     | D    |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | NWL   | NWT | SET | SER |
|-----------------------|-------|-------|-------|-----|-----|-----|
| Capacity (veh/h)      | 452   | 993   | 1531  | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.797 | 0.038 | 0.117 | -   | -   | -   |
| HCM Control Delay (s) | 37.6  | 8.8   | 7.7   | 0   | -   | -   |
| HCM Lane LOS          | E     | A     | A     | A   | -   | -   |
| HCM 95th %tile Q(veh) | 7.2   | 0.1   | 0.4   | -   | -   | -   |

Lanes and Geometrics  
5: CHANEY ST & COLLIER AVE

11/10/2016

|                             |  |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                  | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |
| Lane Configurations         |  |  |                                                                                   |  |  |  |
| Ideal Flow (vphpl)          | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)             | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Grade (%)                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Storage Length (ft)         |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Storage Lanes               |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)           |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Link Speed (mph)            | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)          | 1997                                                                              |                                                                                   |                                                                                   | 292                                                                               | 1583                                                                              |                                                                                   |
| Travel Time (s)             | 45.4                                                                              |                                                                                   |                                                                                   | 6.6                                                                               | 36.0                                                                              |                                                                                   |
| <b>Intersection Summary</b> |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                  | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection              |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh | 11.4 |      |      |      |      |      |      |      |      |      |      |      |
| Intersection LOS          | B    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                  | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Vol, veh/h                | 0    | 0    | 0    | 133  | 0    | 1    | 1    | 0    | 0    | 371  | 1    | 2    |
| Peak Hour Factor          | 0.92 | 0.86 | 0.86 | 0.86 | 0.92 | 0.86 | 0.86 | 0.86 | 0.92 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                 | 0    | 0    | 0    | 155  | 0    | 1    | 1    | 0    | 0    | 431  | 1    | 2    |
| Number of Lanes           | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB   |
|----------------------------|-----|-----|------|
| Opposing Approach          | WB  | EB  | SB   |
| Opposing Lanes             | 1   | 1   | 1    |
| Conflicting Approach Left  | SB  | NB  | EB   |
| Conflicting Lanes Left     | 1   | 1   | 1    |
| Conflicting Approach Right | NB  | SB  | WB   |
| Conflicting Lanes Right    | 1   | 1   | 1    |
| HCM Control Delay          | 8.4 | 8.3 | 12.5 |
| HCM LOS                    | A   | A   | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 99%   | 0%    | 50%   | 0%    |
| Vol Thru, %            | 0%    | 0%    | 50%   | 100%  |
| Vol Right, %           | 1%    | 100%  | 0%    | 0%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 374   | 133   | 2     | 0     |
| LT Vol                 | 371   | 0     | 1     | 0     |
| Through Vol            | 1     | 0     | 1     | 0     |
| RT Vol                 | 2     | 133   | 0     | 0     |
| Lane Flow Rate         | 435   | 155   | 2     | 0     |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.532 | 0.188 | 0.003 | 0     |
| Departure Headway (Hd) | 4.503 | 4.381 | 5.271 | 4.769 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 805   | 824   | 681   | 0     |
| Service Time           | 2.503 | 2.381 | 3.284 | 2.796 |
| HCM Lane V/C Ratio     | 0.54  | 0.188 | 0.003 | 0     |
| HCM Control Delay      | 12.5  | 8.4   | 8.3   | 7.8   |
| HCM Lane LOS           | B     | A     | A     | N     |
| HCM 95th-tile Q        | 3.2   | 0.7   | 0     | 0     |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement          | SBU  | SBL  | SBT  | SBR  |
|-------------------|------|------|------|------|
| Vol, veh/h        | 0    | 0    | 0    | 0    |
| Peak Hour Factor  | 0.92 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, % | 2    | 2    | 2    | 2    |
| Mvmt Flow         | 0    | 0    | 0    | 0    |
| Number of Lanes   | 0    | 0    | 1    | 0    |

Approach SB

|                            |    |
|----------------------------|----|
| Opposing Approach          | NB |
| Opposing Lanes             | 1  |
| Conflicting Approach Left  | WB |
| Conflicting Lanes Left     | 1  |
| Conflicting Approach Right | EB |
| Conflicting Lanes Right    | 1  |
| HCM Control Delay          | 0  |
| HCM LOS                    | -  |

Lane

# Lanes and Geometrics

## 6: N. SPRING ST & COLLIER AVE

11/10/2016

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 294                                                                               |                                                                                   |                                                                                   | 237                                                                               |                                                                                   |                                                                                    | 822                                                                                 |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                    | 18.7                                                                                |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

10/5/2016

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |  |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |  |
| Volume (veh/h)                                                       | 267                                                                               | 1                                                                                 | 202                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 652                                                                                 | 507                                                                                 | 648                                                                                 | 1370                                                                                | 0                                                                                   |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1863                                                                              | 1863                                                                              | 1863                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h                                                 | 371                                                                               | 0                                                                                 | 152                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 733                                                                                 | 570                                                                                 | 728                                                                                 | 1539                                                                                | 0                                                                                   |
| Adj No. of Lanes                                                     | 2                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Cap, veh/h                                                           | 777                                                                               | 0                                                                                 | 347                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1297                                                                                | 580                                                                                 | 846                                                                                 | 2348                                                                                | 0                                                                                   |
| Arrive On Green                                                      | 0.22                                                                              | 0.00                                                                              | 0.22                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.25                                                                                | 0.25                                                                                | 0.25                                                                                | 0.66                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                      | 3548                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3632                                                                                | 1583                                                                                | 3442                                                                                | 3632                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h                                                 | 371                                                                               | 0                                                                                 | 152                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 733                                                                                 | 570                                                                                 | 728                                                                                 | 1539                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                             | 1774                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1770                                                                                | 1583                                                                                | 1721                                                                                | 1770                                                                                | 0                                                                                   |
| Q Serve(g_s), s                                                      | 8.2                                                                               | 0.0                                                                               | 7.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 16.3                                                                                | 32.2                                                                                | 18.2                                                                                | 23.3                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                | 8.2                                                                               | 0.0                                                                               | 7.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 16.3                                                                                | 32.2                                                                                | 18.2                                                                                | 23.3                                                                                | 0.0                                                                                 |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 777                                                                               | 0                                                                                 | 347                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1297                                                                                | 580                                                                                 | 846                                                                                 | 2348                                                                                | 0                                                                                   |
| V/C Ratio(X)                                                         | 0.48                                                                              | 0.00                                                                              | 0.44                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.57                                                                                | 0.98                                                                                | 0.86                                                                                | 0.66                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                | 777                                                                               | 0                                                                                 | 347                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1297                                                                                | 580                                                                                 | 1010                                                                                | 2348                                                                                | 0                                                                                   |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 0.67                                                                                | 0.67                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(l)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.54                                                                                | 0.54                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                             | 30.7                                                                              | 0.0                                                                               | 30.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 27.7                                                                                | 33.7                                                                                | 32.5                                                                                | 9.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                               | 2.1                                                                               | 0.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 1.8                                                                                 | 33.2                                                                                | 3.3                                                                                 | 0.8                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 4.2                                                                               | 0.0                                                                               | 3.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 8.3                                                                                 | 19.5                                                                                | 9.0                                                                                 | 11.4                                                                                | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 32.8                                                                              | 0.0                                                                               | 34.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 29.4                                                                                | 66.9                                                                                | 35.8                                                                                | 9.8                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                            | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | C                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                  |                                                                                   | 523                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 1303                                                                                |                                                                                     |                                                                                     | 2267                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                   | 33.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 45.8                                                                                |                                                                                     |                                                                                     | 18.1                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   |                                                                                   | 26.7                                                                              | 38.3                                                                              |                                                                                   | 25.0                                                                              |                                                                                    | 65.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   |                                                                                   | 26.4                                                                              | 28.7                                                                              |                                                                                   | 19.7                                                                              |                                                                                    | 59.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                   |                                                                                   | 21.2                                                                              | 35.2                                                                              |                                                                                   | 11.2                                                                              |                                                                                    | 26.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   |                                                                                   | 0.9                                                                               | 0.0                                                                               |                                                                                   | 0.7                                                                               |                                                                                    | 19.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 28.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

10/5/2016

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 267                                                                               | 1                                                                                 | 202                                                                               | 652                                                                               | 507                                                                               | 648                                                                               | 1370                                                                               |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                    |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                  |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 5.0                                                                               | 7.0                                                                                |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 29.3                                                                              | 29.3                                                                              | 11.0                                                                              | 20.0                                                                               |
| Total Split (s)      | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 34.0                                                                              | 34.0                                                                              | 31.0                                                                              | 65.0                                                                               |
| Total Split (%)      | 27.8%                                                                             | 27.8%                                                                             | 27.8%                                                                             | 37.8%                                                                             | 37.8%                                                                             | 34.4%                                                                             | 72.2%                                                                              |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                    |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                              |
| Act Effct Green (s)  | 19.7                                                                              | 19.7                                                                              | 19.7                                                                              | 32.3                                                                              | 32.3                                                                              | 22.8                                                                              | 59.7                                                                               |
| Actuated g/C Ratio   | 0.22                                                                              | 0.22                                                                              | 0.22                                                                              | 0.36                                                                              | 0.36                                                                              | 0.25                                                                              | 0.66                                                                               |
| v/c Ratio            | 0.50                                                                              | 0.50                                                                              | 0.42                                                                              | 0.58                                                                              | 0.65                                                                              | 0.84                                                                              | 0.66                                                                               |
| Control Delay        | 36.3                                                                              | 31.6                                                                              | 19.1                                                                              | 17.2                                                                              | 6.6                                                                               | 33.5                                                                              | 4.1                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.4                                                                                |
| Total Delay          | 36.3                                                                              | 31.6                                                                              | 19.1                                                                              | 17.2                                                                              | 6.6                                                                               | 33.5                                                                              | 5.4                                                                                |
| LOS                  | D                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | C                                                                                 | A                                                                                  |
| Approach Delay       |                                                                                   | 29.3                                                                              |                                                                                   | 12.6                                                                              |                                                                                   |                                                                                   | 14.5                                                                               |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 45 (50%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 15.8

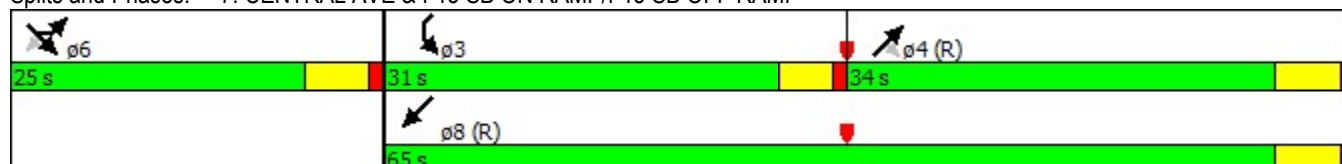
Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP





## Queues

## 7: CENTRAL AVE &amp; I-15 SB ON RAMP/I-15 SB OFF RAMP

10/5/2016



| Lane Group              | SEL  | SET  | SER  | NET  | NER  | SWL  | SWT  |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 183  | 179  | 166  | 733  | 570  | 728  | 1539 |
| v/c Ratio               | 0.50 | 0.50 | 0.42 | 0.58 | 0.65 | 0.84 | 0.66 |
| Control Delay           | 36.3 | 31.6 | 19.1 | 17.2 | 6.6  | 33.5 | 4.1  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 1.4  |
| Total Delay             | 36.3 | 31.6 | 19.1 | 17.2 | 6.6  | 33.5 | 5.4  |
| Queue Length 50th (ft)  | 96   | 83   | 41   | 69   | 6    | 122  | 44   |
| Queue Length 95th (ft)  | 163  | 152  | 100  | 161  | 91   | 183  | 81   |
| Internal Link Dist (ft) |      | 1290 |      | 318  |      |      | 410  |
| Turn Bay Length (ft)    | 200  |      | 200  |      |      | 100  |      |
| Base Capacity (vph)     | 367  | 361  | 394  | 1268 | 878  | 1007 | 2347 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 559  |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.50 | 0.50 | 0.42 | 0.58 | 0.65 | 0.72 | 0.86 |
| Intersection Summary    |      |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

10/5/2016

|                                                                      |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET  | SER | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Volume (veh/h)                                                       | 0                                                                                  | 0    | 0   | 574                                                                               | 0                                                                                 | 546                                                                               | 66                                                                                | 843                                                                                 | 0    | 0    | 1476                                                                                | 448                                                                                 |
| Number                                                               |                                                                                    |      |     | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                 | 4                                                                                   | 14   | 3    | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               |                                                                                    |      |     | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 0    | 0    | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 |                                                                                    |      |     | 836                                                                               | 0                                                                                 | 409                                                                               | 74                                                                                | 947                                                                                 | 0    | 0    | 1658                                                                                | 503                                                                                 |
| Adj No. of Lanes                                                     |                                                                                    |      |     | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                   | 0    | 0    | 3                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                     |                                                                                    |      |     | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                | 0.89 | 0.89 | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %                                                 |                                                                                    |      |     | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0    | 0    | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           |                                                                                    |      |     | 1329                                                                              | 0                                                                                 | 593                                                                               | 109                                                                               | 2582                                                                                | 0    | 0    | 2008                                                                                | 625                                                                                 |
| Arrive On Green                                                      |                                                                                    |      |     | 0.37                                                                              | 0.00                                                                              | 0.37                                                                              | 0.12                                                                              | 1.00                                                                                | 0.00 | 0.00 | 0.79                                                                                | 0.79                                                                                |
| Sat Flow, veh/h                                                      |                                                                                    |      |     | 3548                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 5253                                                                                | 0    | 0    | 5253                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                 |                                                                                    |      |     | 836                                                                               | 0                                                                                 | 409                                                                               | 74                                                                                | 947                                                                                 | 0    | 0    | 1658                                                                                | 503                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             |                                                                                    |      |     | 1774                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 1695                                                                                | 0    | 0    | 1695                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                      |                                                                                    |      |     | 17.4                                                                              | 0.0                                                                               | 19.6                                                                              | 3.6                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 17.7                                                                                | 16.5                                                                                |
| Cycle Q Clear(g_c), s                                                |                                                                                    |      |     | 17.4                                                                              | 0.0                                                                               | 19.6                                                                              | 3.6                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 17.7                                                                                | 16.5                                                                                |
| Prop In Lane                                                         |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               |                                                                                    |      |     | 1329                                                                              | 0                                                                                 | 593                                                                               | 109                                                                               | 2582                                                                                | 0    | 0    | 2008                                                                                | 625                                                                                 |
| V/C Ratio(X)                                                         |                                                                                    |      |     | 0.63                                                                              | 0.00                                                                              | 0.69                                                                              | 0.68                                                                              | 0.37                                                                                | 0.00 | 0.00 | 0.83                                                                                | 0.80                                                                                |
| Avail Cap(c_a), veh/h                                                |                                                                                    |      |     | 1329                                                                              | 0                                                                                 | 593                                                                               | 126                                                                               | 2582                                                                                | 0    | 0    | 2008                                                                                | 625                                                                                 |
| HCM Platoon Ratio                                                    |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                                | 1.00 | 1.00 | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)                                                   |                                                                                    |      |     | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.81                                                                              | 0.81                                                                                | 0.00 | 0.00 | 0.55                                                                                | 0.55                                                                                |
| Uniform Delay (d), s/veh                                             |                                                                                    |      |     | 23.0                                                                              | 0.0                                                                               | 23.7                                                                              | 38.6                                                                              | 0.0                                                                                 | 0.0  | 0.0  | 7.6                                                                                 | 7.5                                                                                 |
| Incr Delay (d2), s/veh                                               |                                                                                    |      |     | 2.3                                                                               | 0.0                                                                               | 6.5                                                                               | 6.3                                                                               | 0.3                                                                                 | 0.0  | 0.0  | 2.3                                                                                 | 6.1                                                                                 |
| Initial Q Delay(d3),s/veh                                            |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             |                                                                                    |      |     | 8.9                                                                               | 0.0                                                                               | 9.6                                                                               | 2.0                                                                               | 0.1                                                                                 | 0.0  | 0.0  | 8.1                                                                                 | 7.8                                                                                 |
| LnGrp Delay(d),s/veh                                                 |                                                                                    |      |     | 25.3                                                                              | 0.0                                                                               | 30.2                                                                              | 44.9                                                                              | 0.3                                                                                 | 0.0  | 0.0  | 9.8                                                                                 | 13.5                                                                                |
| LnGrp LOS                                                            |                                                                                    |      |     | C                                                                                 |                                                                                   | C                                                                                 | D                                                                                 | A                                                                                   |      |      | A                                                                                   | B                                                                                   |
| Approach Vol, veh/h                                                  |                                                                                    |      |     |                                                                                   | 1245                                                                              |                                                                                   |                                                                                   | 1021                                                                                |      |      | 2161                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    |      |     |                                                                                   | 26.9                                                                              |                                                                                   |                                                                                   | 3.6                                                                                 |      |      | 10.7                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                    |      |     |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                   |      |      | B                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2    | 3   | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    | 2    |     | 4                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    | 39.0 |     | 51.0                                                                              |                                                                                   |                                                                                   | 10.2                                                                              | 40.8                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    | 5.3  |     | 5.3                                                                               |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    | 33.7 |     | 45.7                                                                              |                                                                                   |                                                                                   | 6.4                                                                               | 34.7                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    | 22.6 |     | 3.0                                                                               |                                                                                   |                                                                                   | 6.6                                                                               | 20.7                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    | 2.3  |     | 24.9                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 11.3                                                                                |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |      |     | 13.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |      |     | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |

# Timings

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

10/5/2016

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                               | SWT                                                                               | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 574                                                                               | 0                                                                                 | 546                                                                               | 66                                                                                | 843                                                                               | 1476                                                                              | 448                                                                                 |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 2                                                                                 | 2                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 2                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 11.0                                                                              | 20.0                                                                              | 28.3                                                                              | 28.3                                                                                |
| Total Split (s)      | 39.0                                                                              | 39.0                                                                              | 39.0                                                                              | 11.0                                                                              | 51.0                                                                              | 40.0                                                                              | 40.0                                                                                |
| Total Split (%)      | 43.3%                                                                             | 43.3%                                                                             | 43.3%                                                                             | 12.2%                                                                             | 56.7%                                                                             | 44.4%                                                                             | 44.4%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                             | C-Max                                                                             | C-Max                                                                               |
| Act Effct Green (s)  | 33.7                                                                              | 33.7                                                                              | 33.7                                                                              | 6.1                                                                               | 45.7                                                                              | 36.9                                                                              | 36.9                                                                                |
| Actuated g/C Ratio   | 0.37                                                                              | 0.37                                                                              | 0.37                                                                              | 0.07                                                                              | 0.51                                                                              | 0.41                                                                              | 0.41                                                                                |
| v/c Ratio            | 0.70                                                                              | 0.67                                                                              | 0.64                                                                              | 0.62                                                                              | 0.37                                                                              | 0.80                                                                              | 0.53                                                                                |
| Control Delay        | 30.9                                                                              | 25.0                                                                              | 23.1                                                                              | 52.9                                                                              | 19.9                                                                              | 14.4                                                                              | 1.7                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 13.1                                                                              | 0.6                                                                                 |
| Total Delay          | 30.9                                                                              | 25.0                                                                              | 23.1                                                                              | 52.9                                                                              | 19.9                                                                              | 27.5                                                                              | 2.3                                                                                 |
| LOS                  | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | B                                                                                 | C                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 26.5                                                                              |                                                                                   |                                                                                   | 22.3                                                                              | 21.6                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 |                                                                                     |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 7 (8%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 23.2

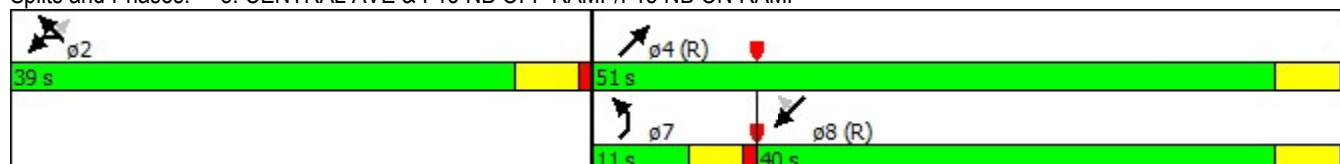
Intersection LOS: C

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP



## Queues

## 8: CENTRAL AVE &amp; I-15 NB OFF RAMP/I-15 NB ON RAMP

10/5/2016



| Lane Group              | NWL  | NWT  | NWR  | NEL  | NET  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 439  | 421  | 398  | 74   | 947  | 1658 | 503  |
| v/c Ratio               | 0.70 | 0.67 | 0.64 | 0.62 | 0.37 | 0.80 | 0.53 |
| Control Delay           | 30.9 | 25.0 | 23.1 | 52.9 | 19.9 | 14.4 | 1.7  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 13.1 | 0.6  |
| Total Delay             | 30.9 | 25.0 | 23.1 | 52.9 | 19.9 | 27.5 | 2.3  |
| Queue Length 50th (ft)  | 217  | 173  | 147  | 42   | 180  | 86   | 0    |
| Queue Length 95th (ft)  | 330  | 285  | 250  | m#84 | 215  | 403  | m0   |
| Internal Link Dist (ft) |      | 1244 |      |      | 410  | 302  |      |
| Turn Bay Length (ft)    | 190  |      | 190  | 190  |      |      |      |
| Base Capacity (vph)     | 629  | 624  | 620  | 125  | 2582 | 2084 | 945  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 439  | 163  |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 27   | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.70 | 0.67 | 0.64 | 0.59 | 0.37 | 1.01 | 0.64 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

10/5/2016

|                                                                    |  |  |  |  |  |  |   |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 68                                                                                | 82                                                                                | 463                                                                               | 81                                                                                | 124                                                                               | 66                                                                                | 359                                                                                 | 930                                                                                 | 101                                                                                 | 119                                                                                 | 1330                                                                                | 167                                                                                 |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 77                                                                                | 93                                                                                | 526                                                                               | 92                                                                                | 141                                                                               | 75                                                                                | 408                                                                                 | 1057                                                                                | 115                                                                                 | 135                                                                                 | 1511                                                                                | 190                                                                                 |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 548                                                                               | 869                                                                               | 897                                                                               | 431                                                                               | 535                                                                               | 284                                                                               | 177                                                                                 | 1327                                                                                | 413                                                                                 | 184                                                                                 | 1695                                                                                | 419                                                                                 |
| Arrive On Green                                                    | 0.47                                                                              | 0.47                                                                              | 0.47                                                                              | 0.47                                                                              | 0.47                                                                              | 0.47                                                                              | 0.13                                                                                | 0.35                                                                                | 0.35                                                                                | 0.10                                                                                | 0.26                                                                                | 0.26                                                                                |
| Sat Flow, veh/h                                                    | 1161                                                                              | 1863                                                                              | 1583                                                                              | 801                                                                               | 1146                                                                              | 609                                                                               | 1774                                                                                | 5085                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 77                                                                                | 93                                                                                | 526                                                                               | 92                                                                                | 0                                                                                 | 216                                                                               | 408                                                                                 | 1057                                                                                | 115                                                                                 | 135                                                                                 | 1511                                                                                | 190                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                           | 1161                                                                              | 1863                                                                              | 1583                                                                              | 801                                                                               | 0                                                                                 | 1755                                                                              | 1774                                                                                | 1695                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 3.8                                                                               | 2.5                                                                               | 19.4                                                                              | 6.6                                                                               | 0.0                                                                               | 6.7                                                                               | 9.0                                                                                 | 16.9                                                                                | 4.7                                                                                 | 6.6                                                                                 | 20.4                                                                                | 9.0                                                                                 |
| Cycle Q Clear(g_c), s                                              | 9.6                                                                               | 2.5                                                                               | 19.4                                                                              | 9.1                                                                               | 0.0                                                                               | 6.7                                                                               | 9.0                                                                                 | 16.9                                                                                | 4.7                                                                                 | 6.6                                                                                 | 20.4                                                                                | 9.0                                                                                 |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.35                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 548                                                                               | 869                                                                               | 897                                                                               | 431                                                                               | 0                                                                                 | 819                                                                               | 177                                                                                 | 1327                                                                                | 413                                                                                 | 184                                                                                 | 1695                                                                                | 419                                                                                 |
| V/C Ratio(X)                                                       | 0.14                                                                              | 0.11                                                                              | 0.59                                                                              | 0.21                                                                              | 0.00                                                                              | 0.26                                                                              | 2.30                                                                                | 0.80                                                                                | 0.28                                                                                | 0.73                                                                                | 0.89                                                                                | 0.45                                                                                |
| Avail Cap(c_a), veh/h                                              | 548                                                                               | 869                                                                               | 897                                                                               | 431                                                                               | 0                                                                                 | 819                                                                               | 177                                                                                 | 1327                                                                                | 413                                                                                 | 195                                                                                 | 1695                                                                                | 419                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 17.2                                                                              | 13.5                                                                              | 12.7                                                                              | 16.0                                                                              | 0.0                                                                               | 14.6                                                                              | 39.0                                                                                | 27.2                                                                                | 23.3                                                                                | 39.1                                                                                | 31.9                                                                                | 27.7                                                                                |
| Incr Delay (d2), s/veh                                             | 0.5                                                                               | 0.2                                                                               | 2.8                                                                               | 1.1                                                                               | 0.0                                                                               | 0.8                                                                               | 600.6                                                                               | 4.5                                                                                 | 1.5                                                                                 | 10.8                                                                                | 7.6                                                                                 | 3.5                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 1.3                                                                               | 1.4                                                                               | 9.0                                                                               | 1.6                                                                               | 0.0                                                                               | 3.4                                                                               | 34.0                                                                                | 8.5                                                                                 | 2.2                                                                                 | 3.8                                                                                 | 9.9                                                                                 | 4.4                                                                                 |
| LnGrp Delay(d),s/veh                                               | 17.7                                                                              | 13.7                                                                              | 15.5                                                                              | 17.1                                                                              | 0.0                                                                               | 15.4                                                                              | 639.6                                                                               | 31.8                                                                                | 24.8                                                                                | 49.9                                                                                | 39.4                                                                                | 31.2                                                                                |
| LnGrp LOS                                                          | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | F                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 696                                                                               |                                                                                   |                                                                                   | 308                                                                               |                                                                                   |                                                                                     | 1580                                                                                |                                                                                     |                                                                                     | 1836                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                   | 15.9                                                                              |                                                                                   |                                                                                     | 188.2                                                                               |                                                                                     |                                                                                     | 39.3                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | F                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 47.3                                                                              | 13.9                                                                              | 28.8                                                                              |                                                                                   | 47.3                                                                              | 13.6                                                                                | 29.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 42.0                                                                              | 9.9                                                                               | 22.9                                                                              |                                                                                   | 42.0                                                                              | 9.0                                                                                 | 23.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                       |                                                                                   | 12.1                                                                              | 9.6                                                                               | 19.9                                                                              |                                                                                   | 22.4                                                                              | 12.0                                                                                | 23.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 2.9                                                                               | 0.0                                                                               | 2.7                                                                               |                                                                                   | 2.8                                                                               | 0.0                                                                                 | 0.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 87.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

10/5/2016

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 68                                                                                | 82                                                                                | 463                                                                               | 81                                                                                | 124                                                                               | 359                                                                               | 930                                                                                | 101                                                                                 | 119                                                                                 | 1330                                                                                | 167                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 14.5                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (%)      | 52.6%                                                                             | 52.6%                                                                             | 15.1%                                                                             | 52.6%                                                                             | 52.6%                                                                             | 15.1%                                                                             | 31.3%                                                                              | 31.3%                                                                               | 16.1%                                                                               | 32.3%                                                                               | 32.3%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 42.0                                                                              | 42.0                                                                              | 56.3                                                                              | 42.0                                                                              | 42.0                                                                              | 9.0                                                                               | 23.1                                                                               | 23.1                                                                                | 9.7                                                                                 | 23.8                                                                                | 23.8                                                                                |
| Actuated g/C Ratio   | 0.47                                                                              | 0.47                                                                              | 0.63                                                                              | 0.47                                                                              | 0.47                                                                              | 0.10                                                                              | 0.26                                                                               | 0.26                                                                                | 0.11                                                                                | 0.26                                                                                | 0.26                                                                                |
| v/c Ratio            | 0.15                                                                              | 0.11                                                                              | 0.53                                                                              | 0.15                                                                              | 0.26                                                                              | 2.31                                                                              | 0.81                                                                               | 0.23                                                                                | 0.71                                                                                | 0.89                                                                                | 0.34                                                                                |
| Control Delay        | 14.7                                                                              | 14.0                                                                              | 11.2                                                                              | 14.7                                                                              | 12.6                                                                              | 627.0                                                                             | 18.6                                                                               | 3.2                                                                                 | 50.9                                                                                | 52.9                                                                                | 19.7                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 32.0                                                                                | 0.0                                                                                 |
| Total Delay          | 14.7                                                                              | 14.0                                                                              | 11.2                                                                              | 14.7                                                                              | 12.6                                                                              | 627.0                                                                             | 18.6                                                                               | 3.2                                                                                 | 50.9                                                                                | 84.9                                                                                | 19.7                                                                                |
| LOS                  | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | F                                                                                 | B                                                                                  | A                                                                                   | D                                                                                   | F                                                                                   | B                                                                                   |
| Approach Delay       |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                   | 13.3                                                                              |                                                                                   | 174.6                                                                              |                                                                                     |                                                                                     | 75.7                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   | F                                                                                  |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.31

Intersection Signal Delay: 96.6

Intersection LOS: F

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE

|                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| ø2                                                                                  | ø3                                                                                  | ø4 (R)                                                                                |
| 47.3 s                                                                              | 14.5 s                                                                              | 28.2 s                                                                                |
|  |  |  |
| ø6                                                                                  | ø7                                                                                  | ø8 (R)                                                                                |
| 47.3 s                                                                              | 13.6 s                                                                              | 29.1 s                                                                                |

## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

10/5/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 77                                                                                | 93                                                                                | 526                                                                               | 92                                                                                | 216                                                                               | 408                                                                               | 1057                                                                               | 115                                                                                 | 135                                                                                 | 1511                                                                                | 190                                                                                 |
| v/c Ratio               | 0.15                                                                              | 0.11                                                                              | 0.53                                                                              | 0.15                                                                              | 0.26                                                                              | 2.31                                                                              | 0.81                                                                               | 0.23                                                                                | 0.71                                                                                | 0.89                                                                                | 0.34                                                                                |
| Control Delay           | 14.7                                                                              | 14.0                                                                              | 11.2                                                                              | 14.7                                                                              | 12.6                                                                              | 627.0                                                                             | 18.6                                                                               | 3.2                                                                                 | 50.9                                                                                | 52.9                                                                                | 19.7                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 32.0                                                                                | 0.0                                                                                 |
| Total Delay             | 14.7                                                                              | 14.0                                                                              | 11.2                                                                              | 14.7                                                                              | 12.6                                                                              | 627.0                                                                             | 18.6                                                                               | 3.2                                                                                 | 50.9                                                                                | 84.9                                                                                | 19.7                                                                                |
| Queue Length 50th (ft)  | 24                                                                                | 29                                                                                | 142                                                                               | 29                                                                                | 57                                                                                | ~395                                                                              | 94                                                                                 | 4                                                                                   | 83                                                                                  | 245                                                                                 | 50                                                                                  |
| Queue Length 95th (ft)  | 50                                                                                | 55                                                                                | 214                                                                               | 57                                                                                | 100                                                                               | #556                                                                              | 132                                                                                | m15                                                                                 | m88                                                                                 | m242                                                                                | m54                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1321                                                                              |                                                                                   |                                                                                   | 1337                                                                              |                                                                                   | 302                                                                                |                                                                                     |                                                                                     | 250                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 140                                                                               |                                                                                   | 140                                                                               | 100                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 150                                                                                 |                                                                                     | 220                                                                                 |
| Base Capacity (vph)     | 525                                                                               | 869                                                                               | 1000                                                                              | 605                                                                               | 845                                                                               | 177                                                                               | 1306                                                                               | 492                                                                                 | 194                                                                                 | 1694                                                                                | 558                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 275                                                                                 | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.15                                                                              | 0.11                                                                              | 0.53                                                                              | 0.15                                                                              | 0.26                                                                              | 2.31                                                                              | 0.81                                                                               | 0.23                                                                                | 0.70                                                                                | 1.06                                                                                | 0.34                                                                                |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 10: CENTRAL AVE & CAMBERN AVE

10/5/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Volume (veh/h)               | 144                                                                               | 2                                                                                 | 78                                                                                | 0                                                                                 | 2                                                                                 | 0                                                                                 | 113                                                                                 | 987                                                                                 | 0                                                                                   | 0                                                                                   | 1486                                                                                | 114                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 155                                                                               | 2                                                                                 | 84                                                                                | 0                                                                                 | 2                                                                                 | 0                                                                                 | 122                                                                                 | 1061                                                                                | 0                                                                                   | 0                                                                                   | 1598                                                                                | 123                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 513                                                                               | 6                                                                                 | 510                                                                               | 80                                                                                | 600                                                                               | 0                                                                                 | 222                                                                                 | 1970                                                                                | 0                                                                                   | 2                                                                                   | 1561                                                                                | 698                                                                                 |
| Arrive On Green              | 0.32                                                                              | 0.32                                                                              | 0.32                                                                              | 0.00                                                                              | 0.32                                                                              | 0.00                                                                              | 0.06                                                                                | 0.56                                                                                | 0.00                                                                                | 0.00                                                                                | 0.44                                                                                | 0.44                                                                                |
| Sat Flow, veh/h              | 1344                                                                              | 19                                                                                | 1583                                                                              | 1306                                                                              | 1863                                                                              | 0                                                                                 | 3442                                                                                | 3632                                                                                | 0                                                                                   | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 157                                                                               | 0                                                                                 | 84                                                                                | 0                                                                                 | 2                                                                                 | 0                                                                                 | 122                                                                                 | 1061                                                                                | 0                                                                                   | 0                                                                                   | 1598                                                                                | 123                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1363                                                                              | 0                                                                                 | 1583                                                                              | 1306                                                                              | 1863                                                                              | 0                                                                                 | 1721                                                                                | 1770                                                                                | 0                                                                                   | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 7.7                                                                               | 0.0                                                                               | 3.4                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 3.1                                                                                 | 17.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 39.7                                                                                | 4.2                                                                                 |
| Cycle Q Clear(g_c), s        | 8.8                                                                               | 0.0                                                                               | 3.4                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 3.1                                                                                 | 17.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 39.7                                                                                | 4.2                                                                                 |
| Prop In Lane                 | 0.99                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 0.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 519                                                                               | 0                                                                                 | 510                                                                               | 80                                                                                | 600                                                                               | 0                                                                                 | 222                                                                                 | 1970                                                                                | 0                                                                                   | 2                                                                                   | 1561                                                                                | 698                                                                                 |
| V/C Ratio(X)                 | 0.30                                                                              | 0.00                                                                              | 0.16                                                                              | 0.00                                                                              | 0.00                                                                              | 0.00                                                                              | 0.55                                                                                | 0.54                                                                                | 0.00                                                                                | 0.00                                                                                | 1.02                                                                                | 0.18                                                                                |
| Avail Cap(c_a), veh/h        | 519                                                                               | 0                                                                                 | 510                                                                               | 80                                                                                | 600                                                                               | 0                                                                                 | 245                                                                                 | 1970                                                                                | 0                                                                                   | 126                                                                                 | 1561                                                                                | 698                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 24.0                                                                              | 0.0                                                                               | 21.8                                                                              | 0.0                                                                               | 20.7                                                                              | 0.0                                                                               | 40.8                                                                                | 12.6                                                                                | 0.0                                                                                 | 0.0                                                                                 | 25.2                                                                                | 15.2                                                                                |
| Incr Delay (d2), s/veh       | 1.5                                                                               | 0.0                                                                               | 0.7                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.8                                                                                 | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 29.0                                                                                | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.2                                                                               | 0.0                                                                               | 1.6                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.5                                                                                 | 8.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 25.6                                                                                | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 25.5                                                                              | 0.0                                                                               | 22.5                                                                              | 0.0                                                                               | 20.7                                                                              | 0.0                                                                               | 41.6                                                                                | 13.7                                                                                | 0.0                                                                                 | 0.0                                                                                 | 54.2                                                                                | 15.8                                                                                |
| LnGrp LOS                    | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   | D                                                                                   | B                                                                                   |                                                                                     |                                                                                     | F                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 241                                                                               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                     | 1183                                                                                |                                                                                     |                                                                                     | 1721                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 24.5                                                                              |                                                                                   |                                                                                   | 20.7                                                                              |                                                                                   |                                                                                     | 16.6                                                                                |                                                                                     |                                                                                     | 51.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 33.9                                                                              | 0.0                                                                               | 56.1                                                                              |                                                                                   | 33.9                                                                              | 10.4                                                                                | 45.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.9                                                                               | 4.6                                                                               | 6.0                                                                               |                                                                                   | 4.9                                                                               | 4.6                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 29.0                                                                              | 6.4                                                                               | 39.1                                                                              |                                                                                   | 29.0                                                                              | 6.4                                                                                 | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 3.1                                                                               | 0.0                                                                               | 20.1                                                                              |                                                                                   | 10.8                                                                              | 6.1                                                                                 | 42.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.7                                                                               | 0.0                                                                               | 14.1                                                                              |                                                                                   | 0.6                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 36.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# Timings

## 10: CENTRAL AVE & CAMBERN AVE

10/5/2016



| Lane Group           | SEL   | SET   | SER   | NWT   | NEL   | NET   | SWT   | SWR   | ø3   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations  |       | ↰     | ↰     | ↰     | ↰     | ↰     | ↰     | ↰     |      |
| Volume (vph)         | 144   | 2     | 78    | 2     | 113   | 987   | 1486  | 114   |      |
| Turn Type            | Perm  | NA    | Perm  | NA    | Prot  | NA    | NA    | Perm  |      |
| Protected Phases     |       | 6     |       | 2     | 7     | 4     | 8     |       | 3    |
| Permitted Phases     | 6     |       | 6     |       |       |       |       | 8     |      |
| Detector Phase       | 6     | 6     | 6     | 2     | 7     | 4     | 8     | 8     |      |
| Switch Phase         |       |       |       |       |       |       |       |       |      |
| Minimum Initial (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 33.9  | 11.0  | 31.0  | 31.0  | 31.0  | 11.0 |
| Total Split (s)      | 33.9  | 33.9  | 33.9  | 33.9  | 11.0  | 45.1  | 45.1  | 45.1  | 11.0 |
| Total Split (%)      | 37.7% | 37.7% | 37.7% | 37.7% | 12.2% | 50.1% | 50.1% | 50.1% | 12%  |
| Yellow Time (s)      | 3.9   | 3.9   | 3.9   | 3.9   | 3.6   | 5.0   | 5.0   | 5.0   | 3.6  |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0  |
| Lost Time Adjust (s) |       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)  |       | 4.9   | 4.9   | 4.9   | 4.6   | 6.0   | 6.0   | 6.0   |      |
| Lead/Lag             |       |       |       |       | Lead  | Lag   | Lag   | Lag   | Lead |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |      |
| Recall Mode          | Max   | Max   | Max   | Max   | None  | C-Max | C-Max | C-Max | None |
| Act Effect Green (s) |       | 29.0  | 29.0  | 29.0  | 6.2   | 50.1  | 39.3  | 39.3  |      |
| Actuated g/C Ratio   |       | 0.32  | 0.32  | 0.32  | 0.07  | 0.56  | 0.44  | 0.44  |      |
| v/c Ratio            |       | 0.36  | 0.15  | 0.00  | 0.52  | 0.54  | 1.03  | 0.16  |      |
| Control Delay        |       | 26.4  | 5.0   | 21.0  | 45.5  | 25.2  | 58.6  | 3.6   |      |
| Queue Delay          |       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay          |       | 26.4  | 5.0   | 21.0  | 45.5  | 25.2  | 58.6  | 3.6   |      |
| LOS                  |       | C     | A     | C     | D     | C     | E     | A     |      |
| Approach Delay       |       | 18.9  |       | 21.0  |       | 27.3  | 54.7  |       |      |
| Approach LOS         |       | B     |       | C     |       | C     | D     |       |      |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 85 (94%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 41.6

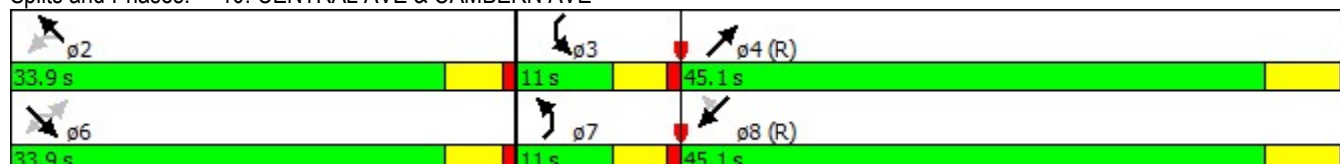
Intersection LOS: D

Intersection Capacity Utilization 72.2%

ICU Level of Service C

Analysis Period (min) 15

### Splits and Phases: 10: CENTRAL AVE & CAMBERN AVE



## Queues

## 10: CENTRAL AVE &amp; CAMBERN AVE

10/5/2016



| Lane Group              | SET  | SER  | NWT  | NEL  | NET  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 157  | 84   | 2    | 122  | 1061 | 1598 | 123  |
| v/c Ratio               | 0.36 | 0.15 | 0.00 | 0.52 | 0.54 | 1.03 | 0.16 |
| Control Delay           | 26.4 | 5.0  | 21.0 | 45.5 | 25.2 | 58.6 | 3.6  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 26.4 | 5.0  | 21.0 | 45.5 | 25.2 | 58.6 | 3.6  |
| Queue Length 50th (ft)  | 68   | 0    | 1    | 38   | 210  | ~521 | 0    |
| Queue Length 95th (ft)  | 122  | 28   | 6    | m50  | 278  | #656 | 30   |
| Internal Link Dist (ft) | 1204 |      | 1267 |      | 636  | 2064 |      |
| Turn Bay Length (ft)    |      | 200  |      | 250  |      |      | 400  |
| Base Capacity (vph)     | 436  | 572  | 600  | 244  | 1970 | 1546 | 761  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.36 | 0.15 | 0.00 | 0.50 | 0.54 | 1.03 | 0.16 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 11: CENTRAL AVE & ROSETTA CNYN DR

10/5/2016

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Volume (veh/h)               | 315                                                                               | 118                                                                               | 909                                                                               | 299                                                                               | 174                                                                               | 1179                                                                              |   |      |
| Number                       | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |      |
| Adj Flow Rate, veh/h         | 339                                                                               | 127                                                                               | 977                                                                               | 322                                                                               | 187                                                                               | 1268                                                                              |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |   |      |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              |   |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |      |
| Cap, veh/h                   | 410                                                                               | 366                                                                               | 2029                                                                              | 632                                                                               | 249                                                                               | 2148                                                                              |   |      |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.40                                                                              | 0.40                                                                              | 0.14                                                                              | 0.61                                                                              |   |      |
| Sat Flow, veh/h              | 1774                                                                              | 1583                                                                              | 5253                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              |   |      |
| Grp Volume(v), veh/h         | 339                                                                               | 127                                                                               | 977                                                                               | 322                                                                               | 187                                                                               | 1268                                                                              |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1583                                                                              | 1695                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              |   |      |
| Q Serve(g_s), s              | 13.5                                                                              | 5.0                                                                               | 10.6                                                                              | 11.4                                                                              | 7.5                                                                               | 16.3                                                                              |   |      |
| Cycle Q Clear(g_c), s        | 13.5                                                                              | 5.0                                                                               | 10.6                                                                              | 11.4                                                                              | 7.5                                                                               | 16.3                                                                              |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Lane Grp Cap(c), veh/h       | 410                                                                               | 366                                                                               | 2029                                                                              | 632                                                                               | 249                                                                               | 2148                                                                              |   |      |
| V/C Ratio(X)                 | 0.83                                                                              | 0.35                                                                              | 0.48                                                                              | 0.51                                                                              | 0.75                                                                              | 0.59                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 790                                                                               | 705                                                                               | 2029                                                                              | 632                                                                               | 407                                                                               | 2148                                                                              |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 27.1                                                                              | 23.8                                                                              | 16.6                                                                              | 16.8                                                                              | 30.6                                                                              | 8.9                                                                               |   |      |
| Incr Delay (d2), s/veh       | 1.6                                                                               | 0.2                                                                               | 0.8                                                                               | 2.9                                                                               | 1.7                                                                               | 1.2                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 6.8                                                                               | 2.2                                                                               | 5.0                                                                               | 5.4                                                                               | 3.8                                                                               | 8.1                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 28.7                                                                              | 24.0                                                                              | 17.4                                                                              | 19.7                                                                              | 32.3                                                                              | 10.1                                                                              |   |      |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 |   |      |
| Approach Vol, veh/h          | 466                                                                               |                                                                                   | 1299                                                                              |                                                                                   |                                                                                   | 1455                                                                              |   |      |
| Approach Delay, s/veh        | 27.4                                                                              |                                                                                   | 18.0                                                                              |                                                                                   |                                                                                   | 13.0                                                                              |   |      |
| Approach LOS                 | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |   | 8    |
| Phs Duration (G+Y+Rc), s     | 15.4                                                                              | 36.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 52.0                                                                              |   | 22.1 |
| Change Period (Y+Rc), s      | 5.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               |   | 5.0  |
| Max Green Setting (Gmax), s  | 17.0                                                                              | 23.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 45.0                                                                              |   | 33.0 |
| Max Q Clear Time (g_c+I1), s | 10.5                                                                              | 14.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.3                                                                              |   | 16.5 |
| Green Ext Time (p_c), s      | 0.1                                                                               | 7.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 19.9                                                                              |   | 0.7  |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 17.1                                                                              |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

# Timings

## 11: CENTRAL AVE & ROSETTA CNYN DR

10/5/2016



| Lane Group           | WBL   | WBR   | NBT   | NBR   | SBL   | SBT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 315   | 118   | 909   | 299   | 174   | 1179  |
| Turn Type            | Prot  | Perm  | NA    | Perm  | Prot  | NA    |
| Protected Phases     | 8     |       | 2     |       | 1     | 6     |
| Permitted Phases     |       | 8     |       | 2     |       |       |
| Detector Phase       | 8     | 8     | 2     | 2     | 1     | 6     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 8.0   | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 38.0  | 38.0  | 20.0  | 20.0  | 11.0  | 39.0  |
| Total Split (s)      | 38.0  | 38.0  | 30.0  | 30.0  | 22.0  | 52.0  |
| Total Split (%)      | 42.2% | 42.2% | 33.3% | 33.3% | 24.4% | 57.8% |
| Yellow Time (s)      | 4.0   | 4.0   | 6.0   | 6.0   | 4.0   | 6.0   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 7.0   | 7.0   | 5.0   | 7.0   |
| Lead/Lag             |       |       | Lag   | Lag   | Lead  |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | None  | None  | Max   | Max   | None  | Max   |
| Act Effect Green (s) | 18.6  | 18.6  | 28.2  | 28.2  | 12.0  | 45.2  |
| Actuated g/C Ratio   | 0.25  | 0.25  | 0.37  | 0.37  | 0.16  | 0.60  |
| v/c Ratio            | 0.78  | 0.26  | 0.52  | 0.44  | 0.67  | 0.60  |
| Control Delay        | 39.7  | 5.8   | 21.5  | 8.5   | 42.8  | 12.1  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 39.7  | 5.8   | 21.5  | 8.5   | 42.8  | 12.1  |
| LOS                  | D     | A     | C     | A     | D     | B     |
| Approach Delay       | 30.5  |       | 18.3  |       |       | 16.0  |
| Approach LOS         | C     |       | B     |       |       | B     |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 75.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 19.0

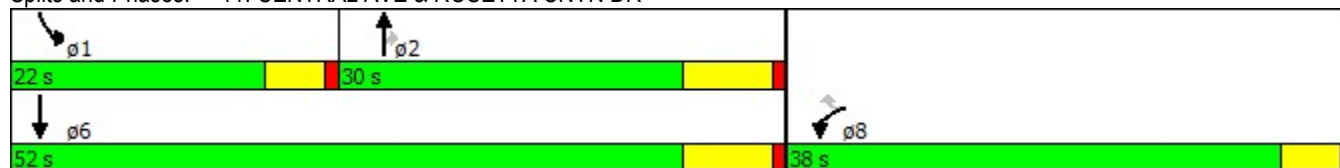
Intersection LOS: B

Intersection Capacity Utilization 60.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: CENTRAL AVE & ROSETTA CNYN DR



## Queues

## 11: CENTRAL AVE &amp; ROSETTA CNYN DR

10/5/2016



| Lane Group              | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 339  | 127  | 977  | 322  | 187  | 1268 |
| v/c Ratio               | 0.78 | 0.26 | 0.52 | 0.44 | 0.67 | 0.60 |
| Control Delay           | 39.7 | 5.8  | 21.5 | 8.5  | 42.8 | 12.1 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 39.7 | 5.8  | 21.5 | 8.5  | 42.8 | 12.1 |
| Queue Length 50th (ft)  | 149  | 0    | 128  | 24   | 83   | 177  |
| Queue Length 95th (ft)  | 235  | 36   | 216  | 106  | 154  | 310  |
| Internal Link Dist (ft) | 1570 |      | 1523 |      |      | 2926 |
| Turn Bay Length (ft)    |      |      |      | 100  | 250  |      |
| Base Capacity (vph)     | 773  | 763  | 1891 | 740  | 398  | 2108 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.44 | 0.17 | 0.52 | 0.44 | 0.47 | 0.60 |
| Intersection Summary    |      |      |      |      |      |      |

HCM 2010 TWSC  
12: COLLIER AVE & PROJECT ACCESS

10/5/2016

Intersection

Int Delay, s/veh 0

| Movement                 | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 682  | 393  | 0    | 0    | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 200  | -    | -    | -    | 0    | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 741  | 427  | 0    | 0    | 0    |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 427    | 0      | 798    |
| Stage 1              | -      | -      | 427    |
| Stage 2              | -      | -      | 371    |
| Critical Hdwy        | 4.12   | -      | 6.63   |
| Critical Hdwy Stg 1  | -      | -      | 5.43   |
| Critical Hdwy Stg 2  | -      | -      | 5.83   |
| Follow-up Hdwy       | 2.218  | -      | 3.519  |
| Pot Cap-1 Maneuver   | 1132   | -      | 339    |
| Stage 1              | -      | -      | 657    |
| Stage 2              | -      | -      | 669    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 1132   | -      | 339    |
| Mov Cap-2 Maneuver   | -      | -      | 339    |
| Stage 1              | -      | -      | 657    |
| Stage 2              | -      | -      | 669    |

| Approach             | SE | NW | SW |
|----------------------|----|----|----|
| HCM Control Delay, s | 0  | 0  | 0  |
| HCM LOS              |    |    | A  |

| Minor Lane/Major Mvmt | NWT | NWR | SEL  | SET | SWLn1 | SWLn2 |
|-----------------------|-----|-----|------|-----|-------|-------|
| Capacity (veh/h)      | -   | -   | 1132 | -   | -     | -     |
| HCM Lane V/C Ratio    | -   | -   | -    | -   | -     | -     |
| HCM Control Delay (s) | -   | -   | 0    | -   | 0     | 0     |
| HCM Lane LOS          | -   | -   | A    | -   | A     | A     |
| HCM 95th %tile Q(veh) | -   | -   | 0    | -   | -     | -     |

# Lanes and Geometrics 12: COLLIER AVE & PROJECT ACCESS

11/10/2016



| Lane Group           | SEL   | SET  | NWT  | NWR  | SWL  | SWR  |
|----------------------|-------|------|------|------|------|------|
| Lane Configurations  |       |      |      |      |      |      |
| Ideal Flow (vphpl)   | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)      | 12    | 12   | 12   | 12   | 12   | 12   |
| Grade (%)            |       | 0%   | 0%   |      | 0%   |      |
| Storage Length (ft)  | 200   |      |      | 0    | 0    | 0    |
| Storage Lanes        | 1     |      |      | 0    | 1    | 1    |
| Taper Length (ft)    | 25    |      |      |      | 25   |      |
| Link Speed (mph)     |       | 30   | 30   |      | 30   |      |
| Link Distance (ft)   |       | 543  | 118  |      | 355  |      |
| Travel Time (s)      |       | 12.3 | 2.7  |      | 8.1  |      |
| Intersection Summary |       |      |      |      |      |      |
| Area Type:           | Other |      |      |      |      |      |

**Intersection**

Int Delay, s/veh 3.6

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 5    | 931  | 5    | 6    | 959  | 104  | 27   | 3    | 2    | 1    | 1    | 3    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | 50   | -    | -    | 50   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 5    | 970  | 5    | 6    | 999  | 108  | 28   | 3    | 2    | 1    | 1    | 3    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor2 |       |       | Minor1 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 1107   | 0 | 0 | 975    | 0 | 0 | 2049   | 2051  | 1053  | 2050   | 2103  | 972   |
| Stage 1              | -      | - | - | -      | - | - | 1066   | 1066  | -     | 983    | 983   | -     |
| Stage 2              | -      | - | - | -      | - | - | 983    | 985   | -     | 1067   | 1120  | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 631    | - | - | 707    | - | - | 41     | 56    | 275   | 41     | 52    | 306   |
| Stage 1              | -      | - | - | -      | - | - | 269    | 299   | -     | 299    | 327   | -     |
| Stage 2              | -      | - | - | -      | - | - | 299    | 326   | -     | 269    | 282   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 631    | - | - | 707    | - | - | 39     | 54    | 275   | 38     | 50    | 306   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 39     | 54    | -     | 38     | 50    | -     |
| Stage 1              | -      | - | - | -      | - | - | 264    | 292   | -     | 294    | 321   | -     |
| Stage 2              | -      | - | - | -      | - | - | 290    | 320   | -     | 258    | 276   | -     |

| Approach             | EB  | WB  | SE  | NW   |
|----------------------|-----|-----|-----|------|
| HCM Control Delay, s | 0.1 | 0.1 | 217 | 47.3 |
| HCM LOS              |     |     | F   | E    |

| Minor Lane/Major Mvmt | NWLn1 | NWLn2 | EBL   | EBT | EBR | WBL   | WBT | WBR | SELn1 | SELn2 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 43    | 306   | 631   | -   | -   | 707   | -   | -   | 40    | 275   |
| HCM Lane V/C Ratio    | 0.048 | 0.01  | 0.008 | -   | -   | 0.009 | -   | -   | 0.781 | 0.008 |
| HCM Control Delay (s) | 92.9  | 16.9  | 10.8  | 0   | -   | 10.1  | 0   | -   | 230.3 | 18.2  |
| HCM Lane LOS          | F     | C     | B     | A   | -   | B     | A   | -   | F     | C     |
| HCM 95th %tile Q(veh) | 0.1   | 0     | 0     | -   | -   | 0     | -   | -   | 2.9   | 0     |



# Lanes and Geometrics

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

11/10/2016

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 50                                                                                  | 0                                                                                   |                                                                                     | 50                                                                                  |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 1687                                                                              |                                                                                   |                                                                                   | 935                                                                               |                                                                                   |                                                                                    | 885                                                                                 |                                                                                     |                                                                                     | 1732                                                                                |                                                                                     |
| Travel Time (s)      |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: RIVERSIDE DR & COLLIER AVE

10/5/2016

|                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Volume (veh/h)                                                                                      | 7                                                                                 | 141                                                                               | 122                                                                               | 924                                                                               | 199                                                                               | 20                                                                                | 89                                                                                 | 6                                                                                   | 841                                                                                 | 26                                                                                  | 18                                                                                  | 18                                                                                  |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                                                | 7                                                                                 | 148                                                                               | 128                                                                               | 973                                                                               | 209                                                                               | 21                                                                                | 94                                                                                 | 6                                                                                   | 885                                                                                 | 27                                                                                  | 19                                                                                  | 19                                                                                  |
| Adj No. of Lanes                                                                                    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                                                    | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 275                                                                               | 288                                                                               | 245                                                                               | 1175                                                                              | 1103                                                                              | 111                                                                               | 254                                                                                | 14                                                                                  | 1300                                                                                | 85                                                                                  | 58                                                                                  | 37                                                                                  |
| Arrive On Green                                                                                     | 0.15                                                                              | 0.15                                                                              | 0.15                                                                              | 0.66                                                                              | 0.66                                                                              | 0.66                                                                              | 0.16                                                                               | 0.16                                                                                | 0.16                                                                                | 0.16                                                                                | 0.16                                                                                | 0.16                                                                                |
| Sat Flow, veh/h                                                                                     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1666                                                                              | 167                                                                               | 1134                                                                               | 88                                                                                  | 1583                                                                                | 195                                                                                 | 367                                                                                 | 232                                                                                 |
| Grp Volume(v), veh/h                                                                                | 7                                                                                 | 148                                                                               | 128                                                                               | 973                                                                               | 0                                                                                 | 230                                                                               | 100                                                                                | 0                                                                                   | 885                                                                                 | 65                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 0                                                                                 | 1833                                                                              | 1223                                                                               | 0                                                                                   | 1583                                                                                | 794                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s                                                                                     | 0.3                                                                               | 6.9                                                                               | 7.1                                                                               | 39.0                                                                              | 0.0                                                                               | 4.6                                                                               | 0.0                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 0.3                                                                               | 6.9                                                                               | 7.1                                                                               | 39.0                                                                              | 0.0                                                                               | 4.6                                                                               | 7.9                                                                                | 0.0                                                                                 | 15.1                                                                                | 8.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                                                        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.09                                                                              | 0.94                                                                               |                                                                                     | 1.00                                                                                | 0.42                                                                                |                                                                                     | 0.29                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 275                                                                               | 288                                                                               | 245                                                                               | 1175                                                                              | 0                                                                                 | 1214                                                                              | 268                                                                                | 0                                                                                   | 1300                                                                                | 180                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                                                                                        | 0.03                                                                              | 0.51                                                                              | 0.52                                                                              | 0.83                                                                              | 0.00                                                                              | 0.19                                                                              | 0.37                                                                               | 0.00                                                                                | 0.68                                                                                | 0.36                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 275                                                                               | 288                                                                               | 245                                                                               | 1175                                                                              | 0                                                                                 | 1214                                                                              | 268                                                                                | 0                                                                                   | 1300                                                                                | 180                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 34.1                                                                              | 36.9                                                                              | 36.9                                                                              | 12.0                                                                              | 0.0                                                                               | 6.2                                                                               | 36.9                                                                               | 0.0                                                                                 | 2.9                                                                                 | 35.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                                                              | 0.2                                                                               | 6.4                                                                               | 7.8                                                                               | 6.8                                                                               | 0.0                                                                               | 0.3                                                                               | 0.3                                                                                | 0.0                                                                                 | 1.2                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 0.2                                                                               | 4.1                                                                               | 3.6                                                                               | 20.9                                                                              | 0.0                                                                               | 2.4                                                                               | 2.4                                                                                | 0.0                                                                                 | 23.5                                                                                | 1.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 34.2                                                                              | 43.3                                                                              | 44.7                                                                              | 18.8                                                                              | 0.0                                                                               | 6.5                                                                               | 37.2                                                                               | 0.0                                                                                 | 4.1                                                                                 | 35.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                                                           | C                                                                                 | D                                                                                 | D                                                                                 | B                                                                                 |                                                                                   | A                                                                                 | D                                                                                  |                                                                                     | A                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h                                                                                 |                                                                                   | 283                                                                               |                                                                                   |                                                                                   | 1203                                                                              |                                                                                   |                                                                                    | 985                                                                                 |                                                                                     |                                                                                     | 65                                                                                  |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 43.7                                                                              |                                                                                   |                                                                                   | 16.5                                                                              |                                                                                   |                                                                                    | 7.4                                                                                 |                                                                                     |                                                                                     | 35.9                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 68.6                                                                              |                                                                                   | 20.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                    | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 5.3                                                                               |                                                                                   | * 5.3                                                                             |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 49.7                                                                              |                                                                                   | * 15                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                        |                                                                                   | 42.0                                                                              |                                                                                   | 18.1                                                                              |                                                                                   | 10.1                                                                              |                                                                                    | 10.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 2.1                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.3                                                                               |                                                                                    | 1.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 16.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 2: RIVERSIDE DR & COLLIER AVE

10/5/2016



| Lane Group           | SEL   | SET   | SER   | NWL   | NWT   | NEL   | NET   | NER   | SWL   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |
| Volume (vph)         | 7     | 141   | 122   | 924   | 199   | 89    | 6     | 841   | 26    | 18    |
| Turn Type            | Split | NA    | Perm  | Split | NA    | Perm  | NA    | pm+ov | Perm  | NA    |
| Protected Phases     | 6     | 6     |       | 2     | 2     |       | 4     | 2     |       | 8     |
| Permitted Phases     |       |       | 6     |       |       | 4     |       | 4     | 8     |       |
| Detector Phase       | 6     | 6     | 6     | 2     | 2     | 4     | 4     | 2     | 8     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 6.0   | 6.0   | 6.0   | 7.0   | 7.0   | 9.0   | 9.0   | 7.0   | 9.0   | 9.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 20.0  | 20.0  | 55.0  | 55.0  | 20.0  | 20.0  | 55.0  | 20.0  | 20.0  |
| Total Split (%)      | 21.1% | 21.1% | 21.1% | 57.9% | 57.9% | 21.1% | 21.1% | 57.9% | 21.1% | 21.1% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 3.9   | 3.9   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |       | 4.9   | 5.3   |       | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |       |       |
| Recall Mode          | Max   | Max   | Max   | C-Max | C-Max | None  | None  | C-Max | None  | None  |
| Act Effct Green (s)  | 14.7  | 14.7  | 14.7  | 56.0  | 56.0  |       | 11.6  | 69.7  |       | 11.2  |
| Actuated g/C Ratio   | 0.15  | 0.15  | 0.15  | 0.59  | 0.59  |       | 0.12  | 0.73  |       | 0.12  |
| v/c Ratio            | 0.03  | 0.51  | 0.36  | 0.93  | 0.21  |       | 0.57  | 0.71  |       | 0.35  |
| Control Delay        | 34.4  | 44.0  | 9.9   | 37.6  | 13.5  |       | 51.7  | 7.9   |       | 33.6  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |
| Total Delay          | 34.4  | 44.0  | 9.9   | 37.6  | 13.5  |       | 51.7  | 7.9   |       | 33.6  |
| LOS                  | C     | D     | A     | D     | B     |       | D     | A     |       | C     |
| Approach Delay       |       | 28.3  |       |       | 33.0  |       | 12.4  |       |       | 33.6  |
| Approach LOS         |       | C     |       |       | C     |       | B     |       |       | C     |

### Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 78 (82%), Referenced to phase 2:NWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 24.5

Intersection LOS: C

Intersection Capacity Utilization 82.0%

ICU Level of Service E

Analysis Period (min) 15

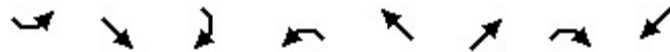
Splits and Phases: 2: RIVERSIDE DR & COLLIER AVE



## Queues

## 2: RIVERSIDE DR &amp; COLLIER AVE

10/5/2016



| Lane Group              | SEL  | SET  | SER  | NWL   | NWT  | NET  | NER  | SWT  |
|-------------------------|------|------|------|-------|------|------|------|------|
| Lane Group Flow (vph)   | 7    | 148  | 128  | 973   | 230  | 100  | 885  | 65   |
| v/c Ratio               | 0.03 | 0.51 | 0.36 | 0.93  | 0.21 | 0.57 | 0.71 | 0.35 |
| Control Delay           | 34.4 | 44.0 | 9.9  | 37.6  | 13.5 | 51.7 | 7.9  | 33.6 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 34.4 | 44.0 | 9.9  | 37.6  | 13.5 | 51.7 | 7.9  | 33.6 |
| Queue Length 50th (ft)  | 4    | 83   | 0    | 613   | 74   | 58   | 144  | 26   |
| Queue Length 95th (ft)  | 16   | 145  | 50   | m#816 | m102 | 106  | 270  | 63   |
| Internal Link Dist (ft) |      | 1295 |      |       | 623  | 2459 |      | 691  |
| Turn Bay Length (ft)    | 200  |      | 200  |       |      |      | 360  |      |
| Base Capacity (vph)     | 273  | 288  | 353  | 1043  | 1086 | 230  | 1245 | 240  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.03 | 0.51 | 0.36 | 0.93  | 0.21 | 0.43 | 0.71 | 0.27 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 3: CENTRAL AVE & COLLIER AVE

10/5/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)               | 838                                                                               | 215                                                                               | 63                                                                                | 41                                                                                | 102                                                                               | 427                                                                               | 186                                                                                | 327                                                                                 | 46                                                                                  | 239                                                                                 | 220                                                                                 | 750                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 873                                                                               | 224                                                                               | 66                                                                                | 43                                                                                | 106                                                                               | 445                                                                               | 194                                                                                | 341                                                                                 | 48                                                                                  | 249                                                                                 | 229                                                                                 | 781                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 1355                                                                              | 1733                                                                              | 775                                                                               | 67                                                                                | 249                                                                               | 381                                                                               | 145                                                                                | 490                                                                                 | 68                                                                                  | 369                                                                                 | 414                                                                                 | 1716                                                                                |
| Arrive On Green              | 0.39                                                                              | 0.49                                                                              | 0.49                                                                              | 0.04                                                                              | 0.13                                                                              | 0.13                                                                              | 0.04                                                                               | 0.16                                                                                | 0.16                                                                                | 0.04                                                                                | 0.07                                                                                | 0.07                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 3539                                                                              | 1583                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 3442                                                                               | 3120                                                                                | 435                                                                                 | 3442                                                                                | 1863                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h         | 873                                                                               | 224                                                                               | 66                                                                                | 43                                                                                | 106                                                                               | 445                                                                               | 194                                                                                | 192                                                                                 | 197                                                                                 | 249                                                                                 | 229                                                                                 | 781                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                               | 1770                                                                                | 1786                                                                                | 1721                                                                                | 1863                                                                                | 1393                                                                                |
| Q Serve(g_s), s              | 19.6                                                                              | 3.3                                                                               | 2.1                                                                               | 2.3                                                                               | 5.0                                                                               | 12.7                                                                              | 4.0                                                                                | 9.8                                                                                 | 9.9                                                                                 | 6.8                                                                                 | 11.3                                                                                | 13.4                                                                                |
| Cycle Q Clear(g_c), s        | 19.6                                                                              | 3.3                                                                               | 2.1                                                                               | 2.3                                                                               | 5.0                                                                               | 12.7                                                                              | 4.0                                                                                | 9.8                                                                                 | 9.9                                                                                 | 6.8                                                                                 | 11.3                                                                                | 13.4                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.24                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 1355                                                                              | 1733                                                                              | 775                                                                               | 67                                                                                | 249                                                                               | 381                                                                               | 145                                                                                | 278                                                                                 | 280                                                                                 | 369                                                                                 | 414                                                                                 | 1716                                                                                |
| V/C Ratio(X)                 | 0.64                                                                              | 0.13                                                                              | 0.09                                                                              | 0.64                                                                              | 0.43                                                                              | 1.17                                                                              | 1.34                                                                               | 0.69                                                                                | 0.70                                                                                | 0.68                                                                                | 0.55                                                                                | 0.46                                                                                |
| Avail Cap(c_a), veh/h        | 1355                                                                              | 1733                                                                              | 775                                                                               | 110                                                                               | 249                                                                               | 381                                                                               | 145                                                                                | 324                                                                                 | 327                                                                                 | 931                                                                                 | 767                                                                                 | 2244                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 23.4                                                                              | 13.2                                                                              | 12.9                                                                              | 45.1                                                                              | 37.8                                                                              | 36.1                                                                              | 45.5                                                                               | 37.9                                                                                | 37.9                                                                                | 44.2                                                                                | 39.5                                                                                | 11.4                                                                                |
| Incr Delay (d2), s/veh       | 0.8                                                                               | 0.2                                                                               | 0.2                                                                               | 3.8                                                                               | 5.3                                                                               | 99.9                                                                              | 191.5                                                                              | 3.6                                                                                 | 3.9                                                                                 | 0.8                                                                                 | 0.4                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 9.4                                                                               | 1.6                                                                               | 1.0                                                                               | 1.2                                                                               | 2.9                                                                               | 20.6                                                                              | 5.7                                                                                | 5.0                                                                                 | 5.2                                                                                 | 3.3                                                                                 | 5.9                                                                                 | 5.2                                                                                 |
| LnGrp Delay(d),s/veh         | 24.2                                                                              | 13.4                                                                              | 13.1                                                                              | 48.9                                                                              | 43.1                                                                              | 135.9                                                                             | 237.0                                                                              | 41.4                                                                                | 41.9                                                                                | 45.0                                                                                | 39.9                                                                                | 11.5                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | F                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 1163                                                                              |                                                                                   |                                                                                   |                                                                                   | 594                                                                               |                                                                                   |                                                                                    |                                                                                     | 583                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 21.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 113.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 106.7                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 42.0                                                                              | 18.0                                                                              | 14.8                                                                              | 20.2                                                                              | 8.2                                                                               | 51.8                                                                              | 8.6                                                                                | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 19.4                                                                              | 12.7                                                                              | 25.7                                                                              | 17.4                                                                              | 5.9                                                                               | 26.2                                                                              | 4.0                                                                                | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 22.6                                                                              | 15.7                                                                              | 9.8                                                                               | 12.8                                                                              | 5.3                                                                               | 6.3                                                                               | 7.0                                                                                | 16.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.4                                                                               | 2.2                                                                               | 0.0                                                                               | 2.3                                                                               | 0.0                                                                                | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 51.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 3: CENTRAL AVE & COLLIER AVE

10/5/2016

|                      |                                                                                    |                                                                                    |  |  |  |  |                                                                                      |                                                                                      |                                                                                      |  |                                                                                      |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                                                                                                                 | SET                                                                                                                                                                 | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                                                                                                    | NET                                                                                                                                                                     | SWL                                                                                                                                                                     | SWT                                                                                 | SWR                                                                                                                                                                     |
| Lane Configurations  |   |   |  |  |  |  |   |   |   |  |   |
| Volume (vph)         | 838                                                                                                                                                                 | 215                                                                                                                                                                 | 63                                                                                | 41                                                                                | 102                                                                               | 427                                                                               | 186                                                                                                                                                                    | 327                                                                                                                                                                     | 239                                                                                                                                                                     | 220                                                                                 | 750                                                                                                                                                                     |
| Turn Type            | Prot                                                                                                                                                                | NA                                                                                                                                                                  | Perm                                                                              | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                                                                                                   | NA                                                                                                                                                                      | Prot                                                                                                                                                                    | NA                                                                                  | pm+ov                                                                                                                                                                   |
| Protected Phases     | 1                                                                                                                                                                   | 6                                                                                                                                                                   |                                                                                   | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                                                                                                      | 4                                                                                                                                                                       | 3                                                                                                                                                                       | 8                                                                                   | 1                                                                                                                                                                       |
| Permitted Phases     |                                                                                                                                                                     |                                                                                                                                                                     | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                                                                                                        |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     | 8                                                                                                                                                                       |
| Detector Phase       | 1                                                                                                                                                                   | 6                                                                                                                                                                   | 6                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                                                                                                      | 4                                                                                                                                                                       | 3                                                                                                                                                                       | 8                                                                                   | 1                                                                                                                                                                       |
| Switch Phase         |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                        |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |
| Minimum Initial (s)  | 5.0                                                                                                                                                                 | 5.0                                                                                                                                                                 | 5.0                                                                               | 4.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                                                                                                                    | 5.0                                                                                                                                                                     | 5.0                                                                                                                                                                     | 5.0                                                                                 | 5.0                                                                                                                                                                     |
| Minimum Split (s)    | 11.6                                                                                                                                                                | 30.5                                                                                                                                                                | 30.5                                                                              | 8.6                                                                               | 18.0                                                                              | 11.6                                                                              | 8.6                                                                                                                                                                    | 20.0                                                                                                                                                                    | 11.6                                                                                                                                                                    | 42.3                                                                                | 11.6                                                                                                                                                                    |
| Total Split (s)      | 24.0                                                                                                                                                                | 31.5                                                                                                                                                                | 31.5                                                                              | 10.5                                                                              | 18.0                                                                              | 30.3                                                                              | 8.6                                                                                                                                                                    | 22.7                                                                                                                                                                    | 30.3                                                                                                                                                                    | 44.4                                                                                | 24.0                                                                                                                                                                    |
| Total Split (%)      | 25.3%                                                                                                                                                               | 33.2%                                                                                                                                                               | 33.2%                                                                             | 11.1%                                                                             | 18.9%                                                                             | 31.9%                                                                             | 9.1%                                                                                                                                                                   | 23.9%                                                                                                                                                                   | 31.9%                                                                                                                                                                   | 46.7%                                                                               | 25.3%                                                                                                                                                                   |
| Yellow Time (s)      | 3.6                                                                                                                                                                 | 4.3                                                                                                                                                                 | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 3.6                                                                               | 3.6                                                                                                                                                                    | 4.3                                                                                                                                                                     | 3.6                                                                                                                                                                     | 4.3                                                                                 | 3.6                                                                                                                                                                     |
| All-Red Time (s)     | 1.0                                                                                                                                                                 | 1.0                                                                                                                                                                 | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                                                                                                    | 1.0                                                                                                                                                                     | 1.0                                                                                                                                                                     | 1.0                                                                                 | 1.0                                                                                                                                                                     |
| Lost Time Adjust (s) | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                    | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                                                                                                     |
| Total Lost Time (s)  | 4.6                                                                                                                                                                 | 5.3                                                                                                                                                                 | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 4.6                                                                                                                                                                    | 5.3                                                                                                                                                                     | 4.6                                                                                                                                                                     | 5.3                                                                                 | 4.6                                                                                                                                                                     |
| Lead/Lag             | Lead                                                                                                                                                                | Lag                                                                                                                                                                 | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                                                                                                   | Lag                                                                                                                                                                     | Lead                                                                                                                                                                    | Lag                                                                                 | Lead                                                                                                                                                                    |
| Lead-Lag Optimize?   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                        |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |
| Recall Mode          | C-Max                                                                                                                                                               | Max                                                                                                                                                                 | Max                                                                               | None                                                                              | Max                                                                               | None                                                                              | None                                                                                                                                                                   | None                                                                                                                                                                    | None                                                                                                                                                                    | None                                                                                | C-Max                                                                                                                                                                   |
| Act Effct Green (s)  | 34.2                                                                                                                                                                | 44.3                                                                                                                                                                | 44.3                                                                              | 6.4                                                                               | 12.7                                                                              | 31.7                                                                              | 4.0                                                                                                                                                                    | 14.6                                                                                                                                                                    | 13.7                                                                                                                                                                    | 24.3                                                                                | 63.8                                                                                                                                                                    |
| Actuated g/C Ratio   | 0.36                                                                                                                                                                | 0.47                                                                                                                                                                | 0.47                                                                              | 0.07                                                                              | 0.13                                                                              | 0.33                                                                              | 0.04                                                                                                                                                                   | 0.15                                                                                                                                                                    | 0.14                                                                                                                                                                    | 0.26                                                                                | 0.67                                                                                                                                                                    |
| v/c Ratio            | 0.71                                                                                                                                                                | 0.14                                                                                                                                                                | 0.08                                                                              | 0.36                                                                              | 0.43                                                                              | 0.72                                                                              | 1.35                                                                                                                                                                   | 0.72                                                                                                                                                                    | 0.50                                                                                                                                                                    | 0.48                                                                                | 0.38                                                                                                                                                                    |
| Control Delay        | 29.7                                                                                                                                                                | 17.4                                                                                                                                                                | 0.1                                                                               | 50.4                                                                              | 43.7                                                                              | 25.6                                                                              | 232.2                                                                                                                                                                  | 44.2                                                                                                                                                                    | 37.8                                                                                                                                                                    | 41.7                                                                                | 1.4                                                                                                                                                                     |
| Queue Delay          | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                    | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                                                                                                     |
| Total Delay          | 29.7                                                                                                                                                                | 17.4                                                                                                                                                                | 0.1                                                                               | 50.4                                                                              | 43.7                                                                              | 25.6                                                                              | 232.2                                                                                                                                                                  | 44.2                                                                                                                                                                    | 37.8                                                                                                                                                                    | 41.7                                                                                | 1.4                                                                                                                                                                     |
| LOS                  | C                                                                                                                                                                   | B                                                                                                                                                                   | A                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | F                                                                                                                                                                      | D                                                                                                                                                                       | D                                                                                                                                                                       | D                                                                                   | A                                                                                                                                                                       |
| Approach Delay       |                                                                                                                                                                     | 25.6                                                                                                                                                                |                                                                                   |                                                                                   | 30.7                                                                              |                                                                                   |                                                                                                                                                                        | 106.8                                                                                                                                                                   |                                                                                                                                                                         | 16.0                                                                                |                                                                                                                                                                         |
| Approach LOS         |                                                                                                                                                                     | C                                                                                                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                                                                                                        | F                                                                                                                                                                       |                                                                                                                                                                         | B                                                                                   |                                                                                                                                                                         |

### Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 43 (45%), Referenced to phase 1:SEL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.35

Intersection Signal Delay: 36.2

Intersection LOS: D

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

### Splits and Phases: 3: CENTRAL AVE & COLLIER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| ø1 (R)                                                                              | ø2                                                                                  | ø3                                                                                  | ø4                                                                                  |
| 24 s                                                                                | 18 s                                                                                | 30.3 s                                                                              | 22.7 s                                                                              |
|  |  |  |  |
| ø5                                                                                  | ø6                                                                                  | ø7                                                                                  | ø8                                                                                  |
| 10.5 s                                                                              | 31.5 s                                                                              | 8.6 s                                                                               | 44.4 s                                                                              |

## Queues

## 3: CENTRAL AVE &amp; COLLIER AVE

10/5/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 873                                                                               | 224                                                                               | 66                                                                                | 43                                                                                | 106                                                                               | 445                                                                               | 194                                                                                | 389                                                                                 | 249                                                                                 | 229                                                                                 | 781                                                                                 |
| v/c Ratio               | 0.71                                                                              | 0.14                                                                              | 0.08                                                                              | 0.36                                                                              | 0.43                                                                              | 0.72                                                                              | 1.35                                                                               | 0.72                                                                                | 0.50                                                                                | 0.48                                                                                | 0.38                                                                                |
| Control Delay           | 29.7                                                                              | 17.4                                                                              | 0.1                                                                               | 50.4                                                                              | 43.7                                                                              | 25.6                                                                              | 232.2                                                                              | 44.2                                                                                | 37.8                                                                                | 41.7                                                                                | 1.4                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 29.7                                                                              | 17.4                                                                              | 0.1                                                                               | 50.4                                                                              | 43.7                                                                              | 25.6                                                                              | 232.2                                                                              | 44.2                                                                                | 37.8                                                                                | 41.7                                                                                | 1.4                                                                                 |
| Queue Length 50th (ft)  | 219                                                                               | 41                                                                                | 0                                                                                 | 25                                                                                | 60                                                                                | 173                                                                               | ~79                                                                                | 114                                                                                 | 74                                                                                  | 144                                                                                 | 9                                                                                   |
| Queue Length 95th (ft)  | #441                                                                              | m80                                                                               | m0                                                                                | 59                                                                                | 111                                                                               | 238                                                                               | #150                                                                               | 155                                                                                 | 112                                                                                 | 186                                                                                 | 14                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 1881                                                                              |                                                                                   |                                                                                   | 463                                                                               |                                                                                   |                                                                                    | 1625                                                                                |                                                                                     | 251                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 650                                                                               |                                                                                   | 220                                                                               | 100                                                                               |                                                                                   | 100                                                                               | 140                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 1235                                                                              | 1651                                                                              | 837                                                                               | 126                                                                               | 249                                                                               | 799                                                                               | 144                                                                                | 656                                                                                 | 928                                                                                 | 766                                                                                 | 2044                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.71                                                                              | 0.14                                                                              | 0.08                                                                              | 0.34                                                                              | 0.43                                                                              | 0.56                                                                              | 1.35                                                                               | 0.59                                                                                | 0.27                                                                                | 0.30                                                                                | 0.38                                                                                |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 2010 TWSC  
4: CRANE ST & COLLIER AVE

10/5/2016

| Intersection             |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
|--------------------------|--------|-------|-------|-----|--------|------|------|-----|--------|-------|-------|--|------|------|------|
| Int Delay, s/veh         | 1.2    |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
|                          |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
| Movement                 | SEL    | SET   | SER   |     | NWL    | NWT  | NWR  |     | NEL    | NET   | NER   |  | SWL  | SWT  | SWR  |
| Vol, veh/h               | 0      | 449   | 16    |     | 8      | 527  | 0    |     | 42     | 0     | 17    |  | 0    | 0    | 0    |
| Conflicting Peds, #/hr   | 0      | 0     | 0     |     | 0      | 0    | 0    |     | 0      | 0     | 0     |  | 0    | 0    | 0    |
| Sign Control             | Free   | Free  | Free  |     | Free   | Free | Free |     | Stop   | Stop  | Stop  |  | Stop | Stop | Stop |
| RT Channelized           | -      | -     | None  |     | -      | -    | None |     | -      | -     | None  |  | -    | -    | None |
| Storage Length           | -      | -     | -     |     | 150    | -    | -    |     | 90     | -     | 0     |  | -    | -    | -    |
| Veh in Median Storage, # | -      | 0     | -     |     | -      | 0    | -    |     | -      | 0     | -     |  | -    | 0    | -    |
| Grade, %                 | -      | 0     | -     |     | -      | 0    | -    |     | -      | 0     | -     |  | -    | 0    | -    |
| Peak Hour Factor         | 93     | 93    | 93    |     | 93     | 93   | 93   |     | 93     | 93    | 93    |  | 93   | 93   | 93   |
| Heavy Vehicles, %        | 2      | 2     | 2     |     | 2      | 2    | 2    |     | 2      | 2     | 2     |  | 2    | 2    | 2    |
| Mvmt Flow                | 0      | 483   | 17    |     | 9      | 567  | 0    |     | 45     | 0     | 18    |  | 0    | 0    | 0    |
|                          |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
| Major/Minor              | Major1 |       |       |     | Major2 |      |      |     | Minor1 |       |       |  |      |      |      |
| Conflicting Flow All     | 567    | 0     | 0     |     | 500    | 0    | 0    |     | 1075   | 1075  | 250   |  |      |      |      |
| Stage 1                  | -      | -     | -     |     | -      | -    | -    |     | 491    | 491   | -     |  |      |      |      |
| Stage 2                  | -      | -     | -     |     | -      | -    | -    |     | 584    | 584   | -     |  |      |      |      |
| Critical Hdwy            | 4.12   | -     | -     |     | 4.14   | -    | -    |     | 6.63   | 6.53  | 6.93  |  |      |      |      |
| Critical Hdwy Stg 1      | -      | -     | -     |     | -      | -    | -    |     | 5.83   | 5.53  | -     |  |      |      |      |
| Critical Hdwy Stg 2      | -      | -     | -     |     | -      | -    | -    |     | 5.43   | 5.53  | -     |  |      |      |      |
| Follow-up Hdwy           | 2.218  | -     | -     |     | 2.22   | -    | -    |     | 3.519  | 4.019 | 3.319 |  |      |      |      |
| Pot Cap-1 Maneuver       | 1005   | -     | -     |     | 1060   | -    | -    |     | 228    | 219   | 751   |  |      |      |      |
| Stage 1                  | -      | -     | -     |     | -      | -    | -    |     | 582    | 547   | -     |  |      |      |      |
| Stage 2                  | -      | -     | -     |     | -      | -    | -    |     | 556    | 497   | -     |  |      |      |      |
| Platoon blocked, %       |        | -     | -     |     |        | -    | -    |     |        |       |       |  |      |      |      |
| Mov Cap-1 Maneuver       | 1005   | -     | -     |     | 1060   | -    | -    |     | 226    | 0     | 751   |  |      |      |      |
| Mov Cap-2 Maneuver       | -      | -     | -     |     | -      | -    | -    |     | 226    | 0     | -     |  |      |      |      |
| Stage 1                  | -      | -     | -     |     | -      | -    | -    |     | 582    | 0     | -     |  |      |      |      |
| Stage 2                  | -      | -     | -     |     | -      | -    | -    |     | 551    | 0     | -     |  |      |      |      |
|                          |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
| Approach                 | SE     |       |       |     | NW     |      |      |     | NE     |       |       |  |      |      |      |
| HCM Control Delay, s     | 0      |       |       |     | 0.1    |      |      |     | 20.6   |       |       |  |      |      |      |
| HCM LOS                  |        |       |       |     |        |      |      |     | C      |       |       |  |      |      |      |
|                          |        |       |       |     |        |      |      |     |        |       |       |  |      |      |      |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL   | NWT | NWR    | SEL  | SET  | SER |        |       |       |  |      |      |      |
| Capacity (veh/h)         | 226    | 751   | 1060  | -   | -      | 1005 | -    | -   |        |       |       |  |      |      |      |
| HCM Lane V/C Ratio       | 0.2    | 0.024 | 0.008 | -   | -      | -    | -    | -   |        |       |       |  |      |      |      |
| HCM Control Delay (s)    | 24.9   | 9.9   | 8.4   | -   | -      | 0    | -    | -   |        |       |       |  |      |      |      |
| HCM Lane LOS             | C      | A     | A     | -   | -      | A    | -    | -   |        |       |       |  |      |      |      |
| HCM 95th %tile Q(veh)    | 0.7    | 0.1   | 0     | -   | -      | 0    | -    | -   |        |       |       |  |      |      |      |



# Lanes and Geometrics

## 4: CRANE ST & COLLIER AVE

11/10/2016

|                      |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 90                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 118                                                                               |                                                                                   |                                                                                   | 1997                                                                              |                                                                                   |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     | 341                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |       |        |      |        |       |
|--------------------------|--------|-------|--------|------|--------|-------|
| Int Delay, s/veh         | 8      |       |        |      |        |       |
|                          |        |       |        |      |        |       |
| Movement                 | SET    | SER   | NWL    | NWT  | NEL    | NER   |
| Vol, veh/h               | 216    | 199   | 21     | 111  | 327    | 55    |
| Conflicting Peds, #/hr   | 0      | 0     | 0      | 0    | 0      | 0     |
| Sign Control             | Free   | Free  | Free   | Free | Stop   | Stop  |
| RT Channelized           | -      | None  | -      | None | -      | None  |
| Storage Length           | -      | 0     | -      | -    | 0      | 0     |
| Veh in Median Storage, # | 0      | -     | -      | 0    | 0      | -     |
| Grade, %                 | 0      | -     | -      | 0    | 0      | -     |
| Peak Hour Factor         | 90     | 90    | 90     | 90   | 90     | 90    |
| Heavy Vehicles, %        | 2      | 2     | 2      | 2    | 2      | 2     |
| Mvmt Flow                | 240    | 221   | 23     | 123  | 363    | 61    |
|                          |        |       |        |      |        |       |
| Major/Minor              | Major1 |       | Major2 |      | Minor1 |       |
| Conflicting Flow All     | 0      | 0     | 240    | 0    | 410    | 240   |
| Stage 1                  | -      | -     | -      | -    | 240    | -     |
| Stage 2                  | -      | -     | -      | -    | 170    | -     |
| Critical Hdwy            | -      | -     | 4.12   | -    | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -     | -      | -    | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -     | -      | -    | 5.42   | -     |
| Follow-up Hdwy           | -      | -     | 2.218  | -    | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | -      | -     | 1327   | -    | 598    | 799   |
| Stage 1                  | -      | -     | -      | -    | 800    | -     |
| Stage 2                  | -      | -     | -      | -    | 860    | -     |
| Platoon blocked, %       | -      | -     |        | -    |        |       |
| Mov Cap-1 Maneuver       | -      | -     | 1327   | -    | 587    | 799   |
| Mov Cap-2 Maneuver       | -      | -     | -      | -    | 587    | -     |
| Stage 1                  | -      | -     | -      | -    | 800    | -     |
| Stage 2                  | -      | -     | -      | -    | 844    | -     |
|                          |        |       |        |      |        |       |
| Approach                 | SE     |       | NW     |      | NE     |       |
| HCM Control Delay, s     | 0      |       | 1.2    |      | 19.1   |       |
| HCM LOS                  | C      |       |        |      |        |       |
|                          |        |       |        |      |        |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL    | NWT  | SET    | SER   |
| Capacity (veh/h)         | 587    | 799   | 1327   | -    | -      | -     |
| HCM Lane V/C Ratio       | 0.619  | 0.076 | 0.018  | -    | -      | -     |
| HCM Control Delay (s)    | 20.6   | 9.9   | 7.8    | 0    | -      | -     |
| HCM Lane LOS             | C      | A     | A      | A    | -      | -     |
| HCM 95th %tile Q(veh)    | 4.2    | 0.2   | 0.1    | -    | -      | -     |

# Lanes and Geometrics

## 5: CHANEY ST & COLLIER AVE

11/10/2016



| Lane Group                  | SET   | SER  | NWL  | NWT  | NEL  | NER  |
|-----------------------------|-------|------|------|------|------|------|
| Lane Configurations         |       |      |      |      |      |      |
| Ideal Flow (vphpl)          | 1900  | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)             | 12    | 12   | 12   | 12   | 12   | 12   |
| Grade (%)                   | 0%    |      |      | 0%   | 0%   |      |
| Storage Length (ft)         |       | 0    | 0    |      | 0    | 0    |
| Storage Lanes               |       | 1    | 0    |      | 1    | 1    |
| Taper Length (ft)           |       |      | 25   |      | 25   |      |
| Link Speed (mph)            | 30    |      |      | 30   | 30   |      |
| Link Distance (ft)          | 1997  |      |      | 292  | 1583 |      |
| Travel Time (s)             | 45.4  |      |      | 6.6  | 36.0 |      |
| <b>Intersection Summary</b> |       |      |      |      |      |      |
| Area Type:                  | Other |      |      |      |      |      |

| Intersection              |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh | 9.5  |      |      |      |      |      |      |      |      |      |      |      |
| Intersection LOS          | A    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                  | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Vol, veh/h                | 0    | 0    | 1    | 368  | 0    | 2    | 0    | 1    | 0    | 146  | 1    | 2    |
| Peak Hour Factor          | 0.92 | 0.90 | 0.90 | 0.90 | 0.92 | 0.90 | 0.90 | 0.90 | 0.92 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                 | 0    | 0    | 1    | 409  | 0    | 2    | 0    | 1    | 0    | 162  | 1    | 2    |
| Number of Lanes           | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  |
| Opposing Lanes             | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  |
| Conflicting Lanes Left     | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  |
| Conflicting Lanes Right    | 1   | 1   | 1   |
| HCM Control Delay          | 9.6 | 7.7 | 9.4 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 98%   | 0%    | 67%   | 0%    |
| Vol Thru, %            | 1%    | 0%    | 0%    | 0%    |
| Vol Right, %           | 1%    | 100%  | 33%   | 100%  |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 149   | 369   | 3     | 1     |
| LT Vol                 | 146   | 0     | 2     | 0     |
| Through Vol            | 1     | 1     | 0     | 0     |
| RT Vol                 | 2     | 368   | 1     | 1     |
| Lane Flow Rate         | 166   | 410   | 3     | 1     |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.223 | 0.43  | 0.004 | 0.001 |
| Departure Headway (Hd) | 4.974 | 3.776 | 4.69  | 4.371 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 727   | 959   | 765   | 817   |
| Service Time           | 2.974 | 1.776 | 2.706 | 2.406 |
| HCM Lane V/C Ratio     | 0.228 | 0.428 | 0.004 | 0.001 |
| HCM Control Delay      | 9.4   | 9.6   | 7.7   | 7.4   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.9   | 2.2   | 0     | 0     |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement          | SBU  | SBL  | SBT  | SBR  |
|-------------------|------|------|------|------|
| Vol, veh/h        | 0    | 0    | 0    | 1    |
| Peak Hour Factor  | 0.92 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, % | 2    | 2    | 2    | 2    |
| Mvmt Flow         | 0    | 0    | 0    | 1    |
| Number of Lanes   | 0    | 0    | 1    | 0    |

| Approach                   | SB  |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.4 |
| HCM LOS                    | A   |

Lane

# Lanes and Geometrics

## 6: N. SPRING ST & COLLIER AVE

11/10/2016

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 294                                                                               |                                                                                   |                                                                                   | 237                                                                               |                                                                                   |                                                                                    | 822                                                                                 |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                    | 18.7                                                                                |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

10/5/2016

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |  |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |  |
| Volume (veh/h)                                                       | 542                                                                               | 3                                                                                 | 147                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 1090                                                                                | 468                                                                                 | 610                                                                                 | 1319                                                                                | 0                                                                                   |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1863                                                                              | 1863                                                                              | 1863                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h                                                 | 614                                                                               | 0                                                                                 | 103                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1135                                                                                | 488                                                                                 | 635                                                                                 | 1374                                                                                | 0                                                                                   |
| Adj No. of Lanes                                                     | 2                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Cap, veh/h                                                           | 624                                                                               | 0                                                                                 | 278                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1580                                                                                | 707                                                                                 | 749                                                                                 | 2522                                                                                | 0                                                                                   |
| Arrive On Green                                                      | 0.18                                                                              | 0.00                                                                              | 0.18                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.15                                                                                | 0.15                                                                                | 0.22                                                                                | 0.71                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                      | 3548                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3632                                                                                | 1583                                                                                | 3442                                                                                | 3632                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h                                                 | 614                                                                               | 0                                                                                 | 103                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1135                                                                                | 488                                                                                 | 635                                                                                 | 1374                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                             | 1774                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1770                                                                                | 1583                                                                                | 1721                                                                                | 1770                                                                                | 0                                                                                   |
| Q Serve(g_s), s                                                      | 16.4                                                                              | 0.0                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 29.1                                                                                | 27.8                                                                                | 16.8                                                                                | 17.3                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                | 16.4                                                                              | 0.0                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 29.1                                                                                | 27.8                                                                                | 16.8                                                                                | 17.3                                                                                | 0.0                                                                                 |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 624                                                                               | 0                                                                                 | 278                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1580                                                                                | 707                                                                                 | 749                                                                                 | 2522                                                                                | 0                                                                                   |
| V/C Ratio(X)                                                         | 0.98                                                                              | 0.00                                                                              | 0.37                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.72                                                                                | 0.69                                                                                | 0.85                                                                                | 0.54                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                | 624                                                                               | 0                                                                                 | 278                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1580                                                                                | 707                                                                                 | 956                                                                                 | 2522                                                                                | 0                                                                                   |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 0.33                                                                                | 0.33                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.63                                                                                | 0.63                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                             | 39.0                                                                              | 0.0                                                                               | 34.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 34.8                                                                                | 34.3                                                                                | 35.6                                                                                | 6.4                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                               | 32.4                                                                              | 0.0                                                                               | 3.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 2.8                                                                                 | 5.5                                                                                 | 3.1                                                                                 | 0.5                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 10.8                                                                              | 0.0                                                                               | 2.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 14.9                                                                                | 13.3                                                                                | 8.3                                                                                 | 8.6                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 71.4                                                                              | 0.0                                                                               | 38.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 37.6                                                                                | 39.7                                                                                | 38.7                                                                                | 7.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                            | E                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                  |                                                                                   | 717                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 1623                                                                                |                                                                                     |                                                                                     | 2009                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                   | 66.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 38.3                                                                                |                                                                                     |                                                                                     | 17.0                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   |                                                                                   | 25.3                                                                              | 47.7                                                                              |                                                                                   | 22.0                                                                              |                                                                                    | 73.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   |                                                                                   | 26.4                                                                              | 36.7                                                                              |                                                                                   | 16.7                                                                              |                                                                                    | 67.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   |                                                                                   | 19.8                                                                              | 32.1                                                                              |                                                                                   | 19.4                                                                              |                                                                                    | 20.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   |                                                                                   | 0.9                                                                               | 4.2                                                                               |                                                                                   | 0.0                                                                               |                                                                                    | 25.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 33.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

10/5/2016

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 542                                                                               | 3                                                                                 | 147                                                                               | 1090                                                                              | 468                                                                               | 610                                                                               | 1319                                                                               |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                    |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                  |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 5.0                                                                               | 7.0                                                                                |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 29.3                                                                              | 29.3                                                                              | 11.0                                                                              | 20.0                                                                               |
| Total Split (s)      | 22.0                                                                              | 22.0                                                                              | 22.0                                                                              | 42.0                                                                              | 42.0                                                                              | 31.0                                                                              | 73.0                                                                               |
| Total Split (%)      | 23.2%                                                                             | 23.2%                                                                             | 23.2%                                                                             | 44.2%                                                                             | 44.2%                                                                             | 32.6%                                                                             | 76.8%                                                                              |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                    |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                              |
| Act Effect Green (s) | 16.7                                                                              | 16.7                                                                              | 16.7                                                                              | 41.4                                                                              | 41.4                                                                              | 21.7                                                                              | 67.7                                                                               |
| Actuated g/C Ratio   | 0.18                                                                              | 0.18                                                                              | 0.18                                                                              | 0.44                                                                              | 0.44                                                                              | 0.23                                                                              | 0.71                                                                               |
| v/c Ratio            | 1.00                                                                              | 1.02                                                                              | 0.41                                                                              | 0.74                                                                              | 0.52                                                                              | 0.81                                                                              | 0.54                                                                               |
| Control Delay        | 92.7                                                                              | 98.3                                                                              | 19.4                                                                              | 19.8                                                                              | 2.6                                                                               | 35.5                                                                              | 2.1                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.5                                                                                |
| Total Delay          | 92.7                                                                              | 98.3                                                                              | 19.4                                                                              | 19.8                                                                              | 2.6                                                                               | 35.5                                                                              | 2.7                                                                                |
| LOS                  | F                                                                                 | F                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | D                                                                                 | A                                                                                  |
| Approach Delay       |                                                                                   | 80.9                                                                              |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 13.1                                                                               |
| Approach LOS         |                                                                                   | F                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                  |

### Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 45 (47%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 24.9

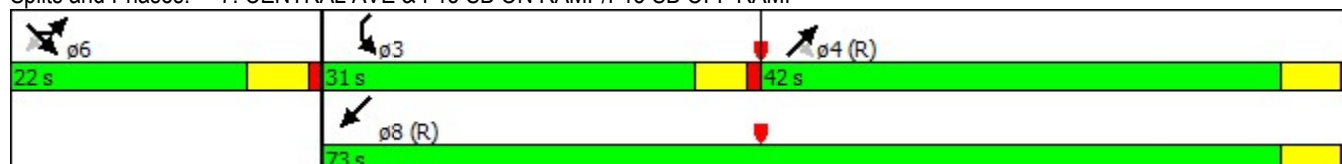
Intersection LOS: C

Intersection Capacity Utilization 76.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP





## Queues

## 7: CENTRAL AVE &amp; I-15 SB ON RAMP/I-15 SB OFF RAMP

10/5/2016



| Lane Group              | SEL  | SET  | SER  | NET  | NER  | SWL  | SWT  |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 294  | 289  | 138  | 1135 | 488  | 635  | 1374 |
| v/c Ratio               | 1.00 | 1.02 | 0.41 | 0.74 | 0.52 | 0.81 | 0.54 |
| Control Delay           | 92.7 | 98.3 | 19.4 | 19.8 | 2.6  | 35.5 | 2.1  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.5  |
| Total Delay             | 92.7 | 98.3 | 19.4 | 19.8 | 2.6  | 35.5 | 2.7  |
| Queue Length 50th (ft)  | 188  | ~195 | 29   | 328  | 18   | 113  | 21   |
| Queue Length 95th (ft)  | #364 | #381 | 87   | 215  | 21   | 150  | 57   |
| Internal Link Dist (ft) |      | 1290 |      | 318  |      |      | 410  |
| Turn Bay Length (ft)    | 200  |      | 200  |      |      | 100  |      |
| Base Capacity (vph)     | 295  | 284  | 333  | 1542 | 940  | 954  | 2522 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 652  |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 1.00 | 1.02 | 0.41 | 0.74 | 0.52 | 0.67 | 0.73 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 2010 Signalized Intersection Summary

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

10/5/2016

|                                                                      |  |      |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET  | SER  | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |                                                                                    |      |      |  |  |  |  |  |      |      |  |  |
| Volume (veh/h)                                                       | 0                                                                                  | 0    | 0    | 500                                                                               | 2                                                                                 | 662                                                                               | 119                                                                               | 1469                                                                                | 0    | 0    | 1437                                                                                | 355                                                                                 |
| Number                                                               |                                                                                    |      |      | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                 | 4                                                                                   | 14   | 3    | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  |                                                                                    |      |      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  |                                                                                    |      |      | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     |                                                                                    |      |      | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               |                                                                                    |      |      | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 0    | 0    | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 |                                                                                    |      |      | 754                                                                               | 0                                                                                 | 428                                                                               | 123                                                                               | 1514                                                                                | 0    | 0    | 1481                                                                                | 366                                                                                 |
| Adj No. of Lanes                                                     |                                                                                    |      |      | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                   | 0    | 0    | 3                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                     |                                                                                    |      |      | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97 | 0.97 | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %                                                 |                                                                                    |      |      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0    | 0    | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           |                                                                                    |      |      | 1259                                                                              | 0                                                                                 | 562                                                                               | 138                                                                               | 2714                                                                                | 0    | 0    | 2072                                                                                | 645                                                                                 |
| Arrive On Green                                                      |                                                                                    |      |      | 0.35                                                                              | 0.00                                                                              | 0.35                                                                              | 0.08                                                                              | 0.53                                                                                | 0.00 | 0.00 | 0.54                                                                                | 0.54                                                                                |
| Sat Flow, veh/h                                                      |                                                                                    |      |      | 3548                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 5253                                                                                | 0    | 0    | 5253                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                 |                                                                                    |      |      | 754                                                                               | 0                                                                                 | 428                                                                               | 123                                                                               | 1514                                                                                | 0    | 0    | 1481                                                                                | 366                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             |                                                                                    |      |      | 1774                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 1695                                                                                | 0    | 0    | 1695                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                      |                                                                                    |      |      | 16.5                                                                              | 0.0                                                                               | 22.7                                                                              | 6.5                                                                               | 18.8                                                                                | 0.0  | 0.0  | 20.7                                                                                | 14.5                                                                                |
| Cycle Q Clear(g_c), s                                                |                                                                                    |      |      | 16.5                                                                              | 0.0                                                                               | 22.7                                                                              | 6.5                                                                               | 18.8                                                                                | 0.0  | 0.0  | 20.7                                                                                | 14.5                                                                                |
| Prop In Lane                                                         |                                                                                    |      |      | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               |                                                                                    |      |      | 1259                                                                              | 0                                                                                 | 562                                                                               | 138                                                                               | 2714                                                                                | 0    | 0    | 2072                                                                                | 645                                                                                 |
| V/C Ratio(X)                                                         |                                                                                    |      |      | 0.60                                                                              | 0.00                                                                              | 0.76                                                                              | 0.89                                                                              | 0.56                                                                                | 0.00 | 0.00 | 0.71                                                                                | 0.57                                                                                |
| Avail Cap(c_a), veh/h                                                |                                                                                    |      |      | 1259                                                                              | 0                                                                                 | 562                                                                               | 138                                                                               | 2714                                                                                | 0    | 0    | 2072                                                                                | 645                                                                                 |
| HCM Platoon Ratio                                                    |                                                                                    |      |      | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.33                                                                                | 1.33                                                                                |
| Upstream Filter(I)                                                   |                                                                                    |      |      | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.52                                                                              | 0.52                                                                                | 0.00 | 0.00 | 0.76                                                                                | 0.76                                                                                |
| Uniform Delay (d), s/veh                                             |                                                                                    |      |      | 25.1                                                                              | 0.0                                                                               | 27.1                                                                              | 43.4                                                                              | 14.7                                                                                | 0.0  | 0.0  | 17.6                                                                                | 16.2                                                                                |
| Incr Delay (d2), s/veh                                               |                                                                                    |      |      | 2.1                                                                               | 0.0                                                                               | 9.4                                                                               | 27.8                                                                              | 0.4                                                                                 | 0.0  | 0.0  | 1.6                                                                                 | 2.8                                                                                 |
| Initial Q Delay(d3),s/veh                                            |                                                                                    |      |      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             |                                                                                    |      |      | 8.4                                                                               | 0.0                                                                               | 11.3                                                                              | 4.3                                                                               | 8.8                                                                                 | 0.0  | 0.0  | 9.9                                                                                 | 6.8                                                                                 |
| LnGrp Delay(d),s/veh                                                 |                                                                                    |      |      | 27.2                                                                              | 0.0                                                                               | 36.5                                                                              | 71.2                                                                              | 15.1                                                                                | 0.0  | 0.0  | 19.3                                                                                | 19.0                                                                                |
| LnGrp LOS                                                            |                                                                                    |      |      | C                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | B                                                                                   |      |      | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h                                                  |                                                                                    |      |      |                                                                                   | 1182                                                                              |                                                                                   |                                                                                   | 1637                                                                                |      |      | 1847                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    |      |      |                                                                                   | 30.6                                                                              |                                                                                   |                                                                                   | 19.4                                                                                |      |      | 19.2                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                    |      |      |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |      |      | B                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2    | 3    | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    | 2    |      | 4                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    | 39.0 |      | 56.0                                                                              |                                                                                   |                                                                                   | 12.0                                                                              | 44.0                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    | 5.3  |      | 5.3                                                                               |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    | 33.7 |      | 50.7                                                                              |                                                                                   |                                                                                   | 7.4                                                                               | 38.7                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    | 25.7 |      | 21.8                                                                              |                                                                                   |                                                                                   | 9.5                                                                               | 23.7                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    | 1.9  |      | 21.7                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 12.7                                                                                |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |      |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |      | 22.1 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |      | C    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |      |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |      |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |

# Timings

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

10/5/2016

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                               | SWT                                                                               | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 500                                                                               | 2                                                                                 | 662                                                                               | 119                                                                               | 1469                                                                              | 1437                                                                              | 355                                                                                 |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 2                                                                                 | 2                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 2                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 11.0                                                                              | 20.0                                                                              | 28.3                                                                              | 28.3                                                                                |
| Total Split (s)      | 39.0                                                                              | 39.0                                                                              | 39.0                                                                              | 12.0                                                                              | 56.0                                                                              | 44.0                                                                              | 44.0                                                                                |
| Total Split (%)      | 41.1%                                                                             | 41.1%                                                                             | 41.1%                                                                             | 12.6%                                                                             | 58.9%                                                                             | 46.3%                                                                             | 46.3%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                             | C-Max                                                                             | C-Max                                                                               |
| Act Effct Green (s)  | 33.7                                                                              | 33.7                                                                              | 33.7                                                                              | 7.4                                                                               | 50.7                                                                              | 38.7                                                                              | 38.7                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.08                                                                              | 0.53                                                                              | 0.41                                                                              | 0.41                                                                                |
| v/c Ratio            | 0.70                                                                              | 0.73                                                                              | 0.67                                                                              | 0.90                                                                              | 0.56                                                                              | 0.72                                                                              | 0.43                                                                                |
| Control Delay        | 33.8                                                                              | 34.1                                                                              | 26.9                                                                              | 81.5                                                                              | 24.5                                                                              | 13.4                                                                              | 1.4                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.2                                                                               | 6.7                                                                               | 0.5                                                                                 |
| Total Delay          | 33.8                                                                              | 34.1                                                                              | 26.9                                                                              | 81.5                                                                              | 25.7                                                                              | 20.1                                                                              | 1.8                                                                                 |
| LOS                  | C                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 31.7                                                                              |                                                                                   |                                                                                   | 29.9                                                                              | 16.5                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 | B                                                                                 |                                                                                     |

### Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 7 (7%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 25.1

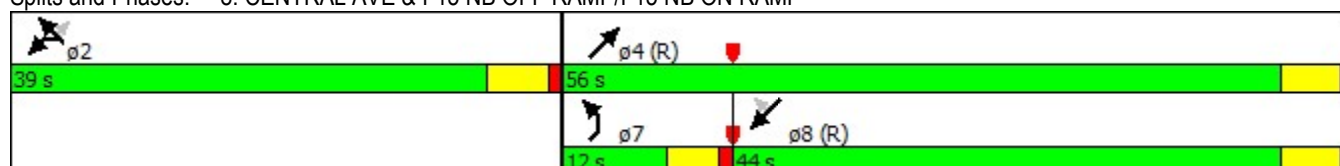
Intersection LOS: C

Intersection Capacity Utilization 76.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP



## Queues

## 8: CENTRAL AVE &amp; I-15 NB OFF RAMP/I-15 NB ON RAMP

10/5/2016



| Lane Group              | NWL  | NWT  | NWR  | NEL   | NET  | SWT  | SWR  |
|-------------------------|------|------|------|-------|------|------|------|
| Lane Group Flow (vph)   | 417  | 393  | 389  | 123   | 1514 | 1481 | 366  |
| v/c Ratio               | 0.70 | 0.73 | 0.67 | 0.90  | 0.56 | 0.72 | 0.43 |
| Control Delay           | 33.8 | 34.1 | 26.9 | 81.5  | 24.5 | 13.4 | 1.4  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0   | 1.2  | 6.7  | 0.5  |
| Total Delay             | 33.8 | 34.1 | 26.9 | 81.5  | 25.7 | 20.1 | 1.8  |
| Queue Length 50th (ft)  | 224  | 210  | 164  | 81    | 326  | 82   | 0    |
| Queue Length 95th (ft)  | 341  | 335  | 276  | m#109 | m398 | 320  | 7    |
| Internal Link Dist (ft) |      | 1244 |      |       | 410  | 302  |      |
| Turn Bay Length (ft)    | 190  |      | 190  | 190   |      |      |      |
| Base Capacity (vph)     | 596  | 542  | 584  | 137   | 2713 | 2071 | 861  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0     | 893  | 544  | 180  |
| Spillback Cap Reductn   | 0    | 0    | 3    | 0     | 246  | 4    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0     | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.70 | 0.73 | 0.67 | 0.90  | 0.83 | 0.97 | 0.54 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

10/5/2016

|                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 66                                                                                | 106                                                                               | 433                                                                               | 140                                                                               | 122                                                                               | 188                                                                               | 440                                                                                | 1560                                                                                | 170                                                                                 | 135                                                                                 | 1122                                                                                | 82                                                                                  |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 69                                                                                | 110                                                                               | 451                                                                               | 146                                                                               | 127                                                                               | 196                                                                               | 458                                                                                | 1625                                                                                | 177                                                                                 | 141                                                                                 | 1169                                                                                | 85                                                                                  |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                  | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 413                                                                               | 824                                                                               | 923                                                                               | 420                                                                               | 292                                                                               | 451                                                                               | 250                                                                                | 1483                                                                                | 462                                                                                 | 188                                                                                 | 1646                                                                                | 407                                                                                 |
| Arrive On Green                                                    | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.05                                                                               | 0.10                                                                                | 0.10                                                                                | 0.11                                                                                | 0.26                                                                                | 0.26                                                                                |
| Sat Flow, veh/h                                                    | 1052                                                                              | 1863                                                                              | 1583                                                                              | 845                                                                               | 662                                                                               | 1021                                                                              | 1774                                                                               | 5085                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 69                                                                                | 110                                                                               | 451                                                                               | 146                                                                               | 0                                                                                 | 323                                                                               | 458                                                                                | 1625                                                                                | 177                                                                                 | 141                                                                                 | 1169                                                                                | 85                                                                                  |
| Grp Sat Flow(s),veh/h/ln                                           | 1052                                                                              | 1863                                                                              | 1583                                                                              | 845                                                                               | 0                                                                                 | 1683                                                                              | 1774                                                                               | 1695                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 4.5                                                                               | 3.3                                                                               | 15.8                                                                              | 11.8                                                                              | 0.0                                                                               | 12.6                                                                              | 13.4                                                                               | 27.7                                                                                | 10.0                                                                                | 7.3                                                                                 | 15.8                                                                                | 4.0                                                                                 |
| Cycle Q Clear(g_c), s                                              | 16.1                                                                              | 3.3                                                                               | 15.8                                                                              | 15.1                                                                              | 0.0                                                                               | 12.6                                                                              | 13.4                                                                               | 27.7                                                                                | 10.0                                                                                | 7.3                                                                                 | 15.8                                                                                | 4.0                                                                                 |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.61                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 413                                                                               | 824                                                                               | 923                                                                               | 420                                                                               | 0                                                                                 | 744                                                                               | 250                                                                                | 1483                                                                                | 462                                                                                 | 188                                                                                 | 1646                                                                                | 407                                                                                 |
| V/C Ratio(X)                                                       | 0.17                                                                              | 0.13                                                                              | 0.49                                                                              | 0.35                                                                              | 0.00                                                                              | 0.43                                                                              | 1.83                                                                               | 1.10                                                                                | 0.38                                                                                | 0.75                                                                                | 0.71                                                                                | 0.21                                                                                |
| Avail Cap(c_a), veh/h                                              | 413                                                                               | 824                                                                               | 923                                                                               | 420                                                                               | 0                                                                                 | 744                                                                               | 250                                                                                | 1483                                                                                | 462                                                                                 | 200                                                                                 | 1646                                                                                | 407                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                               | 0.33                                                                                | 0.33                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.79                                                                               | 0.79                                                                                | 0.79                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 23.5                                                                              | 15.7                                                                              | 11.5                                                                              | 20.2                                                                              | 0.0                                                                               | 18.3                                                                              | 45.3                                                                               | 42.9                                                                                | 34.9                                                                                | 41.2                                                                                | 32.1                                                                                | 27.7                                                                                |
| Incr Delay (d2), s/veh                                             | 0.9                                                                               | 0.3                                                                               | 1.8                                                                               | 2.3                                                                               | 0.0                                                                               | 1.8                                                                               | 385.7                                                                              | 52.0                                                                                | 1.9                                                                                 | 11.8                                                                                | 2.6                                                                                 | 1.2                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 1.4                                                                               | 1.8                                                                               | 7.3                                                                               | 3.0                                                                               | 0.0                                                                               | 6.2                                                                               | 33.4                                                                               | 20.1                                                                                | 4.6                                                                                 | 4.2                                                                                 | 7.3                                                                                 | 1.9                                                                                 |
| LnGrp Delay(d),s/veh                                               | 24.4                                                                              | 16.0                                                                              | 13.4                                                                              | 22.5                                                                              | 0.0                                                                               | 20.1                                                                              | 431.0                                                                              | 94.9                                                                                | 36.8                                                                                | 53.0                                                                                | 34.7                                                                                | 28.9                                                                                |
| LnGrp LOS                                                          | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 |                                                                                   | C                                                                                 | F                                                                                  | F                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 630                                                                               |                                                                                   |                                                                                   | 469                                                                               |                                                                                   |                                                                                    | 2260                                                                                |                                                                                     |                                                                                     | 1395                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 15.1                                                                              |                                                                                   |                                                                                   | 20.9                                                                              |                                                                                   |                                                                                    | 158.5                                                                               |                                                                                     |                                                                                     | 36.2                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 47.3                                                                              | 14.7                                                                              | 33.0                                                                              |                                                                                   | 47.3                                                                              | 18.0                                                                               | 29.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 42.0                                                                              | 10.7                                                                              | 27.1                                                                              |                                                                                   | 42.0                                                                              | 13.4                                                                               | 24.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                       |                                                                                   | 18.1                                                                              | 10.3                                                                              | 30.7                                                                              |                                                                                   | 19.1                                                                              | 16.4                                                                               | 18.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 3.6                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 3.6                                                                               | 0.0                                                                                | 5.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 90.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

10/5/2016

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 66                                                                                | 106                                                                               | 433                                                                               | 140                                                                               | 122                                                                               | 440                                                                               | 1560                                                                               | 170                                                                                 | 135                                                                                 | 1122                                                                                | 82                                                                                  |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 47.3                                                                              | 47.3                                                                              | 18.0                                                                              | 47.3                                                                              | 47.3                                                                              | 18.0                                                                              | 32.4                                                                               | 32.4                                                                                | 15.3                                                                                | 29.7                                                                                | 29.7                                                                                |
| Total Split (%)      | 49.8%                                                                             | 49.8%                                                                             | 18.9%                                                                             | 49.8%                                                                             | 49.8%                                                                             | 18.9%                                                                             | 34.1%                                                                              | 34.1%                                                                               | 16.1%                                                                               | 31.3%                                                                               | 31.3%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 42.0                                                                              | 42.0                                                                              | 60.7                                                                              | 42.0                                                                              | 42.0                                                                              | 13.4                                                                              | 27.5                                                                               | 27.5                                                                                | 10.3                                                                                | 24.4                                                                                | 24.4                                                                                |
| Actuated g/C Ratio   | 0.44                                                                              | 0.44                                                                              | 0.64                                                                              | 0.44                                                                              | 0.44                                                                              | 0.14                                                                              | 0.29                                                                               | 0.29                                                                                | 0.11                                                                                | 0.26                                                                                | 0.26                                                                                |
| v/c Ratio            | 0.17                                                                              | 0.13                                                                              | 0.44                                                                              | 0.26                                                                              | 0.40                                                                              | 1.84                                                                              | 1.10                                                                               | 0.30                                                                                | 0.74                                                                                | 0.71                                                                                | 0.18                                                                                |
| Control Delay        | 17.6                                                                              | 16.3                                                                              | 9.7                                                                               | 18.3                                                                              | 13.5                                                                              | 420.2                                                                             | 80.3                                                                               | 4.6                                                                                 | 68.6                                                                                | 40.3                                                                                | 15.7                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Total Delay          | 17.6                                                                              | 16.3                                                                              | 9.7                                                                               | 18.3                                                                              | 13.5                                                                              | 420.2                                                                             | 80.4                                                                               | 4.6                                                                                 | 68.6                                                                                | 40.7                                                                                | 15.7                                                                                |
| LOS                  | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | F                                                                                 | F                                                                                  | A                                                                                   | E                                                                                   | D                                                                                   | B                                                                                   |
| Approach Delay       |                                                                                   | 11.7                                                                              |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   | 143.3                                                                              |                                                                                     |                                                                                     | 42.0                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   | F                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.84

Intersection Signal Delay: 83.5

Intersection LOS: F

Intersection Capacity Utilization 83.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 9: CENTRAL AVE & DEXTER AVE

|                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| ø2                                                                                  | ø3                                                                                  | ø4 (R)                                                                                |
| 47.3 s                                                                              | 15.3 s                                                                              | 32.4 s                                                                                |
|  |  |  |
| ø6                                                                                  | ø7                                                                                  | ø8 (R)                                                                                |
| 47.3 s                                                                              | 18 s                                                                                | 29.7 s                                                                                |

## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

10/5/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 69                                                                                | 110                                                                               | 451                                                                               | 146                                                                               | 323                                                                               | 458                                                                               | 1625                                                                               | 177                                                                                 | 141                                                                                 | 1169                                                                                | 85                                                                                  |
| v/c Ratio               | 0.17                                                                              | 0.13                                                                              | 0.44                                                                              | 0.26                                                                              | 0.40                                                                              | 1.84                                                                              | 1.10                                                                               | 0.30                                                                                | 0.74                                                                                | 0.71                                                                                | 0.18                                                                                |
| Control Delay           | 17.6                                                                              | 16.3                                                                              | 9.7                                                                               | 18.3                                                                              | 13.5                                                                              | 420.2                                                                             | 80.3                                                                               | 4.6                                                                                 | 68.6                                                                                | 40.3                                                                                | 15.7                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Total Delay             | 17.6                                                                              | 16.3                                                                              | 9.7                                                                               | 18.3                                                                              | 13.5                                                                              | 420.2                                                                             | 80.4                                                                               | 4.6                                                                                 | 68.6                                                                                | 40.7                                                                                | 15.7                                                                                |
| Queue Length 50th (ft)  | 24                                                                                | 38                                                                                | 115                                                                               | 54                                                                                | 83                                                                                | ~436                                                                              | ~397                                                                               | 3                                                                                   | 91                                                                                  | 149                                                                                 | 12                                                                                  |
| Queue Length 95th (ft)  | 53                                                                                | 71                                                                                | 180                                                                               | 97                                                                                | 150                                                                               | #624                                                                              | #498                                                                               | m23                                                                                 | m#162                                                                               | 193                                                                                 | m35                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1321                                                                              |                                                                                   |                                                                                   | 1337                                                                              |                                                                                   | 302                                                                                |                                                                                     |                                                                                     | 250                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 140                                                                               |                                                                                   | 140                                                                               | 100                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 150                                                                                 |                                                                                     | 220                                                                                 |
| Base Capacity (vph)     | 395                                                                               | 823                                                                               | 1020                                                                              | 565                                                                               | 807                                                                               | 249                                                                               | 1471                                                                               | 581                                                                                 | 199                                                                                 | 1645                                                                                | 469                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 22                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 123                                                                                 | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.17                                                                              | 0.13                                                                              | 0.44                                                                              | 0.26                                                                              | 0.40                                                                              | 1.84                                                                              | 1.12                                                                               | 0.30                                                                                | 0.71                                                                                | 0.77                                                                                | 0.18                                                                                |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 10: CENTRAL AVE & CAMBERN AVE

10/5/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Volume (veh/h)               | 252                                                                               | 2                                                                                 | 110                                                                               | 4                                                                                 | 1                                                                                 | 1                                                                                 | 287                                                                                 | 1663                                                                                | 6                                                                                   | 1                                                                                   | 999                                                                                 | 159                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 265                                                                               | 2                                                                                 | 116                                                                               | 4                                                                                 | 1                                                                                 | 1                                                                                 | 302                                                                                 | 1751                                                                                | 6                                                                                   | 1                                                                                   | 1052                                                                                | 167                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 488                                                                               | 3                                                                                 | 483                                                                               | 254                                                                               | 261                                                                               | 261                                                                               | 232                                                                                 | 1918                                                                                | 7                                                                                   | 2                                                                                   | 1643                                                                                | 735                                                                                 |
| Arrive On Green              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.07                                                                                | 0.53                                                                                | 0.53                                                                                | 0.00                                                                                | 0.46                                                                                | 0.46                                                                                |
| Sat Flow, veh/h              | 1353                                                                              | 10                                                                                | 1583                                                                              | 1269                                                                              | 856                                                                               | 856                                                                               | 3442                                                                                | 3618                                                                                | 12                                                                                  | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 267                                                                               | 0                                                                                 | 116                                                                               | 4                                                                                 | 0                                                                                 | 2                                                                                 | 302                                                                                 | 856                                                                                 | 901                                                                                 | 1                                                                                   | 1052                                                                                | 167                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1363                                                                              | 0                                                                                 | 1583                                                                              | 1269                                                                              | 0                                                                                 | 1712                                                                              | 1721                                                                                | 1770                                                                                | 1861                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 15.6                                                                              | 0.0                                                                               | 5.2                                                                               | 0.3                                                                               | 0.0                                                                               | 0.1                                                                               | 6.4                                                                                 | 41.8                                                                                | 41.9                                                                                | 0.1                                                                                 | 21.5                                                                                | 6.0                                                                                 |
| Cycle Q Clear(g_c), s        | 16.6                                                                              | 0.0                                                                               | 5.2                                                                               | 15.9                                                                              | 0.0                                                                               | 0.1                                                                               | 6.4                                                                                 | 41.8                                                                                | 41.9                                                                                | 0.1                                                                                 | 21.5                                                                                | 6.0                                                                                 |
| Prop In Lane                 | 0.99                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                                |                                                                                     | 0.01                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 492                                                                               | 0                                                                                 | 483                                                                               | 254                                                                               | 0                                                                                 | 523                                                                               | 232                                                                                 | 938                                                                                 | 986                                                                                 | 2                                                                                   | 1643                                                                                | 735                                                                                 |
| V/C Ratio(X)                 | 0.54                                                                              | 0.00                                                                              | 0.24                                                                              | 0.02                                                                              | 0.00                                                                              | 0.00                                                                              | 1.30                                                                                | 0.91                                                                                | 0.91                                                                                | 0.41                                                                                | 0.64                                                                                | 0.23                                                                                |
| Avail Cap(c_a), veh/h        | 492                                                                               | 0                                                                                 | 483                                                                               | 254                                                                               | 0                                                                                 | 523                                                                               | 232                                                                                 | 938                                                                                 | 986                                                                                 | 120                                                                                 | 1643                                                                                | 735                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 29.1                                                                              | 0.0                                                                               | 24.7                                                                              | 35.2                                                                              | 0.0                                                                               | 23.0                                                                              | 44.3                                                                                | 20.3                                                                                | 20.3                                                                                | 47.4                                                                                | 19.4                                                                                | 15.2                                                                                |
| Incr Delay (d2), s/veh       | 4.3                                                                               | 0.0                                                                               | 1.2                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 163.9                                                                               | 14.6                                                                                | 14.1                                                                                | 36.5                                                                                | 1.9                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 6.7                                                                               | 0.0                                                                               | 2.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 8.3                                                                                 | 24.0                                                                                | 25.1                                                                                | 0.1                                                                                 | 11.0                                                                                | 2.7                                                                                 |
| LnGrp Delay(d),s/veh         | 33.4                                                                              | 0.0                                                                               | 25.9                                                                              | 35.3                                                                              | 0.0                                                                               | 23.0                                                                              | 208.2                                                                               | 34.9                                                                                | 34.4                                                                                | 83.9                                                                                | 21.3                                                                                | 16.0                                                                                |
| LnGrp LOS                    | C                                                                                 |                                                                                   | C                                                                                 | D                                                                                 |                                                                                   | C                                                                                 | F                                                                                   | C                                                                                   | C                                                                                   | F                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 383                                                                               |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 2059                                                                                |                                                                                     |                                                                                     | 1220                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 31.1                                                                              |                                                                                   |                                                                                   | 31.2                                                                              |                                                                                   |                                                                                     | 60.1                                                                                |                                                                                     |                                                                                     | 20.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 33.9                                                                              | 4.7                                                                               | 56.4                                                                              |                                                                                   | 33.9                                                                              | 11.0                                                                                | 50.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.9                                                                               | 4.6                                                                               | 6.0                                                                               |                                                                                   | 4.9                                                                               | 4.6                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 29.0                                                                              | 6.4                                                                               | 44.1                                                                              |                                                                                   | 29.0                                                                              | 6.4                                                                                 | 44.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 18.9                                                                              | 3.1                                                                               | 44.8                                                                              |                                                                                   | 18.6                                                                              | 9.4                                                                                 | 24.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.9                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.9                                                                               | 0.0                                                                                 | 14.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 43.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# Timings

## 10: CENTRAL AVE & CAMBERN AVE

10/5/2016

|                      |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 252                                                                               | 2                                                                                 | 110                                                                               | 4                                                                                 | 1                                                                                 | 287                                                                               | 1663                                                                               | 1                                                                                   | 999                                                                                 | 159                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 31.0                                                                               | 11.0                                                                                | 31.0                                                                                | 31.0                                                                                |
| Total Split (s)      | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 50.1                                                                               | 11.0                                                                                | 50.1                                                                                | 50.1                                                                                |
| Total Split (%)      | 35.7%                                                                             | 35.7%                                                                             | 35.7%                                                                             | 35.7%                                                                             | 35.7%                                                                             | 11.6%                                                                             | 52.7%                                                                              | 11.6%                                                                               | 52.7%                                                                               | 52.7%                                                                               |
| Yellow Time (s)      | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.6                                                                               | 5.0                                                                                | 3.6                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  |                                                                                   | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.6                                                                               | 6.0                                                                                | 4.6                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  |                                                                                   | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 6.4                                                                               | 53.2                                                                               | 5.0                                                                                 | 44.1                                                                                | 44.1                                                                                |
| Actuated g/C Ratio   |                                                                                   | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.07                                                                              | 0.56                                                                               | 0.05                                                                                | 0.46                                                                                | 0.46                                                                                |
| v/c Ratio            |                                                                                   | 0.65                                                                              | 0.21                                                                              | 0.02                                                                              | 0.00                                                                              | 1.31                                                                              | 0.89                                                                               | 0.01                                                                                | 0.64                                                                                | 0.20                                                                                |
| Control Delay        |                                                                                   | 37.1                                                                              | 5.8                                                                               | 23.5                                                                              | 20.0                                                                              | 185.8                                                                             | 35.8                                                                               | 43.0                                                                                | 21.6                                                                                | 3.1                                                                                 |
| Queue Delay          |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          |                                                                                   | 37.1                                                                              | 5.8                                                                               | 23.5                                                                              | 20.0                                                                              | 185.8                                                                             | 35.8                                                                               | 43.0                                                                                | 21.6                                                                                | 3.1                                                                                 |
| LOS                  |                                                                                   | D                                                                                 | A                                                                                 | C                                                                                 | B                                                                                 | F                                                                                 | D                                                                                  | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 27.6                                                                              |                                                                                   |                                                                                   | 22.3                                                                              |                                                                                   | 57.8                                                                               |                                                                                     | 19.1                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | E                                                                                  |                                                                                     | B                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 85 (89%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.31

Intersection Signal Delay: 41.7

Intersection LOS: D

Intersection Capacity Utilization 84.0%

ICU Level of Service E

Analysis Period (min) 15

### Splits and Phases: 10: CENTRAL AVE & CAMBERN AVE

|                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |
| ø2                                                                                  | ø3                                                                                  | ø4 (R)                                                                              |
| 33.9 s                                                                              | 11 s                                                                                | 50.1 s                                                                              |
|  |  |  |
| ø6                                                                                  | ø7                                                                                  | ø8 (R)                                                                              |
| 33.9 s                                                                              | 11 s                                                                                | 50.1 s                                                                              |

## Queues

## 10: CENTRAL AVE &amp; CAMBERN AVE

10/5/2016



| Lane Group              | SET  | SER  | NWL  | NWT  | NEL   | NET  | SWL  | SWT  | SWR  |
|-------------------------|------|------|------|------|-------|------|------|------|------|
| Lane Group Flow (vph)   | 267  | 116  | 4    | 2    | 302   | 1757 | 1    | 1052 | 167  |
| v/c Ratio               | 0.65 | 0.21 | 0.02 | 0.00 | 1.31  | 0.89 | 0.01 | 0.64 | 0.20 |
| Control Delay           | 37.1 | 5.8  | 23.5 | 20.0 | 185.8 | 35.8 | 43.0 | 21.6 | 3.1  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 37.1 | 5.8  | 23.5 | 20.0 | 185.8 | 35.8 | 43.0 | 21.6 | 3.1  |
| Queue Length 50th (ft)  | 139  | 0    | 2    | 0    | ~125  | 432  | 1    | 245  | 0    |
| Queue Length 95th (ft)  | 228  | 38   | 9    | 6    | m#128 | m407 | 6    | 314  | 34   |
| Internal Link Dist (ft) | 1204 |      |      | 1267 |       | 636  |      | 2064 |      |
| Turn Bay Length (ft)    |      | 200  | 75   |      | 250   |      | 400  |      | 400  |
| Base Capacity (vph)     | 413  | 563  | 261  | 526  | 231   | 1979 | 119  | 1642 | 824  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.65 | 0.21 | 0.02 | 0.00 | 1.31  | 0.89 | 0.01 | 0.64 | 0.20 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 11: CENTRAL AVE & ROSETTA CNYN DR

10/5/2016

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Volume (veh/h)               | 115                                                                               | 25                                                                                | 1547                                                                              | 207                                                                               | 35                                                                                | 949                                                                               |   |      |
| Number                       | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |      |
| Adj Flow Rate, veh/h         | 117                                                                               | 26                                                                                | 1579                                                                              | 211                                                                               | 36                                                                                | 968                                                                               |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |   |      |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              |   |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |      |
| Cap, veh/h                   | 191                                                                               | 171                                                                               | 3110                                                                              | 968                                                                               | 64                                                                                | 2546                                                                              |   |      |
| Arrive On Green              | 0.11                                                                              | 0.11                                                                              | 0.61                                                                              | 0.61                                                                              | 0.04                                                                              | 0.72                                                                              |   |      |
| Sat Flow, veh/h              | 1774                                                                              | 1583                                                                              | 5253                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              |   |      |
| Grp Volume(v), veh/h         | 117                                                                               | 26                                                                                | 1579                                                                              | 211                                                                               | 36                                                                                | 968                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1583                                                                              | 1695                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              |   |      |
| Q Serve(g_s), s              | 4.4                                                                               | 1.0                                                                               | 12.2                                                                              | 4.2                                                                               | 1.4                                                                               | 7.3                                                                               |   |      |
| Cycle Q Clear(g_c), s        | 4.4                                                                               | 1.0                                                                               | 12.2                                                                              | 4.2                                                                               | 1.4                                                                               | 7.3                                                                               |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Lane Grp Cap(c), veh/h       | 191                                                                               | 171                                                                               | 3110                                                                              | 968                                                                               | 64                                                                                | 2546                                                                              |   |      |
| V/C Ratio(X)                 | 0.61                                                                              | 0.15                                                                              | 0.51                                                                              | 0.22                                                                              | 0.56                                                                              | 0.38                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 842                                                                               | 752                                                                               | 3110                                                                              | 968                                                                               | 460                                                                               | 2546                                                                              |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 29.6                                                                              | 28.1                                                                              | 7.6                                                                               | 6.1                                                                               | 33.0                                                                              | 3.8                                                                               |   |      |
| Incr Delay (d2), s/veh       | 1.2                                                                               | 0.2                                                                               | 0.6                                                                               | 0.5                                                                               | 2.9                                                                               | 0.4                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 2.2                                                                               | 0.5                                                                               | 5.7                                                                               | 1.9                                                                               | 0.7                                                                               | 3.6                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 30.8                                                                              | 28.3                                                                              | 8.2                                                                               | 6.6                                                                               | 35.8                                                                              | 4.2                                                                               |   |      |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | D                                                                                 | A                                                                                 |   |      |
| Approach Vol, veh/h          | 143                                                                               |                                                                                   | 1790                                                                              |                                                                                   |                                                                                   | 1004                                                                              |   |      |
| Approach Delay, s/veh        | 30.3                                                                              |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                   | 5.3                                                                               |   |      |
| Approach LOS                 | C                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |   | 8    |
| Phs Duration (G+Y+Rc), s     | 7.5                                                                               | 49.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 57.0                                                                              |   | 12.5 |
| Change Period (Y+Rc), s      | 5.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               |   | 5.0  |
| Max Green Setting (Gmax), s  | 18.0                                                                              | 27.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 50.0                                                                              |   | 33.0 |
| Max Q Clear Time (g_c+l1), s | 4.4                                                                               | 15.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 10.3                                                                              |   | 7.4  |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.0                                                                              |   | 0.2  |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 8.2                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

# Timings

## 11: CENTRAL AVE & ROSETTA CNYN DR

10/5/2016



| Lane Group           | WBL   | WBR   | NBT   | NBR   | SBL   | SBT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↰     | ↰     | ↰↰↰   | ↰     | ↰     | ↰↰    |
| Volume (vph)         | 115   | 25    | 1547  | 207   | 35    | 949   |
| Turn Type            | Prot  | Perm  | NA    | Perm  | Prot  | NA    |
| Protected Phases     | 8     |       | 2     |       | 1     | 6     |
| Permitted Phases     |       | 8     |       | 2     |       |       |
| Detector Phase       | 8     | 8     | 2     | 2     | 1     | 6     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 8.0   | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 38.0  | 38.0  | 20.0  | 20.0  | 11.0  | 39.0  |
| Total Split (s)      | 38.0  | 38.0  | 34.0  | 34.0  | 23.0  | 57.0  |
| Total Split (%)      | 40.0% | 40.0% | 35.8% | 35.8% | 24.2% | 60.0% |
| Yellow Time (s)      | 4.0   | 4.0   | 6.0   | 6.0   | 4.0   | 6.0   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 7.0   | 7.0   | 5.0   | 7.0   |
| Lead/Lag             |       |       | Lag   | Lag   | Lead  |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | None  | None  | Max   | Max   | None  | Max   |
| Act Effect Green (s) | 9.6   | 9.6   | 49.7  | 49.7  | 6.0   | 54.5  |
| Actuated g/C Ratio   | 0.13  | 0.13  | 0.69  | 0.69  | 0.08  | 0.76  |
| v/c Ratio            | 0.50  | 0.11  | 0.45  | 0.19  | 0.24  | 0.36  |
| Control Delay        | 36.3  | 12.4  | 8.4   | 5.0   | 35.0  | 4.7   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 36.3  | 12.4  | 8.4   | 5.0   | 35.0  | 4.7   |
| LOS                  | D     | B     | A     | A     | C     | A     |
| Approach Delay       | 31.9  |       | 8.0   |       |       | 5.7   |
| Approach LOS         | C     |       | A     |       |       | A     |

### Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 72.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 8.4

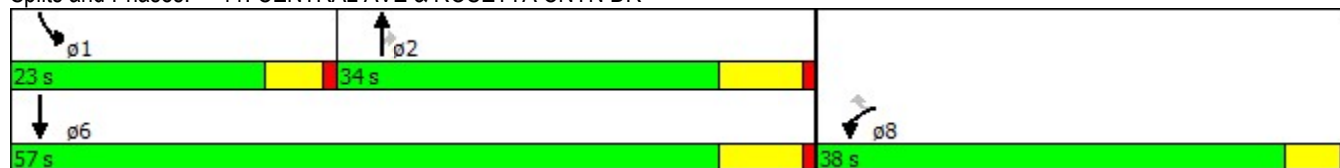
Intersection LOS: A

Intersection Capacity Utilization 46.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: CENTRAL AVE & ROSETTA CNYN DR



## Queues

## 11: CENTRAL AVE &amp; ROSETTA CNYN DR

10/5/2016



| Lane Group              | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 117  | 26   | 1579 | 211  | 36   | 968  |
| v/c Ratio               | 0.50 | 0.11 | 0.45 | 0.19 | 0.24 | 0.36 |
| Control Delay           | 36.3 | 12.4 | 8.4  | 5.0  | 35.0 | 4.7  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 36.3 | 12.4 | 8.4  | 5.0  | 35.0 | 4.7  |
| Queue Length 50th (ft)  | 49   | 0    | 87   | 13   | 15   | 73   |
| Queue Length 95th (ft)  | 96   | 20   | 230  | 63   | 42   | 123  |
| Internal Link Dist (ft) | 1570 |      | 1523 |      |      | 2926 |
| Turn Bay Length (ft)    |      |      |      | 100  | 250  |      |
| Base Capacity (vph)     | 810  | 739  | 3504 | 1121 | 442  | 2673 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.14 | 0.04 | 0.45 | 0.19 | 0.08 | 0.36 |
| Intersection Summary    |      |      |      |      |      |      |

HCM 2010 TWSC  
12: COLLIER AVE & PROJECT ACCESS

10/5/2016

| Intersection             |        |      |        |      |        |       |
|--------------------------|--------|------|--------|------|--------|-------|
| Int Delay, s/veh         | 0      |      |        |      |        |       |
|                          |        |      |        |      |        |       |
| Movement                 | SEL    | SET  | NWT    | NWR  | SWL    | SWR   |
| Vol, veh/h               | 0      | 500  | 570    | 0    | 0      | 0     |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0    | 0      | 0     |
| Sign Control             | Free   | Free | Free   | Free | Stop   | Stop  |
| RT Channelized           | -      | None | -      | None | -      | None  |
| Storage Length           | 200    | -    | -      | -    | 0      | 0     |
| Veh in Median Storage, # | -      | 0    | 0      | -    | 0      | -     |
| Grade, %                 | -      | 0    | 0      | -    | 0      | -     |
| Peak Hour Factor         | 92     | 92   | 92     | 92   | 92     | 92    |
| Heavy Vehicles, %        | 2      | 2    | 2      | 2    | 2      | 2     |
| Mvmt Flow                | 0      | 543  | 620    | 0    | 0      | 0     |
|                          |        |      |        |      |        |       |
| Major/Minor              | Major1 |      | Major2 |      | Minor2 |       |
| Conflicting Flow All     | 620    | 0    | -      | 0    | 892    | 620   |
| Stage 1                  | -      | -    | -      | -    | 620    | -     |
| Stage 2                  | -      | -    | -      | -    | 272    | -     |
| Critical Hdwy            | 4.12   | -    | -      | -    | 6.63   | 6.23  |
| Critical Hdwy Stg 1      | -      | -    | -      | -    | 5.43   | -     |
| Critical Hdwy Stg 2      | -      | -    | -      | -    | 5.83   | -     |
| Follow-up Hdwy           | 2.218  | -    | -      | -    | 3.519  | 3.319 |
| Pot Cap-1 Maneuver       | 960    | -    | -      | -    | 297    | 487   |
| Stage 1                  | -      | -    | -      | -    | 535    | -     |
| Stage 2                  | -      | -    | -      | -    | 750    | -     |
| Platoon blocked, %       |        | -    | -      | -    |        |       |
| Mov Cap-1 Maneuver       | 960    | -    | -      | -    | 297    | 487   |
| Mov Cap-2 Maneuver       | -      | -    | -      | -    | 297    | -     |
| Stage 1                  | -      | -    | -      | -    | 535    | -     |
| Stage 2                  | -      | -    | -      | -    | 750    | -     |
|                          |        |      |        |      |        |       |
| Approach                 | SE     |      | NW     |      | SW     |       |
| HCM Control Delay, s     | 0      |      | 0      |      | 0      |       |
| HCM LOS                  | A      |      |        |      |        |       |
|                          |        |      |        |      |        |       |
| Minor Lane/Major Mvmt    | NWT    | NWR  | SEL    | SET  | SWLn1  | SWLn2 |
| Capacity (veh/h)         | -      | -    | 960    | -    | -      | -     |
| HCM Lane V/C Ratio       | -      | -    | -      | -    | -      | -     |
| HCM Control Delay (s)    | -      | -    | 0      | -    | 0      | 0     |
| HCM Lane LOS             | -      | -    | A      | -    | A      | A     |
| HCM 95th %tile Q(veh)    | -      | -    | 0      | -    | -      | -     |

# Lanes and Geometrics

## 12: COLLIER AVE & PROJECT ACCESS

11/10/2016



| Lane Group          | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           |      | 0%   | 0%   |      | 0%   |      |
| Storage Length (ft) | 200  |      |      | 0    | 0    | 0    |
| Storage Lanes       | 1    |      |      | 0    | 1    | 1    |
| Taper Length (ft)   | 25   |      |      |      | 25   |      |
| Link Speed (mph)    |      | 30   | 30   |      | 30   |      |
| Link Distance (ft)  |      | 543  | 118  |      | 355  |      |
| Travel Time (s)     |      | 12.3 | 2.7  |      | 8.1  |      |

### Intersection Summary

Area Type: Other

## **Appendix E**

Existing Plus Project Conditions Intersection Analysis Worksheets



**Intersection**

Int Delay, s/veh 4.3

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 863  | 1    | 5    | 665  | 30   | 52   | 2    | 6    | 0    | 1    | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | 50   | -    | -    | 50   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 908  | 1    | 5    | 700  | 32   | 55   | 2    | 6    | 0    | 1    | 7    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor2 |       |       | Minor1 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 732    | 0 | 0 | 909    | 0 | 0 | 1635   | 1635  | 716   | 1636   | 1651  | 909   |
| Stage 1              | -      | - | - | -      | - | - | 726    | 726   | -     | 909    | 909   | -     |
| Stage 2              | -      | - | - | -      | - | - | 909    | 909   | -     | 727    | 742   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 873    | - | - | 749    | - | - | 81     | 101   | 430   | 81     | 99    | 333   |
| Stage 1              | -      | - | - | -      | - | - | 416    | 430   | -     | 329    | 354   | -     |
| Stage 2              | -      | - | - | -      | - | - | 329    | 354   | -     | 415    | 422   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 873    | - | - | 749    | - | - | 78     | 100   | 430   | 78     | 98    | 333   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 78     | 100   | -     | 78     | 98    | -     |
| Stage 1              | -      | - | - | -      | - | - | 416    | 425   | -     | 329    | 354   | -     |
| Stage 2              | -      | - | - | -      | - | - | 321    | 354   | -     | 402    | 417   | -     |

| Approach             | EB |  | WB  |  | SE    |  | NW   |
|----------------------|----|--|-----|--|-------|--|------|
| HCM Control Delay, s | 0  |  | 0.1 |  | 113.2 |  | 19.4 |
| HCM LOS              |    |  |     |  | F     |  | C    |

| Minor Lane/Major Mvmt | NWLn1 | NWLn2 | EBL | EBT | EBR | WBL   | WBT | WBR | SELn1 | SELn2 |
|-----------------------|-------|-------|-----|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 98    | 333   | 873 | -   | -   | 749   | -   | -   | 79    | 430   |
| HCM Lane V/C Ratio    | 0.011 | 0.022 | -   | -   | -   | 0.007 | -   | -   | 0.72  | 0.015 |
| HCM Control Delay (s) | 42.1  | 16.1  | 0   | -   | -   | 9.8   | 0   | -   | 124.3 | 13.5  |
| HCM Lane LOS          | E     | C     | A   | -   | -   | A     | A   | -   | F     | B     |
| HCM 95th %tile Q(veh) | 0     | 0.1   | 0   | -   | -   | 0     | -   | -   | 3.4   | 0     |

# Lanes and Geometrics

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 50                                                                                  | 0                                                                                   |                                                                                     | 50                                                                                  |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Frt                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.954                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)    | 0                                                                                 | 1863                                                                              | 0                                                                                 | 0                                                                                 | 1852                                                                              | 0                                                                                 | 0                                                                                  | 1777                                                                                | 1583                                                                                | 0                                                                                   | 1863                                                                                | 1583                                                                                |
| Flt Permitted        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.954                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)    | 0                                                                                 | 1863                                                                              | 0                                                                                 | 0                                                                                 | 1852                                                                              | 0                                                                                 | 0                                                                                  | 1777                                                                                | 1583                                                                                | 0                                                                                   | 1863                                                                                | 1583                                                                                |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 1687                                                                              |                                                                                   |                                                                                   | 935                                                                               |                                                                                   |                                                                                    | 885                                                                                 |                                                                                     |                                                                                     | 1732                                                                                |                                                                                     |
| Travel Time (s)      |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017



| Lane Group           | SEL   | SET   | SER   | NWL   | NWT   | NEL   | NET   | NER   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |
| Volume (vph)         | 1     | 47    | 32    | 665   | 66    | 68    | 6     | 842   | 0     |
| Turn Type            | Split | NA    | Perm  | Split | NA    | Perm  | NA    | pm+ov | NA    |
| Protected Phases     | 6     | 6     |       | 2     | 2     |       | 4     | 2     | 8     |
| Permitted Phases     |       |       | 6     |       |       | 4     |       | 4     |       |
| Detector Phase       | 6     | 6     | 6     | 2     | 2     | 4     | 4     | 2     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 6.0   | 6.0   | 6.0   | 7.0   | 7.0   | 9.0   | 9.0   | 7.0   | 9.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 20.0  | 20.0  | 80.0  | 80.0  | 20.0  | 20.0  | 80.0  | 20.0  |
| Total Split (%)      | 16.7% | 16.7% | 16.7% | 66.7% | 66.7% | 16.7% | 16.7% | 66.7% | 16.7% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 3.9   | 3.9   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |       | 4.9   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |       |
| Recall Mode          | Max   | Max   | Max   | C-Max | C-Max | None  | None  | C-Max | None  |
| Act Effct Green (s)  | 14.7  | 14.7  | 14.7  | 80.8  | 80.8  |       | 11.7  | 94.7  | 11.4  |
| Actuated g/C Ratio   | 0.12  | 0.12  | 0.12  | 0.67  | 0.67  |       | 0.10  | 0.79  | 0.10  |
| v/c Ratio            | 0.00  | 0.23  | 0.14  | 0.61  | 0.07  |       | 0.61  | 0.67  | 0.00  |
| Control Delay        | 46.0  | 50.4  | 3.2   | 8.1   | 3.1   |       | 70.5  | 4.0   | 0.0   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 46.0  | 50.4  | 3.2   | 8.1   | 3.1   |       | 70.5  | 4.0   | 0.0   |
| LOS                  | D     | D     | A     | A     | A     |       | E     | A     | A     |
| Approach Delay       |       | 31.6  |       |       | 7.6   |       | 9.4   |       | 0.0   |
| Approach LOS         |       | C     |       |       | A     |       | A     |       | A     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 51 (43%), Referenced to phase 2:NWTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 9.7

Intersection LOS: A

Intersection Capacity Utilization 77.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: RIVERSIDE DR & COLLIER AVE

|        |      |      |
|--------|------|------|
|        |      |      |
| ø2 (R) | ø6   | ø4   |
| 80 s   | 20 s | 20 s |
|        |      |      |
|        |      | ø8   |
|        |      | 20 s |

## Queues

## 2: RIVERSIDE DR &amp; COLLIER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL  | NWT  | NET  | NER  | SWT  |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 1    | 52   | 35   | 731  | 81   | 82   | 925  | 3    |
| v/c Ratio               | 0.00 | 0.23 | 0.14 | 0.61 | 0.07 | 0.61 | 0.67 | 0.00 |
| Control Delay           | 46.0 | 50.4 | 3.2  | 8.1  | 3.1  | 70.5 | 4.0  | 0.0  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 46.0 | 50.4 | 3.2  | 8.1  | 3.1  | 70.5 | 4.0  | 0.0  |
| Queue Length 50th (ft)  | 1    | 37   | 0    | 182  | 5    | 62   | 48   | 0    |
| Queue Length 95th (ft)  | 6    | 77   | 7    | 267  | 16   | 114  | 105  | 0    |
| Internal Link Dist (ft) |      | 1295 |      |      | 623  | 2459 |      | 691  |
| Turn Bay Length (ft)    | 200  |      | 200  |      |      |      | 360  |      |
| Base Capacity (vph)     | 216  | 228  | 254  | 1192 | 1238 | 173  | 1382 | 1044 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.00 | 0.23 | 0.14 | 0.61 | 0.07 | 0.47 | 0.67 | 0.00 |
| Intersection Summary    |      |      |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017

|                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Volume (veh/h)                                                                                      | 1                                                                                 | 47                                                                                | 32                                                                                | 665                                                                               | 66                                                                                | 7                                                                                 | 68                                                                                 | 6                                                                                   | 842                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                                                | 1                                                                                 | 52                                                                                | 35                                                                                | 731                                                                               | 73                                                                                | 8                                                                                 | 75                                                                                 | 7                                                                                   | 925                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Adj No. of Lanes                                                                                    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                                                    | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 1209                                                                              | 132                                                                               | 212                                                                                | 17                                                                                  | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| Arrive On Green                                                                                     | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.13                                                                               | 0.13                                                                                | 0.13                                                                                | 0.00                                                                                | 0.00                                                                                | 0.13                                                                                |
| Sat Flow, veh/h                                                                                     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1650                                                                              | 181                                                                               | 1228                                                                               | 138                                                                                 | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h                                                                                | 1                                                                                 | 52                                                                                | 35                                                                                | 731                                                                               | 0                                                                                 | 81                                                                                | 82                                                                                 | 0                                                                                   | 925                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 0                                                                                 | 1831                                                                              | 1366                                                                               | 0                                                                                   | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s                                                                                     | 0.1                                                                               | 3.0                                                                               | 2.4                                                                               | 22.5                                                                              | 0.0                                                                               | 1.5                                                                               | 6.1                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 0.1                                                                               | 3.0                                                                               | 2.4                                                                               | 22.5                                                                              | 0.0                                                                               | 1.5                                                                               | 7.1                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 |
| Prop In Lane                                                                                        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.10                                                                              | 0.91                                                                               |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1341                                                                              | 229                                                                                | 0                                                                                   | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| V/C Ratio(X)                                                                                        | 0.00                                                                              | 0.23                                                                              | 0.18                                                                              | 0.56                                                                              | 0.00                                                                              | 0.06                                                                              | 0.36                                                                               | 0.00                                                                                | 0.68                                                                                | 0.00                                                                                | 0.00                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1341                                                                              | 229                                                                                | 0                                                                                   | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 46.2                                                                              | 47.5                                                                              | 47.2                                                                              | 7.3                                                                               | 0.0                                                                               | 4.5                                                                               | 49.3                                                                               | 0.0                                                                                 | 2.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 45.9                                                                                |
| Incr Delay (d2), s/veh                                                                              | 0.0                                                                               | 2.3                                                                               | 2.0                                                                               | 1.8                                                                               | 0.0                                                                               | 0.1                                                                               | 0.4                                                                                | 0.0                                                                                 | 1.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 0.0                                                                               | 1.7                                                                               | 1.1                                                                               | 11.6                                                                              | 0.0                                                                               | 0.8                                                                               | 2.6                                                                                | 0.0                                                                                 | 31.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 46.3                                                                              | 49.8                                                                              | 49.3                                                                              | 9.1                                                                               | 0.0                                                                               | 4.6                                                                               | 49.7                                                                               | 0.0                                                                                 | 3.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 46.0                                                                                |
| LnGrp LOS                                                                                           | D                                                                                 | D                                                                                 | D                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | D                                                                                  |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |
| Approach Vol, veh/h                                                                                 |                                                                                   | 88                                                                                |                                                                                   |                                                                                   | 812                                                                               |                                                                                   |                                                                                    | 1007                                                                                |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 49.6                                                                              |                                                                                   |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                    | 7.2                                                                                 |                                                                                     |                                                                                     | 45.9                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 93.6                                                                              |                                                                                   | 20.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                    | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 5.3                                                                               |                                                                                   | * 5.3                                                                             |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 74.7                                                                              |                                                                                   | * 15                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                        |                                                                                   | 25.5                                                                              |                                                                                   | 18.1                                                                              |                                                                                   | 6.0                                                                               |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 1.6                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.1                                                                               |                                                                                    | 2.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 793                                                                               | 104                                                                               | 21                                                                                | 27                                                                                | 99                                                                                | 338                                                                               | 40                                                                                 | 83                                                                                  | 733                                                                                 | 246                                                                                 | 675                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                               | NA                                                                                  | Prot                                                                                | NA                                                                                  | pm+ov                                                                               |
| Protected Phases     | 1                                                                                 | 6                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 1                                                                                 | 6                                                                                 | 6                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 11.6                                                                              | 30.5                                                                              | 30.5                                                                              | 8.6                                                                               | 18.0                                                                              | 11.6                                                                              | 8.6                                                                                | 20.0                                                                                | 11.6                                                                                | 42.3                                                                                | 11.6                                                                                |
| Total Split (s)      | 43.0                                                                              | 50.1                                                                              | 50.1                                                                              | 10.9                                                                              | 18.0                                                                              | 39.0                                                                              | 8.8                                                                                | 20.0                                                                                | 39.0                                                                                | 50.2                                                                                | 43.0                                                                                |
| Total Split (%)      | 35.8%                                                                             | 41.8%                                                                             | 41.8%                                                                             | 9.1%                                                                              | 15.0%                                                                             | 32.5%                                                                             | 7.3%                                                                               | 16.7%                                                                               | 32.5%                                                                               | 41.8%                                                                               | 35.8%                                                                               |
| Yellow Time (s)      | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 3.6                                                                               | 3.6                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 4.6                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | C-Max                                                                             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | C-Max                                                                               |
| Act Effct Green (s)  | 47.9                                                                              | 57.8                                                                              | 57.8                                                                              | 6.6                                                                               | 12.7                                                                              | 49.9                                                                              | 4.2                                                                                | 7.7                                                                                 | 31.9                                                                                | 37.2                                                                                | 90.4                                                                                |
| Actuated g/C Ratio   | 0.40                                                                              | 0.48                                                                              | 0.48                                                                              | 0.06                                                                              | 0.11                                                                              | 0.42                                                                              | 0.04                                                                               | 0.06                                                                                | 0.27                                                                                | 0.31                                                                                | 0.75                                                                                |
| v/c Ratio            | 0.64                                                                              | 0.07                                                                              | 0.03                                                                              | 0.31                                                                              | 0.29                                                                              | 0.29                                                                              | 0.37                                                                               | 0.52                                                                                | 0.89                                                                                | 0.47                                                                                | 0.34                                                                                |
| Control Delay        | 30.7                                                                              | 18.8                                                                              | 0.0                                                                               | 62.2                                                                              | 51.8                                                                              | 7.5                                                                               | 65.4                                                                               | 44.6                                                                                | 39.9                                                                                | 27.4                                                                                | 2.4                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 30.7                                                                              | 18.8                                                                              | 0.0                                                                               | 62.2                                                                              | 51.8                                                                              | 7.5                                                                               | 65.4                                                                               | 44.6                                                                                | 39.9                                                                                | 27.4                                                                                | 2.4                                                                                 |
| LOS                  | C                                                                                 | B                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | A                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 28.7                                                                              |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                   |                                                                                    | 49.8                                                                                |                                                                                     | 22.7                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 90 (75%), Referenced to phase 1:SEL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 25.4

Intersection LOS: C

Intersection Capacity Utilization 65.7%

ICU Level of Service C

Analysis Period (min) 15

### Splits and Phases: 3: CENTRAL AVE & COLLIER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |
| ø1 (R)                                                                              |                                                                                     | ø2                                                                                  |                                                                                     | ø3                                                                                  |                                                                                     | ø4                                                                                  |                                                                                     |
| 43 s                                                                                |                                                                                     | 18 s                                                                                |                                                                                     | 39 s                                                                                |                                                                                     | 20 s                                                                                |                                                                                     |
|  |  |  |  |  |  |  |  |
| ø5                                                                                  | ø6                                                                                  |                                                                                     |                                                                                     | ø7                                                                                  | ø8                                                                                  |                                                                                     |                                                                                     |
| 10.9 s                                                                              | 50.1 s                                                                              |                                                                                     |                                                                                     | 8.8 s                                                                               | 50.2 s                                                                              |                                                                                     |                                                                                     |

## Queues

## 3: CENTRAL AVE &amp; COLLIER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 881                                                                               | 116                                                                               | 23                                                                                | 30                                                                                | 110                                                                               | 376                                                                               | 44                                                                                 | 132                                                                                 | 814                                                                                 | 273                                                                                 | 750                                                                                 |
| v/c Ratio               | 0.64                                                                              | 0.07                                                                              | 0.03                                                                              | 0.31                                                                              | 0.29                                                                              | 0.29                                                                              | 0.37                                                                               | 0.52                                                                                | 0.89                                                                                | 0.47                                                                                | 0.34                                                                                |
| Control Delay           | 30.7                                                                              | 18.8                                                                              | 0.0                                                                               | 62.2                                                                              | 51.8                                                                              | 7.5                                                                               | 65.4                                                                               | 44.6                                                                                | 39.9                                                                                | 27.4                                                                                | 2.4                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 30.7                                                                              | 18.8                                                                              | 0.0                                                                               | 62.2                                                                              | 51.8                                                                              | 7.5                                                                               | 65.4                                                                               | 44.6                                                                                | 39.9                                                                                | 27.4                                                                                | 2.4                                                                                 |
| Queue Length 50th (ft)  | 284                                                                               | 25                                                                                | 0                                                                                 | 23                                                                                | 42                                                                                | 31                                                                                | 17                                                                                 | 36                                                                                  | 248                                                                                 | 144                                                                                 | 31                                                                                  |
| Queue Length 95th (ft)  | 363                                                                               | m41                                                                               | m0                                                                                | 54                                                                                | 72                                                                                | 64                                                                                | 38                                                                                 | 68                                                                                  | 358                                                                                 | 246                                                                                 | 65                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 1881                                                                              |                                                                                   |                                                                                   | 463                                                                               |                                                                                   |                                                                                    | 1625                                                                                |                                                                                     | 251                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 650                                                                               |                                                                                   | 220                                                                               | 100                                                                               |                                                                                   | 100                                                                               | 140                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 1369                                                                              | 1705                                                                              | 838                                                                               | 104                                                                               | 374                                                                               | 1359                                                                              | 120                                                                                | 449                                                                                 | 984                                                                                 | 697                                                                                 | 2213                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.64                                                                              | 0.07                                                                              | 0.03                                                                              | 0.29                                                                              | 0.29                                                                              | 0.28                                                                              | 0.37                                                                               | 0.29                                                                                | 0.83                                                                                | 0.39                                                                                | 0.34                                                                                |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                                           |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                  | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                       |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)                            | 793                                                                               | 104                                                                               | 21                                                                                | 27                                                                                | 99                                                                                | 338                                                                               | 40                                                                                 | 83                                                                                  | 36                                                                                  | 733                                                                                 | 246                                                                                 | 675                                                                                 |
| Number                                    | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                    | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                      | 881                                                                               | 116                                                                               | 23                                                                                | 30                                                                                | 110                                                                               | 376                                                                               | 44                                                                                 | 92                                                                                  | 40                                                                                  | 814                                                                                 | 273                                                                                 | 750                                                                                 |
| Adj No. of Lanes                          | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   |
| Peak Hour Factor                          | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %                      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                | 1206                                                                              | 1639                                                                              | 733                                                                               | 47                                                                                | 492                                                                               | 1127                                                                              | 99                                                                                 | 196                                                                                 | 81                                                                                  | 913                                                                                 | 590                                                                                 | 1859                                                                                |
| Arrive On Green                           | 0.35                                                                              | 0.46                                                                              | 0.46                                                                              | 0.03                                                                              | 0.14                                                                              | 0.14                                                                              | 0.03                                                                               | 0.08                                                                                | 0.08                                                                                | 0.09                                                                                | 0.10                                                                                | 0.10                                                                                |
| Sat Flow, veh/h                           | 3442                                                                              | 3539                                                                              | 1583                                                                              | 1774                                                                              | 3539                                                                              | 2787                                                                              | 3442                                                                               | 2446                                                                                | 1009                                                                                | 3442                                                                                | 1863                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h                      | 881                                                                               | 116                                                                               | 23                                                                                | 30                                                                                | 110                                                                               | 376                                                                               | 44                                                                                 | 65                                                                                  | 67                                                                                  | 814                                                                                 | 273                                                                                 | 750                                                                                 |
| Grp Sat Flow(s),veh/h/ln                  | 1721                                                                              | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 1393                                                                              | 1721                                                                               | 1770                                                                                | 1685                                                                                | 1721                                                                                | 1863                                                                                | 1393                                                                                |
| Q Serve(g_s), s                           | 26.8                                                                              | 2.2                                                                               | 0.9                                                                               | 2.0                                                                               | 3.3                                                                               | 11.1                                                                              | 1.5                                                                                | 4.2                                                                                 | 4.6                                                                                 | 28.1                                                                                | 16.5                                                                                | 15.5                                                                                |
| Cycle Q Clear(g_c), s                     | 26.8                                                                              | 2.2                                                                               | 0.9                                                                               | 2.0                                                                               | 3.3                                                                               | 11.1                                                                              | 1.5                                                                                | 4.2                                                                                 | 4.6                                                                                 | 28.1                                                                                | 16.5                                                                                | 15.5                                                                                |
| Prop In Lane                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.60                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                    | 1206                                                                              | 1639                                                                              | 733                                                                               | 47                                                                                | 492                                                                               | 1127                                                                              | 99                                                                                 | 142                                                                                 | 135                                                                                 | 913                                                                                 | 590                                                                                 | 1859                                                                                |
| V/C Ratio(X)                              | 0.73                                                                              | 0.07                                                                              | 0.03                                                                              | 0.64                                                                              | 0.22                                                                              | 0.33                                                                              | 0.44                                                                               | 0.46                                                                                | 0.50                                                                                | 0.89                                                                                | 0.46                                                                                | 0.40                                                                                |
| Avail Cap(c_a), veh/h                     | 1206                                                                              | 1639                                                                              | 733                                                                               | 93                                                                                | 492                                                                               | 1127                                                                              | 120                                                                                | 217                                                                                 | 206                                                                                 | 987                                                                                 | 697                                                                                 | 2019                                                                                |
| HCM Platoon Ratio                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                  | 34.0                                                                              | 17.9                                                                              | 17.6                                                                              | 57.9                                                                              | 45.9                                                                              | 24.6                                                                              | 57.3                                                                               | 52.7                                                                                | 52.9                                                                                | 53.0                                                                                | 44.1                                                                                | 12.1                                                                                |
| Incr Delay (d2), s/veh                    | 2.0                                                                               | 0.1                                                                               | 0.1                                                                               | 5.3                                                                               | 1.1                                                                               | 0.8                                                                               | 1.1                                                                                | 0.9                                                                                 | 1.0                                                                                 | 9.2                                                                                 | 0.2                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                  | 13.1                                                                              | 1.1                                                                               | 0.4                                                                               | 1.1                                                                               | 1.7                                                                               | 4.4                                                                               | 0.7                                                                                | 2.1                                                                                 | 2.2                                                                                 | 14.6                                                                                | 8.6                                                                                 | 6.0                                                                                 |
| LnGrp Delay(d),s/veh                      | 36.0                                                                              | 18.0                                                                              | 17.6                                                                              | 63.2                                                                              | 47.0                                                                              | 25.4                                                                              | 58.5                                                                               | 53.6                                                                                | 53.9                                                                                | 62.2                                                                                | 44.3                                                                                | 12.1                                                                                |
| LnGrp LOS                                 | D                                                                                 | B                                                                                 | B                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | E                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h                       | 1020                                                                              |                                                                                   |                                                                                   |                                                                                   | 516                                                                               |                                                                                   |                                                                                    |                                                                                     | 176                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh                     | 33.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.2                                                                              |                                                                                   |                                                                                    |                                                                                     | 54.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                              | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                  | 46.7                                                                              | 22.0                                                                              | 36.4                                                                              | 14.9                                                                              | 7.8                                                                               | 60.9                                                                              | 8.1                                                                                | 43.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                   | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s               | 38.4                                                                              | 12.7                                                                              | 34.4                                                                              | 14.7                                                                              | 6.3                                                                               | 44.8                                                                              | 4.2                                                                                | 44.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s              | 29.8                                                                              | 14.1                                                                              | 31.1                                                                              | 7.2                                                                               | 5.0                                                                               | 5.2                                                                               | 4.5                                                                                | 19.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                   | 1.5                                                                               | 0.0                                                                               | 0.8                                                                               | 2.4                                                                               | 0.0                                                                               | 1.9                                                                               | 0.0                                                                                | 3.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                       | 37.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                              | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved changes to right turn type. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Intersection             |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
|--------------------------|--------|-------|-------|--------|------|------|--------|----------|-------|--------|-------|--|-------|-------|-------|
| Int Delay, s/veh         | 1.1    |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
|                          |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
| Movement                 | SEL    | SET   | SER   |        | NWL  | NWT  | NWR    |          | NEL   | NET    | NER   |  | SWL   | SWT   | SWR   |
| Vol, veh/h               | 0      | 604   | 24    |        | 11   | 432  | 0      |          | 4     | 0      | 14    |  | 30    | 0     | 10    |
| Conflicting Peds, #/hr   | 0      | 0     | 0     |        | 0    | 0    | 0      |          | 0     | 0      | 0     |  | 0     | 0     | 0     |
| Sign Control             | Free   | Free  | Free  |        | Free | Free | Free   |          | Stop  | Stop   | Stop  |  | Stop  | Stop  | Stop  |
| RT Channelized           | -      | -     | None  |        | -    | -    | None   |          | -     | -      | None  |  | -     | -     | None  |
| Storage Length           | 0      | -     | -     |        | 150  | -    | -      |          | 90    | -      | -     |  | -     | -     | -     |
| Veh in Median Storage, # | -      | 0     | -     |        | -    | 0    | -      |          | -     | 0      | -     |  | -     | 0     | -     |
| Grade, %                 | -      | 0     | -     |        | -    | 0    | -      |          | -     | 0      | -     |  | -     | 0     | -     |
| Peak Hour Factor         | 85     | 85    | 85    |        | 85   | 85   | 85     |          | 85    | 85     | 85    |  | 85    | 85    | 85    |
| Heavy Vehicles, %        | 2      | 2     | 2     |        | 2    | 2    | 2      |          | 2     | 2      | 2     |  | 2     | 2     | 2     |
| Mvmt Flow                | 0      | 711   | 28    |        | 13   | 508  | 0      |          | 5     | 0      | 16    |  | 35    | 0     | 12    |
|                          |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
| Major/Minor              | Major1 |       |       | Major2 |      |      | Minor1 |          |       | Minor2 |       |  |       |       |       |
| Conflicting Flow All     | 508    | 0     | 0     |        | 739  | 0    | 0      |          | 1265  | 1259   | 369   |  | 889   | 1273  | 508   |
| Stage 1                  | -      | -     | -     |        | -    | -    | -      |          | 725   | 725    | -     |  | 534   | 534   | -     |
| Stage 2                  | -      | -     | -     |        | -    | -    | -      |          | 540   | 534    | -     |  | 355   | 739   | -     |
| Critical Hdwy            | 4.12   | -     | -     |        | 4.14 | -    | -      |          | 7.33  | 6.53   | 6.93  |  | 7.33  | 6.53  | 6.23  |
| Critical Hdwy Stg 1      | -      | -     | -     |        | -    | -    | -      |          | 6.53  | 5.53   | -     |  | 6.13  | 5.53  | -     |
| Critical Hdwy Stg 2      | -      | -     | -     |        | -    | -    | -      |          | 6.13  | 5.53   | -     |  | 6.53  | 5.53  | -     |
| Follow-up Hdwy           | 2.218  | -     | -     |        | 2.22 | -    | -      |          | 3.519 | 4.019  | 3.319 |  | 3.519 | 4.019 | 3.319 |
| Pot Cap-1 Maneuver       | 1057   | -     | -     |        | 863  | -    | -      |          | 136   | 170    | 629   |  | 251   | 167   | 564   |
| Stage 1                  | -      | -     | -     |        | -    | -    | -      |          | 383   | 429    | -     |  | 529   | 524   | -     |
| Stage 2                  | -      | -     | -     |        | -    | -    | -      |          | 525   | 524    | -     |  | 636   | 423   | -     |
| Platoon blocked, %       |        |       | -     | -      |      |      | -      | -        |       |        |       |  |       |       |       |
| Mov Cap-1 Maneuver       | 1057   | -     | -     |        | 863  | -    | -      |          | 132   | 167    | 629   |  | 242   | 164   | 564   |
| Mov Cap-2 Maneuver       | -      | -     | -     |        | -    | -    | -      |          | 132   | 167    | -     |  | 242   | 164   | -     |
| Stage 1                  | -      | -     | -     |        | -    | -    | -      |          | 383   | 429    | -     |  | 529   | 516   | -     |
| Stage 2                  | -      | -     | -     |        | -    | -    | -      |          | 506   | 516    | -     |  | 619   | 423   | -     |
|                          |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
| Approach                 | SE     |       |       | NW     |      |      | NE     |          |       | SW     |       |  |       |       |       |
| HCM Control Delay, s     | 0      |       |       | 0.2    |      |      | 15.9   |          |       | 20.3   |       |  |       |       |       |
| HCM LOS                  |        |       |       |        |      |      | C      |          |       | C      |       |  |       |       |       |
|                          |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL   | NWT    | NWR  | SEL  | SET    | SERSWLn1 |       |        |       |  |       |       |       |
| Capacity (veh/h)         | 132    | 629   | 863   | -      | -    | 1057 | -      | -        | 282   |        |       |  |       |       |       |
| HCM Lane V/C Ratio       | 0.036  | 0.026 | 0.015 | -      | -    | -    | -      | -        | 0.167 |        |       |  |       |       |       |
| HCM Control Delay (s)    | 33.3   | 10.9  | 9.2   | -      | -    | 0    | -      | -        | 20.3  |        |       |  |       |       |       |
| HCM Lane LOS             | D      | B     | A     | -      | -    | A    | -      | -        | C     |        |       |  |       |       |       |
| HCM 95th %tile Q(veh)    | 0.1    | 0.1   | 0     | -      | -    | 0    | -      | -        | 0.6   |        |       |  |       |       |       |

# Lanes and Geometrics

## 4: CRANE ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 90                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor    | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Frt                  |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.966                                                                               |                                                                                     |
| Flt Protected        |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.964                                                                               |                                                                                     |
| Satd. Flow (prot)    | 1863                                                                              | 3518                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 0                                                                                 | 1770                                                                                | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1735                                                                                | 0                                                                                   |
| Flt Permitted        |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.964                                                                               |                                                                                     |
| Satd. Flow (perm)    | 1863                                                                              | 3518                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 0                                                                                 | 1770                                                                                | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1735                                                                                | 0                                                                                   |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 118                                                                               |                                                                                   |                                                                                   | 1997                                                                              |                                                                                   |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     | 341                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |       |        |      |        |       |
|--------------------------|--------|-------|--------|------|--------|-------|
| Int Delay, s/veh         | 14.7   |       |        |      |        |       |
| Movement                 | SET    | SER   | NWL    | NWT  | NEL    | NER   |
| Vol, veh/h               | 65     | 470   | 149    | 85   | 317    | 31    |
| Conflicting Peds, #/hr   | 0      | 0     | 0      | 0    | 0      | 0     |
| Sign Control             | Free   | Free  | Free   | Free | Stop   | Stop  |
| RT Channelized           | -      | None  | -      | None | -      | None  |
| Storage Length           | -      | 0     | -      | -    | 0      | 0     |
| Veh in Median Storage, # | 0      | -     | -      | 0    | 0      | -     |
| Grade, %                 | 0      | -     | -      | 0    | 0      | -     |
| Peak Hour Factor         | 83     | 83    | 83     | 83   | 83     | 83    |
| Heavy Vehicles, %        | 2      | 2     | 2      | 2    | 2      | 2     |
| Mvmt Flow                | 78     | 566   | 180    | 102  | 382    | 37    |
| Major/Minor              | Major1 |       | Major2 |      | Minor1 |       |
| Conflicting Flow All     | 0      | 0     | 78     | 0    | 539    | 78    |
| Stage 1                  | -      | -     | -      | -    | 78     | -     |
| Stage 2                  | -      | -     | -      | -    | 461    | -     |
| Critical Hdwy            | -      | -     | 4.12   | -    | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -     | -      | -    | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -     | -      | -    | 5.42   | -     |
| Follow-up Hdwy           | -      | -     | 2.218  | -    | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | -      | -     | 1520   | -    | 503    | 983   |
| Stage 1                  | -      | -     | -      | -    | 945    | -     |
| Stage 2                  | -      | -     | -      | -    | 635    | -     |
| Platoon blocked, %       | -      | -     | -      | -    | -      | -     |
| Mov Cap-1 Maneuver       | -      | -     | 1520   | -    | 440    | 983   |
| Mov Cap-2 Maneuver       | -      | -     | -      | -    | 440    | -     |
| Stage 1                  | -      | -     | -      | -    | 945    | -     |
| Stage 2                  | -      | -     | -      | -    | 555    | -     |
| Approach                 | SE     |       | NW     |      | NE     |       |
| HCM Control Delay, s     | 0      |       | 4.9    |      | 43.9   |       |
| HCM LOS                  |        |       |        |      | E      |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL    | NWT  | SET    | SER   |
| Capacity (veh/h)         | 440    | 983   | 1520   | -    | -      | -     |
| HCM Lane V/C Ratio       | 0.868  | 0.038 | 0.118  | -    | -      | -     |
| HCM Control Delay (s)    | 47.3   | 8.8   | 7.7    | 0    | -      | -     |
| HCM Lane LOS             | E      | A     | A      | A    | -      | -     |
| HCM 95th %tile Q(veh)    | 8.9    | 0.1   | 0.4    | -    | -      | -     |

# Lanes and Geometrics

## 5: CHANEY ST & COLLIER AVE

1/27/2017



| Lane Group          | SET  | SER   | NWL  | NWT   | NEL   | NER   |
|---------------------|------|-------|------|-------|-------|-------|
| Lane Configurations | ↑    | ↑     |      | ↑     | ↑     | ↑     |
| Ideal Flow (vphpl)  | 1900 | 1900  | 1900 | 1900  | 1900  | 1900  |
| Lane Width (ft)     | 12   | 12    | 12   | 12    | 12    | 12    |
| Grade (%)           | 0%   |       |      | 0%    | 0%    |       |
| Storage Length (ft) |      | 0     | 0    |       | 0     | 0     |
| Storage Lanes       |      | 1     | 0    |       | 1     | 1     |
| Taper Length (ft)   |      |       | 25   |       | 25    |       |
| Lane Util. Factor   | 1.00 | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  |
| Ped Bike Factor     |      |       |      |       |       |       |
| Frt                 |      | 0.850 |      |       |       | 0.850 |
| Flt Protected       |      |       |      | 0.969 | 0.950 |       |
| Satd. Flow (prot)   | 1863 | 1583  | 0    | 1805  | 1770  | 1583  |
| Flt Permitted       |      |       |      | 0.969 | 0.950 |       |
| Satd. Flow (perm)   | 1863 | 1583  | 0    | 1805  | 1770  | 1583  |
| Link Speed (mph)    | 30   |       |      | 30    | 30    |       |
| Link Distance (ft)  | 1997 |       |      | 292   | 1583  |       |
| Travel Time (s)     | 45.4 |       |      | 6.6   | 36.0  |       |

### Intersection Summary

Area Type: Other

| Intersection              |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh | 11.6 |      |      |      |      |      |      |      |      |      |      |      |
| Intersection LOS          | B    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                  | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Vol, veh/h                | 0    | 0    | 0    | 140  | 0    | 1    | 1    | 0    | 0    | 380  | 1    | 2    |
| Peak Hour Factor          | 0.92 | 0.86 | 0.86 | 0.86 | 0.92 | 0.86 | 0.86 | 0.86 | 0.92 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                 | 0    | 0    | 0    | 163  | 0    | 1    | 1    | 0    | 0    | 442  | 1    | 2    |
| Number of Lanes           | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB   |
|----------------------------|-----|-----|------|
| Opposing Approach          | WB  | EB  | SB   |
| Opposing Lanes             | 1   | 1   | 1    |
| Conflicting Approach Left  | SB  | NB  | EB   |
| Conflicting Lanes Left     | 1   | 1   | 1    |
| Conflicting Approach Right | NB  | SB  | WB   |
| Conflicting Lanes Right    | 1   | 1   | 1    |
| HCM Control Delay          | 8.5 | 8.3 | 12.8 |
| HCM LOS                    | A   | A   | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 99%   | 0%    | 50%   | 0%    |
| Vol Thru, %            | 0%    | 0%    | 50%   | 100%  |
| Vol Right, %           | 1%    | 100%  | 0%    | 0%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 383   | 140   | 2     | 0     |
| LT Vol                 | 380   | 0     | 1     | 0     |
| Through Vol            | 1     | 0     | 1     | 0     |
| RT Vol                 | 2     | 140   | 0     | 0     |
| Lane Flow Rate         | 445   | 163   | 2     | 0     |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.546 | 0.199 | 0.003 | 0     |
| Departure Headway (Hd) | 4.524 | 4.408 | 5.311 | 4.804 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 802   | 819   | 676   | 0     |
| Service Time           | 2.524 | 2.408 | 3.325 | 2.833 |
| HCM Lane V/C Ratio     | 0.555 | 0.199 | 0.003 | 0     |
| HCM Control Delay      | 12.8  | 8.5   | 8.3   | 7.8   |
| HCM Lane LOS           | B     | A     | A     | N     |
| HCM 95th-tile Q        | 3.4   | 0.7   | 0     | 0     |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement          | SBU  | SBL  | SBT  | SBR  |
|-------------------|------|------|------|------|
| Vol, veh/h        | 0    | 0    | 0    | 0    |
| Peak Hour Factor  | 0.92 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, % | 2    | 2    | 2    | 2    |
| Mvmt Flow         | 0    | 0    | 0    | 0    |
| Number of Lanes   | 0    | 0    | 1    | 0    |

| Approach                   | SB |
|----------------------------|----|
| Opposing Approach          | NB |
| Opposing Lanes             | 1  |
| Conflicting Approach Left  | WB |
| Conflicting Lanes Left     | 1  |
| Conflicting Approach Right | EB |
| Conflicting Lanes Right    | 1  |
| HCM Control Delay          | 0  |
| HCM LOS                    | -  |

Lane

# Lanes and Geometrics

## 6: N. SPRING ST & COLLIER AVE

1/27/2017

|                     |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)  | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)     | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)           |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft) | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes       | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Frt                 |                                                                                   | 0.865                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.999                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    | 0.953                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)   | 0                                                                                 | 1611                                                                              | 0                                                                                 | 0                                                                                 | 1818                                                                              | 0                                                                                 | 0                                                                                  | 1773                                                                                | 0                                                                                   | 0                                                                                   | 1863                                                                                | 0                                                                                   |
| Flt Permitted       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    | 0.953                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)   | 0                                                                                 | 1611                                                                              | 0                                                                                 | 0                                                                                 | 1818                                                                              | 0                                                                                 | 0                                                                                  | 1773                                                                                | 0                                                                                   | 0                                                                                   | 1863                                                                                | 0                                                                                   |
| Link Speed (mph)    |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)  |                                                                                   | 294                                                                               |                                                                                   |                                                                                   | 237                                                                               |                                                                                   |                                                                                    | 822                                                                                 |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Travel Time (s)     |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                    | 18.7                                                                                |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |

### Intersection Summary

Area Type: Other

# Timings

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 267                                                                               | 1                                                                                 | 229                                                                               | 714                                                                               | 528                                                                               | 648                                                                               | 1451                                                                               |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                    |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                  |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 5.0                                                                               | 7.0                                                                                |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 29.3                                                                              | 29.3                                                                              | 11.0                                                                              | 20.0                                                                               |
| Total Split (s)      | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 52.0                                                                              | 52.0                                                                              | 39.0                                                                              | 91.0                                                                               |
| Total Split (%)      | 24.2%                                                                             | 24.2%                                                                             | 24.2%                                                                             | 43.3%                                                                             | 43.3%                                                                             | 32.5%                                                                             | 75.8%                                                                              |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                    |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                              |
| Act Effct Green (s)  | 23.7                                                                              | 23.7                                                                              | 23.7                                                                              | 51.7                                                                              | 51.7                                                                              | 29.4                                                                              | 85.7                                                                               |
| Actuated g/C Ratio   | 0.20                                                                              | 0.20                                                                              | 0.20                                                                              | 0.43                                                                              | 0.43                                                                              | 0.24                                                                              | 0.71                                                                               |
| v/c Ratio            | 0.59                                                                              | 0.57                                                                              | 0.50                                                                              | 0.37                                                                              | 0.63                                                                              | 0.86                                                                              | 0.65                                                                               |
| Control Delay        | 52.0                                                                              | 44.5                                                                              | 32.8                                                                              | 16.4                                                                              | 10.5                                                                              | 60.9                                                                              | 6.0                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               | 0.4                                                                                |
| Total Delay          | 52.0                                                                              | 44.5                                                                              | 32.8                                                                              | 16.4                                                                              | 10.6                                                                              | 60.9                                                                              | 6.4                                                                                |
| LOS                  | D                                                                                 | D                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 | E                                                                                 | A                                                                                  |
| Approach Delay       |                                                                                   | 43.4                                                                              |                                                                                   | 14.0                                                                              |                                                                                   |                                                                                   | 23.2                                                                               |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 1 (1%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 22.8

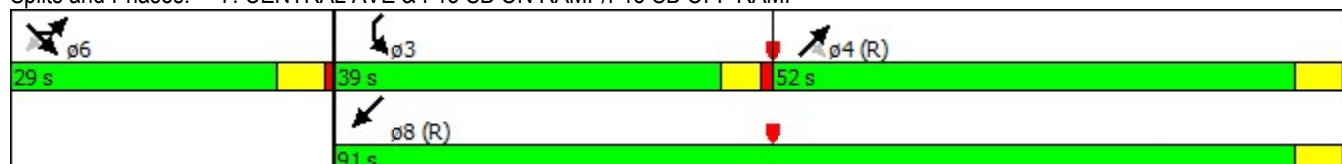
Intersection LOS: C

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP





## Queues

## 7: CENTRAL AVE &amp; I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Group Flow (vph)   | 195                                                                               | 188                                                                               | 175                                                                               | 802                                                                               | 593                                                                               | 728                                                                               | 1630                                                                               |
| v/c Ratio               | 0.59                                                                              | 0.57                                                                              | 0.50                                                                              | 0.37                                                                              | 0.63                                                                              | 0.86                                                                              | 0.65                                                                               |
| Control Delay           | 52.0                                                                              | 44.5                                                                              | 32.8                                                                              | 16.4                                                                              | 10.5                                                                              | 60.9                                                                              | 6.0                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               | 0.4                                                                                |
| Total Delay             | 52.0                                                                              | 44.5                                                                              | 32.8                                                                              | 16.4                                                                              | 10.6                                                                              | 60.9                                                                              | 6.4                                                                                |
| Queue Length 50th (ft)  | 145                                                                               | 123                                                                               | 81                                                                                | 182                                                                               | 253                                                                               | 309                                                                               | 190                                                                                |
| Queue Length 95th (ft)  | 227                                                                               | 207                                                                               | 155                                                                               | 193                                                                               | 352                                                                               | 371                                                                               | 231                                                                                |
| Internal Link Dist (ft) |                                                                                   | 1290                                                                              |                                                                                   | 318                                                                               |                                                                                   |                                                                                   | 410                                                                                |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 100                                                                               |                                                                                    |
| Base Capacity (vph)     | 331                                                                               | 327                                                                               | 347                                                                               | 2189                                                                              | 945                                                                               | 984                                                                               | 2527                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 7                                                                                 | 355                                                                                |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Reduced v/c Ratio       | 0.59                                                                              | 0.57                                                                              | 0.50                                                                              | 0.37                                                                              | 0.65                                                                              | 0.75                                                                              | 0.75                                                                               |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# HCM 2010 Signalized Intersection Summary

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |  |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |  |
| Volume (veh/h)                                                       | 267                                                                               | 1                                                                                 | 229                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 714                                                                                 | 528                                                                                 | 648                                                                                 | 1451                                                                                | 0                                                                                   |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1863                                                                              | 1863                                                                              | 1863                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h                                                 | 380                                                                               | 0                                                                                 | 172                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 802                                                                                 | 593                                                                                 | 728                                                                                 | 1630                                                                                | 0                                                                                   |
| Adj No. of Lanes                                                     | 2                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Cap, veh/h                                                           | 701                                                                               | 0                                                                                 | 313                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2260                                                                                | 704                                                                                 | 796                                                                                 | 2528                                                                                | 0                                                                                   |
| Arrive On Green                                                      | 0.20                                                                              | 0.00                                                                              | 0.20                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.15                                                                                | 0.15                                                                                | 0.46                                                                                | 1.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                      | 3548                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 5253                                                                                | 1583                                                                                | 3442                                                                                | 3632                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h                                                 | 380                                                                               | 0                                                                                 | 172                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 802                                                                                 | 593                                                                                 | 728                                                                                 | 1630                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                             | 1774                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1695                                                                                | 1583                                                                                | 1721                                                                                | 1770                                                                                | 0                                                                                   |
| Q Serve(g_s), s                                                      | 11.6                                                                              | 0.0                                                                               | 11.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 17.0                                                                                | 43.8                                                                                | 23.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                | 11.6                                                                              | 0.0                                                                               | 11.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 17.0                                                                                | 43.8                                                                                | 23.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 701                                                                               | 0                                                                                 | 313                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2260                                                                                | 704                                                                                 | 796                                                                                 | 2528                                                                                | 0                                                                                   |
| V/C Ratio(X)                                                         | 0.54                                                                              | 0.00                                                                              | 0.55                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.35                                                                                | 0.84                                                                                | 0.91                                                                                | 0.64                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                | 701                                                                               | 0                                                                                 | 313                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2260                                                                                | 704                                                                                 | 987                                                                                 | 2528                                                                                | 0                                                                                   |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 0.33                                                                                | 0.33                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                |
| Upstream Filter(l)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.54                                                                                | 0.54                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                             | 43.3                                                                              | 0.0                                                                               | 43.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 35.7                                                                                | 47.1                                                                                | 31.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                               | 3.0                                                                               | 0.0                                                                               | 6.8                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.4                                                                                 | 11.7                                                                                | 5.9                                                                                 | 0.7                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 5.9                                                                               | 0.0                                                                               | 5.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 8.1                                                                                 | 21.5                                                                                | 11.8                                                                                | 0.2                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 46.3                                                                              | 0.0                                                                               | 50.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 36.1                                                                                | 58.9                                                                                | 37.0                                                                                | 0.7                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                            | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                  |                                                                                   | 552                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 1395                                                                                |                                                                                     |                                                                                     | 2358                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                   | 47.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 45.8                                                                                |                                                                                     |                                                                                     | 11.9                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   |                                                                                   | 32.4                                                                              | 58.6                                                                              |                                                                                   | 29.0                                                                              |                                                                                    | 91.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   |                                                                                   | 34.4                                                                              | 46.7                                                                              |                                                                                   | 23.7                                                                              |                                                                                    | 85.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                   |                                                                                   | 26.6                                                                              | 46.8                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   |                                                                                   | 1.1                                                                               | 0.0                                                                               |                                                                                   | 0.8                                                                               |                                                                                    | 31.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 27.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                               | SWT                                                                               | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 601                                                                               | 0                                                                                 | 546                                                                               | 87                                                                                | 884                                                                               | 1530                                                                              | 448                                                                                 |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 2                                                                                 | 2                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 2                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 11.0                                                                              | 20.0                                                                              | 28.3                                                                              | 28.3                                                                                |
| Total Split (s)      | 49.0                                                                              | 49.0                                                                              | 49.0                                                                              | 15.0                                                                              | 71.0                                                                              | 56.0                                                                              | 56.0                                                                                |
| Total Split (%)      | 40.8%                                                                             | 40.8%                                                                             | 40.8%                                                                             | 12.5%                                                                             | 59.2%                                                                             | 46.7%                                                                             | 46.7%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                             | C-Max                                                                             | C-Max                                                                               |
| Act Effct Green (s)  | 43.7                                                                              | 43.7                                                                              | 43.7                                                                              | 9.4                                                                               | 65.7                                                                              | 51.7                                                                              | 51.7                                                                                |
| Actuated g/C Ratio   | 0.36                                                                              | 0.36                                                                              | 0.36                                                                              | 0.08                                                                              | 0.55                                                                              | 0.43                                                                              | 0.43                                                                                |
| v/c Ratio            | 0.73                                                                              | 0.72                                                                              | 0.67                                                                              | 0.71                                                                              | 0.36                                                                              | 0.79                                                                              | 0.53                                                                                |
| Control Delay        | 41.2                                                                              | 35.9                                                                              | 30.5                                                                              | 93.0                                                                              | 10.4                                                                              | 15.7                                                                              | 1.9                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.5                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 0.9                                                                               | 0.3                                                                                 |
| Total Delay          | 41.2                                                                              | 36.4                                                                              | 30.8                                                                              | 93.0                                                                              | 10.4                                                                              | 16.5                                                                              | 2.2                                                                                 |
| LOS                  | D                                                                                 | D                                                                                 | C                                                                                 | F                                                                                 | B                                                                                 | B                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 36.2                                                                              |                                                                                   |                                                                                   | 17.8                                                                              | 13.3                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 115 (96%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 20.8

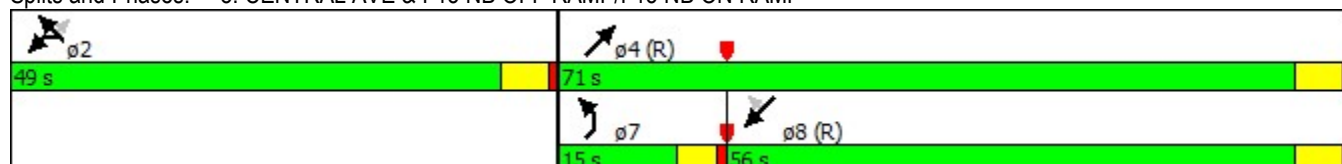
Intersection LOS: C

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP



## Queues

### 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017



| Lane Group              | NWL  | NWT  | NWR  | NEL  | NET  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 445  | 432  | 411  | 98   | 993  | 1719 | 503  |
| v/c Ratio               | 0.73 | 0.72 | 0.67 | 0.71 | 0.36 | 0.79 | 0.53 |
| Control Delay           | 41.2 | 35.9 | 30.5 | 93.0 | 10.4 | 15.7 | 1.9  |
| Queue Delay             | 0.0  | 0.5  | 0.3  | 0.0  | 0.0  | 0.9  | 0.3  |
| Total Delay             | 41.2 | 36.4 | 30.8 | 93.0 | 10.4 | 16.5 | 2.2  |
| Queue Length 50th (ft)  | 311  | 271  | 215  | 81   | 89   | 147  | 0    |
| Queue Length 95th (ft)  | 437  | 404  | 335  | #149 | 108  | 161  | m3   |
| Internal Link Dist (ft) |      | 1244 |      |      | 410  | 302  |      |
| Turn Bay Length (ft)    | 190  |      | 190  | 190  |      |      |      |
| Base Capacity (vph)     | 612  | 599  | 610  | 153  | 2784 | 2189 | 941  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 209  | 95   |
| Spillback Cap Reductn   | 0    | 23   | 23   | 0    | 1    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.73 | 0.75 | 0.70 | 0.64 | 0.36 | 0.87 | 0.59 |

#### Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                                                                      |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET  | SER | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Volume (veh/h)                                                       | 0                                                                                  | 0    | 0   | 601                                                                               | 0                                                                                 | 546                                                                               | 87                                                                                | 884                                                                                 | 0    | 0    | 1530                                                                                | 448                                                                                 |
| Number                                                               |                                                                                    |      |     | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                 | 4                                                                                   | 14   | 3    | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               |                                                                                    |      |     | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 0    | 0    | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 |                                                                                    |      |     | 866                                                                               | 0                                                                                 | 409                                                                               | 98                                                                                | 993                                                                                 | 0    | 0    | 1719                                                                                | 503                                                                                 |
| Adj No. of Lanes                                                     |                                                                                    |      |     | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                   | 0    | 0    | 3                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                     |                                                                                    |      |     | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                | 0.89 | 0.89 | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %                                                 |                                                                                    |      |     | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0    | 0    | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           |                                                                                    |      |     | 1292                                                                              | 0                                                                                 | 577                                                                               | 133                                                                               | 2784                                                                                | 0    | 0    | 2208                                                                                | 688                                                                                 |
| Arrive On Green                                                      |                                                                                    |      |     | 0.36                                                                              | 0.00                                                                              | 0.36                                                                              | 0.15                                                                              | 1.00                                                                                | 0.00 | 0.00 | 0.58                                                                                | 0.58                                                                                |
| Sat Flow, veh/h                                                      |                                                                                    |      |     | 3548                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 5253                                                                                | 0    | 0    | 5253                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                 |                                                                                    |      |     | 866                                                                               | 0                                                                                 | 409                                                                               | 98                                                                                | 993                                                                                 | 0    | 0    | 1719                                                                                | 503                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             |                                                                                    |      |     | 1774                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 1695                                                                                | 0    | 0    | 1695                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                      |                                                                                    |      |     | 24.6                                                                              | 0.0                                                                               | 26.6                                                                              | 6.3                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 31.1                                                                                | 27.9                                                                                |
| Cycle Q Clear(g_c), s                                                |                                                                                    |      |     | 24.6                                                                              | 0.0                                                                               | 26.6                                                                              | 6.3                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 31.1                                                                                | 27.9                                                                                |
| Prop In Lane                                                         |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               |                                                                                    |      |     | 1292                                                                              | 0                                                                                 | 577                                                                               | 133                                                                               | 2784                                                                                | 0    | 0    | 2208                                                                                | 688                                                                                 |
| V/C Ratio(X)                                                         |                                                                                    |      |     | 0.67                                                                              | 0.00                                                                              | 0.71                                                                              | 0.74                                                                              | 0.36                                                                                | 0.00 | 0.00 | 0.78                                                                                | 0.73                                                                                |
| Avail Cap(c_a), veh/h                                                |                                                                                    |      |     | 1292                                                                              | 0                                                                                 | 577                                                                               | 154                                                                               | 2784                                                                                | 0    | 0    | 2208                                                                                | 688                                                                                 |
| HCM Platoon Ratio                                                    |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                                | 1.00 | 1.00 | 1.33                                                                                | 1.33                                                                                |
| Upstream Filter(l)                                                   |                                                                                    |      |     | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.92                                                                              | 0.92                                                                                | 0.00 | 0.00 | 0.56                                                                                | 0.56                                                                                |
| Uniform Delay (d), s/veh                                             |                                                                                    |      |     | 32.1                                                                              | 0.0                                                                               | 32.7                                                                              | 49.9                                                                              | 0.0                                                                                 | 0.0  | 0.0  | 20.9                                                                                | 20.2                                                                                |
| Incr Delay (d2), s/veh                                               |                                                                                    |      |     | 2.8                                                                               | 0.0                                                                               | 7.2                                                                               | 10.6                                                                              | 0.3                                                                                 | 0.0  | 0.0  | 1.6                                                                                 | 3.8                                                                                 |
| Initial Q Delay(d3),s/veh                                            |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             |                                                                                    |      |     | 12.5                                                                              | 0.0                                                                               | 12.7                                                                              | 3.5                                                                               | 0.1                                                                                 | 0.0  | 0.0  | 14.8                                                                                | 12.9                                                                                |
| LnGrp Delay(d),s/veh                                                 |                                                                                    |      |     | 34.9                                                                              | 0.0                                                                               | 39.9                                                                              | 60.5                                                                              | 0.3                                                                                 | 0.0  | 0.0  | 22.5                                                                                | 24.1                                                                                |
| LnGrp LOS                                                            |                                                                                    |      |     | C                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | A                                                                                   |      |      | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                  |                                                                                    |      |     |                                                                                   | 1275                                                                              |                                                                                   |                                                                                   | 1091                                                                                |      |      | 2222                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    |      |     |                                                                                   | 36.5                                                                              |                                                                                   |                                                                                   | 5.7                                                                                 |      |      | 22.8                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                    |      |     |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                   |      |      | C                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2    | 3   | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    | 2    |     | 4                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    | 49.0 |     | 71.0                                                                              |                                                                                   |                                                                                   | 13.6                                                                              | 57.4                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    | 5.3  |     | 5.3                                                                               |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    | 43.7 |     | 65.7                                                                              |                                                                                   |                                                                                   | 10.4                                                                              | 50.7                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    | 29.6 |     | 3.0                                                                               |                                                                                   |                                                                                   | 9.3                                                                               | 34.1                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    | 2.5  |     | 32.1                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 13.3                                                                                |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |      |     | 22.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |      |     | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 68                                                                                | 82                                                                                | 472                                                                               | 81                                                                                | 124                                                                               | 366                                                                               | 965                                                                                | 101                                                                                 | 119                                                                                 | 1375                                                                                | 167                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 47.3                                                                              | 47.3                                                                              | 35.0                                                                              | 47.3                                                                              | 47.3                                                                              | 35.0                                                                              | 50.8                                                                               | 50.8                                                                                | 21.9                                                                                | 37.7                                                                                | 37.7                                                                                |
| Total Split (%)      | 39.4%                                                                             | 39.4%                                                                             | 29.2%                                                                             | 39.4%                                                                             | 39.4%                                                                             | 29.2%                                                                             | 42.3%                                                                              | 42.3%                                                                               | 18.3%                                                                               | 31.4%                                                                               | 31.4%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 42.0                                                                              | 42.0                                                                              | 76.9                                                                              | 42.0                                                                              | 42.0                                                                              | 29.6                                                                              | 49.4                                                                               | 49.4                                                                                | 13.4                                                                                | 33.2                                                                                | 33.2                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.64                                                                              | 0.35                                                                              | 0.35                                                                              | 0.25                                                                              | 0.41                                                                               | 0.41                                                                                | 0.11                                                                                | 0.28                                                                                | 0.28                                                                                |
| v/c Ratio            | 0.22                                                                              | 0.14                                                                              | 0.52                                                                              | 0.20                                                                              | 0.34                                                                              | 0.95                                                                              | 0.52                                                                               | 0.16                                                                                | 0.69                                                                                | 0.88                                                                                | 0.34                                                                                |
| Control Delay        | 29.6                                                                              | 27.5                                                                              | 13.2                                                                              | 28.8                                                                              | 27.1                                                                              | 74.4                                                                              | 22.7                                                                               | 5.0                                                                                 | 85.0                                                                                | 31.7                                                                                | 4.4                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 16.5                                                                              | 0.4                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Total Delay          | 29.6                                                                              | 27.5                                                                              | 13.2                                                                              | 28.8                                                                              | 27.1                                                                              | 90.9                                                                              | 23.2                                                                               | 5.0                                                                                 | 85.0                                                                                | 31.8                                                                                | 4.4                                                                                 |
| LOS                  | C                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | C                                                                                  | A                                                                                   | F                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 16.9                                                                              |                                                                                   |                                                                                   | 27.6                                                                              |                                                                                   | 39.2                                                                               |                                                                                     |                                                                                     | 32.8                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 32.3

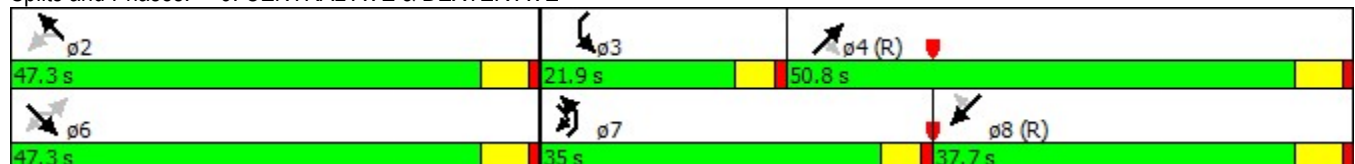
Intersection LOS: C

Intersection Capacity Utilization 75.3%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE



## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 77                                                                                | 93                                                                                | 536                                                                               | 92                                                                                | 216                                                                               | 416                                                                               | 1097                                                                               | 115                                                                                 | 135                                                                                 | 1562                                                                                | 190                                                                                 |
| v/c Ratio               | 0.22                                                                              | 0.14                                                                              | 0.52                                                                              | 0.20                                                                              | 0.34                                                                              | 0.95                                                                              | 0.52                                                                               | 0.16                                                                                | 0.69                                                                                | 0.88                                                                                | 0.34                                                                                |
| Control Delay           | 29.6                                                                              | 27.5                                                                              | 13.2                                                                              | 28.8                                                                              | 27.1                                                                              | 74.4                                                                              | 22.7                                                                               | 5.0                                                                                 | 85.0                                                                                | 31.7                                                                                | 4.4                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 16.5                                                                              | 0.4                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Total Delay             | 29.6                                                                              | 27.5                                                                              | 13.2                                                                              | 28.8                                                                              | 27.1                                                                              | 90.9                                                                              | 23.2                                                                               | 5.0                                                                                 | 85.0                                                                                | 31.8                                                                                | 4.4                                                                                 |
| Queue Length 50th (ft)  | 42                                                                                | 49                                                                                | 195                                                                               | 50                                                                                | 108                                                                               | 282                                                                               | 143                                                                                | 5                                                                                   | 111                                                                                 | 284                                                                                 | 16                                                                                  |
| Queue Length 95th (ft)  | 79                                                                                | 86                                                                                | 272                                                                               | 89                                                                                | 169                                                                               | #469                                                                              | 286                                                                                | m25                                                                                 | m142                                                                                | 337                                                                                 | m25                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1321                                                                              |                                                                                   |                                                                                   | 1337                                                                              |                                                                                   | 302                                                                                |                                                                                     |                                                                                     | 250                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 140                                                                               |                                                                                   | 140                                                                               | 100                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 150                                                                                 |                                                                                     | 220                                                                                 |
| Base Capacity (vph)     | 354                                                                               | 652                                                                               | 1032                                                                              | 454                                                                               | 634                                                                               | 448                                                                               | 2095                                                                               | 720                                                                                 | 255                                                                                 | 1773                                                                                | 559                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 38                                                                                | 478                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 6                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.22                                                                              | 0.14                                                                              | 0.52                                                                              | 0.20                                                                              | 0.34                                                                              | 1.01                                                                              | 0.68                                                                               | 0.16                                                                                | 0.53                                                                                | 0.88                                                                                | 0.34                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                                                                    |  |  |  |  |  |  |   |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 68                                                                                | 82                                                                                | 472                                                                               | 81                                                                                | 124                                                                               | 66                                                                                | 366                                                                                 | 965                                                                                 | 101                                                                                 | 119                                                                                 | 1375                                                                                | 167                                                                                 |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 77                                                                                | 93                                                                                | 536                                                                               | 92                                                                                | 141                                                                               | 75                                                                                | 416                                                                                 | 1097                                                                                | 115                                                                                 | 135                                                                                 | 1562                                                                                | 190                                                                                 |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 370                                                                               | 652                                                                               | 947                                                                               | 311                                                                               | 401                                                                               | 213                                                                               | 440                                                                                 | 2159                                                                                | 672                                                                                 | 175                                                                                 | 1764                                                                                | 436                                                                                 |
| Arrive On Green                                                    | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.50                                                                                | 0.85                                                                                | 0.85                                                                                | 0.10                                                                                | 0.28                                                                                | 0.28                                                                                |
| Sat Flow, veh/h                                                    | 1161                                                                              | 1863                                                                              | 1583                                                                              | 794                                                                               | 1146                                                                              | 609                                                                               | 1774                                                                                | 5085                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 77                                                                                | 93                                                                                | 536                                                                               | 92                                                                                | 0                                                                                 | 216                                                                               | 416                                                                                 | 1097                                                                                | 115                                                                                 | 135                                                                                 | 1562                                                                                | 190                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                           | 1161                                                                              | 1863                                                                              | 1583                                                                              | 794                                                                               | 0                                                                                 | 1755                                                                              | 1774                                                                                | 1695                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 6.2                                                                               | 4.1                                                                               | 24.7                                                                              | 10.8                                                                              | 0.0                                                                               | 10.9                                                                              | 26.7                                                                                | 6.9                                                                                 | 1.5                                                                                 | 8.9                                                                                 | 28.0                                                                                | 11.9                                                                                |
| Cycle Q Clear(g_c), s                                              | 16.2                                                                              | 4.1                                                                               | 24.7                                                                              | 14.9                                                                              | 0.0                                                                               | 10.9                                                                              | 26.7                                                                                | 6.9                                                                                 | 1.5                                                                                 | 8.9                                                                                 | 28.0                                                                                | 11.9                                                                                |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.35                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 370                                                                               | 652                                                                               | 947                                                                               | 311                                                                               | 0                                                                                 | 614                                                                               | 440                                                                                 | 2159                                                                                | 672                                                                                 | 175                                                                                 | 1764                                                                                | 436                                                                                 |
| V/C Ratio(X)                                                       | 0.21                                                                              | 0.14                                                                              | 0.57                                                                              | 0.30                                                                              | 0.00                                                                              | 0.35                                                                              | 0.95                                                                                | 0.51                                                                                | 0.17                                                                                | 0.77                                                                                | 0.89                                                                                | 0.44                                                                                |
| Avail Cap(c_a), veh/h                                              | 370                                                                               | 652                                                                               | 947                                                                               | 311                                                                               | 0                                                                                 | 614                                                                               | 449                                                                                 | 2159                                                                                | 672                                                                                 | 256                                                                                 | 1764                                                                                | 436                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 34.5                                                                              | 26.7                                                                              | 14.7                                                                              | 31.8                                                                              | 0.0                                                                               | 28.9                                                                              | 29.5                                                                                | 5.7                                                                                 | 5.3                                                                                 | 52.7                                                                                | 41.7                                                                                | 35.8                                                                                |
| Incr Delay (d2), s/veh                                             | 1.3                                                                               | 0.5                                                                               | 2.4                                                                               | 2.4                                                                               | 0.0                                                                               | 1.6                                                                               | 26.3                                                                                | 0.8                                                                                 | 0.5                                                                                 | 4.4                                                                                 | 7.0                                                                                 | 3.2                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 2.1                                                                               | 2.2                                                                               | 11.4                                                                              | 2.6                                                                               | 0.0                                                                               | 5.5                                                                               | 16.1                                                                                | 3.2                                                                                 | 0.7                                                                                 | 4.6                                                                                 | 13.2                                                                                | 5.6                                                                                 |
| LnGrp Delay(d),s/veh                                               | 35.8                                                                              | 27.1                                                                              | 17.1                                                                              | 34.2                                                                              | 0.0                                                                               | 30.5                                                                              | 55.8                                                                                | 6.5                                                                                 | 5.8                                                                                 | 57.1                                                                                | 48.6                                                                                | 39.0                                                                                |
| LnGrp LOS                                                          | D                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 |                                                                                   | C                                                                                 | E                                                                                   | A                                                                                   | A                                                                                   | E                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 706                                                                               |                                                                                   |                                                                                   | 308                                                                               |                                                                                   |                                                                                     | 1628                                                                                |                                                                                     |                                                                                     | 1887                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 20.5                                                                              |                                                                                   |                                                                                   | 31.6                                                                              |                                                                                   |                                                                                     | 19.0                                                                                |                                                                                     |                                                                                     | 48.3                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 47.3                                                                              | 16.4                                                                              | 56.3                                                                              |                                                                                   | 47.3                                                                              | 34.4                                                                                | 38.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 42.0                                                                              | 17.3                                                                              | 45.5                                                                              |                                                                                   | 42.0                                                                              | 30.4                                                                                | 32.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                       |                                                                                   | 17.9                                                                              | 11.9                                                                              | 9.9                                                                               |                                                                                   | 27.7                                                                              | 29.7                                                                                | 31.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 2.9                                                                               | 0.1                                                                               | 21.8                                                                              |                                                                                   | 2.6                                                                               | 0.1                                                                                 | 1.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 32.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# Timings

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

| Lane Group           | SEL   | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                 | SWT                                                                                 | SWR                                                                                 | ø3   |
|----------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Lane Configurations  |       |  |  |  |  |  |  |  |  |      |
| Volume (vph)         | 144   | 2                                                                                 | 78                                                                                | 9                                                                                 | 2                                                                                 | 113                                                                               | 1015                                                                                | 1522                                                                                | 114                                                                                 |      |
| Turn Type            | Perm  | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                  | NA                                                                                  | Perm                                                                                |      |
| Protected Phases     |       | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                   | 8                                                                                   |                                                                                     | 3    |
| Permitted Phases     | 6     |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |      |
| Detector Phase       | 6     | 6                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                   | 8                                                                                   | 8                                                                                   |      |
| Switch Phase         |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |      |
| Minimum Initial (s)  | 5.0   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0  |
| Minimum Split (s)    | 20.0  | 20.0                                                                              | 20.0                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 31.0                                                                                | 31.0                                                                                | 31.0                                                                                | 11.0 |
| Total Split (s)      | 33.9  | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 12.0                                                                              | 75.1                                                                                | 74.1                                                                                | 74.1                                                                                | 11.0 |
| Total Split (%)      | 28.3% | 28.3%                                                                             | 28.3%                                                                             | 28.3%                                                                             | 28.3%                                                                             | 10.0%                                                                             | 62.6%                                                                               | 61.8%                                                                               | 61.8%                                                                               | 9%   |
| Yellow Time (s)      | 3.9   | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.6                                                                               | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 3.6  |
| All-Red Time (s)     | 1.0   | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0  |
| Lost Time Adjust (s) |       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |      |
| Total Lost Time (s)  |       | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.6                                                                               | 6.0                                                                                 | 6.0                                                                                 | 6.0                                                                                 |      |
| Lead/Lag             |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lead |
| Lead-Lag Optimize?   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |      |
| Recall Mode          | Max   | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                               | C-Max                                                                               | C-Max                                                                               | None |
| Act Effect Green (s) |       | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 7.1                                                                               | 80.1                                                                                | 68.4                                                                                | 68.4                                                                                |      |
| Actuated g/C Ratio   |       | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.06                                                                              | 0.67                                                                                | 0.57                                                                                | 0.57                                                                                |      |
| v/c Ratio            |       | 0.48                                                                              | 0.19                                                                              | 0.04                                                                              | 0.00                                                                              | 0.60                                                                              | 0.47                                                                                | 0.81                                                                                | 0.13                                                                                |      |
| Control Delay        |       | 44.8                                                                              | 8.6                                                                               | 35.6                                                                              | 34.5                                                                              | 53.6                                                                              | 16.5                                                                                | 24.9                                                                                | 2.4                                                                                 |      |
| Queue Delay          |       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |      |
| Total Delay          |       | 44.8                                                                              | 8.6                                                                               | 35.6                                                                              | 34.5                                                                              | 53.6                                                                              | 16.5                                                                                | 24.9                                                                                | 2.4                                                                                 |      |
| LOS                  |       | D                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | B                                                                                   | C                                                                                   | A                                                                                   |      |
| Approach Delay       |       | 32.2                                                                              |                                                                                   |                                                                                   | 35.4                                                                              |                                                                                   | 20.2                                                                                | 23.3                                                                                |                                                                                     |      |
| Approach LOS         |       | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   | C                                                                                   | C                                                                                   |                                                                                     |      |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 81 (68%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 22.9

Intersection LOS: C

Intersection Capacity Utilization 72.2%

ICU Level of Service C

Analysis Period (min) 15

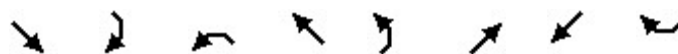
### Splits and Phases: 10: CENTRAL AVE & CAMBERN AVE

|                                                                                        |                                                                                        |                                                                                            |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|  ø2 |  ø3 |  ø4 (R) |
| 33.9 s                                                                                 | 11 s                                                                                   | 75.1 s                                                                                     |
|  ø6 |  ø7 |  ø8 (R) |
| 33.9 s                                                                                 | 12 s                                                                                   | 74.1 s                                                                                     |

## Queues

## 10: CENTRAL AVE &amp; CAMBERN AVE

1/27/2017



| Lane Group              | SET  | SER  | NWL  | NWT  | NEL  | NET  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 157  | 84   | 10   | 2    | 122  | 1099 | 1637 | 123  |
| v/c Ratio               | 0.48 | 0.19 | 0.04 | 0.00 | 0.60 | 0.47 | 0.81 | 0.13 |
| Control Delay           | 44.8 | 8.6  | 35.6 | 34.5 | 53.6 | 16.5 | 24.9 | 2.4  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 44.8 | 8.6  | 35.6 | 34.5 | 53.6 | 16.5 | 24.9 | 2.4  |
| Queue Length 50th (ft)  | 105  | 0    | 6    | 1    | 51   | 206  | 511  | 0    |
| Queue Length 95th (ft)  | 175  | 41   | 21   | 8    | 82   | 303  | 616  | 26   |
| Internal Link Dist (ft) | 1204 |      |      | 1267 |      | 636  | 2064 |      |
| Turn Bay Length (ft)    |      | 200  | 75   |      | 250  |      |      | 400  |
| Base Capacity (vph)     | 327  | 446  | 257  | 450  | 211  | 2360 | 2016 | 954  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.48 | 0.19 | 0.04 | 0.00 | 0.58 | 0.47 | 0.81 | 0.13 |

## Intersection Summary

# HCM 2010 Signalized Intersection Summary

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Volume (veh/h)               | 144                                                                               | 2                                                                                 | 78                                                                                | 9                                                                                 | 2                                                                                 | 0                                                                                 | 113                                                                                 | 1015                                                                                | 7                                                                                   | 0                                                                                   | 1522                                                                                | 114                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 155                                                                               | 2                                                                                 | 84                                                                                | 10                                                                                | 2                                                                                 | 0                                                                                 | 122                                                                                 | 1091                                                                                | 8                                                                                   | 0                                                                                   | 1637                                                                                | 123                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 384                                                                               | 4                                                                                 | 383                                                                               | 249                                                                               | 450                                                                               | 0                                                                                 | 202                                                                                 | 2404                                                                                | 18                                                                                  | 1                                                                                   | 2019                                                                                | 903                                                                                 |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.00                                                                              | 0.06                                                                                | 0.67                                                                                | 0.67                                                                                | 0.00                                                                                | 0.57                                                                                | 0.57                                                                                |
| Sat Flow, veh/h              | 1343                                                                              | 17                                                                                | 1583                                                                              | 1306                                                                              | 1863                                                                              | 0                                                                                 | 3442                                                                                | 3601                                                                                | 26                                                                                  | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 157                                                                               | 0                                                                                 | 84                                                                                | 10                                                                                | 2                                                                                 | 0                                                                                 | 122                                                                                 | 536                                                                                 | 563                                                                                 | 0                                                                                   | 1637                                                                                | 123                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1360                                                                              | 0                                                                                 | 1583                                                                              | 1306                                                                              | 1863                                                                              | 0                                                                                 | 1721                                                                                | 1770                                                                                | 1858                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 11.5                                                                              | 0.0                                                                               | 5.1                                                                               | 0.8                                                                               | 0.1                                                                               | 0.0                                                                               | 4.2                                                                                 | 17.3                                                                                | 17.3                                                                                | 0.0                                                                                 | 44.3                                                                                | 4.3                                                                                 |
| Cycle Q Clear(g_c), s        | 12.6                                                                              | 0.0                                                                               | 5.1                                                                               | 12.4                                                                              | 0.1                                                                               | 0.0                                                                               | 4.2                                                                                 | 17.3                                                                                | 17.3                                                                                | 0.0                                                                                 | 44.3                                                                                | 4.3                                                                                 |
| Prop In Lane                 | 0.99                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 0.01                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 388                                                                               | 0                                                                                 | 383                                                                               | 249                                                                               | 450                                                                               | 0                                                                                 | 202                                                                                 | 1181                                                                                | 1240                                                                                | 1                                                                                   | 2019                                                                                | 903                                                                                 |
| V/C Ratio(X)                 | 0.40                                                                              | 0.00                                                                              | 0.22                                                                              | 0.04                                                                              | 0.00                                                                              | 0.00                                                                              | 0.60                                                                                | 0.45                                                                                | 0.45                                                                                | 0.00                                                                                | 0.81                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 388                                                                               | 0                                                                                 | 383                                                                               | 249                                                                               | 450                                                                               | 0                                                                                 | 212                                                                                 | 1181                                                                                | 1240                                                                                | 95                                                                                  | 2019                                                                                | 903                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 39.8                                                                              | 0.0                                                                               | 36.4                                                                              | 44.2                                                                              | 34.5                                                                              | 0.0                                                                               | 55.1                                                                                | 9.5                                                                                 | 9.5                                                                                 | 0.0                                                                                 | 20.6                                                                                | 12.0                                                                                |
| Incr Delay (d2), s/veh       | 3.1                                                                               | 0.0                                                                               | 1.3                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 2.9                                                                                 | 1.3                                                                                 | 1.2                                                                                 | 0.0                                                                                 | 3.7                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.8                                                                               | 0.0                                                                               | 2.4                                                                               | 0.3                                                                               | 0.1                                                                               | 0.0                                                                               | 2.1                                                                                 | 8.8                                                                                 | 9.2                                                                                 | 0.0                                                                                 | 22.6                                                                                | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 42.9                                                                              | 0.0                                                                               | 37.8                                                                              | 44.5                                                                              | 34.6                                                                              | 0.0                                                                               | 58.1                                                                                | 10.8                                                                                | 10.7                                                                                | 0.0                                                                                 | 24.2                                                                                | 12.3                                                                                |
| LnGrp LOS                    | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 | C                                                                                 |                                                                                   | E                                                                                   | B                                                                                   | B                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 241                                                                               |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 1221                                                                                |                                                                                     |                                                                                     | 1760                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 41.1                                                                              |                                                                                   |                                                                                   | 42.8                                                                              |                                                                                   |                                                                                     | 15.5                                                                                |                                                                                     |                                                                                     | 23.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 33.9                                                                              | 0.0                                                                               | 86.1                                                                              |                                                                                   | 33.9                                                                              | 11.6                                                                                | 74.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.9                                                                               | 4.6                                                                               | 6.0                                                                               |                                                                                   | 4.9                                                                               | 4.6                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 29.0                                                                              | 6.4                                                                               | 69.1                                                                              |                                                                                   | 29.0                                                                              | 7.4                                                                                 | 68.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 15.4                                                                              | 0.0                                                                               | 20.3                                                                              |                                                                                   | 14.6                                                                              | 7.2                                                                                 | 47.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.6                                                                               | 0.0                                                                               | 25.6                                                                              |                                                                                   | 0.6                                                                               | 0.0                                                                                 | 15.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017



| Lane Group           | WBL   | WBR   | NBT   | NBR   | SBL   | SBT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 324   | 118   | 930   | 306   | 174   | 1206  |
| Turn Type            | Prot  | Perm  | NA    | Perm  | Prot  | NA    |
| Protected Phases     | 8     |       | 2     |       | 1     | 6     |
| Permitted Phases     |       | 8     |       | 2     |       |       |
| Detector Phase       | 8     | 8     | 2     | 2     | 1     | 6     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 8.0   | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 38.0  | 38.0  | 20.0  | 20.0  | 11.0  | 39.0  |
| Total Split (s)      | 46.0  | 46.0  | 45.0  | 45.0  | 29.0  | 74.0  |
| Total Split (%)      | 38.3% | 38.3% | 37.5% | 37.5% | 24.2% | 61.7% |
| Yellow Time (s)      | 4.0   | 4.0   | 6.0   | 6.0   | 4.0   | 6.0   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 7.0   | 7.0   | 5.0   | 7.0   |
| Lead/Lag             |       |       | Lag   | Lag   | Lead  |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | None  | None  | Max   | Max   | None  | Max   |
| Act Effect Green (s) | 24.5  | 24.5  | 47.1  | 47.1  | 15.1  | 67.3  |
| Actuated g/C Ratio   | 0.24  | 0.24  | 0.45  | 0.45  | 0.15  | 0.65  |
| v/c Ratio            | 0.83  | 0.27  | 0.43  | 0.40  | 0.72  | 0.57  |
| Control Delay        | 55.1  | 6.8   | 21.9  | 10.7  | 58.9  | 12.3  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 55.1  | 6.8   | 21.9  | 10.7  | 58.9  | 12.3  |
| LOS                  | E     | A     | C     | B     | E     | B     |
| Approach Delay       | 42.2  |       | 19.1  |       |       | 18.2  |
| Approach LOS         | D     |       | B     |       |       | B     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 103.8

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 22.0

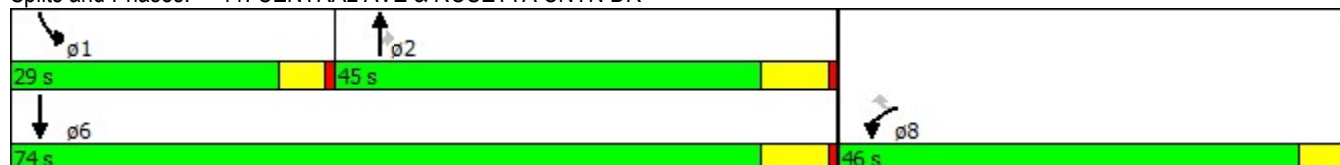
Intersection LOS: C

Intersection Capacity Utilization 61.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: CENTRAL AVE & ROSETTA CNYN DR



## Queues

## 11: CENTRAL AVE &amp; ROSETTA CNYN DR

1/27/2017



| Lane Group              | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 348  | 127  | 1000 | 329  | 187  | 1297 |
| v/c Ratio               | 0.83 | 0.27 | 0.43 | 0.40 | 0.72 | 0.57 |
| Control Delay           | 55.1 | 6.8  | 21.9 | 10.7 | 58.9 | 12.3 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 55.1 | 6.8  | 21.9 | 10.7 | 58.9 | 12.3 |
| Queue Length 50th (ft)  | 220  | 0    | 159  | 51   | 120  | 227  |
| Queue Length 95th (ft)  | 324  | 43   | 260  | 153  | 200  | 373  |
| Internal Link Dist (ft) | 1570 |      | 1523 |      |      | 2926 |
| Turn Bay Length (ft)    |      |      |      | 100  | 250  |      |
| Base Capacity (vph)     | 701  | 704  | 2307 | 825  | 410  | 2293 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.50 | 0.18 | 0.43 | 0.40 | 0.46 | 0.57 |

## Intersection Summary

# HCM 2010 Signalized Intersection Summary

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Volume (veh/h)               | 324                                                                               | 118                                                                               | 930                                                                               | 306                                                                               | 174                                                                               | 1206                                                                              |   |      |
| Number                       | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |      |
| Adj Flow Rate, veh/h         | 348                                                                               | 127                                                                               | 1000                                                                              | 329                                                                               | 187                                                                               | 1297                                                                              |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |   |      |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              |   |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |      |
| Cap, veh/h                   | 400                                                                               | 357                                                                               | 2416                                                                              | 752                                                                               | 236                                                                               | 2325                                                                              |   |      |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.48                                                                              | 0.48                                                                              | 0.13                                                                              | 0.66                                                                              |   |      |
| Sat Flow, veh/h              | 1774                                                                              | 1583                                                                              | 5253                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              |   |      |
| Grp Volume(v), veh/h         | 348                                                                               | 127                                                                               | 1000                                                                              | 329                                                                               | 187                                                                               | 1297                                                                              |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1583                                                                              | 1695                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              |   |      |
| Q Serve(g_s), s              | 19.3                                                                              | 6.9                                                                               | 13.1                                                                              | 14.0                                                                              | 10.4                                                                              | 20.2                                                                              |   |      |
| Cycle Q Clear(g_c), s        | 19.3                                                                              | 6.9                                                                               | 13.1                                                                              | 14.0                                                                              | 10.4                                                                              | 20.2                                                                              |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Lane Grp Cap(c), veh/h       | 400                                                                               | 357                                                                               | 2416                                                                              | 752                                                                               | 236                                                                               | 2325                                                                              |   |      |
| V/C Ratio(X)                 | 0.87                                                                              | 0.36                                                                              | 0.41                                                                              | 0.44                                                                              | 0.79                                                                              | 0.56                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 713                                                                               | 637                                                                               | 2416                                                                              | 752                                                                               | 417                                                                               | 2325                                                                              |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 38.1                                                                              | 33.3                                                                              | 17.5                                                                              | 17.7                                                                              | 42.9                                                                              | 9.5                                                                               |   |      |
| Incr Delay (d2), s/veh       | 2.3                                                                               | 0.2                                                                               | 0.5                                                                               | 1.8                                                                               | 2.3                                                                               | 1.0                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 9.7                                                                               | 3.0                                                                               | 6.2                                                                               | 6.5                                                                               | 5.2                                                                               | 10.0                                                                              |   |      |
| LnGrp Delay(d),s/veh         | 40.4                                                                              | 33.5                                                                              | 18.0                                                                              | 19.6                                                                              | 45.2                                                                              | 10.4                                                                              |   |      |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | B                                                                                 |   |      |
| Approach Vol, veh/h          | 475                                                                               |                                                                                   | 1329                                                                              |                                                                                   |                                                                                   | 1484                                                                              |   |      |
| Approach Delay, s/veh        | 38.5                                                                              |                                                                                   | 18.4                                                                              |                                                                                   |                                                                                   | 14.8                                                                              |   |      |
| Approach LOS                 | D                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |   | 8    |
| Phs Duration (G+Y+Rc), s     | 18.5                                                                              | 55.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 74.0                                                                              |   | 28.0 |
| Change Period (Y+Rc), s      | 5.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               |   | 5.0  |
| Max Green Setting (Gmax), s  | 24.0                                                                              | 38.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 67.0                                                                              |   | 41.0 |
| Max Q Clear Time (g_c+I1), s | 13.4                                                                              | 17.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 23.2                                                                              |   | 22.3 |
| Green Ext Time (p_c), s      | 0.2                                                                               | 17.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.2                                                                              |   | 0.7  |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 19.7                                                                              |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

HCM 2010 TWSC  
12: COLLIER AVE & PROJECT ACCESS

1/27/2017

Intersection

Int Delay, s/veh 2.2

| Movement                 | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 191  | 682  | 403  | 38   | 0    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 200  | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 208  | 741  | 438  | 41   | 0    | 66   |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 479    | 0      | 1245   |
| Stage 1              | -      | -      | 459    |
| Stage 2              | -      | -      | 786    |
| Critical Hdwy        | 5.34   | -      | 6.29   |
| Critical Hdwy Stg 1  | -      | -      | 6.64   |
| Critical Hdwy Stg 2  | -      | -      | 5.84   |
| Follow-up Hdwy       | 3.12   | -      | 3.67   |
| Pot Cap-1 Maneuver   | 693    | -      | 197    |
| Stage 1              | -      | -      | 527    |
| Stage 2              | -      | -      | 398    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 693    | -      | 138    |
| Mov Cap-2 Maneuver   | -      | -      | 138    |
| Stage 1              | -      | -      | 527    |
| Stage 2              | -      | -      | 279    |

| Approach             | SE  | NW | SW   |
|----------------------|-----|----|------|
| HCM Control Delay, s | 2.7 | 0  | 11.2 |
| HCM LOS              |     |    | B    |

| Minor Lane/Major Mvmt | NWT | NWR | SEL  | SETSWLn1 |
|-----------------------|-----|-----|------|----------|
| Capacity (veh/h)      | -   | -   | 693  | - 648    |
| HCM Lane V/C Ratio    | -   | -   | 0.3  | - 0.102  |
| HCM Control Delay (s) | -   | -   | 12.4 | - 11.2   |
| HCM Lane LOS          | -   | -   | B    | - B      |
| HCM 95th %tile Q(veh) | -   | -   | 1.3  | - 0.3    |

# Lanes and Geometrics

## 12: COLLIER AVE & PROJECT ACCESS

1/27/2017



| Lane Group          | SEL   | SET  | NWT   | NWR  | SWL  | SWR   |
|---------------------|-------|------|-------|------|------|-------|
| Lane Configurations |       |      |       |      |      |       |
| Ideal Flow (vphpl)  | 1900  | 1900 | 1900  | 1900 | 1900 | 1900  |
| Lane Width (ft)     | 12    | 12   | 12    | 12   | 12   | 12    |
| Grade (%)           |       | 0%   | 0%    |      | 0%   |       |
| Storage Length (ft) | 200   |      |       | 0    | 0    | 0     |
| Storage Lanes       | 1     |      |       | 0    | 0    | 1     |
| Taper Length (ft)   | 25    |      |       |      | 25   |       |
| Lane Util. Factor   | 1.00  | 0.95 | 0.91  | 0.91 | 1.00 | 1.00  |
| Ped Bike Factor     |       |      |       |      |      |       |
| Frt                 |       |      | 0.987 |      |      | 0.865 |
| Flt Protected       | 0.950 |      |       |      |      |       |
| Satd. Flow (prot)   | 1770  | 3539 | 5019  | 0    | 0    | 1611  |
| Flt Permitted       | 0.950 |      |       |      |      |       |
| Satd. Flow (perm)   | 1770  | 3539 | 5019  | 0    | 0    | 1611  |
| Link Speed (mph)    |       | 30   | 30    |      | 30   |       |
| Link Distance (ft)  |       | 543  | 118   |      | 355  |       |
| Travel Time (s)     |       | 12.3 | 2.7   |      | 8.1  |       |

### Intersection Summary

Area Type: Other



**Intersection**

Int Delay, s/veh 6.3

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 5    | 954  | 5    | 6    | 981  | 111  | 35   | 3    | 2    | 1    | 1    | 3    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | 50   | -    | -    | 50   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 5    | 994  | 5    | 6    | 1022 | 116  | 36   | 3    | 2    | 1    | 1    | 3    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor2 |       |       | Minor1 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 1138   | 0 | 0 | 999    | 0 | 0 | 2099   | 2101  | 1080  | 2101   | 2157  | 996   |
| Stage 1              | -      | - | - | -      | - | - | 1092   | 1092  | -     | 1007   | 1007  | -     |
| Stage 2              | -      | - | - | -      | - | - | 1007   | 1009  | -     | 1094   | 1150  | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 614    | - | - | 693    | - | - | 38     | 52    | 265   | 38     | 48    | 297   |
| Stage 1              | -      | - | - | -      | - | - | 260    | 291   | -     | 290    | 319   | -     |
| Stage 2              | -      | - | - | -      | - | - | 290    | 318   | -     | 259    | 273   | -     |
| Platoon blocked, %   |        | - | - |        | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 614    | - | - | 693    | - | - | ~ 36   | 50    | 265   | 35     | 46    | 297   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | ~ 36   | 50    | -     | 35     | 46    | -     |
| Stage 1              | -      | - | - | -      | - | - | 255    | 284   | -     | 285    | 313   | -     |
| Stage 2              | -      | - | - | -      | - | - | 281    | 312   | -     | 248    | 266   | -     |

| Approach             | EB  | WB  | SE       | NW   |
|----------------------|-----|-----|----------|------|
| HCM Control Delay, s | 0.1 | 0.1 | \$ 319.2 | 50.3 |
| HCM LOS              |     |     | F        | F    |

| Minor Lane/Major Mvmt | NWLn1 | NWLn2 | EBL   | EBT | EBR | WBL   | WBT | WBR | SELn1  | SELn2 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|--------|-------|
| Capacity (veh/h)      | 40    | 297   | 614   | -   | -   | 693   | -   | -   | 37     | 265   |
| HCM Lane V/C Ratio    | 0.052 | 0.011 | 0.008 | -   | -   | 0.009 | -   | -   | 1.07   | 0.008 |
| HCM Control Delay (s) | 99.9  | 17.3  | 10.9  | 0   | -   | 10.2  | 0   | -   | \$ 335 | 18.7  |
| HCM Lane LOS          | F     | C     | B     | A   | -   | B     | A   | -   | F      | C     |
| HCM 95th %tile Q(veh) | 0.2   | 0     | 0     | -   | -   | 0     | -   | -   | 4      | 0     |

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

# Lanes and Geometrics

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017

|                             |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                  | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations         |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Ideal Flow (vphpl)          | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)             | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)         | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 50                                                                                  | 0                                                                                   |                                                                                     | 50                                                                                  |
| Storage Lanes               | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)           | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)            |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)          |                                                                                   | 1687                                                                              |                                                                                   |                                                                                   | 935                                                                               |                                                                                   |                                                                                    | 885                                                                                 |                                                                                     |                                                                                     | 1732                                                                                |                                                                                     |
| Travel Time (s)             |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |
| <b>Intersection Summary</b> |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                  | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017



| Lane Group           | SEL   | SET   | SER   | NWL   | NWT   | NEL   | NET   | NER   | SWL   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |
| Volume (vph)         | 7     | 149   | 122   | 953   | 206   | 89    | 6     | 871   | 26    | 18    |
| Turn Type            | Split | NA    | Perm  | Split | NA    | Perm  | NA    | pm+ov | Perm  | NA    |
| Protected Phases     | 6     | 6     |       | 2     | 2     |       | 4     | 2     |       | 8     |
| Permitted Phases     |       |       | 6     |       |       | 4     |       | 4     | 8     |       |
| Detector Phase       | 6     | 6     | 6     | 2     | 2     | 4     | 4     | 2     | 8     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 6.0   | 6.0   | 6.0   | 7.0   | 7.0   | 9.0   | 9.0   | 7.0   | 9.0   | 9.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 20.0  | 20.0  | 80.0  | 80.0  | 20.0  | 20.0  | 80.0  | 20.0  | 20.0  |
| Total Split (%)      | 16.7% | 16.7% | 16.7% | 66.7% | 66.7% | 16.7% | 16.7% | 66.7% | 16.7% | 16.7% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 3.9   | 3.9   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |       | 4.9   | 5.3   |       | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |       |       |
| Recall Mode          | Max   | Max   | Max   | C-Max | C-Max | None  | None  | C-Max | None  | None  |
| Act Effct Green (s)  | 14.7  | 14.7  | 14.7  | 77.1  | 77.1  |       | 12.7  | 94.7  |       | 12.3  |
| Actuated g/C Ratio   | 0.12  | 0.12  | 0.12  | 0.64  | 0.64  |       | 0.11  | 0.79  |       | 0.10  |
| v/c Ratio            | 0.03  | 0.69  | 0.42  | 0.88  | 0.20  |       | 0.70  | 0.71  |       | 0.44  |
| Control Delay        | 47.0  | 66.9  | 12.6  | 17.8  | 2.6   |       | 77.2  | 8.0   |       | 49.2  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |
| Total Delay          | 47.0  | 66.9  | 12.6  | 17.8  | 2.6   |       | 77.2  | 8.0   |       | 49.2  |
| LOS                  | D     | E     | B     | B     | A     |       | E     | A     |       | D     |
| Approach Delay       |       | 42.6  |       |       | 14.9  |       | 14.9  |       |       | 49.2  |
| Approach LOS         |       | D     |       |       | B     |       | B     |       |       | D     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 105 (88%), Referenced to phase 2:NWTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 84.0%

ICU Level of Service E

Analysis Period (min) 15

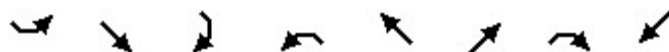
Splits and Phases: 2: RIVERSIDE DR & COLLIER AVE

|        |      |      |
|--------|------|------|
|        |      |      |
| ø2 (R) | ø6   | ø4   |
| 80 s   | 20 s | 20 s |
|        |      | ø8   |
|        |      | 20 s |

## Queues

## 2: RIVERSIDE DR &amp; COLLIER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL   | NWT  | NET  | NER  | SWT  |
|-------------------------|------|------|------|-------|------|------|------|------|
| Lane Group Flow (vph)   | 7    | 157  | 128  | 1003  | 238  | 100  | 917  | 65   |
| v/c Ratio               | 0.03 | 0.69 | 0.42 | 0.88  | 0.20 | 0.70 | 0.71 | 0.44 |
| Control Delay           | 47.0 | 66.9 | 12.6 | 17.8  | 2.6  | 77.2 | 8.0  | 49.2 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 47.0 | 66.9 | 12.6 | 17.8  | 2.6  | 77.2 | 8.0  | 49.2 |
| Queue Length 50th (ft)  | 5    | 118  | 0    | 422   | 21   | 76   | 208  | 37   |
| Queue Length 95th (ft)  | 20   | #208 | 57   | #1000 | 42   | #137 | 334  | 83   |
| Internal Link Dist (ft) |      | 1295 |      |       | 623  | 2459 |      | 691  |
| Turn Bay Length (ft)    | 200  |      | 200  |       |      |      | 360  |      |
| Base Capacity (vph)     | 216  | 228  | 306  | 1136  | 1183 | 168  | 1292 | 174  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.03 | 0.69 | 0.42 | 0.88  | 0.20 | 0.60 | 0.71 | 0.37 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 2010 Signalized Intersection Summary

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017

|                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Volume (veh/h)                                                                                      | 7                                                                                 | 149                                                                               | 122                                                                               | 953                                                                               | 206                                                                               | 20                                                                                | 89                                                                                 | 6                                                                                   | 871                                                                                 | 26                                                                                  | 18                                                                                  | 18                                                                                  |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                                                | 7                                                                                 | 157                                                                               | 128                                                                               | 1003                                                                              | 217                                                                               | 21                                                                                | 94                                                                                 | 6                                                                                   | 917                                                                                 | 27                                                                                  | 19                                                                                  | 19                                                                                  |
| Adj No. of Lanes                                                                                    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                                                    | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 1225                                                                              | 119                                                                               | 164                                                                                | 7                                                                                   | 1359                                                                                | 49                                                                                  | 33                                                                                  | 17                                                                                  |
| Arrive On Green                                                                                     | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.13                                                                               | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                |
| Sat Flow, veh/h                                                                                     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1672                                                                              | 162                                                                               | 838                                                                                | 59                                                                                  | 1583                                                                                | 52                                                                                  | 266                                                                                 | 131                                                                                 |
| Grp Volume(v), veh/h                                                                                | 7                                                                                 | 157                                                                               | 128                                                                               | 1003                                                                              | 0                                                                                 | 238                                                                               | 100                                                                                | 0                                                                                   | 917                                                                                 | 65                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 0                                                                                 | 1834                                                                              | 897                                                                                | 0                                                                                   | 1583                                                                                | 449                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s                                                                                     | 0.4                                                                               | 9.7                                                                               | 9.3                                                                               | 41.8                                                                              | 0.0                                                                               | 4.8                                                                               | 0.0                                                                                | 0.0                                                                                 | 15.1                                                                                | 1.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 0.4                                                                               | 9.7                                                                               | 9.3                                                                               | 41.8                                                                              | 0.0                                                                               | 4.8                                                                               | 13.2                                                                               | 0.0                                                                                 | 15.1                                                                                | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                                                        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.09                                                                              | 0.94                                                                               |                                                                                     | 1.00                                                                                | 0.42                                                                                |                                                                                     | 0.29                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1344                                                                              | 171                                                                                | 0                                                                                   | 1359                                                                                | 99                                                                                  | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                                                                                        | 0.03                                                                              | 0.69                                                                              | 0.66                                                                              | 0.77                                                                              | 0.00                                                                              | 0.18                                                                              | 0.58                                                                               | 0.00                                                                                | 0.67                                                                                | 0.66                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1344                                                                              | 171                                                                                | 0                                                                                   | 1359                                                                                | 99                                                                                  | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 46.4                                                                              | 50.5                                                                              | 50.3                                                                              | 9.9                                                                               | 0.0                                                                               | 4.9                                                                               | 51.6                                                                               | 0.0                                                                                 | 2.3                                                                                 | 51.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                                                              | 0.3                                                                               | 15.7                                                                              | 16.3                                                                              | 4.5                                                                               | 0.0                                                                               | 0.3                                                                               | 3.4                                                                                | 0.0                                                                                 | 1.1                                                                                 | 11.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 0.2                                                                               | 6.0                                                                               | 4.9                                                                               | 21.7                                                                              | 0.0                                                                               | 2.5                                                                               | 3.4                                                                                | 0.0                                                                                 | 30.7                                                                                | 2.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 46.7                                                                              | 66.1                                                                              | 66.5                                                                              | 14.4                                                                              | 0.0                                                                               | 5.2                                                                               | 55.0                                                                               | 0.0                                                                                 | 3.4                                                                                 | 63.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                                                           | D                                                                                 | E                                                                                 | E                                                                                 | B                                                                                 |                                                                                   | A                                                                                 | E                                                                                  |                                                                                     | A                                                                                   | E                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h                                                                                 |                                                                                   | 292                                                                               |                                                                                   |                                                                                   | 1241                                                                              |                                                                                   |                                                                                    | 1017                                                                                |                                                                                     |                                                                                     | 65                                                                                  |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 65.8                                                                              |                                                                                   |                                                                                   | 12.6                                                                              |                                                                                   |                                                                                    | 8.4                                                                                 |                                                                                     |                                                                                     | 63.0                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 93.6                                                                              |                                                                                   | 20.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                    | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 5.3                                                                               |                                                                                   | * 5.3                                                                             |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 74.7                                                                              |                                                                                   | * 15                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                        |                                                                                   | 44.8                                                                              |                                                                                   | 18.1                                                                              |                                                                                   | 12.7                                                                              |                                                                                    | 17.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 3.1                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.2                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 18.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 862                                                                               | 251                                                                               | 63                                                                                | 41                                                                                | 161                                                                               | 451                                                                               | 186                                                                                | 327                                                                                 | 385                                                                                 | 220                                                                                 | 750                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                               | NA                                                                                  | Prot                                                                                | NA                                                                                  | pm+ov                                                                               |
| Protected Phases     | 1                                                                                 | 6                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 1                                                                                 | 6                                                                                 | 6                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 11.6                                                                              | 30.5                                                                              | 30.5                                                                              | 8.6                                                                               | 18.0                                                                              | 11.6                                                                              | 8.6                                                                                | 20.0                                                                                | 11.6                                                                                | 42.3                                                                                | 11.6                                                                                |
| Total Split (s)      | 44.7                                                                              | 50.9                                                                              | 50.9                                                                              | 11.8                                                                              | 18.0                                                                              | 25.7                                                                              | 15.0                                                                               | 31.6                                                                                | 25.7                                                                                | 42.3                                                                                | 44.7                                                                                |
| Total Split (%)      | 37.3%                                                                             | 42.4%                                                                             | 42.4%                                                                             | 9.8%                                                                              | 15.0%                                                                             | 21.4%                                                                             | 12.5%                                                                              | 26.3%                                                                               | 21.4%                                                                               | 35.3%                                                                               | 37.3%                                                                               |
| Yellow Time (s)      | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 3.6                                                                               | 3.6                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 4.6                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | C-Max                                                                             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | C-Max                                                                               |
| Act Effct Green (s)  | 52.2                                                                              | 59.3                                                                              | 59.3                                                                              | 7.4                                                                               | 12.7                                                                              | 35.9                                                                              | 9.7                                                                                | 17.4                                                                                | 17.9                                                                                | 25.6                                                                                | 83.1                                                                                |
| Actuated g/C Ratio   | 0.44                                                                              | 0.49                                                                              | 0.49                                                                              | 0.06                                                                              | 0.11                                                                              | 0.30                                                                              | 0.08                                                                               | 0.14                                                                                | 0.15                                                                                | 0.21                                                                                | 0.69                                                                                |
| v/c Ratio            | 0.60                                                                              | 0.15                                                                              | 0.08                                                                              | 0.40                                                                              | 0.45                                                                              | 0.51                                                                              | 0.70                                                                               | 0.76                                                                                | 0.78                                                                                | 0.58                                                                                | 0.39                                                                                |
| Control Delay        | 25.5                                                                              | 16.5                                                                              | 0.2                                                                               | 64.0                                                                              | 54.6                                                                              | 26.0                                                                              | 67.3                                                                               | 57.3                                                                                | 44.6                                                                                | 46.2                                                                                | 11.4                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 25.5                                                                              | 16.5                                                                              | 0.2                                                                               | 64.0                                                                              | 54.6                                                                              | 26.0                                                                              | 67.3                                                                               | 57.3                                                                                | 44.6                                                                                | 46.2                                                                                | 11.4                                                                                |
| LOS                  | C                                                                                 | B                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | E                                                                                  | E                                                                                   | D                                                                                   | D                                                                                   | B                                                                                   |
| Approach Delay       |                                                                                   | 22.2                                                                              |                                                                                   |                                                                                   | 35.4                                                                              |                                                                                   |                                                                                    | 60.6                                                                                |                                                                                     | 26.5                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 17 (14%), Referenced to phase 1:SEL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 31.8

Intersection LOS: C

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15

### Splits and Phases: 3: CENTRAL AVE & COLLIER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| ø1 (R)                                                                              | ø2                                                                                  | ø3                                                                                  | ø4                                                                                  |
| 44.7 s                                                                              | 18 s                                                                                | 25.7 s                                                                              | 31.6 s                                                                              |
|  |  |  |  |
| ø5                                                                                  | ø6                                                                                  | ø7                                                                                  | ø8                                                                                  |
| 11.8 s                                                                              | 50.9 s                                                                              | 15 s                                                                                | 42.3 s                                                                              |

## Queues

## 3: CENTRAL AVE &amp; COLLIER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL  | NWT  | NWR  | NEL  | NET  | SWL  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 898  | 261  | 66   | 43   | 168  | 470  | 194  | 389  | 401  | 229  | 781  |
| v/c Ratio               | 0.60 | 0.15 | 0.08 | 0.40 | 0.45 | 0.51 | 0.70 | 0.76 | 0.78 | 0.58 | 0.39 |
| Control Delay           | 25.5 | 16.5 | 0.2  | 64.0 | 54.6 | 26.0 | 67.3 | 57.3 | 44.6 | 46.2 | 11.4 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 25.5 | 16.5 | 0.2  | 64.0 | 54.6 | 26.0 | 67.3 | 57.3 | 44.6 | 46.2 | 11.4 |
| Queue Length 50th (ft)  | 239  | 55   | 0    | 33   | 65   | 119  | 76   | 149  | 163  | 178  | 138  |
| Queue Length 95th (ft)  | 360  | 87   | m0   | 70   | 102  | 171  | 115  | 195  | 211  | 255  | 203  |
| Internal Link Dist (ft) | 1881 |      |      |      | 463  |      |      | 1625 |      | 251  |      |
| Turn Bay Length (ft)    | 650  |      | 220  | 100  |      | 100  | 140  |      |      |      |      |
| Base Capacity (vph)     | 1493 | 1749 | 856  | 120  | 374  | 998  | 297  | 770  | 603  | 574  | 1982 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.60 | 0.15 | 0.08 | 0.36 | 0.45 | 0.47 | 0.65 | 0.51 | 0.67 | 0.40 | 0.39 |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|
| Movement                                  | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |  |  |  |  |
| Lane Configurations                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)                            | 862                                                                               | 251                                                                               | 63                                                                                | 41                                                                                | 161                                                                               | 451                                                                               | 186                                                                                | 327                                                                                 | 46                                                                                  | 385                                                                                 | 220                                                                                 | 750                                                                                 |  |  |  |  |
| Number                                    | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |  |  |  |  |
| Initial Q (Qb), veh                       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |  |  |  |  |
| Ped-Bike Adj(A_pbT)                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |  |  |  |  |
| Parking Bus, Adj                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Adj Sat Flow, veh/h/ln                    | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |  |  |  |  |
| Adj Flow Rate, veh/h                      | 898                                                                               | 261                                                                               | 66                                                                                | 43                                                                                | 168                                                                               | 470                                                                               | 194                                                                                | 341                                                                                 | 48                                                                                  | 401                                                                                 | 229                                                                                 | 781                                                                                 |  |  |  |  |
| Adj No. of Lanes                          | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   |  |  |  |  |
| Peak Hour Factor                          | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |  |  |  |  |
| Percent Heavy Veh, %                      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |  |  |  |  |
| Cap, veh/h                                | 1292                                                                              | 1756                                                                              | 785                                                                               | 66                                                                                | 560                                                                               | 841                                                                               | 276                                                                                | 493                                                                                 | 69                                                                                  | 494                                                                                 | 413                                                                                 | 1663                                                                                |  |  |  |  |
| Arrive On Green                           | 0.38                                                                              | 0.50                                                                              | 0.50                                                                              | 0.04                                                                              | 0.16                                                                              | 0.16                                                                              | 0.08                                                                               | 0.16                                                                                | 0.16                                                                                | 0.05                                                                                | 0.07                                                                                | 0.07                                                                                |  |  |  |  |
| Sat Flow, veh/h                           | 3442                                                                              | 3539                                                                              | 1583                                                                              | 1774                                                                              | 3539                                                                              | 2787                                                                              | 3442                                                                               | 3120                                                                                | 435                                                                                 | 3442                                                                                | 1863                                                                                | 2787                                                                                |  |  |  |  |
| Grp Volume(v), veh/h                      | 898                                                                               | 261                                                                               | 66                                                                                | 43                                                                                | 168                                                                               | 470                                                                               | 194                                                                                | 192                                                                                 | 197                                                                                 | 401                                                                                 | 229                                                                                 | 781                                                                                 |  |  |  |  |
| Grp Sat Flow(s),veh/h/ln                  | 1721                                                                              | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 1393                                                                              | 1721                                                                               | 1770                                                                                | 1786                                                                                | 1721                                                                                | 1863                                                                                | 1393                                                                                |  |  |  |  |
| Q Serve(g_s), s                           | 26.5                                                                              | 4.8                                                                               | 2.6                                                                               | 2.9                                                                               | 5.0                                                                               | 17.0                                                                              | 6.6                                                                                | 12.3                                                                                | 12.5                                                                                | 13.9                                                                                | 14.3                                                                                | 17.8                                                                                |  |  |  |  |
| Cycle Q Clear(g_c), s                     | 26.5                                                                              | 4.8                                                                               | 2.6                                                                               | 2.9                                                                               | 5.0                                                                               | 17.0                                                                              | 6.6                                                                                | 12.3                                                                                | 12.5                                                                                | 13.9                                                                                | 14.3                                                                                | 17.8                                                                                |  |  |  |  |
| Prop In Lane                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.24                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |  |  |  |  |
| Lane Grp Cap(c), veh/h                    | 1292                                                                              | 1756                                                                              | 785                                                                               | 66                                                                                | 560                                                                               | 841                                                                               | 276                                                                                | 280                                                                                 | 282                                                                                 | 494                                                                                 | 413                                                                                 | 1663                                                                                |  |  |  |  |
| V/C Ratio(X)                              | 0.70                                                                              | 0.15                                                                              | 0.08                                                                              | 0.65                                                                              | 0.30                                                                              | 0.56                                                                              | 0.70                                                                               | 0.69                                                                                | 0.70                                                                                | 0.81                                                                                | 0.55                                                                                | 0.47                                                                                |  |  |  |  |
| Avail Cap(c_a), veh/h                     | 1292                                                                              | 1756                                                                              | 785                                                                               | 106                                                                               | 560                                                                               | 841                                                                               | 298                                                                                | 388                                                                                 | 391                                                                                 | 605                                                                                 | 574                                                                                 | 1905                                                                                |  |  |  |  |
| HCM Platoon Ratio                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |  |  |  |  |
| Upstream Filter(I)                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Uniform Delay (d), s/veh                  | 31.7                                                                              | 16.4                                                                              | 15.9                                                                              | 57.0                                                                              | 44.6                                                                              | 35.2                                                                              | 53.8                                                                               | 47.7                                                                                | 47.8                                                                                | 55.6                                                                                | 49.9                                                                                | 15.9                                                                                |  |  |  |  |
| Incr Delay (d2), s/veh                    | 1.4                                                                               | 0.2                                                                               | 0.2                                                                               | 4.0                                                                               | 1.4                                                                               | 2.7                                                                               | 5.3                                                                                | 1.1                                                                                 | 1.2                                                                                 | 5.6                                                                                 | 0.4                                                                                 | 0.1                                                                                 |  |  |  |  |
| Initial Q Delay(d3),s/veh                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |  |  |  |  |
| %ile BackOfQ(50%),veh/ln                  | 12.8                                                                              | 2.4                                                                               | 1.2                                                                               | 1.5                                                                               | 2.6                                                                               | 6.8                                                                               | 3.3                                                                                | 6.1                                                                                 | 6.3                                                                                 | 7.0                                                                                 | 7.4                                                                                 | 6.9                                                                                 |  |  |  |  |
| LnGrp Delay(d),s/veh                      | 33.1                                                                              | 16.6                                                                              | 16.1                                                                              | 61.0                                                                              | 46.0                                                                              | 37.9                                                                              | 59.1                                                                               | 48.8                                                                                | 49.0                                                                                | 61.1                                                                                | 50.3                                                                                | 16.0                                                                                |  |  |  |  |
| LnGrp LOS                                 | C                                                                                 | B                                                                                 | B                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | E                                                                                   | D                                                                                   | B                                                                                   |  |  |  |  |
| Approach Vol, veh/h                       | 1225                                                                              |                                                                                   |                                                                                   |                                                                                   | 681                                                                               |                                                                                   |                                                                                    |                                                                                     | 583                                                                                 |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach Delay, s/veh                     | 28.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 41.3                                                                              |                                                                                   |                                                                                    |                                                                                     | 52.3                                                                                |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach LOS                              | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Timer                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Assigned Phs                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Phs Duration (G+Y+Rc), s                  | 49.6                                                                              | 24.3                                                                              | 21.8                                                                              | 24.3                                                                              | 9.1                                                                               | 64.8                                                                              | 14.2                                                                               | 31.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Change Period (Y+Rc), s                   | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Green Setting (Gmax), s               | 40.1                                                                              | 12.7                                                                              | 21.1                                                                              | 26.3                                                                              | 7.2                                                                               | 45.6                                                                              | 10.4                                                                               | 37.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Q Clear Time (g_c+I1), s              | 29.5                                                                              | 20.0                                                                              | 16.9                                                                              | 15.3                                                                              | 5.9                                                                               | 7.8                                                                               | 9.6                                                                                | 20.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Green Ext Time (p_c), s                   | 1.6                                                                               | 0.0                                                                               | 0.4                                                                               | 3.7                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                                | 4.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| <b>Intersection Summary</b>               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 Ctrl Delay                       | 36.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 LOS                              | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| <b>Notes</b>                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| User approved changes to right turn type. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |



HCM 2010 TWSC  
4: CRANE ST & COLLIER AVE

1/27/2017

| Intersection             |        |       |       |        |      |      |        |          |       |        |       |       |
|--------------------------|--------|-------|-------|--------|------|------|--------|----------|-------|--------|-------|-------|
| Int Delay, s/veh         | 2.3    |       |       |        |      |      |        |          |       |        |       |       |
|                          |        |       |       |        |      |      |        |          |       |        |       |       |
| Movement                 | SEL    | SET   | SER   | NWL    | NWT  | NWR  | NEL    | NET      | NER   | SWL    | SWT   | SWR   |
| Vol, veh/h               | 0      | 449   | 16    | 8      | 563  | 0    | 42     | 0        | 17    | 35     | 0     | 12    |
| Conflicting Peds, #/hr   | 0      | 0     | 0     | 0      | 0    | 0    | 0      | 0        | 0     | 0      | 0     | 0     |
| Sign Control             | Free   | Free  | Free  | Free   | Free | Free | Stop   | Stop     | Stop  | Stop   | Stop  | Stop  |
| RT Channelized           | -      | -     | None  | -      | -    | None | -      | -        | None  | -      | -     | None  |
| Storage Length           | 0      | -     | -     | 150    | -    | -    | 90     | -        | -     | -      | -     | -     |
| Veh in Median Storage, # | -      | 0     | -     | -      | 0    | -    | -      | 0        | -     | -      | 0     | -     |
| Grade, %                 | -      | 0     | -     | -      | 0    | -    | -      | 0        | -     | -      | 0     | -     |
| Peak Hour Factor         | 93     | 93    | 93    | 93     | 93   | 93   | 93     | 93       | 93    | 93     | 93    | 93    |
| Heavy Vehicles, %        | 2      | 2     | 2     | 2      | 2    | 2    | 2      | 2        | 2     | 2      | 2     | 2     |
| Mvmt Flow                | 0      | 483   | 17    | 9      | 605  | 0    | 45     | 0        | 18    | 38     | 0     | 13    |
|                          |        |       |       |        |      |      |        |          |       |        |       |       |
| Major/Minor              | Major1 |       |       | Major2 |      |      | Minor1 |          |       | Minor2 |       |       |
| Conflicting Flow All     | 605    | 0     | 0     | 500    | 0    | 0    | 1120   | 1114     | 250   | 864    | 1123  | 605   |
| Stage 1                  | -      | -     | -     | -      | -    | -    | 491    | 491      | -     | 623    | 623   | -     |
| Stage 2                  | -      | -     | -     | -      | -    | -    | 629    | 623      | -     | 241    | 500   | -     |
| Critical Hdwy            | 4.12   | -     | -     | 4.14   | -    | -    | 7.33   | 6.53     | 6.93  | 7.33   | 6.53  | 6.23  |
| Critical Hdwy Stg 1      | -      | -     | -     | -      | -    | -    | 6.53   | 5.53     | -     | 6.13   | 5.53  | -     |
| Critical Hdwy Stg 2      | -      | -     | -     | -      | -    | -    | 6.13   | 5.53     | -     | 6.53   | 5.53  | -     |
| Follow-up Hdwy           | 2.218  | -     | -     | 2.22   | -    | -    | 3.519  | 4.019    | 3.319 | 3.519  | 4.019 | 3.319 |
| Pot Cap-1 Maneuver       | 973    | -     | -     | 1060   | -    | -    | 172    | 208      | 751   | 261    | 205   | 497   |
| Stage 1                  | -      | -     | -     | -      | -    | -    | 529    | 547      | -     | 473    | 477   | -     |
| Stage 2                  | -      | -     | -     | -      | -    | -    | 469    | 477      | -     | 742    | 542   | -     |
| Platoon blocked, %       |        | -     | -     |        | -    | -    |        |          |       |        |       |       |
| Mov Cap-1 Maneuver       | 973    | -     | -     | 1060   | -    | -    | 166    | 206      | 751   | 253    | 203   | 497   |
| Mov Cap-2 Maneuver       | -      | -     | -     | -      | -    | -    | 166    | 206      | -     | 253    | 203   | -     |
| Stage 1                  | -      | -     | -     | -      | -    | -    | 529    | 547      | -     | 473    | 473   | -     |
| Stage 2                  | -      | -     | -     | -      | -    | -    | 453    | 473      | -     | 724    | 542   | -     |
|                          |        |       |       |        |      |      |        |          |       |        |       |       |
| Approach                 | SE     |       |       | NW     |      |      | NE     |          |       | SW     |       |       |
| HCM Control Delay, s     | 0      |       |       | 0.1    |      |      | 27.5   |          |       | 20.1   |       |       |
| HCM LOS                  |        |       |       |        |      |      | D      |          |       | C      |       |       |
|                          |        |       |       |        |      |      |        |          |       |        |       |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL   | NWT    | NWR  | SEL  | SET    | SERSWLn1 |       |        |       |       |
| Capacity (veh/h)         | 166    | 751   | 1060  | -      | -    | 973  | -      | -        | 289   |        |       |       |
| HCM Lane V/C Ratio       | 0.272  | 0.024 | 0.008 | -      | -    | -    | -      | -        | 0.175 |        |       |       |
| HCM Control Delay (s)    | 34.6   | 9.9   | 8.4   | -      | -    | 0    | -      | -        | 20.1  |        |       |       |
| HCM Lane LOS             | D      | A     | A     | -      | -    | A    | -      | -        | C     |        |       |       |
| HCM 95th %tile Q(veh)    | 1      | 0.1   | 0     | -      | -    | 0    | -      | -        | 0.6   |        |       |       |

# Lanes and Geometrics

## 4: CRANE ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 90                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 118                                                                               |                                                                                   |                                                                                   | 1997                                                                              |                                                                                   |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     | 341                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |       |        |      |        |       |
|--------------------------|--------|-------|--------|------|--------|-------|
| Int Delay, s/veh         | 8.7    |       |        |      |        |       |
|                          |        |       |        |      |        |       |
| Movement                 | SET    | SER   | NWL    | NWT  | NEL    | NER   |
| Vol, veh/h               | 223    | 214   | 21     | 119  | 342    | 55    |
| Conflicting Peds, #/hr   | 0      | 0     | 0      | 0    | 0      | 0     |
| Sign Control             | Free   | Free  | Free   | Free | Stop   | Stop  |
| RT Channelized           | -      | None  | -      | None | -      | None  |
| Storage Length           | -      | 0     | -      | -    | 0      | 0     |
| Veh in Median Storage, # | 0      | -     | -      | 0    | 0      | -     |
| Grade, %                 | 0      | -     | -      | 0    | 0      | -     |
| Peak Hour Factor         | 90     | 90    | 90     | 90   | 90     | 90    |
| Heavy Vehicles, %        | 2      | 2     | 2      | 2    | 2      | 2     |
| Mvmt Flow                | 248    | 238   | 23     | 132  | 380    | 61    |
|                          |        |       |        |      |        |       |
| Major/Minor              | Major1 |       | Major2 |      | Minor1 |       |
| Conflicting Flow All     | 0      | 0     | 248    | 0    | 427    | 248   |
| Stage 1                  | -      | -     | -      | -    | 248    | -     |
| Stage 2                  | -      | -     | -      | -    | 179    | -     |
| Critical Hdwy            | -      | -     | 4.12   | -    | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -     | -      | -    | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -     | -      | -    | 5.42   | -     |
| Follow-up Hdwy           | -      | -     | 2.218  | -    | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | -      | -     | 1318   | -    | 584    | 791   |
| Stage 1                  | -      | -     | -      | -    | 793    | -     |
| Stage 2                  | -      | -     | -      | -    | 852    | -     |
| Platoon blocked, %       | -      | -     |        | -    |        |       |
| Mov Cap-1 Maneuver       | -      | -     | 1318   | -    | 573    | 791   |
| Mov Cap-2 Maneuver       | -      | -     | -      | -    | 573    | -     |
| Stage 1                  | -      | -     | -      | -    | 793    | -     |
| Stage 2                  | -      | -     | -      | -    | 836    | -     |
|                          |        |       |        |      |        |       |
| Approach                 | SE     |       | NW     |      | NE     |       |
| HCM Control Delay, s     | 0      |       | 1.2    |      | 21     |       |
| HCM LOS                  | C      |       |        |      |        |       |
|                          |        |       |        |      |        |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL    | NWT  | SET    | SER   |
| Capacity (veh/h)         | 573    | 791   | 1318   | -    | -      | -     |
| HCM Lane V/C Ratio       | 0.663  | 0.077 | 0.018  | -    | -      | -     |
| HCM Control Delay (s)    | 22.8   | 9.9   | 7.8    | 0    | -      | -     |
| HCM Lane LOS             | C      | A     | A      | A    | -      | -     |
| HCM 95th %tile Q(veh)    | 4.9    | 0.2   | 0.1    | -    | -      | -     |

# Lanes and Geometrics

## 5: CHANEY ST & COLLIER AVE

1/27/2017

|                             |  |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                  | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |
| Lane Configurations         |  |  |                                                                                   |  |  |  |
| Ideal Flow (vphpl)          | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)             | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Grade (%)                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Storage Length (ft)         |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Storage Lanes               |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)           |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Link Speed (mph)            | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)          | 1997                                                                              |                                                                                   |                                                                                   | 292                                                                               | 1583                                                                              |                                                                                   |
| Travel Time (s)             | 45.4                                                                              |                                                                                   |                                                                                   | 6.6                                                                               | 36.0                                                                              |                                                                                   |
| <b>Intersection Summary</b> |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                  | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection              |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh | 9.7  |      |      |      |      |      |      |      |      |      |      |      |
| Intersection LOS          | A    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                  | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Vol, veh/h                | 0    | 0    | 1    | 375  | 0    | 2    | 0    | 1    | 0    | 154  | 1    | 2    |
| Peak Hour Factor          | 0.92 | 0.90 | 0.90 | 0.90 | 0.92 | 0.90 | 0.90 | 0.90 | 0.92 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                 | 0    | 0    | 1    | 417  | 0    | 2    | 0    | 1    | 0    | 171  | 1    | 2    |
| Number of Lanes           | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  |
|----------------------------|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  |
| Opposing Lanes             | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  |
| Conflicting Lanes Left     | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  |
| Conflicting Lanes Right    | 1   | 1   | 1   |
| HCM Control Delay          | 9.8 | 7.8 | 9.6 |
| HCM LOS                    | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 98%   | 0%    | 67%   | 0%    |
| Vol Thru, %            | 1%    | 0%    | 0%    | 0%    |
| Vol Right, %           | 1%    | 100%  | 33%   | 100%  |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 157   | 376   | 3     | 1     |
| LT Vol                 | 154   | 0     | 2     | 0     |
| Through Vol            | 1     | 1     | 0     | 0     |
| RT Vol                 | 2     | 375   | 1     | 1     |
| Lane Flow Rate         | 174   | 418   | 3     | 1     |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.24  | 0.441 | 0.004 | 0.001 |
| Departure Headway (Hd) | 4.961 | 3.799 | 4.725 | 4.404 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 724   | 953   | 757   | 810   |
| Service Time           | 2.996 | 1.809 | 2.753 | 2.446 |
| HCM Lane V/C Ratio     | 0.24  | 0.439 | 0.004 | 0.001 |
| HCM Control Delay      | 9.6   | 9.8   | 7.8   | 7.5   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.9   | 2.3   | 0     | 0     |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement          | SBU  | SBL  | SBT  | SBR  |
|-------------------|------|------|------|------|
| Vol, veh/h        | 0    | 0    | 0    | 1    |
| Peak Hour Factor  | 0.92 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, % | 2    | 2    | 2    | 2    |
| Mvmt Flow         | 0    | 0    | 0    | 1    |
| Number of Lanes   | 0    | 0    | 1    | 0    |

| Approach                   | SB  |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.5 |
| HCM LOS                    | A   |

Lane

# Lanes and Geometrics

## 6: N. SPRING ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 294                                                                               |                                                                                   |                                                                                   | 237                                                                               |                                                                                   |                                                                                    | 822                                                                                 |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                    | 18.7                                                                                |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 542                                                                               | 3                                                                                 | 170                                                                               | 1156                                                                              | 490                                                                               | 610                                                                               | 1387                                                                               |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                    |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                  |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 5.0                                                                               | 7.0                                                                                |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 29.3                                                                              | 29.3                                                                              | 11.0                                                                              | 20.0                                                                               |
| Total Split (s)      | 39.0                                                                              | 39.0                                                                              | 39.0                                                                              | 46.0                                                                              | 46.0                                                                              | 35.0                                                                              | 81.0                                                                               |
| Total Split (%)      | 32.5%                                                                             | 32.5%                                                                             | 32.5%                                                                             | 38.3%                                                                             | 38.3%                                                                             | 29.2%                                                                             | 67.5%                                                                              |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                    |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                              |
| Act Effct Green (s)  | 33.7                                                                              | 33.7                                                                              | 33.7                                                                              | 45.0                                                                              | 45.0                                                                              | 26.1                                                                              | 75.7                                                                               |
| Actuated g/C Ratio   | 0.28                                                                              | 0.28                                                                              | 0.28                                                                              | 0.38                                                                              | 0.38                                                                              | 0.22                                                                              | 0.63                                                                               |
| v/c Ratio            | 0.62                                                                              | 0.64                                                                              | 0.34                                                                              | 0.63                                                                              | 0.56                                                                              | 0.85                                                                              | 0.65                                                                               |
| Control Delay        | 44.4                                                                              | 45.2                                                                              | 22.7                                                                              | 28.3                                                                              | 7.1                                                                               | 37.2                                                                              | 12.8                                                                               |
| Queue Delay          | 0.2                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 10.0                                                                               |
| Total Delay          | 44.6                                                                              | 45.4                                                                              | 22.7                                                                              | 28.3                                                                              | 7.1                                                                               | 37.2                                                                              | 22.8                                                                               |
| LOS                  | D                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 | C                                                                                  |
| Approach Delay       |                                                                                   | 40.2                                                                              |                                                                                   | 22.0                                                                              |                                                                                   |                                                                                   | 27.2                                                                               |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 51 (43%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 27.4

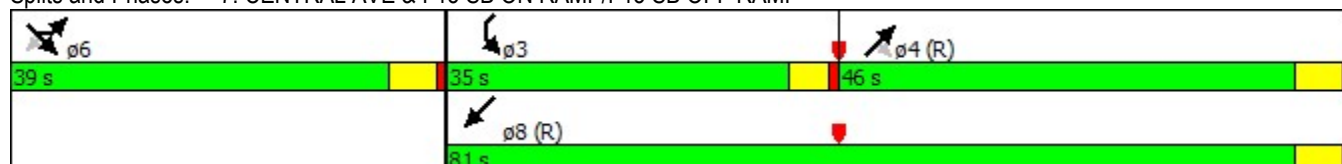
Intersection LOS: C

Intersection Capacity Utilization 77.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP





## Queues

## 7: CENTRAL AVE &amp; I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Group Flow (vph)   | 294                                                                               | 292                                                                               | 159                                                                               | 1204                                                                              | 510                                                                               | 635                                                                               | 1445                                                                               |
| v/c Ratio               | 0.62                                                                              | 0.64                                                                              | 0.34                                                                              | 0.63                                                                              | 0.56                                                                              | 0.85                                                                              | 0.65                                                                               |
| Control Delay           | 44.4                                                                              | 45.2                                                                              | 22.7                                                                              | 28.3                                                                              | 7.1                                                                               | 37.2                                                                              | 12.8                                                                               |
| Queue Delay             | 0.2                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 10.0                                                                               |
| Total Delay             | 44.6                                                                              | 45.4                                                                              | 22.7                                                                              | 28.3                                                                              | 7.1                                                                               | 37.2                                                                              | 22.8                                                                               |
| Queue Length 50th (ft)  | 209                                                                               | 216                                                                               | 60                                                                                | 281                                                                               | 81                                                                                | 179                                                                               | 469                                                                                |
| Queue Length 95th (ft)  | 311                                                                               | 325                                                                               | 125                                                                               | 354                                                                               | 151                                                                               | 260                                                                               | 531                                                                                |
| Internal Link Dist (ft) |                                                                                   | 1290                                                                              |                                                                                   | 318                                                                               |                                                                                   |                                                                                   | 410                                                                                |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 100                                                                               |                                                                                    |
| Base Capacity (vph)     | 472                                                                               | 453                                                                               | 467                                                                               | 1908                                                                              | 912                                                                               | 869                                                                               | 2232                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 770                                                                                |
| Spillback Cap Reductn   | 10                                                                                | 10                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Reduced v/c Ratio       | 0.64                                                                              | 0.66                                                                              | 0.34                                                                              | 0.63                                                                              | 0.56                                                                              | 0.73                                                                              | 0.99                                                                               |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# HCM 2010 Signalized Intersection Summary

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |  |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |  |
| Volume (veh/h)                                                       | 542                                                                               | 3                                                                                 | 170                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 1156                                                                                | 490                                                                                 | 610                                                                                 | 1387                                                                                | 0                                                                                   |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1863                                                                              | 1863                                                                              | 1863                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h                                                 | 621                                                                               | 0                                                                                 | 119                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1204                                                                                | 510                                                                                 | 635                                                                                 | 1445                                                                                | 0                                                                                   |
| Adj No. of Lanes                                                     | 2                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Cap, veh/h                                                           | 996                                                                               | 0                                                                                 | 445                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1924                                                                                | 599                                                                                 | 737                                                                                 | 2233                                                                                | 0                                                                                   |
| Arrive On Green                                                      | 0.28                                                                              | 0.00                                                                              | 0.28                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.12                                                                                | 0.12                                                                                | 0.07                                                                                | 0.21                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                      | 3548                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 5253                                                                                | 1583                                                                                | 3442                                                                                | 3632                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h                                                 | 621                                                                               | 0                                                                                 | 119                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1204                                                                                | 510                                                                                 | 635                                                                                 | 1445                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                             | 1774                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1695                                                                                | 1583                                                                                | 1721                                                                                | 1770                                                                                | 0                                                                                   |
| Q Serve(g_s), s                                                      | 18.3                                                                              | 0.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 27.0                                                                                | 37.8                                                                                | 21.9                                                                                | 44.8                                                                                | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                | 18.3                                                                              | 0.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 27.0                                                                                | 37.8                                                                                | 21.9                                                                                | 44.8                                                                                | 0.0                                                                                 |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 996                                                                               | 0                                                                                 | 445                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1924                                                                                | 599                                                                                 | 737                                                                                 | 2233                                                                                | 0                                                                                   |
| V/C Ratio(X)                                                         | 0.62                                                                              | 0.00                                                                              | 0.27                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.63                                                                                | 0.85                                                                                | 0.86                                                                                | 0.65                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                | 996                                                                               | 0                                                                                 | 445                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1924                                                                                | 599                                                                                 | 872                                                                                 | 2233                                                                                | 0                                                                                   |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.61                                                                                | 0.61                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                             | 37.6                                                                              | 0.0                                                                               | 33.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 44.4                                                                                | 49.2                                                                                | 54.0                                                                                | 35.3                                                                                | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                               | 2.9                                                                               | 0.0                                                                               | 1.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 1.5                                                                                 | 14.2                                                                                | 4.3                                                                                 | 0.9                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 9.4                                                                               | 0.0                                                                               | 3.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 13.0                                                                                | 19.0                                                                                | 10.9                                                                                | 22.3                                                                                | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 40.6                                                                              | 0.0                                                                               | 35.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 46.0                                                                                | 63.4                                                                                | 58.3                                                                                | 36.2                                                                                | 0.0                                                                                 |
| LnGrp LOS                                                            | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   | E                                                                                   | E                                                                                   | D                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                  |                                                                                   | 740                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 1714                                                                                |                                                                                     |                                                                                     | 2080                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                   | 39.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 51.2                                                                                |                                                                                     |                                                                                     | 42.9                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   |                                                                                   | 30.3                                                                              | 50.7                                                                              |                                                                                   | 39.0                                                                              |                                                                                    | 81.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   |                                                                                   | 30.4                                                                              | 40.7                                                                              |                                                                                   | 33.7                                                                              |                                                                                    | 75.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                         |                                                                                   |                                                                                   | 24.9                                                                              | 40.8                                                                              |                                                                                   | 21.3                                                                              |                                                                                    | 47.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   |                                                                                   | 0.8                                                                               | 0.0                                                                               |                                                                                   | 1.3                                                                               |                                                                                    | 19.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 45.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                               | SWT                                                                               | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 523                                                                               | 2                                                                                 | 662                                                                               | 141                                                                               | 1513                                                                              | 1482                                                                              | 355                                                                                 |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 2                                                                                 | 2                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 2                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 11.0                                                                              | 20.0                                                                              | 28.3                                                                              | 28.3                                                                                |
| Total Split (s)      | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              | 20.0                                                                              | 72.0                                                                              | 52.0                                                                              | 52.0                                                                                |
| Total Split (%)      | 40.0%                                                                             | 40.0%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 60.0%                                                                             | 43.3%                                                                             | 43.3%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                             | C-Max                                                                             | C-Max                                                                               |
| Act Effct Green (s)  | 42.7                                                                              | 42.7                                                                              | 42.7                                                                              | 13.1                                                                              | 66.7                                                                              | 49.0                                                                              | 49.0                                                                                |
| Actuated g/C Ratio   | 0.36                                                                              | 0.36                                                                              | 0.36                                                                              | 0.11                                                                              | 0.56                                                                              | 0.41                                                                              | 0.41                                                                                |
| v/c Ratio            | 0.71                                                                              | 0.73                                                                              | 0.69                                                                              | 0.75                                                                              | 0.55                                                                              | 0.74                                                                              | 0.43                                                                                |
| Control Delay        | 41.2                                                                              | 41.0                                                                              | 34.7                                                                              | 60.8                                                                              | 17.4                                                                              | 20.4                                                                              | 2.3                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.3                                                                               | 0.2                                                                               | 0.0                                                                               | 1.0                                                                               | 0.5                                                                               | 0.1                                                                                 |
| Total Delay          | 41.2                                                                              | 41.2                                                                              | 34.9                                                                              | 60.8                                                                              | 18.4                                                                              | 20.9                                                                              | 2.5                                                                                 |
| LOS                  | D                                                                                 | D                                                                                 | C                                                                                 | E                                                                                 | B                                                                                 | C                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 39.2                                                                              |                                                                                   |                                                                                   | 22.0                                                                              | 17.4                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 | B                                                                                 |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 106 (88%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 24.5

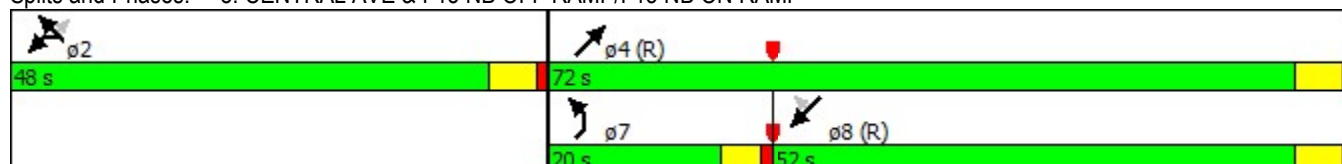
Intersection LOS: C

Intersection Capacity Utilization 77.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP



## Queues

## 8: CENTRAL AVE &amp; I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017



| Lane Group              | NWL  | NWT  | NWR  | NEL  | NET  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 426  | 401  | 396  | 145  | 1560 | 1528 | 366  |
| v/c Ratio               | 0.71 | 0.73 | 0.69 | 0.75 | 0.55 | 0.74 | 0.43 |
| Control Delay           | 41.2 | 41.0 | 34.7 | 60.8 | 17.4 | 20.4 | 2.3  |
| Queue Delay             | 0.0  | 0.3  | 0.2  | 0.0  | 1.0  | 0.5  | 0.1  |
| Total Delay             | 41.2 | 41.2 | 34.9 | 60.8 | 18.4 | 20.9 | 2.5  |
| Queue Length 50th (ft)  | 297  | 279  | 231  | 109  | 324  | 164  | 7    |
| Queue Length 95th (ft)  | 427  | 416  | 357  | m180 | 358  | 199  | m25  |
| Internal Link Dist (ft) |      | 1244 |      |      | 410  | 302  |      |
| Turn Bay Length (ft)    | 190  |      | 190  | 190  |      |      |      |
| Base Capacity (vph)     | 598  | 546  | 575  | 227  | 2826 | 2077 | 855  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 905  | 0    | 75   |
| Spillback Cap Reductn   | 0    | 11   | 11   | 0    | 263  | 200  | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.71 | 0.75 | 0.70 | 0.64 | 0.81 | 0.81 | 0.47 |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                                                                      |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET  | SER | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Volume (veh/h)                                                       | 0                                                                                  | 0    | 0   | 523                                                                               | 2                                                                                 | 662                                                                               | 141                                                                               | 1513                                                                                | 0    | 0    | 1482                                                                                | 355                                                                                 |
| Number                                                               |                                                                                    |      |     | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                 | 4                                                                                   | 14   | 3    | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               |                                                                                    |      |     | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 0    | 0    | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 |                                                                                    |      |     | 774                                                                               | 0                                                                                 | 432                                                                               | 145                                                                               | 1560                                                                                | 0    | 0    | 1528                                                                                | 366                                                                                 |
| Adj No. of Lanes                                                     |                                                                                    |      |     | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                   | 0    | 0    | 3                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                     |                                                                                    |      |     | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97 | 0.97 | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %                                                 |                                                                                    |      |     | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0    | 0    | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 187                                                                               | 2827                                                                                | 0    | 0    | 2095                                                                                | 652                                                                                 |
| Arrive On Green                                                      |                                                                                    |      |     | 0.36                                                                              | 0.00                                                                              | 0.36                                                                              | 0.03                                                                              | 0.18                                                                                | 0.00 | 0.00 | 0.82                                                                                | 0.82                                                                                |
| Sat Flow, veh/h                                                      |                                                                                    |      |     | 3548                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 5253                                                                                | 0    | 0    | 5253                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                 |                                                                                    |      |     | 774                                                                               | 0                                                                                 | 432                                                                               | 145                                                                               | 1560                                                                                | 0    | 0    | 1528                                                                                | 366                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             |                                                                                    |      |     | 1774                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 1695                                                                                | 0    | 0    | 1695                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                      |                                                                                    |      |     | 21.6                                                                              | 0.0                                                                               | 29.0                                                                              | 9.7                                                                               | 33.4                                                                                | 0.0  | 0.0  | 15.9                                                                                | 9.1                                                                                 |
| Cycle Q Clear(g_c), s                                                |                                                                                    |      |     | 21.6                                                                              | 0.0                                                                               | 29.0                                                                              | 9.7                                                                               | 33.4                                                                                | 0.0  | 0.0  | 15.9                                                                                | 9.1                                                                                 |
| Prop In Lane                                                         |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 187                                                                               | 2827                                                                                | 0    | 0    | 2095                                                                                | 652                                                                                 |
| V/C Ratio(X)                                                         |                                                                                    |      |     | 0.61                                                                              | 0.00                                                                              | 0.77                                                                              | 0.77                                                                              | 0.55                                                                                | 0.00 | 0.00 | 0.73                                                                                | 0.56                                                                                |
| Avail Cap(c_a), veh/h                                                |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 228                                                                               | 2827                                                                                | 0    | 0    | 2095                                                                                | 652                                                                                 |
| HCM Platoon Ratio                                                    |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                                | 1.00 | 1.00 | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)                                                   |                                                                                    |      |     | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.74                                                                              | 0.74                                                                                | 0.00 | 0.00 | 0.70                                                                                | 0.70                                                                                |
| Uniform Delay (d), s/veh                                             |                                                                                    |      |     | 31.8                                                                              | 0.0                                                                               | 34.2                                                                              | 56.5                                                                              | 35.4                                                                                | 0.0  | 0.0  | 7.6                                                                                 | 7.0                                                                                 |
| Incr Delay (d2), s/veh                                               |                                                                                    |      |     | 2.2                                                                               | 0.0                                                                               | 9.6                                                                               | 7.5                                                                               | 0.6                                                                                 | 0.0  | 0.0  | 1.6                                                                                 | 2.5                                                                                 |
| Initial Q Delay(d3),s/veh                                            |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             |                                                                                    |      |     | 10.9                                                                              | 0.0                                                                               | 14.1                                                                              | 5.2                                                                               | 15.9                                                                                | 0.0  | 0.0  | 7.4                                                                                 | 4.1                                                                                 |
| LnGrp Delay(d),s/veh                                                 |                                                                                    |      |     | 34.1                                                                              | 0.0                                                                               | 43.9                                                                              | 64.0                                                                              | 36.0                                                                                | 0.0  | 0.0  | 9.2                                                                                 | 9.5                                                                                 |
| LnGrp LOS                                                            |                                                                                    |      |     | C                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | D                                                                                   |      |      | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h                                                  |                                                                                    |      |     |                                                                                   | 1206                                                                              |                                                                                   |                                                                                   | 1705                                                                                |      |      | 1894                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    |      |     |                                                                                   | 37.6                                                                              |                                                                                   |                                                                                   | 38.4                                                                                |      |      | 9.3                                                                                 |                                                                                     |
| Approach LOS                                                         |                                                                                    |      |     |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                   |      |      | A                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2    | 3   | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    | 2    |     | 4                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    | 48.0 |     | 72.0                                                                              |                                                                                   |                                                                                   | 17.3                                                                              | 54.7                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    | 5.3  |     | 5.3                                                                               |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    | 42.7 |     | 66.7                                                                              |                                                                                   |                                                                                   | 15.4                                                                              | 46.7                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    | 32.0 |     | 36.4                                                                              |                                                                                   |                                                                                   | 12.7                                                                              | 18.9                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    | 2.2  |     | 23.0                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 21.6                                                                                |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |      |     | 26.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |      |     | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 66                                                                                | 106                                                                               | 441                                                                               | 140                                                                               | 122                                                                               | 447                                                                               | 1597                                                                               | 170                                                                                 | 135                                                                                 | 1160                                                                                | 82                                                                                  |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 47.3                                                                              | 47.3                                                                              | 41.0                                                                              | 47.3                                                                              | 47.3                                                                              | 41.0                                                                              | 54.8                                                                               | 54.8                                                                                | 17.9                                                                                | 31.7                                                                                | 31.7                                                                                |
| Total Split (%)      | 39.4%                                                                             | 39.4%                                                                             | 34.2%                                                                             | 39.4%                                                                             | 39.4%                                                                             | 34.2%                                                                             | 45.7%                                                                              | 45.7%                                                                               | 14.9%                                                                               | 26.4%                                                                               | 26.4%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 42.0                                                                              | 42.0                                                                              | 81.3                                                                              | 42.0                                                                              | 42.0                                                                              | 34.0                                                                              | 50.6                                                                               | 50.6                                                                                | 12.2                                                                                | 28.8                                                                                | 28.8                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.68                                                                              | 0.35                                                                              | 0.35                                                                              | 0.28                                                                              | 0.42                                                                               | 0.42                                                                                | 0.10                                                                                | 0.24                                                                                | 0.24                                                                                |
| v/c Ratio            | 0.26                                                                              | 0.17                                                                              | 0.43                                                                              | 0.33                                                                              | 0.51                                                                              | 0.93                                                                              | 0.78                                                                               | 0.23                                                                                | 0.78                                                                                | 0.79                                                                                | 0.19                                                                                |
| Control Delay        | 31.3                                                                              | 27.9                                                                              | 9.4                                                                               | 31.2                                                                              | 26.9                                                                              | 61.9                                                                              | 20.1                                                                               | 1.9                                                                                 | 85.7                                                                                | 35.9                                                                                | 5.2                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 15.2                                                                              | 1.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 31.3                                                                              | 27.9                                                                              | 9.4                                                                               | 31.2                                                                              | 26.9                                                                              | 77.1                                                                              | 21.4                                                                               | 1.9                                                                                 | 85.7                                                                                | 35.9                                                                                | 5.2                                                                                 |
| LOS                  | C                                                                                 | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | C                                                                                  | A                                                                                   | F                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 14.9                                                                              |                                                                                   |                                                                                   | 28.2                                                                              |                                                                                   | 31.1                                                                               |                                                                                     |                                                                                     | 38.9                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 31.0

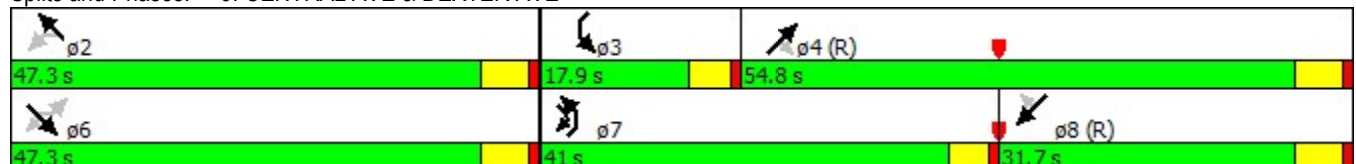
Intersection LOS: C

Intersection Capacity Utilization 84.1%

ICU Level of Service E

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE



## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 69                                                                                | 110                                                                               | 459                                                                               | 146                                                                               | 323                                                                               | 466                                                                               | 1664                                                                               | 177                                                                                 | 141                                                                                 | 1208                                                                                | 85                                                                                  |
| v/c Ratio               | 0.26                                                                              | 0.17                                                                              | 0.43                                                                              | 0.33                                                                              | 0.51                                                                              | 0.93                                                                              | 0.78                                                                               | 0.23                                                                                | 0.78                                                                                | 0.79                                                                                | 0.19                                                                                |
| Control Delay           | 31.3                                                                              | 27.9                                                                              | 9.4                                                                               | 31.2                                                                              | 26.9                                                                              | 61.9                                                                              | 20.1                                                                               | 1.9                                                                                 | 85.7                                                                                | 35.9                                                                                | 5.2                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 15.2                                                                              | 1.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 31.3                                                                              | 27.9                                                                              | 9.4                                                                               | 31.2                                                                              | 26.9                                                                              | 77.1                                                                              | 21.4                                                                               | 1.9                                                                                 | 85.7                                                                                | 35.9                                                                                | 5.2                                                                                 |
| Queue Length 50th (ft)  | 38                                                                                | 58                                                                                | 129                                                                               | 82                                                                                | 152                                                                               | 236                                                                               | 437                                                                                | 5                                                                                   | 115                                                                                 | 162                                                                                 | 1                                                                                   |
| Queue Length 95th (ft)  | 79                                                                                | 102                                                                               | 188                                                                               | 140                                                                               | 243                                                                               | #513                                                                              | 451                                                                                | m14                                                                                 | #208                                                                                | 251                                                                                 | m20                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1321                                                                              |                                                                                   |                                                                                   | 1337                                                                              |                                                                                   | 302                                                                                |                                                                                     |                                                                                     | 250                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 140                                                                               |                                                                                   | 140                                                                               | 100                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 150                                                                                 |                                                                                     | 220                                                                                 |
| Base Capacity (vph)     | 265                                                                               | 652                                                                               | 1110                                                                              | 447                                                                               | 638                                                                               | 536                                                                               | 2144                                                                               | 761                                                                                 | 196                                                                                 | 1536                                                                                | 459                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 67                                                                                | 264                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.26                                                                              | 0.17                                                                              | 0.41                                                                              | 0.33                                                                              | 0.51                                                                              | 0.99                                                                              | 0.89                                                                               | 0.23                                                                                | 0.72                                                                                | 0.79                                                                                | 0.19                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                                                                    |  |  |  |  |  |  |   |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 66                                                                                | 106                                                                               | 441                                                                               | 140                                                                               | 122                                                                               | 188                                                                               | 447                                                                                 | 1597                                                                                | 170                                                                                 | 135                                                                                 | 1160                                                                                | 82                                                                                  |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 69                                                                                | 110                                                                               | 459                                                                               | 146                                                                               | 127                                                                               | 196                                                                               | 466                                                                                 | 1664                                                                                | 177                                                                                 | 141                                                                                 | 1208                                                                                | 85                                                                                  |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 275                                                                               | 652                                                                               | 991                                                                               | 319                                                                               | 232                                                                               | 357                                                                               | 489                                                                                 | 2144                                                                                | 667                                                                                 | 181                                                                                 | 1586                                                                                | 392                                                                                 |
| Arrive On Green                                                    | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.55                                                                                | 0.84                                                                                | 0.84                                                                                | 0.10                                                                                | 0.25                                                                                | 0.25                                                                                |
| Sat Flow, veh/h                                                    | 1052                                                                              | 1863                                                                              | 1583                                                                              | 839                                                                               | 662                                                                               | 1021                                                                              | 1774                                                                                | 5085                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 69                                                                                | 110                                                                               | 459                                                                               | 146                                                                               | 0                                                                                 | 323                                                                               | 466                                                                                 | 1664                                                                                | 177                                                                                 | 141                                                                                 | 1208                                                                                | 85                                                                                  |
| Grp Sat Flow(s),veh/h/ln                                           | 1052                                                                              | 1863                                                                              | 1583                                                                              | 839                                                                               | 0                                                                                 | 1683                                                                              | 1774                                                                                | 1695                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 6.7                                                                               | 4.9                                                                               | 18.3                                                                              | 17.5                                                                              | 0.0                                                                               | 18.5                                                                              | 29.8                                                                                | 17.8                                                                                | 2.7                                                                                 | 9.3                                                                                 | 21.0                                                                                | 5.1                                                                                 |
| Cycle Q Clear(g_c), s                                              | 24.2                                                                              | 4.9                                                                               | 18.3                                                                              | 22.4                                                                              | 0.0                                                                               | 18.5                                                                              | 29.8                                                                                | 17.8                                                                                | 2.7                                                                                 | 9.3                                                                                 | 21.0                                                                                | 5.1                                                                                 |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.61                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 275                                                                               | 652                                                                               | 991                                                                               | 319                                                                               | 0                                                                                 | 589                                                                               | 489                                                                                 | 2144                                                                                | 667                                                                                 | 181                                                                                 | 1586                                                                                | 392                                                                                 |
| V/C Ratio(X)                                                       | 0.25                                                                              | 0.17                                                                              | 0.46                                                                              | 0.46                                                                              | 0.00                                                                              | 0.55                                                                              | 0.95                                                                                | 0.78                                                                                | 0.27                                                                                | 0.78                                                                                | 0.76                                                                                | 0.22                                                                                |
| Avail Cap(c_a), veh/h                                              | 275                                                                               | 652                                                                               | 991                                                                               | 319                                                                               | 0                                                                                 | 589                                                                               | 538                                                                                 | 2144                                                                                | 667                                                                                 | 197                                                                                 | 1586                                                                                | 392                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.79                                                                                | 0.79                                                                                | 0.79                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 40.7                                                                              | 26.9                                                                              | 11.8                                                                              | 34.7                                                                              | 0.0                                                                               | 31.4                                                                              | 26.1                                                                                | 6.8                                                                                 | 5.7                                                                                 | 52.6                                                                                | 41.9                                                                                | 35.9                                                                                |
| Incr Delay (d2), s/veh                                             | 2.2                                                                               | 0.6                                                                               | 1.6                                                                               | 4.7                                                                               | 0.0                                                                               | 3.6                                                                               | 21.7                                                                                | 2.2                                                                                 | 0.8                                                                                 | 14.8                                                                                | 3.5                                                                                 | 1.3                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 2.1                                                                               | 2.6                                                                               | 8.3                                                                               | 4.5                                                                               | 0.0                                                                               | 9.2                                                                               | 17.2                                                                                | 8.1                                                                                 | 1.2                                                                                 | 5.3                                                                                 | 9.7                                                                                 | 2.4                                                                                 |
| LnGrp Delay(d),s/veh                                               | 42.9                                                                              | 27.5                                                                              | 13.4                                                                              | 39.3                                                                              | 0.0                                                                               | 35.0                                                                              | 47.8                                                                                | 9.1                                                                                 | 6.4                                                                                 | 67.4                                                                                | 45.4                                                                                | 37.2                                                                                |
| LnGrp LOS                                                          | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                   | A                                                                                   | A                                                                                   | E                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 638                                                                               |                                                                                   |                                                                                   | 469                                                                               |                                                                                   |                                                                                     | 2307                                                                                |                                                                                     |                                                                                     | 1434                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 19.0                                                                              |                                                                                   |                                                                                   | 36.4                                                                              |                                                                                   |                                                                                     | 16.7                                                                                |                                                                                     |                                                                                     | 47.1                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 47.3                                                                              | 16.8                                                                              | 55.9                                                                              |                                                                                   | 47.3                                                                              | 37.7                                                                                | 35.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 42.0                                                                              | 13.3                                                                              | 49.5                                                                              |                                                                                   | 42.0                                                                              | 36.4                                                                                | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                       |                                                                                   | 25.4                                                                              | 12.3                                                                              | 20.8                                                                              |                                                                                   | 27.2                                                                              | 32.8                                                                                | 24.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 3.4                                                                               | 0.0                                                                               | 20.5                                                                              |                                                                                   | 3.2                                                                               | 0.3                                                                                 | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 27.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# Timings

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 252                                                                               | 2                                                                                 | 110                                                                               | 12                                                                                | 1                                                                                 | 287                                                                               | 1692                                                                               | 1                                                                                   | 1029                                                                                | 159                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 31.0                                                                               | 11.0                                                                                | 31.0                                                                                | 31.0                                                                                |
| Total Split (s)      | 36.0                                                                              | 36.0                                                                              | 36.0                                                                              | 36.0                                                                              | 36.0                                                                              | 21.0                                                                              | 73.0                                                                               | 11.0                                                                                | 63.0                                                                                | 63.0                                                                                |
| Total Split (%)      | 30.0%                                                                             | 30.0%                                                                             | 30.0%                                                                             | 30.0%                                                                             | 30.0%                                                                             | 17.5%                                                                             | 60.8%                                                                              | 9.2%                                                                                | 52.5%                                                                               | 52.5%                                                                               |
| Yellow Time (s)      | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.6                                                                               | 5.0                                                                                | 3.6                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  |                                                                                   | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.6                                                                               | 6.0                                                                                | 4.6                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effect Green (s) |                                                                                   | 31.1                                                                              | 31.1                                                                              | 31.1                                                                              | 31.1                                                                              | 14.3                                                                              | 76.1                                                                               | 5.0                                                                                 | 59.1                                                                                | 59.1                                                                                |
| Actuated g/C Ratio   |                                                                                   | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.12                                                                              | 0.63                                                                               | 0.04                                                                                | 0.49                                                                                | 0.49                                                                                |
| v/c Ratio            |                                                                                   | 0.76                                                                              | 0.23                                                                              | 0.07                                                                              | 0.00                                                                              | 0.74                                                                              | 0.80                                                                               | 0.01                                                                                | 0.62                                                                                | 0.19                                                                                |
| Control Delay        |                                                                                   | 56.6                                                                              | 7.5                                                                               | 34.9                                                                              | 28.0                                                                              | 64.5                                                                              | 23.4                                                                               | 56.0                                                                                | 24.6                                                                                | 3.2                                                                                 |
| Queue Delay          |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          |                                                                                   | 56.6                                                                              | 7.5                                                                               | 34.9                                                                              | 28.0                                                                              | 64.5                                                                              | 23.4                                                                               | 56.0                                                                                | 24.6                                                                                | 3.2                                                                                 |
| LOS                  |                                                                                   | E                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | C                                                                                  | E                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 41.7                                                                              |                                                                                   |                                                                                   | 34.0                                                                              |                                                                                   | 29.3                                                                               |                                                                                     | 21.7                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | C                                                                                  |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 97 (81%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 28.1

Intersection LOS: C

Intersection Capacity Utilization 85.0%

ICU Level of Service E

Analysis Period (min) 15

### Splits and Phases: 10: CENTRAL AVE & CAMBERN AVE

|                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |
| 36 s                                                                                | 11 s                                                                                | 73 s                                                                                |
|  |  |  |
| 36 s                                                                                | 21 s                                                                                | 63 s                                                                                |

## Queues

## 10: CENTRAL AVE &amp; CAMBERN AVE

1/27/2017



| Lane Group              | SET  | SER  | NWL  | NWT  | NEL  | NET  | SWL  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 267  | 116  | 13   | 2    | 302  | 1795 | 1    | 1083 | 167  |
| v/c Ratio               | 0.76 | 0.23 | 0.07 | 0.00 | 0.74 | 0.80 | 0.01 | 0.62 | 0.19 |
| Control Delay           | 56.6 | 7.5  | 34.9 | 28.0 | 64.5 | 23.4 | 56.0 | 24.6 | 3.2  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 56.6 | 7.5  | 34.9 | 28.0 | 64.5 | 23.4 | 56.0 | 24.6 | 3.2  |
| Queue Length 50th (ft)  | 192  | 0    | 8    | 1    | 127  | 340  | 1    | 316  | 0    |
| Queue Length 95th (ft)  | #318 | 46   | 25   | 8    | m167 | 423  | 7    | 398  | 37   |
| Internal Link Dist (ft) | 1204 |      |      | 1267 |      | 636  |      | 2064 |      |
| Turn Bay Length (ft)    |      | 200  | 75   |      | 250  |      | 400  |      | 400  |
| Base Capacity (vph)     | 350  | 496  | 189  | 447  | 469  | 2241 | 94   | 1743 | 864  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.76 | 0.23 | 0.07 | 0.00 | 0.64 | 0.80 | 0.01 | 0.62 | 0.19 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Volume (veh/h)               | 252                                                                               | 2                                                                                 | 110                                                                               | 12                                                                                | 1                                                                                 | 1                                                                                 | 287                                                                                 | 1692                                                                                | 13                                                                                  | 1                                                                                   | 1029                                                                                | 159                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 265                                                                               | 2                                                                                 | 116                                                                               | 13                                                                                | 1                                                                                 | 1                                                                                 | 302                                                                                 | 1781                                                                                | 14                                                                                  | 1                                                                                   | 1083                                                                                | 167                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 411                                                                               | 3                                                                                 | 410                                                                               | 167                                                                               | 222                                                                               | 222                                                                               | 386                                                                                 | 2197                                                                                | 17                                                                                  | 2                                                                                   | 1768                                                                                | 791                                                                                 |
| Arrive On Green              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.11                                                                                | 0.61                                                                                | 0.61                                                                                | 0.00                                                                                | 0.50                                                                                | 0.50                                                                                |
| Sat Flow, veh/h              | 1356                                                                              | 10                                                                                | 1583                                                                              | 1269                                                                              | 856                                                                               | 856                                                                               | 3442                                                                                | 3599                                                                                | 28                                                                                  | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 267                                                                               | 0                                                                                 | 116                                                                               | 13                                                                                | 0                                                                                 | 2                                                                                 | 302                                                                                 | 875                                                                                 | 920                                                                                 | 1                                                                                   | 1083                                                                                | 167                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1366                                                                              | 0                                                                                 | 1583                                                                              | 1269                                                                              | 0                                                                                 | 1712                                                                              | 1721                                                                                | 1770                                                                                | 1858                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 21.0                                                                              | 0.0                                                                               | 7.0                                                                               | 1.1                                                                               | 0.0                                                                               | 0.1                                                                               | 10.2                                                                                | 45.7                                                                                | 45.9                                                                                | 0.1                                                                                 | 26.5                                                                                | 7.1                                                                                 |
| Cycle Q Clear(g_c), s        | 22.0                                                                              | 0.0                                                                               | 7.0                                                                               | 22.1                                                                              | 0.0                                                                               | 0.1                                                                               | 10.2                                                                                | 45.7                                                                                | 45.9                                                                                | 0.1                                                                                 | 26.5                                                                                | 7.1                                                                                 |
| Prop In Lane                 | 0.99                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                                |                                                                                     | 0.02                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 414                                                                               | 0                                                                                 | 410                                                                               | 167                                                                               | 0                                                                                 | 444                                                                               | 386                                                                                 | 1080                                                                                | 1134                                                                                | 2                                                                                   | 1768                                                                                | 791                                                                                 |
| V/C Ratio(X)                 | 0.65                                                                              | 0.00                                                                              | 0.28                                                                              | 0.08                                                                              | 0.00                                                                              | 0.00                                                                              | 0.78                                                                                | 0.81                                                                                | 0.81                                                                                | 0.41                                                                                | 0.61                                                                                | 0.21                                                                                |
| Avail Cap(c_a), veh/h        | 414                                                                               | 0                                                                                 | 410                                                                               | 167                                                                               | 0                                                                                 | 444                                                                               | 470                                                                                 | 1080                                                                                | 1134                                                                                | 95                                                                                  | 1768                                                                                | 791                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 41.5                                                                              | 0.0                                                                               | 35.5                                                                              | 50.8                                                                              | 0.0                                                                               | 33.0                                                                              | 51.9                                                                                | 18.0                                                                                | 18.1                                                                                | 59.9                                                                                | 21.6                                                                                | 16.8                                                                                |
| Incr Delay (d2), s/veh       | 7.5                                                                               | 0.0                                                                               | 1.7                                                                               | 0.9                                                                               | 0.0                                                                               | 0.0                                                                               | 5.4                                                                                 | 6.6                                                                                 | 6.4                                                                                 | 36.8                                                                                | 1.6                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 9.0                                                                               | 0.0                                                                               | 3.3                                                                               | 0.4                                                                               | 0.0                                                                               | 0.1                                                                               | 5.2                                                                                 | 24.1                                                                                | 25.3                                                                                | 0.1                                                                                 | 13.3                                                                                | 3.2                                                                                 |
| LnGrp Delay(d),s/veh         | 49.1                                                                              | 0.0                                                                               | 37.3                                                                              | 51.7                                                                              | 0.0                                                                               | 33.0                                                                              | 57.3                                                                                | 24.6                                                                                | 24.4                                                                                | 96.6                                                                                | 23.2                                                                                | 17.4                                                                                |
| LnGrp LOS                    | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | C                                                                                 | E                                                                                   | C                                                                                   | C                                                                                   | F                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 383                                                                               |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                     | 2097                                                                                |                                                                                     |                                                                                     | 1251                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 45.5                                                                              |                                                                                   |                                                                                   | 49.2                                                                              |                                                                                   |                                                                                     | 29.2                                                                                |                                                                                     |                                                                                     | 22.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 36.0                                                                              | 4.8                                                                               | 79.2                                                                              |                                                                                   | 36.0                                                                              | 18.0                                                                                | 66.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.9                                                                               | 4.6                                                                               | 6.0                                                                               |                                                                                   | 4.9                                                                               | 4.6                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 31.1                                                                              | 6.4                                                                               | 67.0                                                                              |                                                                                   | 31.1                                                                              | 16.4                                                                                | 57.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 25.1                                                                              | 3.1                                                                               | 48.7                                                                              |                                                                                   | 24.0                                                                              | 13.2                                                                                | 29.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.7                                                                               | 0.0                                                                               | 14.3                                                                              |                                                                                   | 0.8                                                                               | 0.2                                                                                 | 19.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 28.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017



| Lane Group           | WBL   | WBR   | NBT   | NBR   | SBL   | SBT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 123   | 25    | 1569  | 214   | 35    | 972   |
| Turn Type            | Prot  | Perm  | NA    | Perm  | Prot  | NA    |
| Protected Phases     | 8     |       | 2     |       | 1     | 6     |
| Permitted Phases     |       | 8     |       | 2     |       |       |
| Detector Phase       | 8     | 8     | 2     | 2     | 1     | 6     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 8.0   | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 38.0  | 38.0  | 20.0  | 20.0  | 11.0  | 39.0  |
| Total Split (s)      | 40.0  | 40.0  | 67.0  | 67.0  | 13.0  | 80.0  |
| Total Split (%)      | 33.3% | 33.3% | 55.8% | 55.8% | 10.8% | 66.7% |
| Yellow Time (s)      | 4.0   | 4.0   | 6.0   | 6.0   | 4.0   | 6.0   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 7.0   | 7.0   | 5.0   | 7.0   |
| Lead/Lag             |       |       | Lag   | Lag   | Lead  |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | None  | None  | Max   | Max   | None  | Max   |
| Act Effect Green (s) | 11.4  | 11.4  | 65.9  | 65.9  | 6.4   | 73.1  |
| Actuated g/C Ratio   | 0.12  | 0.12  | 0.68  | 0.68  | 0.07  | 0.76  |
| v/c Ratio            | 0.60  | 0.12  | 0.46  | 0.20  | 0.31  | 0.37  |
| Control Delay        | 52.7  | 15.5  | 8.8   | 4.3   | 50.5  | 4.7   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 52.7  | 15.5  | 8.8   | 4.3   | 50.5  | 4.7   |
| LOS                  | D     | B     | A     | A     | D     | A     |
| Approach Delay       | 46.3  |       | 8.3   |       |       | 6.3   |
| Approach LOS         | D     |       | A     |       |       | A     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 96.5

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 9.5

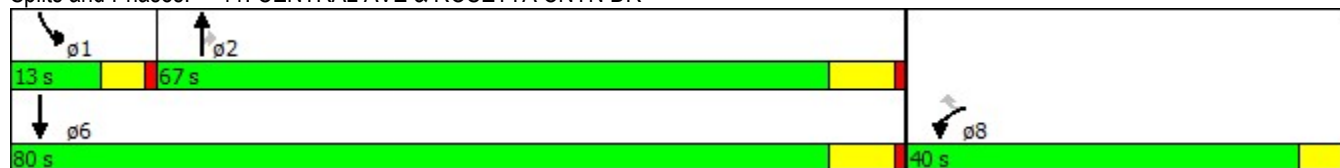
Intersection LOS: A

Intersection Capacity Utilization 47.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: CENTRAL AVE & ROSETTA CNYN DR



## Queues

## 11: CENTRAL AVE &amp; ROSETTA CNYN DR

1/27/2017



| Lane Group              | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 126  | 26   | 1601 | 218  | 36   | 992  |
| v/c Ratio               | 0.60 | 0.12 | 0.46 | 0.20 | 0.31 | 0.37 |
| Control Delay           | 52.7 | 15.5 | 8.8  | 4.3  | 50.5 | 4.7  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 52.7 | 15.5 | 8.8  | 4.3  | 50.5 | 4.7  |
| Queue Length 50th (ft)  | 74   | 0    | 169  | 23   | 21   | 86   |
| Queue Length 95th (ft)  | 132  | 24   | 246  | 60   | 55   | 140  |
| Internal Link Dist (ft) | 1570 |      | 1523 |      |      | 2926 |
| Turn Bay Length (ft)    |      |      |      | 100  | 250  |      |
| Base Capacity (vph)     | 642  | 591  | 3470 | 1115 | 147  | 2679 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.20 | 0.04 | 0.46 | 0.20 | 0.24 | 0.37 |
| Intersection Summary    |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Volume (veh/h)               | 123                                                                               | 25                                                                                | 1569                                                                              | 214                                                                               | 35                                                                                | 972                                                                               |   |      |
| Number                       | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |      |
| Adj Flow Rate, veh/h         | 126                                                                               | 26                                                                                | 1601                                                                              | 218                                                                               | 36                                                                                | 992                                                                               |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |   |      |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              |   |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |      |
| Cap, veh/h                   | 179                                                                               | 159                                                                               | 3494                                                                              | 1088                                                                              | 57                                                                                | 2733                                                                              |   |      |
| Arrive On Green              | 0.10                                                                              | 0.10                                                                              | 0.69                                                                              | 0.69                                                                              | 0.03                                                                              | 0.77                                                                              |   |      |
| Sat Flow, veh/h              | 1774                                                                              | 1583                                                                              | 5253                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              |   |      |
| Grp Volume(v), veh/h         | 126                                                                               | 26                                                                                | 1601                                                                              | 218                                                                               | 36                                                                                | 992                                                                               |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1583                                                                              | 1695                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              |   |      |
| Q Serve(g_s), s              | 6.5                                                                               | 1.4                                                                               | 13.6                                                                              | 4.7                                                                               | 1.9                                                                               | 8.4                                                                               |   |      |
| Cycle Q Clear(g_c), s        | 6.5                                                                               | 1.4                                                                               | 13.6                                                                              | 4.7                                                                               | 1.9                                                                               | 8.4                                                                               |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Lane Grp Cap(c), veh/h       | 179                                                                               | 159                                                                               | 3494                                                                              | 1088                                                                              | 57                                                                                | 2733                                                                              |   |      |
| V/C Ratio(X)                 | 0.71                                                                              | 0.16                                                                              | 0.46                                                                              | 0.20                                                                              | 0.63                                                                              | 0.36                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 657                                                                               | 586                                                                               | 3494                                                                              | 1088                                                                              | 150                                                                               | 2733                                                                              |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 41.1                                                                              | 38.9                                                                              | 6.8                                                                               | 5.4                                                                               | 45.2                                                                              | 3.4                                                                               |   |      |
| Incr Delay (d2), s/veh       | 1.9                                                                               | 0.2                                                                               | 0.4                                                                               | 0.4                                                                               | 4.1                                                                               | 0.4                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 3.3                                                                               | 0.6                                                                               | 6.4                                                                               | 2.2                                                                               | 1.0                                                                               | 4.1                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 43.0                                                                              | 39.0                                                                              | 7.2                                                                               | 5.8                                                                               | 49.3                                                                              | 3.8                                                                               |   |      |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | D                                                                                 | A                                                                                 |   |      |
| Approach Vol, veh/h          | 152                                                                               |                                                                                   | 1819                                                                              |                                                                                   |                                                                                   | 1028                                                                              |   |      |
| Approach Delay, s/veh        | 42.4                                                                              |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |   |      |
| Approach LOS                 | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |   | 8    |
| Phs Duration (G+Y+Rc), s     | 8.1                                                                               | 71.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 80.0                                                                              |   | 14.5 |
| Change Period (Y+Rc), s      | 5.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               |   | 5.0  |
| Max Green Setting (Gmax), s  | 8.0                                                                               | 60.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 73.0                                                                              |   | 35.0 |
| Max Q Clear Time (g_c+l1), s | 4.9                                                                               | 16.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.4                                                                              |   | 9.5  |
| Green Ext Time (p_c), s      | 0.0                                                                               | 32.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 42.0                                                                              |   | 0.2  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 8.2                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

HCM 2010 TWSC  
12: COLLIER AVE & PROJECT ACCESS

1/27/2017

Intersection

Int Delay, s/veh 2.6

| Movement                 | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 182  | 500  | 582  | 36   | 0    | 71   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 200  | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 198  | 543  | 633  | 39   | 0    | 77   |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 672    | 0      | 1319   |
| Stage 1              | -      | -      | 652    |
| Stage 2              | -      | -      | 667    |
| Critical Hdwy        | 5.34   | -      | 6.29   |
| Critical Hdwy Stg 1  | -      | -      | 6.64   |
| Critical Hdwy Stg 2  | -      | -      | 5.84   |
| Follow-up Hdwy       | 3.12   | -      | 3.67   |
| Pot Cap-1 Maneuver   | 562    | -      | 178    |
| Stage 1              | -      | -      | 403    |
| Stage 2              | -      | -      | 458    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 562    | -      | 115    |
| Mov Cap-2 Maneuver   | -      | -      | 115    |
| Stage 1              | -      | -      | 403    |
| Stage 2              | -      | -      | 297    |

| Approach             | SE | NW | SW   |
|----------------------|----|----|------|
| HCM Control Delay, s | 4  | 0  | 12.4 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | NWT | NWR | SEL   | SETSWLn1 |
|-----------------------|-----|-----|-------|----------|
| Capacity (veh/h)      | -   | -   | 562   | - 563    |
| HCM Lane V/C Ratio    | -   | -   | 0.352 | - 0.137  |
| HCM Control Delay (s) | -   | -   | 14.8  | - 12.4   |
| HCM Lane LOS          | -   | -   | B     | - B      |
| HCM 95th %tile Q(veh) | -   | -   | 1.6   | - 0.5    |

# Lanes and Geometrics

## 12: COLLIER AVE & PROJECT ACCESS

1/27/2017



| Lane Group          | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           |      | 0%   | 0%   |      | 0%   |      |
| Storage Length (ft) | 200  |      |      | 0    | 0    | 0    |
| Storage Lanes       | 1    |      |      | 0    | 0    | 1    |
| Taper Length (ft)   | 25   |      |      |      | 25   |      |
| Link Speed (mph)    |      | 30   | 30   |      | 30   |      |
| Link Distance (ft)  |      | 543  | 118  |      | 355  |      |
| Travel Time (s)     |      | 12.3 | 2.7  |      | 8.1  |      |

### Intersection Summary

Area Type: Other



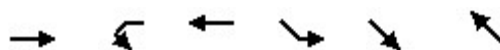
## **Appendix F**

Mitigated Existing Plus Project Conditions Intersection Analysis Worksheets

# Timings

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017



| Lane Group           | EBT   | WBL   | WBT   | SEL   | SET   | NWT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↕     |       | ↕     |       | ↕     | ↕     |
| Volume (vph)         | 863   | 5     | 665   | 52    | 2     | 1     |
| Turn Type            | NA    | Perm  | NA    | Perm  | NA    | NA    |
| Protected Phases     | 4     |       | 8     |       | 6     | 2     |
| Permitted Phases     |       | 8     |       | 6     |       |       |
| Detector Phase       | 4     | 8     | 8     | 6     | 6     | 2     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 98.0  | 98.0  | 98.0  | 22.0  | 22.0  | 22.0  |
| Total Split (%)      | 81.7% | 81.7% | 81.7% | 18.3% | 18.3% | 18.3% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   |       | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   |       | 5.3   |       | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | C-Max | C-Max | C-Max | Max   | Max   | Max   |
| Act Effect Green (s) | 92.7  |       | 92.7  |       | 16.7  | 16.7  |
| Actuated g/C Ratio   | 0.77  |       | 0.77  |       | 0.14  | 0.14  |
| v/c Ratio            | 0.63  |       | 0.52  |       | 0.32  | 0.03  |
| Control Delay        | 8.5   |       | 1.8   |       | 48.8  | 27.0  |
| Queue Delay          | 0.0   |       | 0.0   |       | 0.0   | 0.0   |
| Total Delay          | 8.5   |       | 1.8   |       | 48.8  | 27.0  |
| LOS                  | A     |       | A     |       | D     | C     |
| Approach Delay       | 8.5   |       | 1.8   |       | 48.8  | 27.0  |
| Approach LOS         | A     |       | A     |       | D     | C     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 16 (13%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 7.2

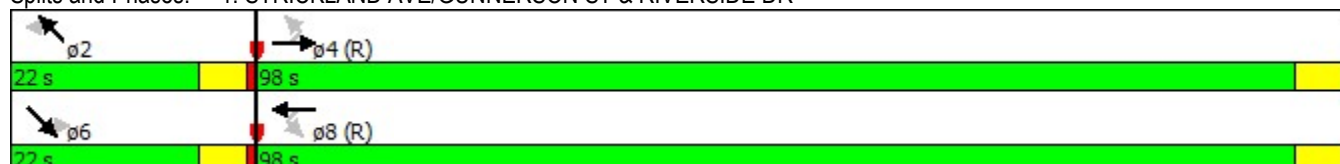
Intersection LOS: A

Intersection Capacity Utilization 64.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR



## Queues

### 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017



| Lane Group              | EBT  | WBT  | SET  | NWT  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 909  | 737  | 63   | 8    |
| v/c Ratio               | 0.63 | 0.52 | 0.32 | 0.03 |
| Control Delay           | 8.5  | 1.8  | 48.8 | 27.0 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 8.5  | 1.8  | 48.8 | 27.0 |
| Queue Length 50th (ft)  | 264  | 4    | 42   | 1    |
| Queue Length 95th (ft)  | 367  | 5    | 87   | 16   |
| Internal Link Dist (ft) | 1607 | 855  | 805  | 1652 |
| Turn Bay Length (ft)    |      |      |      |      |
| Base Capacity (vph)     | 1439 | 1424 | 194  | 234  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.63 | 0.52 | 0.32 | 0.03 |
| Intersection Summary    |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                 | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 0                                                                                 | 863                                                                               | 1                                                                                 | 5                                                                                 | 665                                                                               | 30                                                                                | 52                                                                                  | 2                                                                                   | 6                                                                                   | 0                                                                                   | 1                                                                                   | 7                                                                                   |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 1                                                                                   | 6                                                                                   | 16                                                                                  | 5                                                                                   | 2                                                                                   | 12                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 908                                                                               | 1                                                                                 | 5                                                                                 | 700                                                                               | 32                                                                                | 55                                                                                  | 2                                                                                   | 6                                                                                   | 0                                                                                   | 1                                                                                   | 7                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1437                                                                              | 2                                                                                 | 33                                                                                | 1359                                                                              | 62                                                                                | 224                                                                                 | 10                                                                                  | 19                                                                                  | 0                                                                                   | 28                                                                                  | 196                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.00                                                                                | 0.14                                                                                | 0.14                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 1860                                                                              | 2                                                                                 | 3                                                                                 | 1759                                                                              | 80                                                                                | 1209                                                                                | 73                                                                                  | 135                                                                                 | 0                                                                                   | 202                                                                                 | 1412                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 0                                                                                 | 909                                                                               | 737                                                                               | 0                                                                                 | 0                                                                                 | 63                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 8                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 0                                                                                 | 1862                                                                              | 1842                                                                              | 0                                                                                 | 0                                                                                 | 1416                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 1614                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 26.0                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 4.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.5                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 26.0                                                                              | 18.1                                                                              | 0.0                                                                               | 0.0                                                                               | 4.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.5                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.01                                                                              |                                                                                   | 0.04                                                                              | 0.87                                                                                |                                                                                     | 0.10                                                                                | 0.00                                                                                |                                                                                     | 0.87                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 0                                                                                 | 1439                                                                              | 1453                                                                              | 0                                                                                 | 0                                                                                 | 253                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 225                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.00                                                                              | 0.63                                                                              | 0.51                                                                              | 0.00                                                                              | 0.00                                                                              | 0.25                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.04                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 0                                                                                 | 1439                                                                              | 1453                                                                              | 0                                                                                 | 0                                                                                 | 253                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 225                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 6.1                                                                               | 5.2                                                                               | 0.0                                                                               | 0.0                                                                               | 46.6                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 44.7                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.0                                                                               | 2.1                                                                               | 1.3                                                                               | 0.0                                                                               | 0.0                                                                               | 2.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.0                                                                               | 14.0                                                                              | 9.5                                                                               | 0.0                                                                               | 0.0                                                                               | 2.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.0                                                                               | 8.2                                                                               | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 49.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 45.0                                                                                |
| LnGrp LOS                    |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 909                                                                               |                                                                                   |                                                                                   | 737                                                                               |                                                                                   |                                                                                     | 63                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 8.2                                                                               |                                                                                   |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                     | 49.0                                                                                |                                                                                     |                                                                                     | 45.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 22.0                                                                              |                                                                                   | 98.0                                                                              |                                                                                   | 22.0                                                                              |                                                                                     | 98.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                     | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 16.7                                                                              |                                                                                   | 92.7                                                                              |                                                                                   | 16.7                                                                              |                                                                                     | 92.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 2.5                                                                               |                                                                                   | 28.0                                                                              |                                                                                   | 6.9                                                                               |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.2                                                                               |                                                                                   | 21.7                                                                              |                                                                                   | 0.2                                                                               |                                                                                     | 22.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 5: CHANEY ST & COLLIER AVE

1/27/2017



| Lane Group           | SET   | SER   | NWL   | NWT   | NEL   | NER   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 65    | 470   | 149   | 85    | 317   | 31    |
| Turn Type            | NA    | Perm  | Perm  | NA    | Prot  | Perm  |
| Protected Phases     | 6     |       |       | 2     | 4     |       |
| Permitted Phases     |       | 6     | 2     |       |       | 4     |
| Detector Phase       | 6     | 6     | 2     | 2     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 33.0  | 33.0  | 33.0  | 33.0  | 27.0  | 27.0  |
| Total Split (%)      | 55.0% | 55.0% | 55.0% | 55.0% | 45.0% | 45.0% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   |       | 5.3   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | Min   | None  | None  |
| Act Effect Green (s) | 12.4  | 12.4  |       | 12.4  | 12.3  | 12.3  |
| Actuated g/C Ratio   | 0.34  | 0.34  |       | 0.34  | 0.34  | 0.34  |
| v/c Ratio            | 0.12  | 0.62  |       | 0.58  | 0.63  | 0.07  |
| Control Delay        | 9.4   | 4.7   |       | 15.8  | 15.8  | 4.4   |
| Queue Delay          | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 9.4   | 4.7   |       | 15.8  | 15.8  | 4.4   |
| LOS                  | A     | A     |       | B     | B     | A     |
| Approach Delay       | 5.2   |       |       | 15.8  | 14.8  |       |
| Approach LOS         | A     |       |       | B     | B     |       |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 36

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 10.4

Intersection LOS: B

Intersection Capacity Utilization 50.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: CHANEY ST & COLLIER AVE

|      |      |
|------|------|
| 02   | 04   |
| 33 s | 27 s |
| 06   |      |
| 33 s |      |

## Queues

## 5: CHANEY ST &amp; COLLIER AVE

1/27/2017



| Lane Group              | SET  | SER  | NWT  | NEL  | NER  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 78   | 566  | 282  | 382  | 37   |
| v/c Ratio               | 0.12 | 0.62 | 0.58 | 0.63 | 0.07 |
| Control Delay           | 9.4  | 4.7  | 15.8 | 15.8 | 4.4  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.4  | 4.7  | 15.8 | 15.8 | 4.4  |
| Queue Length 50th (ft)  | 9    | 0    | 40   | 55   | 0    |
| Queue Length 95th (ft)  | 32   | 34   | 107  | 136  | 11   |
| Internal Link Dist (ft) | 1917 |      | 212  | 1503 |      |
| Turn Bay Length (ft)    |      |      |      |      |      |
| Base Capacity (vph)     | 1488 | 1378 | 1131 | 1138 | 1030 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.05 | 0.41 | 0.25 | 0.34 | 0.04 |
| Intersection Summary    |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 5: CHANEY ST & COLLIER AVE

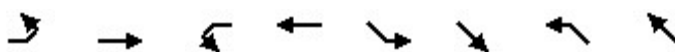
1/27/2017

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |   |   |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |   |
| Volume (veh/h)               | 65                                                                                | 470                                                                               | 149                                                                               | 85                                                                                | 317                                                                               | 31                                                                                |   |   |
| Number                       | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 78                                                                                | 566                                                                               | 180                                                                               | 102                                                                               | 382                                                                               | 37                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 826                                                                               | 702                                                                               | 422                                                                               | 205                                                                               | 474                                                                               | 423                                                                               |   |   |
| Arrive On Green              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.27                                                                              | 0.27                                                                              |   |   |
| Sat Flow, veh/h              | 1863                                                                              | 1583                                                                              | 588                                                                               | 463                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 78                                                                                | 566                                                                               | 282                                                                               | 0                                                                                 | 382                                                                               | 37                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1863                                                                              | 1583                                                                              | 1051                                                                              | 0                                                                                 | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 0.9                                                                               | 11.3                                                                              | 5.6                                                                               | 0.0                                                                               | 7.4                                                                               | 0.6                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 0.9                                                                               | 11.3                                                                              | 6.7                                                                               | 0.0                                                                               | 7.4                                                                               | 0.6                                                                               |   |   |
| Prop In Lane                 |                                                                                   | 1.00                                                                              | 0.64                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 826                                                                               | 702                                                                               | 627                                                                               | 0                                                                                 | 474                                                                               | 423                                                                               |   |   |
| V/C Ratio(X)                 | 0.09                                                                              | 0.81                                                                              | 0.45                                                                              | 0.00                                                                              | 0.81                                                                              | 0.09                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1410                                                                              | 1199                                                                              | 938                                                                               | 0                                                                                 | 1052                                                                              | 939                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 5.9                                                                               | 8.8                                                                               | 7.3                                                                               | 0.0                                                                               | 12.5                                                                              | 10.1                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.8                                                                               | 0.2                                                                               | 0.0                                                                               | 1.3                                                                               | 0.0                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 5.0                                                                               | 2.1                                                                               | 0.0                                                                               | 3.8                                                                               | 0.3                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 5.9                                                                               | 9.7                                                                               | 7.5                                                                               | 0.0                                                                               | 13.8                                                                              | 10.1                                                                              |   |   |
| LnGrp LOS                    | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 |   |   |
| Approach Vol, veh/h          | 644                                                                               |                                                                                   |                                                                                   | 282                                                                               | 419                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        | 9.2                                                                               |                                                                                   |                                                                                   | 7.5                                                                               | 13.4                                                                              |                                                                                   |   |   |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 21.5                                                                              |                                                                                   | 15.1                                                                              |                                                                                   | 21.5                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 27.7                                                                              |                                                                                   | 21.7                                                                              |                                                                                   | 27.7                                                                              |   |   |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 8.7                                                                               |                                                                                   | 9.4                                                                               |                                                                                   | 13.3                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 3.1                                                                               |                                                                                   | 0.6                                                                               |                                                                                   | 2.9                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 10.2                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

# Timings

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017



| Lane Group           | EBL   | EBT   | WBL   | WBT   | SEL   | SET   | NWL   | NWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       | ↕     |       | ↕     |       | ↕     |       | ↕     |
| Volume (vph)         | 5     | 954   | 6     | 981   | 35    | 3     | 1     | 1     |
| Turn Type            | Perm  | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases     |       | 4     |       | 8     |       | 6     |       | 2     |
| Permitted Phases     | 4     |       | 8     |       | 6     |       | 2     |       |
| Detector Phase       | 4     | 4     | 8     | 8     | 6     | 6     | 2     | 2     |
| Switch Phase         |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 98.7  | 98.7  | 98.7  | 98.7  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (%)      | 82.3% | 82.3% | 82.3% | 82.3% | 17.8% | 17.8% | 17.8% | 17.8% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) |       | 0.0   |       | 0.0   |       | 0.0   |       | 0.0   |
| Total Lost Time (s)  |       | 5.3   |       | 5.3   |       | 5.3   |       | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |
| Recall Mode          | C-Max | C-Max | C-Max | C-Max | Max   | Max   | Max   | Max   |
| Act Effect Green (s) |       | 93.4  |       | 93.4  |       | 16.0  |       | 16.0  |
| Actuated g/C Ratio   |       | 0.78  |       | 0.78  |       | 0.13  |       | 0.13  |
| v/c Ratio            |       | 0.70  |       | 0.80  |       | 0.22  |       | 0.02  |
| Control Delay        |       | 9.6   |       | 5.1   |       | 47.9  |       | 34.6  |
| Queue Delay          |       | 0.0   |       | 0.0   |       | 0.0   |       | 0.0   |
| Total Delay          |       | 9.6   |       | 5.1   |       | 47.9  |       | 34.6  |
| LOS                  |       | A     |       | A     |       | D     |       | C     |
| Approach Delay       |       | 9.6   |       | 5.1   |       | 47.9  |       | 34.6  |
| Approach LOS         |       | A     |       | A     |       | D     |       | C     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 61 (51%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 8.0

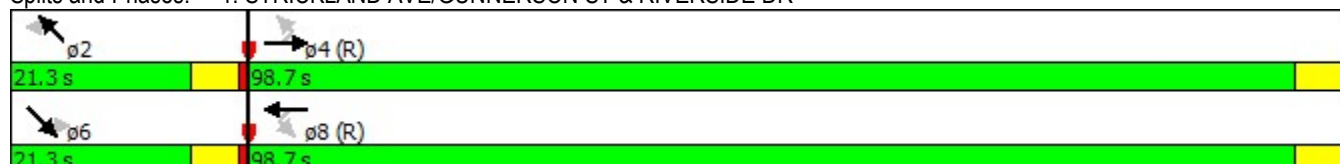
Intersection LOS: A

Intersection Capacity Utilization 78.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR





## Queues

### 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017



| Lane Group              | EBT  | WBT  | SET  | NWT  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 1004 | 1144 | 41   | 5    |
| v/c Ratio               | 0.70 | 0.80 | 0.22 | 0.02 |
| Control Delay           | 9.6  | 5.1  | 47.9 | 34.6 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.6  | 5.1  | 47.9 | 34.6 |
| Queue Length 50th (ft)  | 314  | 31   | 27   | 1    |
| Queue Length 95th (ft)  | 445  | m44  | 63   | 14   |
| Internal Link Dist (ft) | 1607 | 855  | 805  | 1652 |
| Turn Bay Length (ft)    |      |      |      |      |
| Base Capacity (vph)     | 1441 | 1425 | 189  | 223  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.70 | 0.80 | 0.22 | 0.02 |

#### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                 | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 5                                                                                 | 954                                                                               | 5                                                                                 | 6                                                                                 | 981                                                                               | 111                                                                               | 35                                                                                  | 3                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 3                                                                                   |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 1                                                                                   | 6                                                                                   | 16                                                                                  | 5                                                                                   | 2                                                                                   | 12                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 5                                                                                 | 994                                                                               | 5                                                                                 | 6                                                                                 | 1022                                                                              | 116                                                                               | 36                                                                                  | 3                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 3                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 32                                                                                | 1434                                                                              | 7                                                                                 | 32                                                                                | 1273                                                                              | 144                                                                               | 222                                                                                 | 18                                                                                  | 9                                                                                   | 61                                                                                  | 62                                                                                  | 130                                                                                 |
| Arrive On Green              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                |
| Sat Flow, veh/h              | 2                                                                                 | 1843                                                                              | 9                                                                                 | 3                                                                                 | 1636                                                                              | 185                                                                               | 1243                                                                                | 134                                                                                 | 71                                                                                  | 186                                                                                 | 466                                                                                 | 978                                                                                 |
| Grp Volume(v), veh/h         | 1004                                                                              | 0                                                                                 | 0                                                                                 | 1144                                                                              | 0                                                                                 | 0                                                                                 | 41                                                                                  | 0                                                                                   | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1854                                                                              | 0                                                                                 | 0                                                                                 | 1824                                                                              | 0                                                                                 | 0                                                                                 | 1448                                                                                | 0                                                                                   | 0                                                                                   | 1630                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 2.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 31.2                                                                              | 0.0                                                                               | 0.0                                                                               | 44.4                                                                              | 0.0                                                                               | 0.0                                                                               | 3.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.01                                                                              |                                                                                   | 0.10                                                                              | 0.88                                                                                |                                                                                     | 0.05                                                                                | 0.20                                                                                |                                                                                     | 0.60                                                                                |
| Lane Grp Cap(c), veh/h       | 1473                                                                              | 0                                                                                 | 0                                                                                 | 1450                                                                              | 0                                                                                 | 0                                                                                 | 249                                                                                 | 0                                                                                   | 0                                                                                   | 253                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.68                                                                              | 0.00                                                                              | 0.00                                                                              | 0.79                                                                              | 0.00                                                                              | 0.00                                                                              | 0.16                                                                                | 0.00                                                                                | 0.00                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 1473                                                                              | 0                                                                                 | 0                                                                                 | 1450                                                                              | 0                                                                                 | 0                                                                                 | 249                                                                                 | 0                                                                                   | 0                                                                                   | 253                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 7.9                                                                               | 0.0                                                                               | 0.0                                                                               | 46.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 45.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 2.6                                                                               | 0.0                                                                               | 0.0                                                                               | 4.4                                                                               | 0.0                                                                               | 0.0                                                                               | 1.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 16.7                                                                              | 0.0                                                                               | 0.0                                                                               | 23.7                                                                              | 0.0                                                                               | 0.0                                                                               | 1.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 9.0                                                                               | 0.0                                                                               | 0.0                                                                               | 12.3                                                                              | 0.0                                                                               | 0.0                                                                               | 47.7                                                                                | 0.0                                                                                 | 0.0                                                                                 | 45.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1004                                                                              |                                                                                   |                                                                                   | 1144                                                                              |                                                                                   |                                                                                   | 41                                                                                  |                                                                                     |                                                                                     | 5                                                                                   |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 9.0                                                                               |                                                                                   |                                                                                   | 12.3                                                                              |                                                                                   |                                                                                   | 47.7                                                                                |                                                                                     |                                                                                     | 45.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 21.3                                                                              |                                                                                   | 98.7                                                                              |                                                                                   | 21.3                                                                              |                                                                                     | 98.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                     | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 16.0                                                                              |                                                                                   | 93.4                                                                              |                                                                                   | 16.0                                                                              |                                                                                     | 93.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 2.3                                                                               |                                                                                   | 33.2                                                                              |                                                                                   | 5.0                                                                               |                                                                                     | 46.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.1                                                                               |                                                                                   | 37.8                                                                              |                                                                                   | 0.1                                                                               |                                                                                     | 32.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 11.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 5: CHANEY ST & COLLIER AVE

1/27/2017



| Lane Group           | SET   | SER   | NWL   | NWT   | NEL   | NER   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↑     | ↑     |       | ↑     | ↑     | ↑     |
| Volume (vph)         | 223   | 214   | 21    | 119   | 342   | 55    |
| Turn Type            | NA    | Perm  | Perm  | NA    | Prot  | Perm  |
| Protected Phases     | 6     |       |       | 2     | 4     |       |
| Permitted Phases     |       | 6     | 2     |       |       | 4     |
| Detector Phase       | 6     | 6     | 2     | 2     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 27.0  | 27.0  | 27.0  | 27.0  | 33.0  | 33.0  |
| Total Split (%)      | 45.0% | 45.0% | 45.0% | 45.0% | 55.0% | 55.0% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   |       | 5.3   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | Min   | None  | None  |
| Act Effect Green (s) | 9.9   | 9.9   |       | 9.9   | 11.7  | 11.7  |
| Actuated g/C Ratio   | 0.30  | 0.30  |       | 0.30  | 0.36  | 0.36  |
| v/c Ratio            | 0.44  | 0.37  |       | 0.30  | 0.60  | 0.10  |
| Control Delay        | 12.7  | 3.9   |       | 11.4  | 13.4  | 3.3   |
| Queue Delay          | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 12.7  | 3.9   |       | 11.4  | 13.4  | 3.3   |
| LOS                  | B     | A     |       | B     | B     | A     |
| Approach Delay       | 8.4   |       |       | 11.4  | 12.0  |       |
| Approach LOS         | A     |       |       | B     | B     |       |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 32.7

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 10.3

Intersection LOS: B

Intersection Capacity Utilization 51.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: CHANEY ST & COLLIER AVE

|            |            |
|------------|------------|
| ø2<br>27 s | ø4<br>33 s |
| ø6<br>27 s |            |

## Queues

## 5: CHANEY ST &amp; COLLIER AVE

1/27/2017



| Lane Group              | SET  | SER  | NWT  | NEL  | NER  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 248  | 238  | 155  | 380  | 61   |
| v/c Ratio               | 0.44 | 0.37 | 0.30 | 0.60 | 0.10 |
| Control Delay           | 12.7 | 3.9  | 11.4 | 13.4 | 3.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 12.7 | 3.9  | 11.4 | 13.4 | 3.3  |
| Queue Length 50th (ft)  | 31   | 0    | 18   | 45   | 0    |
| Queue Length 95th (ft)  | 92   | 33   | 61   | 129  | 15   |
| Internal Link Dist (ft) | 1917 |      | 212  | 1503 |      |
| Turn Bay Length (ft)    |      |      |      |      |      |
| Base Capacity (vph)     | 1294 | 1172 | 1185 | 1521 | 1369 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.19 | 0.20 | 0.13 | 0.25 | 0.04 |
| Intersection Summary    |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 5: CHANEY ST & COLLIER AVE

1/27/2017

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |   |   |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |   |
| Volume (veh/h)               | 223                                                                               | 214                                                                               | 21                                                                                | 119                                                                               | 342                                                                               | 55                                                                                |   |   |
| Number                       | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 248                                                                               | 238                                                                               | 23                                                                                | 132                                                                               | 380                                                                               | 61                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 528                                                                               | 449                                                                               | 203                                                                               | 455                                                                               | 509                                                                               | 455                                                                               |   |   |
| Arrive On Green              | 0.28                                                                              | 0.28                                                                              | 0.28                                                                              | 0.28                                                                              | 0.29                                                                              | 0.29                                                                              |   |   |
| Sat Flow, veh/h              | 1863                                                                              | 1583                                                                              | 125                                                                               | 1606                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 248                                                                               | 238                                                                               | 155                                                                               | 0                                                                                 | 380                                                                               | 61                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1863                                                                              | 1583                                                                              | 1731                                                                              | 0                                                                                 | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 2.7                                                                               | 3.1                                                                               | 0.0                                                                               | 0.0                                                                               | 4.8                                                                               | 0.7                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 2.7                                                                               | 3.1                                                                               | 1.6                                                                               | 0.0                                                                               | 4.8                                                                               | 0.7                                                                               |   |   |
| Prop In Lane                 |                                                                                   | 1.00                                                                              | 0.15                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 528                                                                               | 449                                                                               | 658                                                                               | 0                                                                                 | 509                                                                               | 455                                                                               |   |   |
| V/C Ratio(X)                 | 0.47                                                                              | 0.53                                                                              | 0.24                                                                              | 0.00                                                                              | 0.75                                                                              | 0.13                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1637                                                                              | 1392                                                                              | 1617                                                                              | 0                                                                                 | 1990                                                                              | 1776                                                                              |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 7.3                                                                               | 7.5                                                                               | 6.9                                                                               | 0.0                                                                               | 8.0                                                                               | 6.5                                                                               |   |   |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 0.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.8                                                                               | 0.0                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.4                                                                               | 1.4                                                                               | 0.8                                                                               | 0.0                                                                               | 2.4                                                                               | 0.3                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 7.6                                                                               | 7.8                                                                               | 7.0                                                                               | 0.0                                                                               | 8.8                                                                               | 6.6                                                                               |   |   |
| LnGrp LOS                    | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |   |   |
| Approach Vol, veh/h          | 486                                                                               |                                                                                   |                                                                                   | 155                                                                               | 441                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        | 7.7                                                                               |                                                                                   |                                                                                   | 7.0                                                                               | 8.5                                                                               |                                                                                   |   |   |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 12.3                                                                              |                                                                                   | 12.4                                                                              |                                                                                   | 12.3                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 21.7                                                                              |                                                                                   | 27.7                                                                              |                                                                                   | 21.7                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 3.6                                                                               |                                                                                   | 6.8                                                                               |                                                                                   | 5.1                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 1.9                                                                               |                                                                                   | 0.7                                                                               |                                                                                   | 1.9                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

## **Appendix G**

Project Completion Conditions (Existing Plus Ambient Growth Plus Proposed  
Project) Intersection Analysis Worksheets

**Intersection**

Int Delay, s/veh 5.5

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 896  | 1    | 5    | 691  | 31   | 54   | 2    | 6    | 0    | 1    | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | 50   | -    | -    | 50   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 943  | 1    | 5    | 727  | 33   | 57   | 2    | 6    | 0    | 1    | 7    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor2 |       |       | Minor1 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 760    | 0 | 0 | 944    | 0 | 0 | 1698   | 1698  | 744   | 1699   | 1715  | 944   |
| Stage 1              | -      | - | - | -      | - | - | 754    | 754   | -     | 944    | 944   | -     |
| Stage 2              | -      | - | - | -      | - | - | 944    | 944   | -     | 755    | 771   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 852    | - | - | 727    | - | - | 73     | 92    | 415   | 73     | 90    | 318   |
| Stage 1              | -      | - | - | -      | - | - | 401    | 417   | -     | 315    | 341   | -     |
| Stage 2              | -      | - | - | -      | - | - | 315    | 341   | -     | 401    | 410   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 852    | - | - | 727    | - | - | 70     | 91    | 415   | 70     | 89    | 318   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 70     | 91    | -     | 70     | 89    | -     |
| Stage 1              | -      | - | - | -      | - | - | 401    | 412   | -     | 315    | 341   | -     |
| Stage 2              | -      | - | - | -      | - | - | 307    | 341   | -     | 388    | 405   | -     |

| Approach             | EB | WB  | SE    | NW   |
|----------------------|----|-----|-------|------|
| HCM Control Delay, s | 0  | 0.1 | 146.1 | 20.3 |
| HCM LOS              |    |     | F     | C    |

| Minor Lane/Major Mvmt | NWLn1 | NWLn2 | EBL | EBT | EBR | WBL   | WBT | WBR | SELn1 | SELn2 |
|-----------------------|-------|-------|-----|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 89    | 318   | 852 | -   | -   | 727   | -   | -   | 71    | 415   |
| HCM Lane V/C Ratio    | 0.012 | 0.023 | -   | -   | -   | 0.007 | -   | -   | 0.83  | 0.015 |
| HCM Control Delay (s) | 45.9  | 16.6  | 0   | -   | -   | 10    | 0   | -   | 160.3 | 13.8  |
| HCM Lane LOS          | E     | C     | A   | -   | -   | A     | A   | -   | F     | B     |
| HCM 95th %tile Q(veh) | 0     | 0.1   | 0   | -   | -   | 0     | -   | -   | 4     | 0     |

# Lanes and Geometrics

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 50                                                                                  | 0                                                                                   |                                                                                     | 50                                                                                  |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 1687                                                                              |                                                                                   |                                                                                   | 935                                                                               |                                                                                   |                                                                                    | 885                                                                                 |                                                                                     |                                                                                     | 1732                                                                                |                                                                                     |
| Travel Time (s)      |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# Timings

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017



| Lane Group           | SEL   | SET   | SER   | NWL   | NWT   | NEL   | NET   | NER   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |
| Volume (vph)         | 1     | 49    | 33    | 690   | 68    | 71    | 6     | 874   | 0     |
| Turn Type            | Split | NA    | Perm  | Split | NA    | Perm  | NA    | pm+ov | NA    |
| Protected Phases     | 6     | 6     |       | 2     | 2     |       | 4     | 2     | 8     |
| Permitted Phases     |       |       | 6     |       |       | 4     |       | 4     |       |
| Detector Phase       | 6     | 6     | 6     | 2     | 2     | 4     | 4     | 2     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 6.0   | 6.0   | 6.0   | 7.0   | 7.0   | 9.0   | 9.0   | 7.0   | 9.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 20.0  | 20.0  | 80.0  | 80.0  | 20.0  | 20.0  | 80.0  | 20.0  |
| Total Split (%)      | 16.7% | 16.7% | 16.7% | 66.7% | 66.7% | 16.7% | 16.7% | 66.7% | 16.7% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 3.9   | 3.9   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |       | 4.9   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |       |
| Recall Mode          | Max   | Max   | Max   | C-Max | C-Max | None  | None  | C-Max | None  |
| Act Effct Green (s)  | 14.7  | 14.7  | 14.7  | 80.7  | 80.7  |       | 11.8  | 94.7  | 11.5  |
| Actuated g/C Ratio   | 0.12  | 0.12  | 0.12  | 0.67  | 0.67  |       | 0.10  | 0.79  | 0.10  |
| v/c Ratio            | 0.00  | 0.24  | 0.14  | 0.64  | 0.07  |       | 0.62  | 0.70  | 0.00  |
| Control Delay        | 46.0  | 50.6  | 3.4   | 11.4  | 6.0   |       | 71.5  | 4.6   | 0.0   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 46.0  | 50.6  | 3.4   | 11.4  | 6.0   |       | 71.5  | 4.6   | 0.0   |
| LOS                  | D     | D     | A     | B     | A     |       | E     | A     | A     |
| Approach Delay       |       | 31.9  |       |       | 10.8  |       | 10.1  |       | 0.0   |
| Approach LOS         |       | C     |       |       | B     |       | B     |       | A     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 42 (35%), Referenced to phase 2:NWTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 11.4

Intersection LOS: B

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15

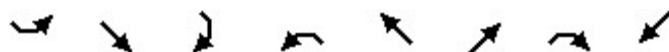
Splits and Phases: 2: RIVERSIDE DR & COLLIER AVE

|        |      |      |
|--------|------|------|
|        |      |      |
| ø2 (R) | ø6   | ø4   |
| 80 s   | 20 s | 20 s |
|        |      |      |
|        |      | ø8   |
|        |      | 20 s |

## Queues

## 2: RIVERSIDE DR &amp; COLLIER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL  | NWT  | NET  | NER  | SWT  |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 1    | 54   | 36   | 758  | 83   | 85   | 960  | 3    |
| v/c Ratio               | 0.00 | 0.24 | 0.14 | 0.64 | 0.07 | 0.62 | 0.70 | 0.00 |
| Control Delay           | 46.0 | 50.6 | 3.4  | 11.4 | 6.0  | 71.5 | 4.6  | 0.0  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 46.0 | 50.6 | 3.4  | 11.4 | 6.0  | 71.5 | 4.6  | 0.0  |
| Queue Length 50th (ft)  | 1    | 38   | 0    | 185  | 13   | 64   | 58   | 0    |
| Queue Length 95th (ft)  | 6    | 79   | 8    | 433  | 26   | 116  | 138  | 0    |
| Internal Link Dist (ft) |      | 1295 |      |      | 623  | 2459 |      | 691  |
| Turn Bay Length (ft)    | 200  |      | 200  |      |      |      | 360  |      |
| Base Capacity (vph)     | 216  | 228  | 254  | 1190 | 1238 | 173  | 1380 | 1040 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.00 | 0.24 | 0.14 | 0.64 | 0.07 | 0.49 | 0.70 | 0.00 |
| Intersection Summary    |      |      |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017

|                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Volume (veh/h)                                                                                      | 1                                                                                 | 49                                                                                | 33                                                                                | 690                                                                               | 68                                                                                | 7                                                                                 | 71                                                                                 | 6                                                                                   | 874                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                                                | 1                                                                                 | 54                                                                                | 36                                                                                | 758                                                                               | 75                                                                                | 8                                                                                 | 78                                                                                 | 7                                                                                   | 960                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Adj No. of Lanes                                                                                    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                                                    | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 1212                                                                              | 129                                                                               | 212                                                                                | 17                                                                                  | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| Arrive On Green                                                                                     | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.13                                                                               | 0.13                                                                                | 0.13                                                                                | 0.00                                                                                | 0.00                                                                                | 0.13                                                                                |
| Sat Flow, veh/h                                                                                     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1655                                                                              | 177                                                                               | 1231                                                                               | 133                                                                                 | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h                                                                                | 1                                                                                 | 54                                                                                | 36                                                                                | 758                                                                               | 0                                                                                 | 83                                                                                | 85                                                                                 | 0                                                                                   | 960                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 0                                                                                 | 1832                                                                              | 1364                                                                               | 0                                                                                   | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s                                                                                     | 0.1                                                                               | 3.1                                                                               | 2.4                                                                               | 23.9                                                                              | 0.0                                                                               | 1.5                                                                               | 6.4                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 0.1                                                                               | 3.1                                                                               | 2.4                                                                               | 23.9                                                                              | 0.0                                                                               | 1.5                                                                               | 7.4                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 |
| Prop In Lane                                                                                        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.10                                                                              | 0.92                                                                               |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1342                                                                              | 229                                                                                | 0                                                                                   | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| V/C Ratio(X)                                                                                        | 0.00                                                                              | 0.24                                                                              | 0.19                                                                              | 0.58                                                                              | 0.00                                                                              | 0.06                                                                              | 0.37                                                                               | 0.00                                                                                | 0.71                                                                                | 0.00                                                                                | 0.00                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1342                                                                              | 229                                                                                | 0                                                                                   | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 46.2                                                                              | 47.6                                                                              | 47.3                                                                              | 7.5                                                                               | 0.0                                                                               | 4.5                                                                               | 49.4                                                                               | 0.0                                                                                 | 2.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 45.9                                                                                |
| Incr Delay (d2), s/veh                                                                              | 0.0                                                                               | 2.4                                                                               | 2.1                                                                               | 1.9                                                                               | 0.0                                                                               | 0.1                                                                               | 0.4                                                                                | 0.0                                                                                 | 1.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 0.0                                                                               | 1.8                                                                               | 1.2                                                                               | 12.3                                                                              | 0.0                                                                               | 0.8                                                                               | 2.7                                                                                | 0.0                                                                                 | 32.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 46.3                                                                              | 50.0                                                                              | 49.4                                                                              | 9.4                                                                               | 0.0                                                                               | 4.6                                                                               | 49.8                                                                               | 0.0                                                                                 | 3.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 46.0                                                                                |
| LnGrp LOS                                                                                           | D                                                                                 | D                                                                                 | D                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | D                                                                                  |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |
| Approach Vol, veh/h                                                                                 |                                                                                   | 91                                                                                |                                                                                   |                                                                                   | 841                                                                               |                                                                                   |                                                                                    | 1045                                                                                |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 49.7                                                                              |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                    | 7.5                                                                                 |                                                                                     |                                                                                     | 45.9                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 93.6                                                                              |                                                                                   | 20.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                    | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 5.3                                                                               |                                                                                   | * 5.3                                                                             |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 74.7                                                                              |                                                                                   | * 15                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                        |                                                                                   | 26.9                                                                              |                                                                                   | 18.1                                                                              |                                                                                   | 6.1                                                                               |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 1.6                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.1                                                                               |                                                                                    | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |   |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 824                                                                               | 107                                                                               | 22                                                                                | 28                                                                                | 101                                                                               | 351                                                                               | 42                                                                                  | 86                                                                                  | 756                                                                                 | 256                                                                                 | 702                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                | NA                                                                                  | Prot                                                                                | NA                                                                                  | pm+ov                                                                               |
| Protected Phases     | 1                                                                                 | 6                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 1                                                                                 | 6                                                                                 | 6                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 11.6                                                                              | 30.5                                                                              | 30.5                                                                              | 8.6                                                                               | 18.0                                                                              | 11.6                                                                              | 8.6                                                                                 | 20.0                                                                                | 11.6                                                                                | 42.3                                                                                | 11.6                                                                                |
| Total Split (s)      | 43.0                                                                              | 50.0                                                                              | 50.0                                                                              | 11.0                                                                              | 18.0                                                                              | 39.0                                                                              | 9.6                                                                                 | 20.0                                                                                | 39.0                                                                                | 49.4                                                                                | 43.0                                                                                |
| Total Split (%)      | 35.8%                                                                             | 41.7%                                                                             | 41.7%                                                                             | 9.2%                                                                              | 15.0%                                                                             | 32.5%                                                                             | 8.0%                                                                                | 16.7%                                                                               | 32.5%                                                                               | 41.2%                                                                               | 35.8%                                                                               |
| Yellow Time (s)      | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 3.6                                                                               | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | C-Max                                                                             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | C-Max                                                                               |
| Act Effct Green (s)  | 47.1                                                                              | 57.0                                                                              | 57.0                                                                              | 6.6                                                                               | 12.7                                                                              | 50.5                                                                              | 4.9                                                                                 | 7.9                                                                                 | 32.5                                                                                | 37.3                                                                                | 89.7                                                                                |
| Actuated g/C Ratio   | 0.39                                                                              | 0.48                                                                              | 0.48                                                                              | 0.06                                                                              | 0.11                                                                              | 0.42                                                                              | 0.04                                                                                | 0.07                                                                                | 0.27                                                                                | 0.31                                                                                | 0.75                                                                                |
| v/c Ratio            | 0.68                                                                              | 0.07                                                                              | 0.03                                                                              | 0.32                                                                              | 0.30                                                                              | 0.30                                                                              | 0.34                                                                                | 0.53                                                                                | 0.90                                                                                | 0.49                                                                                | 0.35                                                                                |
| Control Delay        | 31.6                                                                              | 18.9                                                                              | 0.0                                                                               | 62.3                                                                              | 51.9                                                                              | 8.7                                                                               | 62.6                                                                                | 44.8                                                                                | 47.6                                                                                | 25.4                                                                                | 1.1                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 31.6                                                                              | 18.9                                                                              | 0.0                                                                               | 62.3                                                                              | 51.9                                                                              | 8.7                                                                               | 62.6                                                                                | 44.8                                                                                | 47.6                                                                                | 25.4                                                                                | 1.1                                                                                 |
| LOS                  | C                                                                                 | B                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | A                                                                                 | E                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 29.4                                                                              |                                                                                   |                                                                                   | 20.9                                                                              |                                                                                   |                                                                                     | 49.4                                                                                |                                                                                     | 25.2                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 81 (68%), Referenced to phase 1:SEL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 27.0

Intersection LOS: C

Intersection Capacity Utilization 68.6%

ICU Level of Service C

Analysis Period (min) 15

### Splits and Phases: 3: CENTRAL AVE & COLLIER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |
| ø1 (R)                                                                              |                                                                                     | ø2                                                                                  |                                                                                     | ø3                                                                                  |                                                                                     | ø4                                                                                  |                                                                                     |
| 43 s                                                                                |                                                                                     | 18 s                                                                                |                                                                                     | 39 s                                                                                |                                                                                     | 20 s                                                                                |                                                                                     |
|  |  |  |  |  |  |  |  |
| ø5                                                                                  | ø6                                                                                  | ø7                                                                                  | ø8                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| 11 s                                                                                | 50 s                                                                                | 9.6 s                                                                               | 49.4 s                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## 3: CENTRAL AVE &amp; COLLIER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL  | NWT  | NWR  | NEL  | NET  | SWL  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 916  | 119  | 24   | 31   | 112  | 390  | 47   | 137  | 840  | 284  | 780  |
| v/c Ratio               | 0.68 | 0.07 | 0.03 | 0.32 | 0.30 | 0.30 | 0.34 | 0.53 | 0.90 | 0.49 | 0.35 |
| Control Delay           | 31.6 | 18.9 | 0.0  | 62.3 | 51.9 | 8.7  | 62.6 | 44.8 | 47.6 | 25.4 | 1.1  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 31.6 | 18.9 | 0.0  | 62.3 | 51.9 | 8.7  | 62.6 | 44.8 | 47.6 | 25.4 | 1.1  |
| Queue Length 50th (ft)  | 305  | 25   | 0    | 24   | 42   | 38   | 18   | 38   | 257  | 131  | 23   |
| Queue Length 95th (ft)  | 377  | m41  | m0   | 55   | 72   | 73   | 39   | 70   | #374 | 218  | 23   |
| Internal Link Dist (ft) |      | 1881 |      |      | 463  |      |      | 1625 |      | 251  |      |
| Turn Bay Length (ft)    | 650  |      | 220  | 100  |      | 100  | 140  |      |      |      |      |
| Base Capacity (vph)     | 1348 | 1682 | 828  | 106  | 374  | 1351 | 143  | 450  | 984  | 684  | 2202 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.68 | 0.07 | 0.03 | 0.29 | 0.30 | 0.29 | 0.33 | 0.30 | 0.85 | 0.42 | 0.35 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)               | 824                                                                               | 107                                                                               | 22                                                                                | 28                                                                                | 101                                                                               | 351                                                                               | 42                                                                                 | 86                                                                                  | 37                                                                                  | 756                                                                                 | 256                                                                                 | 702                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 916                                                                               | 119                                                                               | 24                                                                                | 31                                                                                | 112                                                                               | 390                                                                               | 47                                                                                 | 96                                                                                  | 41                                                                                  | 840                                                                                 | 284                                                                                 | 780                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 1231                                                                              | 1629                                                                              | 729                                                                               | 48                                                                                | 459                                                                               | 1101                                                                              | 105                                                                                | 202                                                                                 | 82                                                                                  | 913                                                                                 | 591                                                                                 | 1880                                                                                |
| Arrive On Green              | 0.36                                                                              | 0.46                                                                              | 0.46                                                                              | 0.03                                                                              | 0.13                                                                              | 0.13                                                                              | 0.03                                                                               | 0.08                                                                                | 0.08                                                                                | 0.35                                                                                | 0.42                                                                                | 0.42                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 3539                                                                              | 1583                                                                              | 1774                                                                              | 3539                                                                              | 2787                                                                              | 3442                                                                               | 2459                                                                                | 997                                                                                 | 3442                                                                                | 1863                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h         | 916                                                                               | 119                                                                               | 24                                                                                | 31                                                                                | 112                                                                               | 390                                                                               | 47                                                                                 | 68                                                                                  | 69                                                                                  | 840                                                                                 | 284                                                                                 | 780                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 1393                                                                              | 1721                                                                               | 1770                                                                                | 1687                                                                                | 1721                                                                                | 1863                                                                                | 1393                                                                                |
| Q Serve(g_s), s              | 28.0                                                                              | 2.3                                                                               | 1.0                                                                               | 2.1                                                                               | 3.4                                                                               | 11.8                                                                              | 1.6                                                                                | 4.4                                                                                 | 4.7                                                                                 | 28.1                                                                                | 13.3                                                                                | 14.7                                                                                |
| Cycle Q Clear(g_c), s        | 28.0                                                                              | 2.3                                                                               | 1.0                                                                               | 2.1                                                                               | 3.4                                                                               | 11.8                                                                              | 1.6                                                                                | 4.4                                                                                 | 4.7                                                                                 | 28.1                                                                                | 13.3                                                                                | 14.7                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.59                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 1231                                                                              | 1629                                                                              | 729                                                                               | 48                                                                                | 459                                                                               | 1101                                                                              | 105                                                                                | 145                                                                                 | 138                                                                                 | 913                                                                                 | 591                                                                                 | 1880                                                                                |
| V/C Ratio(X)                 | 0.74                                                                              | 0.07                                                                              | 0.03                                                                              | 0.64                                                                              | 0.24                                                                              | 0.35                                                                              | 0.45                                                                               | 0.47                                                                                | 0.50                                                                                | 0.92                                                                                | 0.48                                                                                | 0.41                                                                                |
| Avail Cap(c_a), veh/h        | 1231                                                                              | 1629                                                                              | 729                                                                               | 95                                                                                | 459                                                                               | 1101                                                                              | 143                                                                                | 217                                                                                 | 207                                                                                 | 987                                                                                 | 685                                                                                 | 2021                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 33.7                                                                              | 18.1                                                                              | 17.7                                                                              | 57.8                                                                              | 46.9                                                                              | 25.5                                                                              | 57.2                                                                               | 52.6                                                                                | 52.7                                                                                | 37.6                                                                                | 27.5                                                                                | 7.4                                                                                 |
| Incr Delay (d2), s/veh       | 2.2                                                                               | 0.1                                                                               | 0.1                                                                               | 5.2                                                                               | 1.3                                                                               | 0.9                                                                               | 1.1                                                                                | 0.9                                                                                 | 1.0                                                                                 | 12.2                                                                                | 0.2                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 13.6                                                                              | 1.1                                                                               | 0.4                                                                               | 1.1                                                                               | 1.7                                                                               | 4.7                                                                               | 0.8                                                                                | 2.2                                                                                 | 2.2                                                                                 | 14.8                                                                                | 6.9                                                                                 | 5.6                                                                                 |
| LnGrp Delay(d),s/veh         | 35.9                                                                              | 18.2                                                                              | 17.8                                                                              | 63.0                                                                              | 48.2                                                                              | 26.4                                                                              | 58.3                                                                               | 53.4                                                                                | 53.8                                                                                | 49.8                                                                                | 27.8                                                                                | 7.5                                                                                 |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 1059                                                                              |                                                                                   |                                                                                   |                                                                                   | 533                                                                               |                                                                                   |                                                                                    | 184                                                                                 |                                                                                     |                                                                                     | 1904                                                                                |                                                                                     |
| Approach Delay, s/veh        | 33.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 33.1                                                                              |                                                                                   |                                                                                    | 54.8                                                                                |                                                                                     |                                                                                     | 29.2                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 47.5                                                                              | 20.9                                                                              | 36.4                                                                              | 15.1                                                                              | 7.9                                                                               | 60.5                                                                              | 8.2                                                                                | 43.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 38.4                                                                              | 12.7                                                                              | 34.4                                                                              | 14.7                                                                              | 6.4                                                                               | 44.7                                                                              | 5.0                                                                                | 44.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 31.0                                                                              | 14.8                                                                              | 31.1                                                                              | 7.4                                                                               | 5.1                                                                               | 5.3                                                                               | 4.6                                                                                | 17.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 1.4                                                                               | 0.0                                                                               | 0.8                                                                               | 2.5                                                                               | 0.0                                                                               | 2.0                                                                               | 0.0                                                                                | 3.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 32.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
|--------------------------|--------|-------|-------|--------|------|------|--------|----------|-------|--------|-------|--|-------|-------|-------|
| Int Delay, s/veh         | 1.1    |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
|                          |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
| Movement                 | SEL    | SET   | SER   |        | NWL  | NWT  | NWR    |          | NEL   | NET    | NER   |  | SWL   | SWT   | SWR   |
| Vol, veh/h               | 0      | 628   | 25    |        | 11   | 448  | 0      |          | 4     | 0      | 15    |  | 30    | 0     | 10    |
| Conflicting Peds, #/hr   | 0      | 0     | 0     |        | 0    | 0    | 0      |          | 0     | 0      | 0     |  | 0     | 0     | 0     |
| Sign Control             | Free   | Free  | Free  |        | Free | Free | Free   |          | Stop  | Stop   | Stop  |  | Stop  | Stop  | Stop  |
| RT Channelized           | -      | -     | None  |        | -    | -    | None   |          | -     | -      | None  |  | -     | -     | None  |
| Storage Length           | 0      | -     | -     |        | 150  | -    | -      |          | 90    | -      | -     |  | -     | -     | -     |
| Veh in Median Storage, # | -      | 0     | -     |        | -    | 0    | -      |          | -     | 0      | -     |  | -     | 0     | -     |
| Grade, %                 | -      | 0     | -     |        | -    | 0    | -      |          | -     | 0      | -     |  | -     | 0     | -     |
| Peak Hour Factor         | 85     | 85    | 85    |        | 85   | 85   | 85     |          | 85    | 85     | 85    |  | 85    | 85    | 85    |
| Heavy Vehicles, %        | 2      | 2     | 2     |        | 2    | 2    | 2      |          | 2     | 2      | 2     |  | 2     | 2     | 2     |
| Mvmt Flow                | 0      | 739   | 29    |        | 13   | 527  | 0      |          | 5     | 0      | 18    |  | 35    | 0     | 12    |
|                          |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
| Major/Minor              | Major1 |       |       | Major2 |      |      | Minor1 |          |       | Minor2 |       |  |       |       |       |
| Conflicting Flow All     | 527    | 0     | 0     |        | 768  | 0    | 0      |          | 1313  | 1307   | 384   |  | 922   | 1321  | 527   |
| Stage 1                  | -      | -     | -     |        | -    | -    | -      |          | 754   | 754    | -     |  | 553   | 553   | -     |
| Stage 2                  | -      | -     | -     |        | -    | -    | -      |          | 559   | 553    | -     |  | 369   | 768   | -     |
| Critical Hdwy            | 4.12   | -     | -     |        | 4.14 | -    | -      |          | 7.33  | 6.53   | 6.93  |  | 7.33  | 6.53  | 6.23  |
| Critical Hdwy Stg 1      | -      | -     | -     |        | -    | -    | -      |          | 6.53  | 5.53   | -     |  | 6.13  | 5.53  | -     |
| Critical Hdwy Stg 2      | -      | -     | -     |        | -    | -    | -      |          | 6.13  | 5.53   | -     |  | 6.53  | 5.53  | -     |
| Follow-up Hdwy           | 2.218  | -     | -     |        | 2.22 | -    | -      |          | 3.519 | 4.019  | 3.319 |  | 3.519 | 4.019 | 3.319 |
| Pot Cap-1 Maneuver       | 1040   | -     | -     |        | 842  | -    | -      |          | 125   | 159    | 615   |  | 238   | 156   | 550   |
| Stage 1                  | -      | -     | -     |        | -    | -    | -      |          | 368   | 416    | -     |  | 516   | 513   | -     |
| Stage 2                  | -      | -     | -     |        | -    | -    | -      |          | 513   | 513    | -     |  | 624   | 410   | -     |
| Platoon blocked, %       |        |       | -     | -      |      |      | -      | -        |       |        |       |  |       |       |       |
| Mov Cap-1 Maneuver       | 1040   | -     | -     |        | 842  | -    | -      |          | 121   | 157    | 615   |  | 228   | 154   | 550   |
| Mov Cap-2 Maneuver       | -      | -     | -     |        | -    | -    | -      |          | 121   | 157    | -     |  | 228   | 154   | -     |
| Stage 1                  | -      | -     | -     |        | -    | -    | -      |          | 368   | 416    | -     |  | 516   | 505   | -     |
| Stage 2                  | -      | -     | -     |        | -    | -    | -      |          | 494   | 505    | -     |  | 606   | 410   | -     |
|                          |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
| Approach                 | SE     |       |       | NW     |      |      | NE     |          |       | SW     |       |  |       |       |       |
| HCM Control Delay, s     | 0      |       |       | 0.2    |      |      | 16.3   |          |       | 21.3   |       |  |       |       |       |
| HCM LOS                  |        |       |       |        |      |      | C      |          |       | C      |       |  |       |       |       |
|                          |        |       |       |        |      |      |        |          |       |        |       |  |       |       |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL   | NWT    | NWR  | SEL  | SET    | SERSWLn1 |       |        |       |  |       |       |       |
| Capacity (veh/h)         | 121    | 615   | 842   | -      | -    | 1040 | -      | -        | 267   |        |       |  |       |       |       |
| HCM Lane V/C Ratio       | 0.039  | 0.029 | 0.015 | -      | -    | -    | -      | -        | 0.176 |        |       |  |       |       |       |
| HCM Control Delay (s)    | 36     | 11    | 9.3   | -      | -    | 0    | -      | -        | 21.3  |        |       |  |       |       |       |
| HCM Lane LOS             | E      | B     | A     | -      | -    | A    | -      | -        | C     |        |       |  |       |       |       |
| HCM 95th %tile Q(veh)    | 0.1    | 0.1   | 0     | -      | -    | 0    | -      | -        | 0.6   |        |       |  |       |       |       |

# Lanes and Geometrics

## 4: CRANE ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 90                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 118                                                                               |                                                                                   |                                                                                   | 1997                                                                              |                                                                                   |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     | 341                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Intersection             |        |       |        |      |        |       |
|--------------------------|--------|-------|--------|------|--------|-------|
| Int Delay, s/veh         | 18.3   |       |        |      |        |       |
| Movement                 | SET    | SER   | NWL    | NWT  | NEL    | NER   |
| Vol, veh/h               | 67     | 488   | 155    | 88   | 329    | 32    |
| Conflicting Peds, #/hr   | 0      | 0     | 0      | 0    | 0      | 0     |
| Sign Control             | Free   | Free  | Free   | Free | Stop   | Stop  |
| RT Channelized           | -      | None  | -      | None | -      | None  |
| Storage Length           | -      | 0     | -      | -    | 0      | 0     |
| Veh in Median Storage, # | 0      | -     | -      | 0    | 0      | -     |
| Grade, %                 | 0      | -     | -      | 0    | 0      | -     |
| Peak Hour Factor         | 83     | 83    | 83     | 83   | 83     | 83    |
| Heavy Vehicles, %        | 2      | 2     | 2      | 2    | 2      | 2     |
| Mvmt Flow                | 81     | 588   | 187    | 106  | 396    | 39    |
| Major/Minor              | Major1 |       | Major2 |      | Minor1 |       |
| Conflicting Flow All     | 0      | 0     | 81     | 0    | 561    | 81    |
| Stage 1                  | -      | -     | -      | -    | 81     | -     |
| Stage 2                  | -      | -     | -      | -    | 480    | -     |
| Critical Hdwy            | -      | -     | 4.12   | -    | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -     | -      | -    | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -     | -      | -    | 5.42   | -     |
| Follow-up Hdwy           | -      | -     | 2.218  | -    | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | -      | -     | 1517   | -    | 489    | 979   |
| Stage 1                  | -      | -     | -      | -    | 942    | -     |
| Stage 2                  | -      | -     | -      | -    | 622    | -     |
| Platoon blocked, %       | -      | -     | -      | -    | -      | -     |
| Mov Cap-1 Maneuver       | -      | -     | 1517   | -    | 425    | 979   |
| Mov Cap-2 Maneuver       | -      | -     | -      | -    | 425    | -     |
| Stage 1                  | -      | -     | -      | -    | 942    | -     |
| Stage 2                  | -      | -     | -      | -    | 541    | -     |
| Approach                 | SE     |       | NW     |      | NE     |       |
| HCM Control Delay, s     | 0      |       | 4.9    |      | 55.3   |       |
| HCM LOS                  |        |       |        |      | F      |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL    | NWT  | SET    | SER   |
| Capacity (veh/h)         | 425    | 979   | 1517   | -    | -      | -     |
| HCM Lane V/C Ratio       | 0.933  | 0.039 | 0.123  | -    | -      | -     |
| HCM Control Delay (s)    | 59.8   | 8.8   | 7.7    | 0    | -      | -     |
| HCM Lane LOS             | F      | A     | A      | A    | -      | -     |
| HCM 95th %tile Q(veh)    | 10.5   | 0.1   | 0.4    | -    | -      | -     |

# Lanes and Geometrics

## 5: CHANEY ST & COLLIER AVE

1/27/2017



| Lane Group          | SET  | SER  | NWL  | NWT  | NEL  | NER  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           | 0%   |      |      | 0%   | 0%   |      |
| Storage Length (ft) |      | 0    | 0    |      | 0    | 0    |
| Storage Lanes       |      | 1    | 0    |      | 1    | 1    |
| Taper Length (ft)   |      |      | 25   |      | 25   |      |
| Link Speed (mph)    | 30   |      |      | 30   | 30   |      |
| Link Distance (ft)  | 1997 |      |      | 292  | 1583 |      |
| Travel Time (s)     | 45.4 |      |      | 6.6  | 36.0 |      |

### Intersection Summary

Area Type: Other

| Intersection              |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh | 12.1 |      |      |      |      |      |      |      |      |      |      |      |
| Intersection LOS          | B    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                  | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Vol, veh/h                | 0    | 0    | 0    | 145  | 0    | 1    | 1    | 0    | 0    | 395  | 1    | 2    |
| Peak Hour Factor          | 0.92 | 0.86 | 0.86 | 0.86 | 0.92 | 0.86 | 0.86 | 0.86 | 0.92 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                 | 0    | 0    | 0    | 169  | 0    | 1    | 1    | 0    | 0    | 459  | 1    | 2    |
| Number of Lanes           | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB   |
|----------------------------|-----|-----|------|
| Opposing Approach          | WB  | EB  | SB   |
| Opposing Lanes             | 1   | 1   | 1    |
| Conflicting Approach Left  | SB  | NB  | EB   |
| Conflicting Lanes Left     | 1   | 1   | 1    |
| Conflicting Approach Right | NB  | SB  | WB   |
| Conflicting Lanes Right    | 1   | 1   | 1    |
| HCM Control Delay          | 8.6 | 8.4 | 13.4 |
| HCM LOS                    | A   | A   | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 99%   | 0%    | 50%   | 0%    |
| Vol Thru, %            | 0%    | 0%    | 50%   | 100%  |
| Vol Right, %           | 1%    | 100%  | 0%    | 0%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 398   | 145   | 2     | 0     |
| LT Vol                 | 395   | 0     | 1     | 0     |
| Through Vol            | 1     | 0     | 1     | 0     |
| RT Vol                 | 2     | 145   | 0     | 0     |
| Lane Flow Rate         | 463   | 169   | 2     | 0     |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.569 | 0.209 | 0.003 | 0     |
| Departure Headway (Hd) | 4.544 | 4.453 | 5.367 | 4.843 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 801   | 811   | 669   | 0     |
| Service Time           | 2.544 | 2.453 | 3.383 | 2.876 |
| HCM Lane V/C Ratio     | 0.578 | 0.208 | 0.003 | 0     |
| HCM Control Delay      | 13.4  | 8.6   | 8.4   | 7.9   |
| HCM Lane LOS           | B     | A     | A     | N     |
| HCM 95th-tile Q        | 3.6   | 0.8   | 0     | 0     |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement          | SBU  | SBL  | SBT  | SBR  |
|-------------------|------|------|------|------|
| Vol, veh/h        | 0    | 0    | 0    | 0    |
| Peak Hour Factor  | 0.92 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, % | 2    | 2    | 2    | 2    |
| Mvmt Flow         | 0    | 0    | 0    | 0    |
| Number of Lanes   | 0    | 0    | 1    | 0    |

Approach SB

|                            |    |
|----------------------------|----|
| Opposing Approach          | NB |
| Opposing Lanes             | 1  |
| Conflicting Approach Left  | WB |
| Conflicting Lanes Left     | 1  |
| Conflicting Approach Right | EB |
| Conflicting Lanes Right    | 1  |
| HCM Control Delay          | 0  |
| HCM LOS                    | -  |

Lane

# Lanes and Geometrics

## 6: N. SPRING ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 294                                                                               |                                                                                   |                                                                                   | 237                                                                               |                                                                                   |                                                                                    | 822                                                                                 |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                    | 18.7                                                                                |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 278                                                                               | 1                                                                                 | 237                                                                               | 740                                                                               | 548                                                                               | 674                                                                               | 1506                                                                               |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                    |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                  |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 5.0                                                                               | 7.0                                                                                |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 29.3                                                                              | 29.3                                                                              | 11.0                                                                              | 20.0                                                                               |
| Total Split (s)      | 28.0                                                                              | 28.0                                                                              | 28.0                                                                              | 53.0                                                                              | 53.0                                                                              | 39.0                                                                              | 92.0                                                                               |
| Total Split (%)      | 23.3%                                                                             | 23.3%                                                                             | 23.3%                                                                             | 44.2%                                                                             | 44.2%                                                                             | 32.5%                                                                             | 76.7%                                                                              |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                    |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                              |
| Act Effct Green (s)  | 22.7                                                                              | 22.7                                                                              | 22.7                                                                              | 51.9                                                                              | 51.9                                                                              | 30.2                                                                              | 86.7                                                                               |
| Actuated g/C Ratio   | 0.19                                                                              | 0.19                                                                              | 0.19                                                                              | 0.43                                                                              | 0.43                                                                              | 0.25                                                                              | 0.72                                                                               |
| v/c Ratio            | 0.64                                                                              | 0.62                                                                              | 0.54                                                                              | 0.38                                                                              | 0.66                                                                              | 0.88                                                                              | 0.66                                                                               |
| Control Delay        | 55.2                                                                              | 47.4                                                                              | 34.9                                                                              | 23.0                                                                              | 16.4                                                                              | 64.3                                                                              | 5.5                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               | 0.2                                                                                |
| Total Delay          | 55.2                                                                              | 47.4                                                                              | 34.9                                                                              | 23.0                                                                              | 16.5                                                                              | 64.4                                                                              | 5.7                                                                                |
| LOS                  | E                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | B                                                                                 | E                                                                                 | A                                                                                  |
| Approach Delay       |                                                                                   | 46.2                                                                              |                                                                                   | 20.3                                                                              |                                                                                   |                                                                                   | 23.8                                                                               |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 25.6

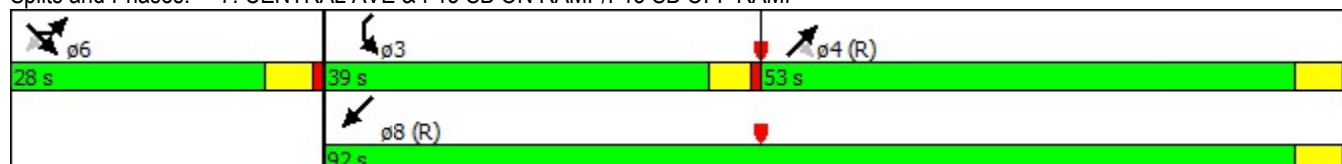
Intersection LOS: C

Intersection Capacity Utilization 76.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP



## Queues

## 7: CENTRAL AVE &amp; I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Group Flow (vph)   | 203                                                                               | 195                                                                               | 181                                                                               | 831                                                                               | 616                                                                               | 757                                                                               | 1692                                                                               |
| v/c Ratio               | 0.64                                                                              | 0.62                                                                              | 0.54                                                                              | 0.38                                                                              | 0.66                                                                              | 0.88                                                                              | 0.66                                                                               |
| Control Delay           | 55.2                                                                              | 47.4                                                                              | 34.9                                                                              | 23.0                                                                              | 16.4                                                                              | 64.3                                                                              | 5.5                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               | 0.2                                                                                |
| Total Delay             | 55.2                                                                              | 47.4                                                                              | 34.9                                                                              | 23.0                                                                              | 16.5                                                                              | 64.4                                                                              | 5.7                                                                                |
| Queue Length 50th (ft)  | 153                                                                               | 130                                                                               | 86                                                                                | 204                                                                               | 270                                                                               | 324                                                                               | 187                                                                                |
| Queue Length 95th (ft)  | 238                                                                               | 218                                                                               | 164                                                                               | 245                                                                               | 407                                                                               | 384                                                                               | 214                                                                                |
| Internal Link Dist (ft) |                                                                                   | 1290                                                                              |                                                                                   | 318                                                                               |                                                                                   |                                                                                   | 410                                                                                |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 100                                                                               |                                                                                    |
| Base Capacity (vph)     | 317                                                                               | 315                                                                               | 335                                                                               | 2200                                                                              | 939                                                                               | 984                                                                               | 2556                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 27                                                                                | 7                                                                                 | 237                                                                                |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Reduced v/c Ratio       | 0.64                                                                              | 0.62                                                                              | 0.54                                                                              | 0.38                                                                              | 0.68                                                                              | 0.77                                                                              | 0.73                                                                               |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# HCM 2010 Signalized Intersection Summary

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |  |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |  |
| Volume (veh/h)                                                       | 278                                                                               | 1                                                                                 | 237                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 740                                                                                 | 548                                                                                 | 674                                                                                 | 1506                                                                                | 0                                                                                   |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1863                                                                              | 1863                                                                              | 1863                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h                                                 | 395                                                                               | 0                                                                                 | 178                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 831                                                                                 | 616                                                                                 | 757                                                                                 | 1692                                                                                | 0                                                                                   |
| Adj No. of Lanes                                                     | 2                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Cap, veh/h                                                           | 671                                                                               | 0                                                                                 | 300                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2263                                                                                | 705                                                                                 | 823                                                                                 | 2557                                                                                | 0                                                                                   |
| Arrive On Green                                                      | 0.19                                                                              | 0.00                                                                              | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.89                                                                                | 0.89                                                                                | 0.48                                                                                | 1.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                      | 3548                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 5253                                                                                | 1583                                                                                | 3442                                                                                | 3632                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h                                                 | 395                                                                               | 0                                                                                 | 178                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 831                                                                                 | 616                                                                                 | 757                                                                                 | 1692                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                             | 1774                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1695                                                                                | 1583                                                                                | 1721                                                                                | 1770                                                                                | 0                                                                                   |
| Q Serve(g_s), s                                                      | 12.2                                                                              | 0.0                                                                               | 12.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 3.2                                                                                 | 23.1                                                                                | 24.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                | 12.2                                                                              | 0.0                                                                               | 12.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 3.2                                                                                 | 23.1                                                                                | 24.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 671                                                                               | 0                                                                                 | 300                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2263                                                                                | 705                                                                                 | 823                                                                                 | 2557                                                                                | 0                                                                                   |
| V/C Ratio(X)                                                         | 0.59                                                                              | 0.00                                                                              | 0.59                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.37                                                                                | 0.87                                                                                | 0.92                                                                                | 0.66                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                | 671                                                                               | 0                                                                                 | 300                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2263                                                                                | 705                                                                                 | 987                                                                                 | 2557                                                                                | 0                                                                                   |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.50                                                                                | 0.50                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                             | 44.4                                                                              | 0.0                                                                               | 44.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 3.8                                                                                 | 4.9                                                                                 | 30.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                               | 3.8                                                                               | 0.0                                                                               | 8.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.5                                                                                 | 14.2                                                                                | 6.1                                                                                 | 0.7                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 6.3                                                                               | 0.0                                                                               | 6.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 1.5                                                                                 | 11.7                                                                                | 12.3                                                                                | 0.2                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 48.1                                                                              | 0.0                                                                               | 52.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 4.3                                                                                 | 19.1                                                                                | 36.4                                                                                | 0.7                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                            | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | A                                                                                   | B                                                                                   | D                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                  |                                                                                   | 573                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 1447                                                                                |                                                                                     |                                                                                     | 2449                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                   | 49.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 10.6                                                                                |                                                                                     |                                                                                     | 11.7                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   |                                                                                   | 33.3                                                                              | 58.7                                                                              |                                                                                   | 28.0                                                                              |                                                                                    | 92.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   |                                                                                   | 34.4                                                                              | 47.7                                                                              |                                                                                   | 22.7                                                                              |                                                                                    | 86.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                   |                                                                                   | 27.6                                                                              | 26.1                                                                              |                                                                                   | 15.3                                                                              |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   |                                                                                   | 1.1                                                                               | 16.2                                                                              |                                                                                   | 0.8                                                                               |                                                                                    | 34.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 16.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# Timings

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                               | SWT                                                                               | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 624                                                                               | 0                                                                                 | 568                                                                               | 90                                                                                | 918                                                                               | 1589                                                                              | 466                                                                                 |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 2                                                                                 | 2                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 2                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 11.0                                                                              | 20.0                                                                              | 28.3                                                                              | 28.3                                                                                |
| Total Split (s)      | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              | 16.0                                                                              | 72.0                                                                              | 56.0                                                                              | 56.0                                                                                |
| Total Split (%)      | 40.0%                                                                             | 40.0%                                                                             | 40.0%                                                                             | 13.3%                                                                             | 60.0%                                                                             | 46.7%                                                                             | 46.7%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                             | C-Max                                                                             | C-Max                                                                               |
| Act Effct Green (s)  | 42.7                                                                              | 42.7                                                                              | 42.7                                                                              | 10.0                                                                              | 66.7                                                                              | 52.1                                                                              | 52.1                                                                                |
| Actuated g/C Ratio   | 0.36                                                                              | 0.36                                                                              | 0.36                                                                              | 0.08                                                                              | 0.56                                                                              | 0.43                                                                              | 0.43                                                                                |
| v/c Ratio            | 0.77                                                                              | 0.77                                                                              | 0.72                                                                              | 0.69                                                                              | 0.36                                                                              | 0.81                                                                              | 0.55                                                                                |
| Control Delay        | 44.7                                                                              | 39.2                                                                              | 33.7                                                                              | 85.4                                                                              | 9.1                                                                               | 15.4                                                                              | 2.1                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.6                                                                               | 0.4                                                                               | 0.0                                                                               | 0.0                                                                               | 0.8                                                                               | 0.3                                                                                 |
| Total Delay          | 44.7                                                                              | 39.8                                                                              | 34.1                                                                              | 85.4                                                                              | 9.1                                                                               | 16.1                                                                              | 2.4                                                                                 |
| LOS                  | D                                                                                 | D                                                                                 | C                                                                                 | F                                                                                 | A                                                                                 | B                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 39.7                                                                              |                                                                                   |                                                                                   | 15.9                                                                              | 13.0                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 114 (95%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 21.2

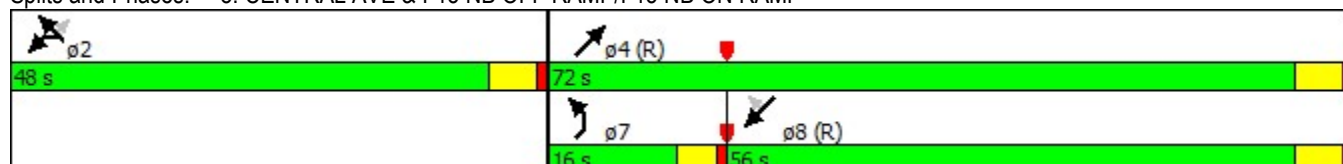
Intersection LOS: C

Intersection Capacity Utilization 76.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP



## Queues

### 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017



| Lane Group              | NWL  | NWT  | NWR  | NEL   | NET  | SWT  | SWR  |
|-------------------------|------|------|------|-------|------|------|------|
| Lane Group Flow (vph)   | 463  | 449  | 427  | 101   | 1031 | 1785 | 524  |
| v/c Ratio               | 0.77 | 0.77 | 0.72 | 0.69  | 0.36 | 0.81 | 0.55 |
| Control Delay           | 44.7 | 39.2 | 33.7 | 85.4  | 9.1  | 15.4 | 2.1  |
| Queue Delay             | 0.0  | 0.6  | 0.4  | 0.0   | 0.0  | 0.8  | 0.3  |
| Total Delay             | 44.7 | 39.8 | 34.1 | 85.4  | 9.1  | 16.1 | 2.4  |
| Queue Length 50th (ft)  | 332  | 293  | 236  | 84    | 95   | 152  | 0    |
| Queue Length 95th (ft)  | 468  | 435  | 364  | m#141 | 109  | m165 | m2   |
| Internal Link Dist (ft) |      | 1244 |      |       | 410  | 302  |      |
| Turn Bay Length (ft)    | 190  |      | 190  | 190   |      |      |      |
| Base Capacity (vph)     | 598  | 586  | 595  | 168   | 2826 | 2208 | 946  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0     | 0    | 169  | 86   |
| Spillback Cap Reductn   | 0    | 20   | 20   | 0     | 158  | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0     | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.77 | 0.79 | 0.74 | 0.60  | 0.39 | 0.88 | 0.61 |

#### Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                                                                      |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET  | SER | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Volume (veh/h)                                                       | 0                                                                                  | 0    | 0   | 624                                                                               | 0                                                                                 | 568                                                                               | 90                                                                                | 918                                                                                 | 0    | 0    | 1589                                                                                | 466                                                                                 |
| Number                                                               |                                                                                    |      |     | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                 | 4                                                                                   | 14   | 3    | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               |                                                                                    |      |     | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 0    | 0    | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 |                                                                                    |      |     | 899                                                                               | 0                                                                                 | 425                                                                               | 101                                                                               | 1031                                                                                | 0    | 0    | 1785                                                                                | 524                                                                                 |
| Adj No. of Lanes                                                     |                                                                                    |      |     | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                   | 0    | 0    | 3                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                     |                                                                                    |      |     | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                | 0.89 | 0.89 | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %                                                 |                                                                                    |      |     | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0    | 0    | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 136                                                                               | 2827                                                                                | 0    | 0    | 2241                                                                                | 698                                                                                 |
| Arrive On Green                                                      |                                                                                    |      |     | 0.36                                                                              | 0.00                                                                              | 0.36                                                                              | 0.15                                                                              | 1.00                                                                                | 0.00 | 0.00 | 0.88                                                                                | 0.88                                                                                |
| Sat Flow, veh/h                                                      |                                                                                    |      |     | 3548                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 5253                                                                                | 0    | 0    | 5253                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                 |                                                                                    |      |     | 899                                                                               | 0                                                                                 | 425                                                                               | 101                                                                               | 1031                                                                                | 0    | 0    | 1785                                                                                | 524                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             |                                                                                    |      |     | 1774                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 1695                                                                                | 0    | 0    | 1695                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                      |                                                                                    |      |     | 26.2                                                                              | 0.0                                                                               | 28.4                                                                              | 6.5                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 16.8                                                                                | 13.9                                                                                |
| Cycle Q Clear(g_c), s                                                |                                                                                    |      |     | 26.2                                                                              | 0.0                                                                               | 28.4                                                                              | 6.5                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 16.8                                                                                | 13.9                                                                                |
| Prop In Lane                                                         |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 136                                                                               | 2827                                                                                | 0    | 0    | 2241                                                                                | 698                                                                                 |
| V/C Ratio(X)                                                         |                                                                                    |      |     | 0.71                                                                              | 0.00                                                                              | 0.75                                                                              | 0.74                                                                              | 0.36                                                                                | 0.00 | 0.00 | 0.80                                                                                | 0.75                                                                                |
| Avail Cap(c_a), veh/h                                                |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 169                                                                               | 2827                                                                                | 0    | 0    | 2241                                                                                | 698                                                                                 |
| HCM Platoon Ratio                                                    |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                                | 1.00 | 1.00 | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)                                                   |                                                                                    |      |     | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.91                                                                              | 0.91                                                                                | 0.00 | 0.00 | 0.49                                                                                | 0.49                                                                                |
| Uniform Delay (d), s/veh                                             |                                                                                    |      |     | 33.3                                                                              | 0.0                                                                               | 34.0                                                                              | 49.6                                                                              | 0.0                                                                                 | 0.0  | 0.0  | 5.0                                                                                 | 4.8                                                                                 |
| Incr Delay (d2), s/veh                                               |                                                                                    |      |     | 3.4                                                                               | 0.0                                                                               | 9.1                                                                               | 8.4                                                                               | 0.3                                                                                 | 0.0  | 0.0  | 1.5                                                                                 | 3.7                                                                                 |
| Initial Q Delay(d3),s/veh                                            |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             |                                                                                    |      |     | 13.5                                                                              | 0.0                                                                               | 13.8                                                                              | 3.5                                                                               | 0.1                                                                                 | 0.0  | 0.0  | 7.2                                                                                 | 6.2                                                                                 |
| LnGrp Delay(d),s/veh                                                 |                                                                                    |      |     | 36.8                                                                              | 0.0                                                                               | 43.1                                                                              | 58.1                                                                              | 0.3                                                                                 | 0.0  | 0.0  | 6.5                                                                                 | 8.5                                                                                 |
| LnGrp LOS                                                            |                                                                                    |      |     | D                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | A                                                                                   |      |      | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h                                                  |                                                                                    |      |     |                                                                                   | 1324                                                                              |                                                                                   |                                                                                   | 1132                                                                                |      |      | 2309                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    |      |     |                                                                                   | 38.8                                                                              |                                                                                   |                                                                                   | 5.5                                                                                 |      |      | 6.9                                                                                 |                                                                                     |
| Approach LOS                                                         |                                                                                    |      |     |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                   |      |      | A                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2    | 3   | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    | 2    |     | 4                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    | 48.0 |     | 72.0                                                                              |                                                                                   |                                                                                   | 13.8                                                                              | 58.2                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    | 5.3  |     | 5.3                                                                               |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    | 42.7 |     | 66.7                                                                              |                                                                                   |                                                                                   | 11.4                                                                              | 50.7                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    | 31.4 |     | 3.0                                                                               |                                                                                   |                                                                                   | 9.5                                                                               | 19.8                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    | 2.5  |     | 34.6                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 22.2                                                                                |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |      |     | 15.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |      |     | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 71                                                                                | 85                                                                                | 491                                                                               | 84                                                                                | 129                                                                               | 380                                                                               | 1002                                                                               | 105                                                                                 | 124                                                                                 | 1428                                                                                | 174                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 47.3                                                                              | 47.3                                                                              | 35.0                                                                              | 47.3                                                                              | 47.3                                                                              | 35.0                                                                              | 50.4                                                                               | 50.4                                                                                | 22.3                                                                                | 37.7                                                                                | 37.7                                                                                |
| Total Split (%)      | 39.4%                                                                             | 39.4%                                                                             | 29.2%                                                                             | 39.4%                                                                             | 39.4%                                                                             | 29.2%                                                                             | 42.0%                                                                              | 42.0%                                                                               | 18.6%                                                                               | 31.4%                                                                               | 31.4%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 42.0                                                                              | 42.0                                                                              | 77.4                                                                              | 42.0                                                                              | 42.0                                                                              | 30.1                                                                              | 49.1                                                                               | 49.1                                                                                | 13.7                                                                                | 32.7                                                                                | 32.7                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.64                                                                              | 0.35                                                                              | 0.35                                                                              | 0.25                                                                              | 0.41                                                                               | 0.41                                                                                | 0.11                                                                                | 0.27                                                                                | 0.27                                                                                |
| v/c Ratio            | 0.23                                                                              | 0.15                                                                              | 0.54                                                                              | 0.21                                                                              | 0.36                                                                              | 0.97                                                                              | 0.55                                                                               | 0.17                                                                                | 0.70                                                                                | 0.93                                                                                | 0.36                                                                                |
| Control Delay        | 29.9                                                                              | 27.6                                                                              | 13.5                                                                              | 29.0                                                                              | 27.6                                                                              | 74.0                                                                              | 27.8                                                                               | 7.9                                                                                 | 85.2                                                                                | 35.8                                                                                | 4.9                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 22.7                                                                              | 0.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 29.9                                                                              | 27.6                                                                              | 13.5                                                                              | 29.0                                                                              | 27.6                                                                              | 96.7                                                                              | 28.3                                                                               | 7.9                                                                                 | 85.2                                                                                | 35.8                                                                                | 4.9                                                                                 |
| LOS                  | C                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | C                                                                                  | A                                                                                   | F                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 17.1                                                                              |                                                                                   |                                                                                   | 28.0                                                                              |                                                                                   | 44.3                                                                               |                                                                                     |                                                                                     | 36.3                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 35.6

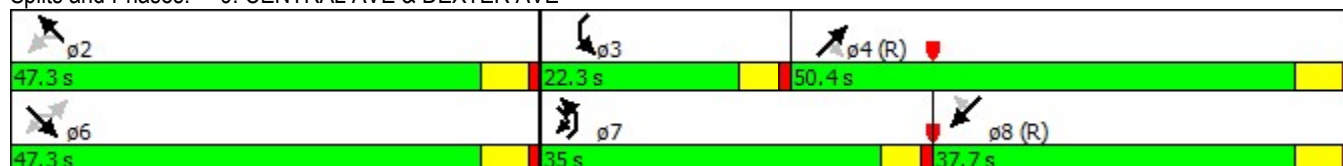
Intersection LOS: D

Intersection Capacity Utilization 77.3%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE



## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 81                                                                                | 97                                                                                | 558                                                                               | 95                                                                                | 225                                                                               | 432                                                                               | 1139                                                                               | 119                                                                                 | 141                                                                                 | 1623                                                                                | 198                                                                                 |
| v/c Ratio               | 0.23                                                                              | 0.15                                                                              | 0.54                                                                              | 0.21                                                                              | 0.36                                                                              | 0.97                                                                              | 0.55                                                                               | 0.17                                                                                | 0.70                                                                                | 0.93                                                                                | 0.36                                                                                |
| Control Delay           | 29.9                                                                              | 27.6                                                                              | 13.5                                                                              | 29.0                                                                              | 27.6                                                                              | 74.0                                                                              | 27.8                                                                               | 7.9                                                                                 | 85.2                                                                                | 35.8                                                                                | 4.9                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 22.7                                                                              | 0.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 29.9                                                                              | 27.6                                                                              | 13.5                                                                              | 29.0                                                                              | 27.6                                                                              | 96.7                                                                              | 28.3                                                                               | 7.9                                                                                 | 85.2                                                                                | 35.8                                                                                | 4.9                                                                                 |
| Queue Length 50th (ft)  | 44                                                                                | 51                                                                                | 208                                                                               | 51                                                                                | 114                                                                               | 290                                                                               | 242                                                                                | 5                                                                                   | 116                                                                                 | 303                                                                                 | 18                                                                                  |
| Queue Length 95th (ft)  | 84                                                                                | 90                                                                                | 288                                                                               | 92                                                                                | 177                                                                               | #498                                                                              | 321                                                                                | m34                                                                                 | m144                                                                                | #372                                                                                | m28                                                                                 |
| Internal Link Dist (ft) | 1321                                                                              |                                                                                   |                                                                                   | 1337                                                                              |                                                                                   |                                                                                   | 302                                                                                | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    | 140                                                                               |                                                                                   | 140                                                                               | 100                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 150                                                                                 |                                                                                     | 220                                                                                 |
| Base Capacity (vph)     | 346                                                                               | 652                                                                               | 1032                                                                              | 452                                                                               | 633                                                                               | 448                                                                               | 2082                                                                               | 718                                                                                 | 261                                                                                 | 1744                                                                                | 553                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 37                                                                                | 460                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.23                                                                              | 0.15                                                                              | 0.54                                                                              | 0.21                                                                              | 0.36                                                                              | 1.05                                                                              | 0.70                                                                               | 0.17                                                                                | 0.54                                                                                | 0.93                                                                                | 0.36                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                                                                    |  |  |  |  |  |  |   |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 71                                                                                | 85                                                                                | 491                                                                               | 84                                                                                | 129                                                                               | 69                                                                                | 380                                                                                 | 1002                                                                                | 105                                                                                 | 124                                                                                 | 1428                                                                                | 174                                                                                 |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 81                                                                                | 97                                                                                | 558                                                                               | 95                                                                                | 147                                                                               | 78                                                                                | 432                                                                                 | 1139                                                                                | 119                                                                                 | 141                                                                                 | 1623                                                                                | 198                                                                                 |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 362                                                                               | 652                                                                               | 955                                                                               | 304                                                                               | 401                                                                               | 213                                                                               | 449                                                                                 | 2141                                                                                | 667                                                                                 | 181                                                                                 | 1730                                                                                | 427                                                                                 |
| Arrive On Green                                                    | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.51                                                                                | 0.84                                                                                | 0.84                                                                                | 0.10                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h                                                    | 1151                                                                              | 1863                                                                              | 1583                                                                              | 775                                                                               | 1147                                                                              | 609                                                                               | 1774                                                                                | 5085                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 81                                                                                | 97                                                                                | 558                                                                               | 95                                                                                | 0                                                                                 | 225                                                                               | 432                                                                                 | 1139                                                                                | 119                                                                                 | 141                                                                                 | 1623                                                                                | 198                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                           | 1151                                                                              | 1863                                                                              | 1583                                                                              | 775                                                                               | 0                                                                                 | 1755                                                                              | 1774                                                                                | 1695                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 6.7                                                                               | 4.3                                                                               | 25.9                                                                              | 11.5                                                                              | 0.0                                                                               | 11.5                                                                              | 28.1                                                                                | 7.7                                                                                 | 1.7                                                                                 | 9.3                                                                                 | 29.7                                                                                | 12.5                                                                                |
| Cycle Q Clear(g_c), s                                              | 17.2                                                                              | 4.3                                                                               | 25.9                                                                              | 15.8                                                                              | 0.0                                                                               | 11.5                                                                              | 28.1                                                                                | 7.7                                                                                 | 1.7                                                                                 | 9.3                                                                                 | 29.7                                                                                | 12.5                                                                                |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.35                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 362                                                                               | 652                                                                               | 955                                                                               | 304                                                                               | 0                                                                                 | 614                                                                               | 449                                                                                 | 2141                                                                                | 667                                                                                 | 181                                                                                 | 1730                                                                                | 427                                                                                 |
| V/C Ratio(X)                                                       | 0.22                                                                              | 0.15                                                                              | 0.58                                                                              | 0.31                                                                              | 0.00                                                                              | 0.37                                                                              | 0.96                                                                                | 0.53                                                                                | 0.18                                                                                | 0.78                                                                                | 0.94                                                                                | 0.46                                                                                |
| Avail Cap(c_a), veh/h                                              | 362                                                                               | 652                                                                               | 955                                                                               | 304                                                                               | 0                                                                                 | 614                                                                               | 449                                                                                 | 2141                                                                                | 667                                                                                 | 262                                                                                 | 1730                                                                                | 428                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 35.1                                                                              | 26.7                                                                              | 14.6                                                                              | 32.2                                                                              | 0.0                                                                               | 29.1                                                                              | 29.0                                                                                | 6.1                                                                                 | 5.6                                                                                 | 52.5                                                                                | 42.8                                                                                | 36.5                                                                                |
| Incr Delay (d2), s/veh                                             | 1.4                                                                               | 0.5                                                                               | 2.6                                                                               | 2.7                                                                               | 0.0                                                                               | 1.7                                                                               | 29.9                                                                                | 0.8                                                                                 | 0.5                                                                                 | 5.0                                                                                 | 11.2                                                                                | 3.6                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 2.3                                                                               | 2.3                                                                               | 11.9                                                                              | 2.7                                                                               | 0.0                                                                               | 5.8                                                                               | 17.2                                                                                | 3.5                                                                                 | 0.8                                                                                 | 4.8                                                                                 | 14.5                                                                                | 5.9                                                                                 |
| LnGrp Delay(d),s/veh                                               | 36.5                                                                              | 27.2                                                                              | 17.2                                                                              | 34.8                                                                              | 0.0                                                                               | 30.8                                                                              | 59.0                                                                                | 6.9                                                                                 | 6.1                                                                                 | 57.5                                                                                | 54.1                                                                                | 40.1                                                                                |
| LnGrp LOS                                                          | D                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 |                                                                                   | C                                                                                 | E                                                                                   | A                                                                                   | A                                                                                   | E                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 736                                                                               |                                                                                   |                                                                                   | 320                                                                               |                                                                                   |                                                                                     | 1690                                                                                |                                                                                     |                                                                                     | 1962                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 20.6                                                                              |                                                                                   |                                                                                   | 32.0                                                                              |                                                                                   |                                                                                     | 20.2                                                                                |                                                                                     |                                                                                     | 52.9                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 47.3                                                                              | 16.9                                                                              | 55.8                                                                              |                                                                                   | 47.3                                                                              | 35.0                                                                                | 37.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 42.0                                                                              | 17.7                                                                              | 45.1                                                                              |                                                                                   | 42.0                                                                              | 30.4                                                                                | 32.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                       |                                                                                   | 18.8                                                                              | 12.3                                                                              | 10.7                                                                              |                                                                                   | 28.9                                                                              | 31.1                                                                                | 32.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 3.1                                                                               | 0.1                                                                               | 22.4                                                                              |                                                                                   | 2.7                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 34.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |      |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | SWT                                                                                 | SWR                                                                                 | ø3   |
| Lane Configurations  |                                                                                   |  |  |  |  |  |  |  |  |      |
| Volume (vph)         | 150                                                                               | 2                                                                                 | 81                                                                                | 9                                                                                 | 2                                                                                 | 118                                                                               | 1054                                                                               | 1581                                                                                | 119                                                                                 |      |
| Turn Type            | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | NA                                                                                  | Perm                                                                                |      |
| Protected Phases     |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  | 8                                                                                   |                                                                                     | 3    |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 8                                                                                   |      |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 8                                                                                   | 8                                                                                   |      |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |      |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0  |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 31.0                                                                               | 31.0                                                                                | 31.0                                                                                | 11.0 |
| Total Split (s)      | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 75.1                                                                               | 75.1                                                                                | 75.1                                                                                | 11.0 |
| Total Split (%)      | 28.3%                                                                             | 28.3%                                                                             | 28.3%                                                                             | 28.3%                                                                             | 28.3%                                                                             | 9.2%                                                                              | 62.6%                                                                              | 62.6%                                                                               | 62.6%                                                                               | 9%   |
| Yellow Time (s)      | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.6                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 3.6  |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0  |
| Lost Time Adjust (s) |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |      |
| Total Lost Time (s)  |                                                                                   | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.6                                                                               | 6.0                                                                                | 6.0                                                                                 | 6.0                                                                                 |      |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lead |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |      |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | C-Max                                                                               | None |
| Act Effect Green (s) |                                                                                   | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 6.4                                                                               | 80.1                                                                               | 69.1                                                                                | 69.1                                                                                |      |
| Actuated g/C Ratio   |                                                                                   | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.05                                                                              | 0.67                                                                               | 0.58                                                                                | 0.58                                                                                |      |
| v/c Ratio            |                                                                                   | 0.50                                                                              | 0.19                                                                              | 0.04                                                                              | 0.00                                                                              | 0.70                                                                              | 0.48                                                                               | 0.83                                                                                | 0.13                                                                                |      |
| Control Delay        |                                                                                   | 45.4                                                                              | 8.5                                                                               | 35.6                                                                              | 34.5                                                                              | 60.6                                                                              | 17.4                                                                               | 25.5                                                                                | 2.3                                                                                 |      |
| Queue Delay          |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |      |
| Total Delay          |                                                                                   | 45.4                                                                              | 8.5                                                                               | 35.6                                                                              | 34.5                                                                              | 60.6                                                                              | 17.4                                                                               | 25.5                                                                                | 2.3                                                                                 |      |
| LOS                  |                                                                                   | D                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | E                                                                                 | B                                                                                  | C                                                                                   | A                                                                                   |      |
| Approach Delay       |                                                                                   | 32.6                                                                              |                                                                                   |                                                                                   | 35.4                                                                              |                                                                                   | 21.8                                                                               | 23.8                                                                                |                                                                                     |      |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   | C                                                                                  | C                                                                                   |                                                                                     |      |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 80 (67%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 23.8

Intersection LOS: C

Intersection Capacity Utilization 74.7%

ICU Level of Service D

Analysis Period (min) 15

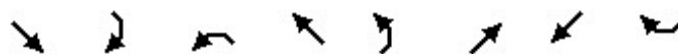
### Splits and Phases: 10: CENTRAL AVE & CAMBERN AVE

|                                                                                     |    |  |                                                                                     |    |                                                                                     |        |
|-------------------------------------------------------------------------------------|----|--|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|--------|
|  | ø2 |  |  | ø3 |  | ø4 (R) |
| 33.9 s                                                                              |    |  | 11 s                                                                                |    | 75.1 s                                                                              |        |
|  | ø6 |  |  | ø7 |  | ø8 (R) |
| 33.9 s                                                                              |    |  | 11 s                                                                                |    | 75.1 s                                                                              |        |

## Queues

## 10: CENTRAL AVE &amp; CAMBERN AVE

1/27/2017



| Lane Group              | SET  | SER  | NWL  | NWT  | NEL  | NET  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 163  | 87   | 10   | 2    | 127  | 1141 | 1700 | 128  |
| v/c Ratio               | 0.50 | 0.19 | 0.04 | 0.00 | 0.70 | 0.48 | 0.83 | 0.13 |
| Control Delay           | 45.4 | 8.5  | 35.6 | 34.5 | 60.6 | 17.4 | 25.5 | 2.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 45.4 | 8.5  | 35.6 | 34.5 | 60.6 | 17.4 | 25.5 | 2.3  |
| Queue Length 50th (ft)  | 109  | 0    | 6    | 1    | 53   | 205  | 537  | 0    |
| Queue Length 95th (ft)  | 181  | 41   | 21   | 8    | #96  | 328  | 646  | 26   |
| Internal Link Dist (ft) | 1204 |      |      | 1267 |      | 636  | 2064 |      |
| Turn Bay Length (ft)    |      | 200  | 75   |      | 250  |      |      | 400  |
| Base Capacity (vph)     | 327  | 448  | 252  | 450  | 183  | 2360 | 2038 | 965  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.50 | 0.19 | 0.04 | 0.00 | 0.69 | 0.48 | 0.83 | 0.13 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



# HCM 2010 Signalized Intersection Summary

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Volume (veh/h)               | 150                                                                               | 2                                                                                 | 81                                                                                | 9                                                                                 | 2                                                                                 | 0                                                                                 | 118                                                                                 | 1054                                                                                | 7                                                                                   | 0                                                                                   | 1581                                                                                | 119                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 161                                                                               | 2                                                                                 | 87                                                                                | 10                                                                                | 2                                                                                 | 0                                                                                 | 127                                                                                 | 1133                                                                                | 8                                                                                   | 0                                                                                   | 1700                                                                                | 128                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 384                                                                               | 4                                                                                 | 383                                                                               | 243                                                                               | 450                                                                               | 0                                                                                 | 184                                                                                 | 2405                                                                                | 17                                                                                  | 1                                                                                   | 2038                                                                                | 912                                                                                 |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.00                                                                              | 0.05                                                                                | 0.67                                                                                | 0.67                                                                                | 0.00                                                                                | 0.58                                                                                | 0.58                                                                                |
| Sat Flow, veh/h              | 1343                                                                              | 17                                                                                | 1583                                                                              | 1303                                                                              | 1863                                                                              | 0                                                                                 | 3442                                                                                | 3602                                                                                | 25                                                                                  | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 163                                                                               | 0                                                                                 | 87                                                                                | 10                                                                                | 2                                                                                 | 0                                                                                 | 127                                                                                 | 557                                                                                 | 584                                                                                 | 0                                                                                   | 1700                                                                                | 128                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1360                                                                              | 0                                                                                 | 1583                                                                              | 1303                                                                              | 1863                                                                              | 0                                                                                 | 1721                                                                                | 1770                                                                                | 1858                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 12.0                                                                              | 0.0                                                                               | 5.3                                                                               | 0.8                                                                               | 0.1                                                                               | 0.0                                                                               | 4.4                                                                                 | 18.3                                                                                | 18.3                                                                                | 0.0                                                                                 | 47.0                                                                                | 4.5                                                                                 |
| Cycle Q Clear(g_c), s        | 13.1                                                                              | 0.0                                                                               | 5.3                                                                               | 12.9                                                                              | 0.1                                                                               | 0.0                                                                               | 4.4                                                                                 | 18.3                                                                                | 18.3                                                                                | 0.0                                                                                 | 47.0                                                                                | 4.5                                                                                 |
| Prop In Lane                 | 0.99                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 0.01                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 388                                                                               | 0                                                                                 | 383                                                                               | 243                                                                               | 450                                                                               | 0                                                                                 | 184                                                                                 | 1181                                                                                | 1240                                                                                | 1                                                                                   | 2038                                                                                | 912                                                                                 |
| V/C Ratio(X)                 | 0.42                                                                              | 0.00                                                                              | 0.23                                                                              | 0.04                                                                              | 0.00                                                                              | 0.00                                                                              | 0.69                                                                                | 0.47                                                                                | 0.47                                                                                | 0.00                                                                                | 0.83                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 388                                                                               | 0                                                                                 | 383                                                                               | 243                                                                               | 450                                                                               | 0                                                                                 | 184                                                                                 | 1181                                                                                | 1240                                                                                | 95                                                                                  | 2038                                                                                | 912                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 39.9                                                                              | 0.0                                                                               | 36.5                                                                              | 44.6                                                                              | 34.5                                                                              | 0.0                                                                               | 55.8                                                                                | 9.7                                                                                 | 9.7                                                                                 | 0.0                                                                                 | 20.8                                                                                | 11.7                                                                                |
| Incr Delay (d2), s/veh       | 3.3                                                                               | 0.0                                                                               | 1.4                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                               | 9.0                                                                                 | 1.3                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 4.2                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.0                                                                               | 0.0                                                                               | 2.5                                                                               | 0.3                                                                               | 0.1                                                                               | 0.0                                                                               | 2.3                                                                                 | 9.3                                                                                 | 9.7                                                                                 | 0.0                                                                                 | 24.1                                                                                | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 43.3                                                                              | 0.0                                                                               | 37.9                                                                              | 45.0                                                                              | 34.6                                                                              | 0.0                                                                               | 64.8                                                                                | 11.0                                                                                | 11.0                                                                                | 0.0                                                                                 | 25.0                                                                                | 12.1                                                                                |
| LnGrp LOS                    | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 | C                                                                                 |                                                                                   | E                                                                                   | B                                                                                   | B                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 250                                                                               |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 1268                                                                                |                                                                                     |                                                                                     | 1828                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                   | 43.2                                                                              |                                                                                   |                                                                                     | 16.4                                                                                |                                                                                     |                                                                                     | 24.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 33.9                                                                              | 0.0                                                                               | 86.1                                                                              |                                                                                   | 33.9                                                                              | 11.0                                                                                | 75.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.9                                                                               | 4.6                                                                               | 6.0                                                                               |                                                                                   | 4.9                                                                               | 4.6                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 29.0                                                                              | 6.4                                                                               | 69.1                                                                              |                                                                                   | 29.0                                                                              | 6.4                                                                                 | 69.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 15.9                                                                              | 0.0                                                                               | 21.3                                                                              |                                                                                   | 15.1                                                                              | 7.4                                                                                 | 50.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.6                                                                               | 0.0                                                                               | 27.0                                                                              |                                                                                   | 0.6                                                                               | 0.0                                                                                 | 14.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 22.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017



| Lane Group           | WBL   | WBR   | NBT   | NBR   | SBL   | SBT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 337   | 123   | 966   | 318   | 181   | 1253  |
| Turn Type            | Prot  | Perm  | NA    | Perm  | Prot  | NA    |
| Protected Phases     | 8     |       | 2     |       | 1     | 6     |
| Permitted Phases     |       | 8     |       | 2     |       |       |
| Detector Phase       | 8     | 8     | 2     | 2     | 1     | 6     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 8.0   | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 38.0  | 38.0  | 20.0  | 20.0  | 11.0  | 39.0  |
| Total Split (s)      | 46.0  | 46.0  | 45.0  | 45.0  | 29.0  | 74.0  |
| Total Split (%)      | 38.3% | 38.3% | 37.5% | 37.5% | 24.2% | 61.7% |
| Yellow Time (s)      | 4.0   | 4.0   | 6.0   | 6.0   | 4.0   | 6.0   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 7.0   | 7.0   | 5.0   | 7.0   |
| Lead/Lag             |       |       | Lag   | Lag   | Lead  |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | None  | None  | Max   | Max   | None  | Max   |
| Act Effect Green (s) | 25.5  | 25.5  | 46.6  | 46.6  | 15.7  | 67.3  |
| Actuated g/C Ratio   | 0.24  | 0.24  | 0.44  | 0.44  | 0.15  | 0.64  |
| v/c Ratio            | 0.84  | 0.27  | 0.46  | 0.42  | 0.74  | 0.59  |
| Control Delay        | 55.2  | 6.6   | 23.2  | 11.7  | 59.6  | 13.2  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 55.2  | 6.6   | 23.2  | 11.7  | 59.6  | 13.2  |
| LOS                  | E     | A     | C     | B     | E     | B     |
| Approach Delay       | 42.2  |       | 20.4  |       |       | 19.1  |
| Approach LOS         | D     |       | C     |       |       | B     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 104.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 23.0

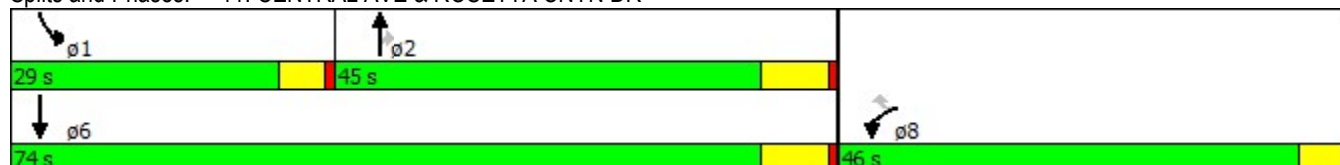
Intersection LOS: C

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: CENTRAL AVE & ROSETTA CNYN DR



## Queues

## 11: CENTRAL AVE &amp; ROSETTA CNYN DR

1/27/2017



| Lane Group              | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 362  | 132  | 1039 | 342  | 195  | 1347 |
| v/c Ratio               | 0.84 | 0.27 | 0.46 | 0.42 | 0.74 | 0.59 |
| Control Delay           | 55.2 | 6.6  | 23.2 | 11.7 | 59.6 | 13.2 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 55.2 | 6.6  | 23.2 | 11.7 | 59.6 | 13.2 |
| Queue Length 50th (ft)  | 231  | 0    | 172  | 58   | 126  | 250  |
| Queue Length 95th (ft)  | 337  | 44   | 281  | 170  | 208  | 409  |
| Internal Link Dist (ft) | 1570 |      | 1523 |      |      | 2926 |
| Turn Bay Length (ft)    |      |      |      | 100  | 250  |      |
| Base Capacity (vph)     | 694  | 701  | 2258 | 812  | 406  | 2270 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.52 | 0.19 | 0.46 | 0.42 | 0.48 | 0.59 |
| Intersection Summary    |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017

|                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
|                              |  |  |  |  |  |  |   |      |
| Movement                     | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Volume (veh/h)               | 337                                                                               | 123                                                                               | 966                                                                               | 318                                                                               | 181                                                                               | 1253                                                                              |   |      |
| Number                       | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |      |
| Adj Flow Rate, veh/h         | 362                                                                               | 132                                                                               | 1039                                                                              | 342                                                                               | 195                                                                               | 1347                                                                              |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |   |      |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              |   |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |      |
| Cap, veh/h                   | 413                                                                               | 369                                                                               | 2365                                                                              | 736                                                                               | 243                                                                               | 2302                                                                              |   |      |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.46                                                                              | 0.46                                                                              | 0.14                                                                              | 0.65                                                                              |   |      |
| Sat Flow, veh/h              | 1774                                                                              | 1583                                                                              | 5253                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              |   |      |
| Grp Volume(v), veh/h         | 362                                                                               | 132                                                                               | 1039                                                                              | 342                                                                               | 195                                                                               | 1347                                                                              |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1583                                                                              | 1695                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              |   |      |
| Q Serve(g_s), s              | 20.3                                                                              | 7.2                                                                               | 14.1                                                                              | 15.2                                                                              | 11.0                                                                              | 22.1                                                                              |   |      |
| Cycle Q Clear(g_c), s        | 20.3                                                                              | 7.2                                                                               | 14.1                                                                              | 15.2                                                                              | 11.0                                                                              | 22.1                                                                              |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Lane Grp Cap(c), veh/h       | 413                                                                               | 369                                                                               | 2365                                                                              | 736                                                                               | 243                                                                               | 2302                                                                              |   |      |
| V/C Ratio(X)                 | 0.88                                                                              | 0.36                                                                              | 0.44                                                                              | 0.46                                                                              | 0.80                                                                              | 0.59                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 706                                                                               | 630                                                                               | 2365                                                                              | 736                                                                               | 413                                                                               | 2302                                                                              |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 38.1                                                                              | 33.1                                                                              | 18.5                                                                              | 18.8                                                                              | 43.1                                                                              | 10.2                                                                              |   |      |
| Incr Delay (d2), s/veh       | 3.0                                                                               | 0.2                                                                               | 0.6                                                                               | 2.1                                                                               | 2.3                                                                               | 1.1                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 10.2                                                                              | 3.2                                                                               | 6.7                                                                               | 7.1                                                                               | 5.5                                                                               | 11.0                                                                              |   |      |
| LnGrp Delay(d),s/veh         | 41.1                                                                              | 33.3                                                                              | 19.1                                                                              | 20.9                                                                              | 45.4                                                                              | 11.2                                                                              |   |      |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 | B                                                                                 |   |      |
| Approach Vol, veh/h          | 494                                                                               |                                                                                   | 1381                                                                              |                                                                                   |                                                                                   | 1542                                                                              |   |      |
| Approach Delay, s/veh        | 39.0                                                                              |                                                                                   | 19.6                                                                              |                                                                                   |                                                                                   | 15.6                                                                              |   |      |
| Approach LOS                 | D                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |   | 8    |
| Phs Duration (G+Y+Rc), s     | 19.1                                                                              | 54.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 74.0                                                                              |   | 29.0 |
| Change Period (Y+Rc), s      | 5.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               |   | 5.0  |
| Max Green Setting (Gmax), s  | 24.0                                                                              | 38.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 67.0                                                                              |   | 41.0 |
| Max Q Clear Time (g_c+I1), s | 14.0                                                                              | 18.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 25.1                                                                              |   | 23.3 |
| Green Ext Time (p_c), s      | 0.2                                                                               | 16.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.5                                                                              |   | 0.7  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 20.6                                                                              |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

HCM 2010 TWSC  
12: COLLIER AVE & PROJECT ACCESS

1/27/2017

Intersection

Int Delay, s/veh 2.2

| Movement                 | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 191  | 709  | 419  | 38   | 0    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 200  | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 208  | 771  | 455  | 41   | 0    | 66   |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 497    | 0      | 1277   |
| Stage 1              | -      | -      | 476    |
| Stage 2              | -      | -      | 801    |
| Critical Hdwy        | 5.34   | -      | 6.29   |
| Critical Hdwy Stg 1  | -      | -      | 6.64   |
| Critical Hdwy Stg 2  | -      | -      | 5.84   |
| Follow-up Hdwy       | 3.12   | -      | 3.67   |
| Pot Cap-1 Maneuver   | 679    | -      | 188    |
| Stage 1              | -      | -      | 515    |
| Stage 2              | -      | -      | 391    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 679    | -      | 130    |
| Mov Cap-2 Maneuver   | -      | -      | 130    |
| Stage 1              | -      | -      | 515    |
| Stage 2              | -      | -      | 271    |

| Approach             | SE  | NW | SW   |
|----------------------|-----|----|------|
| HCM Control Delay, s | 2.7 | 0  | 11.3 |
| HCM LOS              |     |    | B    |

| Minor Lane/Major Mvmt | NWT | NWR | SEL   | SETSWLn1 |
|-----------------------|-----|-----|-------|----------|
| Capacity (veh/h)      | -   | -   | 679   | - 641    |
| HCM Lane V/C Ratio    | -   | -   | 0.306 | - 0.103  |
| HCM Control Delay (s) | -   | -   | 12.6  | - 11.3   |
| HCM Lane LOS          | -   | -   | B     | - B      |
| HCM 95th %tile Q(veh) | -   | -   | 1.3   | - 0.3    |

# Lanes and Geometrics

## 12: COLLIER AVE & PROJECT ACCESS

1/27/2017



| Lane Group          | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           |      | 0%   | 0%   |      | 0%   |      |
| Storage Length (ft) | 200  |      |      | 0    | 0    | 0    |
| Storage Lanes       | 1    |      |      | 0    | 0    | 1    |
| Taper Length (ft)   | 25   |      |      |      | 25   |      |
| Link Speed (mph)    |      | 30   | 30   |      | 30   |      |
| Link Distance (ft)  |      | 543  | 118  |      | 355  |      |
| Travel Time (s)     |      | 12.3 | 2.7  |      | 8.1  |      |

### Intersection Summary

Area Type: Other

**Intersection**

Int Delay, s/veh 8.1

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 5    | 991  | 5    | 6    | 1019 | 115  | 36   | 3    | 2    | 1    | 1    | 3    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | 50   | -    | -    | 50   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 5    | 1032 | 5    | 6    | 1061 | 120  | 38   | 3    | 2    | 1    | 1    | 3    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor2 |       |       | Minor1 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 1181   | 0 | 0 | 1038   | 0 | 0 | 2180   | 2182  | 1121  | 2180   | 2239  | 1035  |
| Stage 1              | -      | - | - | -      | - | - | 1134   | 1134  | -     | 1045   | 1045  | -     |
| Stage 2              | -      | - | - | -      | - | - | 1046   | 1048  | -     | 1135   | 1194  | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 591    | - | - | 670    | - | - | ~ 33   | 46    | 251   | 33     | 42    | 282   |
| Stage 1              | -      | - | - | -      | - | - | 246    | 278   | -     | 276    | 306   | -     |
| Stage 2              | -      | - | - | -      | - | - | 276    | 305   | -     | 246    | 260   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 591    | - | - | 670    | - | - | ~ 31   | 44    | 251   | 30     | 40    | 282   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | ~ 31   | 44    | -     | 30     | 40    | -     |
| Stage 1              | -      | - | - | -      | - | - | 241    | 270   | -     | 270    | 300   | -     |
| Stage 2              | -      | - | - | -      | - | - | 267    | 299   | -     | 235    | 253   | -     |

| Approach             | EB  | WB  | SE       | NW   |
|----------------------|-----|-----|----------|------|
| HCM Control Delay, s | 0.1 | 0.1 | \$ 418.3 | 57.8 |
| HCM LOS              |     |     | F        | F    |

| Minor Lane/Major Mvmt | NWLn1 | NWLn2 | EBL   | EBT | EBR | WBL   | WBT | WBR | SELn1    | SELn2 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|----------|-------|
| Capacity (veh/h)      | 34    | 282   | 591   | -   | -   | 670   | -   | -   | 32       | 251   |
| HCM Lane V/C Ratio    | 0.061 | 0.011 | 0.009 | -   | -   | 0.009 | -   | -   | 1.27     | 0.008 |
| HCM Control Delay (s) | 117.7 | 17.9  | 11.1  | 0   | -   | 10.4  | 0   | -   | \$ 438.8 | 19.5  |
| HCM Lane LOS          | F     | C     | B     | A   | -   | B     | A   | -   | F        | C     |
| HCM 95th %tile Q(veh) | 0.2   | 0     | 0     | -   | -   | 0     | -   | -   | 4.5      | 0     |

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

# Lanes and Geometrics

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 50                                                                                  | 0                                                                                   |                                                                                     | 50                                                                                  |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 1687                                                                              |                                                                                   |                                                                                   | 935                                                                               |                                                                                   |                                                                                    | 885                                                                                 |                                                                                     |                                                                                     | 1732                                                                                |                                                                                     |
| Travel Time (s)      |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# Timings

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017



| Lane Group           | SEL   | SET   | SER   | NWL   | NWT   | NEL   | NET   | NER   | SWL   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |
| Volume (vph)         | 7     | 155   | 127   | 990   | 214   | 93    | 6     | 905   | 27    | 19    |
| Turn Type            | Split | NA    | Perm  | Split | NA    | Perm  | NA    | pm+ov | Perm  | NA    |
| Protected Phases     | 6     | 6     |       | 2     | 2     |       | 4     | 2     |       | 8     |
| Permitted Phases     |       |       | 6     |       |       | 4     |       | 4     | 8     |       |
| Detector Phase       | 6     | 6     | 6     | 2     | 2     | 4     | 4     | 2     | 8     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 6.0   | 6.0   | 6.0   | 7.0   | 7.0   | 9.0   | 9.0   | 7.0   | 9.0   | 9.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 20.0  | 20.0  | 80.0  | 80.0  | 20.0  | 20.0  | 80.0  | 20.0  | 20.0  |
| Total Split (%)      | 16.7% | 16.7% | 16.7% | 66.7% | 66.7% | 16.7% | 16.7% | 66.7% | 16.7% | 16.7% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 3.9   | 3.9   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |       | 4.9   | 5.3   |       | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |       |       |
| Recall Mode          | Max   | Max   | Max   | C-Max | C-Max | None  | None  | C-Max | None  | None  |
| Act Effct Green (s)  | 14.7  | 14.7  | 14.7  | 76.8  | 76.8  |       | 13.0  | 94.7  |       | 12.6  |
| Actuated g/C Ratio   | 0.12  | 0.12  | 0.12  | 0.64  | 0.64  |       | 0.11  | 0.79  |       | 0.10  |
| v/c Ratio            | 0.03  | 0.71  | 0.43  | 0.92  | 0.21  |       | 0.73  | 0.74  |       | 0.46  |
| Control Delay        | 47.0  | 68.8  | 12.6  | 21.9  | 2.7   |       | 79.4  | 9.1   |       | 49.9  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |
| Total Delay          | 47.0  | 68.8  | 12.6  | 21.9  | 2.7   |       | 79.4  | 9.1   |       | 49.9  |
| LOS                  | D     | E     | B     | C     | A     |       | E     | A     |       | D     |
| Approach Delay       |       | 43.5  |       |       | 18.2  |       | 16.0  |       |       | 49.9  |
| Approach LOS         |       | D     |       |       | B     |       | B     |       |       | D     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 42 (35%), Referenced to phase 2:NWTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 21.0

Intersection LOS: C

Intersection Capacity Utilization 86.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: RIVERSIDE DR & COLLIER AVE

|        |      |      |      |
|--------|------|------|------|
|        |      |      |      |
| ø2 (R) | ø6   | ø4   | ø8   |
| 80 s   | 20 s | 20 s | 20 s |

## Queues

## 2: RIVERSIDE DR &amp; COLLIER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL   | NWT  | NET  | NER  | SWT  |
|-------------------------|------|------|------|-------|------|------|------|------|
| Lane Group Flow (vph)   | 7    | 163  | 134  | 1042  | 247  | 104  | 953  | 68   |
| v/c Ratio               | 0.03 | 0.71 | 0.43 | 0.92  | 0.21 | 0.73 | 0.74 | 0.46 |
| Control Delay           | 47.0 | 68.8 | 12.6 | 21.9  | 2.7  | 79.4 | 9.1  | 49.9 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 47.0 | 68.8 | 12.6 | 21.9  | 2.7  | 79.4 | 9.1  | 49.9 |
| Queue Length 50th (ft)  | 5    | 123  | 0    | 434   | 24   | 78   | 237  | 39   |
| Queue Length 95th (ft)  | 20   | #219 | 58   | #1052 | 44   | #150 | 385  | 87   |
| Internal Link Dist (ft) |      | 1295 |      |       | 623  | 2459 |      | 691  |
| Turn Bay Length (ft)    | 200  |      | 200  |       |      |      | 360  |      |
| Base Capacity (vph)     | 216  | 228  | 311  | 1132  | 1179 | 166  | 1289 | 172  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.03 | 0.71 | 0.43 | 0.92  | 0.21 | 0.63 | 0.74 | 0.40 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 2010 Signalized Intersection Summary

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017

|                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Volume (veh/h)                                                                                      | 7                                                                                 | 155                                                                               | 127                                                                               | 990                                                                               | 214                                                                               | 21                                                                                | 93                                                                                 | 6                                                                                   | 905                                                                                 | 27                                                                                  | 19                                                                                  | 19                                                                                  |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                                                | 7                                                                                 | 163                                                                               | 134                                                                               | 1042                                                                              | 225                                                                               | 22                                                                                | 98                                                                                 | 6                                                                                   | 953                                                                                 | 28                                                                                  | 20                                                                                  | 20                                                                                  |
| Adj No. of Lanes                                                                                    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                                                    | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 1224                                                                              | 120                                                                               | 163                                                                                | 6                                                                                   | 1359                                                                                | 46                                                                                  | 32                                                                                  | 15                                                                                  |
| Arrive On Green                                                                                     | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.13                                                                               | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                |
| Sat Flow, veh/h                                                                                     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1671                                                                              | 163                                                                               | 836                                                                                | 51                                                                                  | 1583                                                                                | 31                                                                                  | 254                                                                                 | 119                                                                                 |
| Grp Volume(v), veh/h                                                                                | 7                                                                                 | 163                                                                               | 134                                                                               | 1042                                                                              | 0                                                                                 | 247                                                                               | 104                                                                                | 0                                                                                   | 953                                                                                 | 68                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 0                                                                                 | 1834                                                                              | 887                                                                                | 0                                                                                   | 1583                                                                                | 403                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s                                                                                     | 0.4                                                                               | 10.1                                                                              | 9.7                                                                               | 45.7                                                                              | 0.0                                                                               | 5.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 15.1                                                                                | 1.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 0.4                                                                               | 10.1                                                                              | 9.7                                                                               | 45.7                                                                              | 0.0                                                                               | 5.0                                                                               | 13.9                                                                               | 0.0                                                                                 | 15.1                                                                                | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                                                        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.09                                                                              | 0.94                                                                               |                                                                                     | 1.00                                                                                | 0.41                                                                                |                                                                                     | 0.29                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1343                                                                              | 170                                                                                | 0                                                                                   | 1359                                                                                | 93                                                                                  | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                                                                                        | 0.03                                                                              | 0.71                                                                              | 0.69                                                                              | 0.80                                                                              | 0.00                                                                              | 0.18                                                                              | 0.61                                                                               | 0.00                                                                                | 0.70                                                                                | 0.73                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1343                                                                              | 170                                                                                | 0                                                                                   | 1359                                                                                | 93                                                                                  | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 46.4                                                                              | 50.6                                                                              | 50.5                                                                              | 10.4                                                                              | 0.0                                                                               | 5.0                                                                               | 51.9                                                                               | 0.0                                                                                 | 2.3                                                                                 | 51.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                                                              | 0.3                                                                               | 17.4                                                                              | 18.3                                                                              | 5.3                                                                               | 0.0                                                                               | 0.3                                                                               | 4.7                                                                                | 0.0                                                                                 | 1.4                                                                                 | 22.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 0.2                                                                               | 6.3                                                                               | 5.2                                                                               | 23.9                                                                              | 0.0                                                                               | 2.7                                                                               | 3.6                                                                                | 0.0                                                                                 | 32.0                                                                                | 2.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 46.7                                                                              | 68.0                                                                              | 68.8                                                                              | 15.7                                                                              | 0.0                                                                               | 5.3                                                                               | 56.6                                                                               | 0.0                                                                                 | 3.7                                                                                 | 73.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                                                           | D                                                                                 | E                                                                                 | E                                                                                 | B                                                                                 |                                                                                   | A                                                                                 | E                                                                                  |                                                                                     | A                                                                                   | E                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h                                                                                 |                                                                                   | 304                                                                               |                                                                                   |                                                                                   | 1289                                                                              |                                                                                   |                                                                                    | 1057                                                                                |                                                                                     |                                                                                     | 68                                                                                  |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 67.9                                                                              |                                                                                   |                                                                                   | 13.7                                                                              |                                                                                   |                                                                                    | 8.9                                                                                 |                                                                                     |                                                                                     | 73.9                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 93.6                                                                              |                                                                                   | 20.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                    | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 5.3                                                                               |                                                                                   | * 5.3                                                                             |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 74.7                                                                              |                                                                                   | * 15                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                        |                                                                                   | 48.7                                                                              |                                                                                   | 18.1                                                                              |                                                                                   | 13.1                                                                              |                                                                                    | 17.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 3.2                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.2                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 19.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 896                                                                               | 260                                                                               | 66                                                                                | 43                                                                                | 165                                                                               | 468                                                                               | 193                                                                                | 340                                                                                 | 395                                                                                 | 229                                                                                 | 780                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                               | NA                                                                                  | Prot                                                                                | NA                                                                                  | pm+ov                                                                               |
| Protected Phases     | 1                                                                                 | 6                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 1                                                                                 | 6                                                                                 | 6                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 11.6                                                                              | 30.5                                                                              | 30.5                                                                              | 8.6                                                                               | 18.0                                                                              | 11.6                                                                              | 8.6                                                                                | 20.0                                                                                | 11.6                                                                                | 42.3                                                                                | 11.6                                                                                |
| Total Split (s)      | 44.7                                                                              | 49.5                                                                              | 49.5                                                                              | 13.2                                                                              | 18.0                                                                              | 26.2                                                                              | 15.0                                                                               | 31.1                                                                                | 26.2                                                                                | 42.3                                                                                | 44.7                                                                                |
| Total Split (%)      | 37.3%                                                                             | 41.3%                                                                             | 41.3%                                                                             | 11.0%                                                                             | 15.0%                                                                             | 21.8%                                                                             | 12.5%                                                                              | 25.9%                                                                               | 21.8%                                                                               | 35.3%                                                                               | 37.3%                                                                               |
| Yellow Time (s)      | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 3.6                                                                               | 3.6                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 4.6                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | C-Max                                                                             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | C-Max                                                                               |
| Act Effct Green (s)  | 51.1                                                                              | 58.2                                                                              | 58.2                                                                              | 7.5                                                                               | 12.7                                                                              | 36.4                                                                              | 9.8                                                                                | 17.9                                                                                | 18.4                                                                                | 26.5                                                                                | 83.0                                                                                |
| Actuated g/C Ratio   | 0.43                                                                              | 0.48                                                                              | 0.48                                                                              | 0.06                                                                              | 0.11                                                                              | 0.30                                                                              | 0.08                                                                               | 0.15                                                                                | 0.15                                                                                | 0.22                                                                                | 0.69                                                                                |
| v/c Ratio            | 0.64                                                                              | 0.16                                                                              | 0.08                                                                              | 0.41                                                                              | 0.46                                                                              | 0.53                                                                              | 0.72                                                                               | 0.76                                                                                | 0.78                                                                                | 0.58                                                                                | 0.41                                                                                |
| Control Delay        | 27.3                                                                              | 17.6                                                                              | 0.2                                                                               | 64.2                                                                              | 54.8                                                                              | 27.7                                                                              | 68.3                                                                               | 57.2                                                                                | 52.3                                                                                | 38.4                                                                                | 6.5                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 27.3                                                                              | 17.6                                                                              | 0.2                                                                               | 64.2                                                                              | 54.8                                                                              | 27.7                                                                              | 68.3                                                                               | 57.2                                                                                | 52.3                                                                                | 38.4                                                                                | 6.5                                                                                 |
| LOS                  | C                                                                                 | B                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | E                                                                                  | E                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 23.8                                                                              |                                                                                   |                                                                                   | 36.6                                                                              |                                                                                   |                                                                                    | 60.9                                                                                |                                                                                     | 24.6                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 74 (62%), Referenced to phase 1:SEL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 31.9

Intersection LOS: C

Intersection Capacity Utilization 68.8%

ICU Level of Service C

Analysis Period (min) 15

### Splits and Phases: 3: CENTRAL AVE & COLLIER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| ø1 (R)                                                                              | ø2                                                                                  | ø3                                                                                  | ø4                                                                                  |
| 44.7 s                                                                              | 18 s                                                                                | 26.2 s                                                                              | 31.1 s                                                                              |
|  |  |  |  |
| ø5                                                                                  | ø6                                                                                  | ø7                                                                                  | ø8                                                                                  |
| 13.2 s                                                                              | 49.5 s                                                                              | 15 s                                                                                | 42.3 s                                                                              |

## Queues

## 3: CENTRAL AVE &amp; COLLIER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 933                                                                               | 271                                                                               | 69                                                                                | 45                                                                                | 172                                                                               | 488                                                                               | 201                                                                                | 404                                                                                 | 411                                                                                 | 239                                                                                 | 812                                                                                 |
| v/c Ratio               | 0.64                                                                              | 0.16                                                                              | 0.08                                                                              | 0.41                                                                              | 0.46                                                                              | 0.53                                                                              | 0.72                                                                               | 0.76                                                                                | 0.78                                                                                | 0.58                                                                                | 0.41                                                                                |
| Control Delay           | 27.3                                                                              | 17.6                                                                              | 0.2                                                                               | 64.2                                                                              | 54.8                                                                              | 27.7                                                                              | 68.3                                                                               | 57.2                                                                                | 52.3                                                                                | 38.4                                                                                | 6.5                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 27.3                                                                              | 17.6                                                                              | 0.2                                                                               | 64.2                                                                              | 54.8                                                                              | 27.7                                                                              | 68.3                                                                               | 57.2                                                                                | 52.3                                                                                | 38.4                                                                                | 6.5                                                                                 |
| Queue Length 50th (ft)  | 249                                                                               | 57                                                                                | 0                                                                                 | 34                                                                                | 66                                                                                | 134                                                                               | 79                                                                                 | 155                                                                                 | 151                                                                                 | 164                                                                                 | 97                                                                                  |
| Queue Length 95th (ft)  | 392                                                                               | m93                                                                               | m0                                                                                | 72                                                                                | 104                                                                               | 185                                                                               | 120                                                                                | 202                                                                                 | 197                                                                                 | 263                                                                                 | 220                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1881                                                                              |                                                                                   |                                                                                   | 463                                                                               |                                                                                   |                                                                                    | 1625                                                                                |                                                                                     | 251                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 650                                                                               |                                                                                   | 220                                                                               | 100                                                                               |                                                                                   | 100                                                                               | 140                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 1462                                                                              | 1715                                                                              | 842                                                                               | 132                                                                               | 374                                                                               | 998                                                                               | 297                                                                                | 755                                                                                 | 617                                                                                 | 574                                                                                 | 1976                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.64                                                                              | 0.16                                                                              | 0.08                                                                              | 0.34                                                                              | 0.46                                                                              | 0.49                                                                              | 0.68                                                                               | 0.54                                                                                | 0.67                                                                                | 0.42                                                                                | 0.41                                                                                |

## Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)               | 896                                                                               | 260                                                                               | 66                                                                                | 43                                                                                | 165                                                                               | 468                                                                               | 193                                                                                | 340                                                                                 | 48                                                                                  | 395                                                                                 | 229                                                                                 | 780                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 933                                                                               | 271                                                                               | 69                                                                                | 45                                                                                | 172                                                                               | 488                                                                               | 201                                                                                | 354                                                                                 | 50                                                                                  | 411                                                                                 | 239                                                                                 | 812                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 1329                                                                              | 1725                                                                              | 772                                                                               | 69                                                                                | 496                                                                               | 799                                                                               | 282                                                                                | 505                                                                                 | 71                                                                                  | 504                                                                                 | 422                                                                                 | 1708                                                                                |
| Arrive On Green              | 0.39                                                                              | 0.49                                                                              | 0.49                                                                              | 0.04                                                                              | 0.14                                                                              | 0.14                                                                              | 0.08                                                                               | 0.16                                                                                | 0.16                                                                                | 0.05                                                                                | 0.07                                                                                | 0.07                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 3539                                                                              | 1583                                                                              | 1774                                                                              | 3539                                                                              | 2787                                                                              | 3442                                                                               | 3118                                                                                | 437                                                                                 | 3442                                                                                | 1863                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h         | 933                                                                               | 271                                                                               | 69                                                                                | 45                                                                                | 172                                                                               | 488                                                                               | 201                                                                                | 200                                                                                 | 204                                                                                 | 411                                                                                 | 239                                                                                 | 812                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 1393                                                                              | 1721                                                                               | 1770                                                                                | 1786                                                                                | 1721                                                                                | 1863                                                                                | 1393                                                                                |
| Q Serve(g_s), s              | 27.4                                                                              | 5.1                                                                               | 2.8                                                                               | 3.0                                                                               | 5.3                                                                               | 16.8                                                                              | 6.8                                                                                | 12.8                                                                                | 13.0                                                                                | 14.2                                                                                | 14.9                                                                                | 17.9                                                                                |
| Cycle Q Clear(g_c), s        | 27.4                                                                              | 5.1                                                                               | 2.8                                                                               | 3.0                                                                               | 5.3                                                                               | 16.8                                                                              | 6.8                                                                                | 12.8                                                                                | 13.0                                                                                | 14.2                                                                                | 14.9                                                                                | 17.9                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.24                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 1329                                                                              | 1725                                                                              | 772                                                                               | 69                                                                                | 496                                                                               | 799                                                                               | 282                                                                                | 287                                                                                 | 289                                                                                 | 504                                                                                 | 422                                                                                 | 1708                                                                                |
| V/C Ratio(X)                 | 0.70                                                                              | 0.16                                                                              | 0.09                                                                              | 0.65                                                                              | 0.35                                                                              | 0.61                                                                              | 0.71                                                                               | 0.70                                                                                | 0.71                                                                                | 0.81                                                                                | 0.57                                                                                | 0.48                                                                                |
| Avail Cap(c_a), veh/h        | 1329                                                                              | 1725                                                                              | 772                                                                               | 127                                                                               | 496                                                                               | 799                                                                               | 298                                                                                | 380                                                                                 | 384                                                                                 | 619                                                                                 | 574                                                                                 | 1935                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 31.0                                                                              | 17.1                                                                              | 16.5                                                                              | 56.9                                                                              | 46.6                                                                              | 37.0                                                                              | 53.7                                                                               | 47.5                                                                                | 47.6                                                                                | 55.5                                                                                | 49.8                                                                                | 14.9                                                                                |
| Incr Delay (d2), s/veh       | 1.4                                                                               | 0.2                                                                               | 0.2                                                                               | 3.8                                                                               | 1.9                                                                               | 3.5                                                                               | 6.0                                                                                | 1.8                                                                                 | 2.1                                                                                 | 5.6                                                                                 | 0.4                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 13.2                                                                              | 2.5                                                                               | 1.3                                                                               | 1.5                                                                               | 2.7                                                                               | 7.3                                                                               | 3.5                                                                                | 6.4                                                                                 | 6.6                                                                                 | 7.2                                                                                 | 7.7                                                                                 | 6.9                                                                                 |
| LnGrp Delay(d),s/veh         | 32.4                                                                              | 17.3                                                                              | 16.7                                                                              | 60.7                                                                              | 48.5                                                                              | 40.5                                                                              | 59.7                                                                               | 49.3                                                                                | 49.6                                                                                | 61.1                                                                                | 50.3                                                                                | 15.0                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | E                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 1273                                                                              |                                                                                   |                                                                                   |                                                                                   | 705                                                                               |                                                                                   |                                                                                    | 605                                                                                 |                                                                                     |                                                                                     | 1462                                                                                |                                                                                     |
| Approach Delay, s/veh        | 28.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 43.7                                                                              |                                                                                   |                                                                                    | 52.9                                                                                |                                                                                     |                                                                                     | 33.7                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 50.9                                                                              | 22.1                                                                              | 22.2                                                                              | 24.7                                                                              | 9.3                                                                               | 63.8                                                                              | 14.4                                                                               | 32.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 40.1                                                                              | 12.7                                                                              | 21.6                                                                              | 25.8                                                                              | 8.6                                                                               | 44.2                                                                              | 10.4                                                                               | 37.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 30.4                                                                              | 19.8                                                                              | 17.2                                                                              | 15.8                                                                              | 6.0                                                                               | 8.1                                                                               | 9.8                                                                                | 20.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 1.7                                                                               | 0.0                                                                               | 0.4                                                                               | 3.7                                                                               | 0.0                                                                               | 3.4                                                                               | 0.0                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 36.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection

Int Delay, s/veh 2.4

| Movement                 | SEL  | SET  | SER  | NWL  | NWT  | NWR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 467  | 17   | 8    | 584  | 0    | 44   | 0    | 18   | 35   | 0    | 12   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 0    | -    | -    | 150  | -    | -    | 90   | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 502  | 18   | 9    | 628  | 0    | 47   | 0    | 19   | 38   | 0    | 13   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 628    | 0 | 0 | 520    | 0 | 0 | 1163   | 1156  | 260   | 896    | 1165  | 628   |
| Stage 1              | -      | - | - | -      | - | - | 511    | 511   | -     | 645    | 645   | -     |
| Stage 2              | -      | - | - | -      | - | - | 652    | 645   | -     | 251    | 520   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.14   | - | - | 7.33   | 6.53  | 6.93  | 7.33   | 6.53  | 6.23  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.53   | 5.53  | -     | 6.13   | 5.53  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.13   | 5.53  | -     | 6.53   | 5.53  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.22   | - | - | 3.519  | 4.019 | 3.319 | 3.519  | 4.019 | 3.319 |
| Pot Cap-1 Maneuver   | 954    | - | - | 1042   | - | - | 160    | 196   | 740   | 248    | 193   | 482   |
| Stage 1              | -      | - | - | -      | - | - | 514    | 536   | -     | 460    | 467   | -     |
| Stage 2              | -      | - | - | -      | - | - | 456    | 467   | -     | 732    | 531   | -     |
| Platoon blocked, %   |        | - | - |        | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 954    | - | - | 1042   | - | - | 155    | 194   | 740   | 240    | 191   | 482   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 155    | 194   | -     | 240    | 191   | -     |
| Stage 1              | -      | - | - | -      | - | - | 514    | 536   | -     | 460    | 463   | -     |
| Stage 2              | -      | - | - | -      | - | - | 440    | 463   | -     | 713    | 531   | -     |

| Approach             | SE | NW  | NE   | SW |
|----------------------|----|-----|------|----|
| HCM Control Delay, s | 0  | 0.1 | 29.9 | 21 |
| HCM LOS              |    |     | D    | C  |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | NWL   | NWT | NWR | SEL | SET | SERSWLn1 |
|-----------------------|-------|-------|-------|-----|-----|-----|-----|----------|
| Capacity (veh/h)      | 155   | 740   | 1042  | -   | -   | 954 | -   | - 275    |
| HCM Lane V/C Ratio    | 0.305 | 0.026 | 0.008 | -   | -   | -   | -   | - 0.184  |
| HCM Control Delay (s) | 38.1  | 10    | 8.5   | -   | -   | 0   | -   | - 21     |
| HCM Lane LOS          | E     | B     | A     | -   | -   | A   | -   | - C      |
| HCM 95th %tile Q(veh) | 1.2   | 0.1   | 0     | -   | -   | 0   | -   | - 0.7    |

# Lanes and Geometrics

## 4: CRANE ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 90                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 118                                                                               |                                                                                   |                                                                                   | 1997                                                                              |                                                                                   |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     | 341                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Intersection             |        |       |        |      |        |       |
|--------------------------|--------|-------|--------|------|--------|-------|
| Int Delay, s/veh         | 9.6    |       |        |      |        |       |
| Movement                 | SET    | SER   | NWL    | NWT  | NEL    | NER   |
| Vol, veh/h               | 232    | 222   | 22     | 123  | 355    | 57    |
| Conflicting Peds, #/hr   | 0      | 0     | 0      | 0    | 0      | 0     |
| Sign Control             | Free   | Free  | Free   | Free | Stop   | Stop  |
| RT Channelized           | -      | None  | -      | None | -      | None  |
| Storage Length           | -      | 0     | -      | -    | 0      | 0     |
| Veh in Median Storage, # | 0      | -     | -      | 0    | 0      | -     |
| Grade, %                 | 0      | -     | -      | 0    | 0      | -     |
| Peak Hour Factor         | 90     | 90    | 90     | 90   | 90     | 90    |
| Heavy Vehicles, %        | 2      | 2     | 2      | 2    | 2      | 2     |
| Mvmt Flow                | 258    | 247   | 24     | 137  | 394    | 63    |
| Major/Minor              | Major1 |       | Major2 |      | Minor1 |       |
| Conflicting Flow All     | 0      | 0     | 258    | 0    | 444    | 258   |
| Stage 1                  | -      | -     | -      | -    | 258    | -     |
| Stage 2                  | -      | -     | -      | -    | 186    | -     |
| Critical Hdwy            | -      | -     | 4.12   | -    | 6.42   | 6.22  |
| Critical Hdwy Stg 1      | -      | -     | -      | -    | 5.42   | -     |
| Critical Hdwy Stg 2      | -      | -     | -      | -    | 5.42   | -     |
| Follow-up Hdwy           | -      | -     | 2.218  | -    | 3.518  | 3.318 |
| Pot Cap-1 Maneuver       | -      | -     | 1307   | -    | 571    | 781   |
| Stage 1                  | -      | -     | -      | -    | 785    | -     |
| Stage 2                  | -      | -     | -      | -    | 846    | -     |
| Platoon blocked, %       | -      | -     | -      | -    | -      | -     |
| Mov Cap-1 Maneuver       | -      | -     | 1307   | -    | 560    | 781   |
| Mov Cap-2 Maneuver       | -      | -     | -      | -    | 560    | -     |
| Stage 1                  | -      | -     | -      | -    | 785    | -     |
| Stage 2                  | -      | -     | -      | -    | 829    | -     |
| Approach                 | SE     |       | NW     |      | NE     |       |
| HCM Control Delay, s     | 0      |       | 1.2    |      | 23.2   |       |
| HCM LOS                  |        |       |        |      | C      |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL    | NWT  | SET    | SER   |
| Capacity (veh/h)         | 560    | 781   | 1307   | -    | -      | -     |
| HCM Lane V/C Ratio       | 0.704  | 0.081 | 0.019  | -    | -      | -     |
| HCM Control Delay (s)    | 25.3   | 10    | 7.8    | 0    | -      | -     |
| HCM Lane LOS             | D      | B     | A      | A    | -      | -     |
| HCM 95th %tile Q(veh)    | 5.6    | 0.3   | 0.1    | -    | -      | -     |

# Lanes and Geometrics

## 5: CHANEY ST & COLLIER AVE

1/27/2017



| Lane Group          | SET  | SER  | NWL  | NWT  | NEL  | NER  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           | 0%   |      |      | 0%   | 0%   |      |
| Storage Length (ft) |      | 0    | 0    |      | 0    | 0    |
| Storage Lanes       |      | 1    | 0    |      | 1    | 1    |
| Taper Length (ft)   |      |      | 25   |      | 25   |      |
| Link Speed (mph)    | 30   |      |      | 30   | 30   |      |
| Link Distance (ft)  | 1997 |      |      | 292  | 1583 |      |
| Travel Time (s)     | 45.4 |      |      | 6.6  | 36.0 |      |

### Intersection Summary

Area Type: Other

| Intersection              |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh | 10   |      |      |      |      |      |      |      |      |      |      |      |
| Intersection LOS          | A    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                  | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Vol, veh/h                | 0    | 0    | 1    | 390  | 0    | 2    | 0    | 1    | 0    | 160  | 1    | 2    |
| Peak Hour Factor          | 0.92 | 0.90 | 0.90 | 0.90 | 0.92 | 0.90 | 0.90 | 0.90 | 0.92 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                 | 0    | 0    | 1    | 433  | 0    | 2    | 0    | 1    | 0    | 178  | 1    | 2    |
| Number of Lanes           | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB   | WB  | NB  |
|----------------------------|------|-----|-----|
| Opposing Approach          | WB   | EB  | SB  |
| Opposing Lanes             | 1    | 1   | 1   |
| Conflicting Approach Left  | SB   | NB  | EB  |
| Conflicting Lanes Left     | 1    | 1   | 1   |
| Conflicting Approach Right | NB   | SB  | WB  |
| Conflicting Lanes Right    | 1    | 1   | 1   |
| HCM Control Delay          | 10.1 | 7.8 | 9.7 |
| HCM LOS                    | B    | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 98%   | 0%    | 67%   | 0%    |
| Vol Thru, %            | 1%    | 0%    | 0%    | 0%    |
| Vol Right, %           | 1%    | 100%  | 33%   | 100%  |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 163   | 391   | 3     | 1     |
| LT Vol                 | 160   | 0     | 2     | 0     |
| Through Vol            | 1     | 1     | 0     | 0     |
| RT Vol                 | 2     | 390   | 1     | 1     |
| Lane Flow Rate         | 181   | 434   | 3     | 1     |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.251 | 0.461 | 0.004 | 0.001 |
| Departure Headway (Hd) | 4.997 | 3.821 | 4.766 | 4.452 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 717   | 947   | 751   | 800   |
| Service Time           | 3.036 | 1.831 | 2.795 | 2.498 |
| HCM Lane V/C Ratio     | 0.252 | 0.458 | 0.004 | 0.001 |
| HCM Control Delay      | 9.7   | 10.1  | 7.8   | 7.5   |
| HCM Lane LOS           | A     | B     | A     | A     |
| HCM 95th-tile Q        | 1     | 2.5   | 0     | 0     |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement          | SBU  | SBL  | SBT  | SBR  |
|-------------------|------|------|------|------|
| Vol, veh/h        | 0    | 0    | 0    | 1    |
| Peak Hour Factor  | 0.92 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, % | 2    | 2    | 2    | 2    |
| Mvmt Flow         | 0    | 0    | 0    | 1    |
| Number of Lanes   | 0    | 0    | 1    | 0    |

Approach SB

|                            |     |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.5 |
| HCM LOS                    | A   |

Lane

# Lanes and Geometrics

## 6: N. SPRING ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 294                                                                               |                                                                                   |                                                                                   | 237                                                                               |                                                                                   |                                                                                    | 822                                                                                 |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                    | 18.7                                                                                |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                      |  |  |  |                                                                                                                                                                      |  |                                                                                    |                                                                                       |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                                                                                                                                                                                                   | NER                                                                               | SWL                                                                                                                                                                 | SWT                                                                                                                                                                     |
| Lane Configurations  |  |  |  |    |  |   |   |
| Volume (vph)         | 564                                                                               | 3                                                                                 | 176                                                                               | 1200                                                                                                                                                                                                                                                  | 509                                                                               | 634                                                                                                                                                                 | 1440                                                                                                                                                                    |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                                                                                                                                                                                    | Perm                                                                              | Prot                                                                                                                                                                | NA                                                                                                                                                                      |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                                                                                                                                                                                     |                                                                                   | 3                                                                                                                                                                   | 8                                                                                                                                                                       |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                                                                                                                                                                                       | 4                                                                                 |                                                                                                                                                                     |                                                                                                                                                                         |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                                                                                                                                                                                     | 4                                                                                 | 3                                                                                                                                                                   | 8                                                                                                                                                                       |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                         |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                                                                                                                                                                                                   | 7.0                                                                               | 5.0                                                                                                                                                                 | 7.0                                                                                                                                                                     |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 29.3                                                                                                                                                                                                                                                  | 29.3                                                                              | 11.0                                                                                                                                                                | 20.0                                                                                                                                                                    |
| Total Split (s)      | 39.0                                                                              | 39.0                                                                              | 39.0                                                                              | 45.0                                                                                                                                                                                                                                                  | 45.0                                                                              | 36.0                                                                                                                                                                | 81.0                                                                                                                                                                    |
| Total Split (%)      | 32.5%                                                                             | 32.5%                                                                             | 32.5%                                                                             | 37.5%                                                                                                                                                                                                                                                 | 37.5%                                                                             | 30.0%                                                                                                                                                               | 67.5%                                                                                                                                                                   |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                                                                                                                                                                                   | 4.3                                                                               | 3.6                                                                                                                                                                 | 4.3                                                                                                                                                                     |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                                                                                                                                                                                   | 1.0                                                                               | 1.0                                                                                                                                                                 | 1.0                                                                                                                                                                     |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                     |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                                                                                                                                                                                   | 5.3                                                                               | 4.6                                                                                                                                                                 | 5.3                                                                                                                                                                     |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                                                                                                                                                                                                   | Lag                                                                               | Lead                                                                                                                                                                |                                                                                                                                                                         |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                         |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                                                                                                                                                                                                 | C-Max                                                                             | None                                                                                                                                                                | C-Max                                                                                                                                                                   |
| Act Effct Green (s)  | 33.7                                                                              | 33.7                                                                              | 33.7                                                                              | 44.2                                                                                                                                                                                                                                                  | 44.2                                                                              | 26.9                                                                                                                                                                | 75.7                                                                                                                                                                    |
| Actuated g/C Ratio   | 0.28                                                                              | 0.28                                                                              | 0.28                                                                              | 0.37                                                                                                                                                                                                                                                  | 0.37                                                                              | 0.22                                                                                                                                                                | 0.63                                                                                                                                                                    |
| v/c Ratio            | 0.65                                                                              | 0.67                                                                              | 0.35                                                                              | 0.67                                                                                                                                                                                                                                                  | 0.58                                                                              | 0.86                                                                                                                                                                | 0.67                                                                                                                                                                    |
| Control Delay        | 45.4                                                                              | 46.3                                                                              | 23.3                                                                              | 29.1                                                                                                                                                                                                                                                  | 6.9                                                                               | 57.5                                                                                                                                                                | 19.1                                                                                                                                                                    |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                                                                                                                 | 1.2                                                                                                                                                                     |
| Total Delay          | 45.4                                                                              | 46.3                                                                              | 23.3                                                                              | 29.1                                                                                                                                                                                                                                                  | 6.9                                                                               | 57.5                                                                                                                                                                | 20.4                                                                                                                                                                    |
| LOS                  | D                                                                                 | D                                                                                 | C                                                                                 | C                                                                                                                                                                                                                                                     | A                                                                                 | E                                                                                                                                                                   | C                                                                                                                                                                       |
| Approach Delay       |                                                                                   | 41.0                                                                              |                                                                                   | 22.5                                                                                                                                                                                                                                                  |                                                                                   |                                                                                                                                                                     | 31.7                                                                                                                                                                    |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   | C                                                                                                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     | C                                                                                                                                                                       |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 109 (91%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 29.8

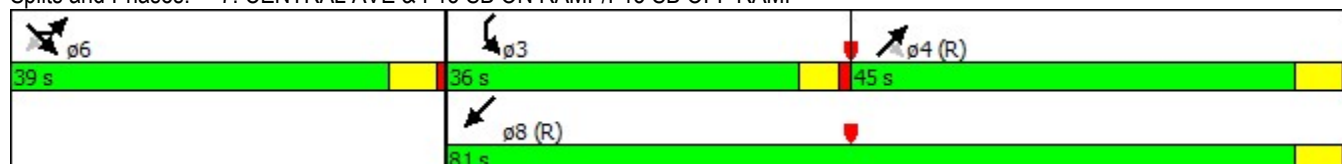
Intersection LOS: C

Intersection Capacity Utilization 79.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP



## Queues

## 7: CENTRAL AVE &amp; I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Group Flow (vph)   | 306                                                                               | 303                                                                               | 165                                                                               | 1250                                                                              | 530                                                                               | 660                                                                               | 1500                                                                               |
| v/c Ratio               | 0.65                                                                              | 0.67                                                                              | 0.35                                                                              | 0.67                                                                              | 0.58                                                                              | 0.86                                                                              | 0.67                                                                               |
| Control Delay           | 45.4                                                                              | 46.3                                                                              | 23.3                                                                              | 29.1                                                                              | 6.9                                                                               | 57.5                                                                              | 19.1                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.2                                                                                |
| Total Delay             | 45.4                                                                              | 46.3                                                                              | 23.3                                                                              | 29.1                                                                              | 6.9                                                                               | 57.5                                                                              | 20.4                                                                               |
| Queue Length 50th (ft)  | 220                                                                               | 226                                                                               | 64                                                                                | 291                                                                               | 82                                                                                | 279                                                                               | 370                                                                                |
| Queue Length 95th (ft)  | 326                                                                               | 339                                                                               | 130                                                                               | 372                                                                               | 134                                                                               | 341                                                                               | 432                                                                                |
| Internal Link Dist (ft) |                                                                                   | 1290                                                                              |                                                                                   | 318                                                                               |                                                                                   |                                                                                   | 410                                                                                |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 100                                                                               |                                                                                    |
| Base Capacity (vph)     | 472                                                                               | 453                                                                               | 467                                                                               | 1871                                                                              | 917                                                                               | 898                                                                               | 2232                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 471                                                                                |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Reduced v/c Ratio       | 0.65                                                                              | 0.67                                                                              | 0.35                                                                              | 0.67                                                                              | 0.58                                                                              | 0.73                                                                              | 0.85                                                                               |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# HCM 2010 Signalized Intersection Summary

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |  |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Volume (veh/h)                                                       | 564                                                                               | 3                                                                                 | 176                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 1200                                                                                | 509                                                                                 | 634                                                                                 | 1440                                                                                | 0                                                                                   |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1863                                                                              | 1863                                                                              | 1863                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h                                                 | 646                                                                               | 0                                                                                 | 123                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1250                                                                                | 530                                                                                 | 660                                                                                 | 1500                                                                                | 0                                                                                   |
| Adj No. of Lanes                                                     | 2                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Cap, veh/h                                                           | 996                                                                               | 0                                                                                 | 445                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1935                                                                                | 602                                                                                 | 730                                                                                 | 2233                                                                                | 0                                                                                   |
| Arrive On Green                                                      | 0.28                                                                              | 0.00                                                                              | 0.28                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.13                                                                                | 0.13                                                                                | 0.42                                                                                | 1.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                      | 3548                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 5253                                                                                | 1583                                                                                | 3442                                                                                | 3632                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h                                                 | 646                                                                               | 0                                                                                 | 123                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1250                                                                                | 530                                                                                 | 660                                                                                 | 1500                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                             | 1774                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1695                                                                                | 1583                                                                                | 1721                                                                                | 1770                                                                                | 0                                                                                   |
| Q Serve(g_s), s                                                      | 19.2                                                                              | 0.0                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 28.1                                                                                | 39.5                                                                                | 21.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                | 19.2                                                                              | 0.0                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 28.1                                                                                | 39.5                                                                                | 21.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 996                                                                               | 0                                                                                 | 445                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1935                                                                                | 602                                                                                 | 730                                                                                 | 2233                                                                                | 0                                                                                   |
| V/C Ratio(X)                                                         | 0.65                                                                              | 0.00                                                                              | 0.28                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.65                                                                                | 0.88                                                                                | 0.90                                                                                | 0.67                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                | 996                                                                               | 0                                                                                 | 445                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1935                                                                                | 602                                                                                 | 901                                                                                 | 2233                                                                                | 0                                                                                   |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 0.33                                                                                | 0.33                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.56                                                                                | 0.56                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                             | 37.9                                                                              | 0.0                                                                               | 33.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 44.8                                                                                | 49.8                                                                                | 33.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                               | 3.3                                                                               | 0.0                                                                               | 1.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 1.7                                                                                 | 16.7                                                                                | 5.9                                                                                 | 0.9                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 9.9                                                                               | 0.0                                                                               | 3.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 13.5                                                                                | 20.1                                                                                | 10.7                                                                                | 0.3                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 41.2                                                                              | 0.0                                                                               | 35.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 46.5                                                                                | 66.5                                                                                | 39.3                                                                                | 0.9                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                            | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                  |                                                                                   | 769                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 1780                                                                                |                                                                                     |                                                                                     | 2160                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                   | 40.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 52.4                                                                                |                                                                                     |                                                                                     | 12.6                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   |                                                                                   | 30.0                                                                              | 51.0                                                                              |                                                                                   | 39.0                                                                              |                                                                                    | 81.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   |                                                                                   | 31.4                                                                              | 39.7                                                                              |                                                                                   | 33.7                                                                              |                                                                                    | 75.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                   |                                                                                   | 24.5                                                                              | 42.5                                                                              |                                                                                   | 22.2                                                                              |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   |                                                                                   | 0.9                                                                               | 0.0                                                                               |                                                                                   | 1.3                                                                               |                                                                                    | 35.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 32.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# Timings

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                               | SWT                                                                               | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 543                                                                               | 2                                                                                 | 688                                                                               | 146                                                                               | 1572                                                                              | 1539                                                                              | 369                                                                                 |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 2                                                                                 | 2                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 2                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 11.0                                                                              | 20.0                                                                              | 28.3                                                                              | 28.3                                                                                |
| Total Split (s)      | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              | 20.0                                                                              | 72.0                                                                              | 52.0                                                                              | 52.0                                                                                |
| Total Split (%)      | 40.0%                                                                             | 40.0%                                                                             | 40.0%                                                                             | 16.7%                                                                             | 60.0%                                                                             | 43.3%                                                                             | 43.3%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                             | C-Max                                                                             | C-Max                                                                               |
| Act Effct Green (s)  | 42.7                                                                              | 42.7                                                                              | 42.7                                                                              | 13.4                                                                              | 66.7                                                                              | 48.7                                                                              | 48.7                                                                                |
| Actuated g/C Ratio   | 0.36                                                                              | 0.36                                                                              | 0.36                                                                              | 0.11                                                                              | 0.56                                                                              | 0.41                                                                              | 0.41                                                                                |
| v/c Ratio            | 0.74                                                                              | 0.77                                                                              | 0.71                                                                              | 0.77                                                                              | 0.57                                                                              | 0.77                                                                              | 0.45                                                                                |
| Control Delay        | 42.6                                                                              | 43.4                                                                              | 36.1                                                                              | 87.9                                                                              | 14.1                                                                              | 19.1                                                                              | 2.2                                                                                 |
| Queue Delay          | 0.6                                                                               | 1.4                                                                               | 0.8                                                                               | 0.0                                                                               | 0.2                                                                               | 0.3                                                                               | 0.2                                                                                 |
| Total Delay          | 43.3                                                                              | 44.8                                                                              | 36.9                                                                              | 87.9                                                                              | 14.3                                                                              | 19.4                                                                              | 2.4                                                                                 |
| LOS                  | D                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | B                                                                                 | B                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 41.7                                                                              |                                                                                   |                                                                                   | 20.6                                                                              | 16.1                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 | B                                                                                 |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 111 (93%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 24.2

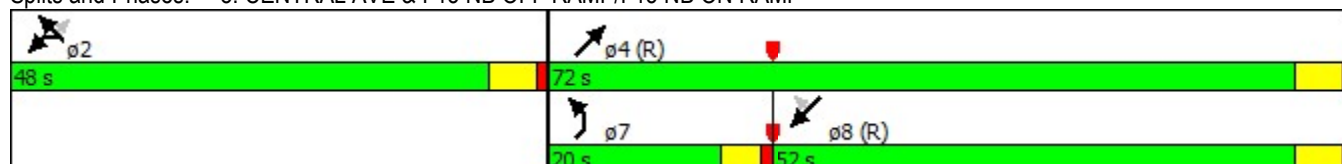
Intersection LOS: C

Intersection Capacity Utilization 79.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP



## Queues

### 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017



| Lane Group              | NWL  | NWT  | NWR  | NEL   | NET  | SWT  | SWR  |
|-------------------------|------|------|------|-------|------|------|------|
| Lane Group Flow (vph)   | 442  | 418  | 411  | 151   | 1621 | 1587 | 380  |
| v/c Ratio               | 0.74 | 0.77 | 0.71 | 0.77  | 0.57 | 0.77 | 0.45 |
| Control Delay           | 42.6 | 43.4 | 36.1 | 87.9  | 14.1 | 19.1 | 2.2  |
| Queue Delay             | 0.6  | 1.4  | 0.8  | 0.0   | 0.2  | 0.3  | 0.2  |
| Total Delay             | 43.3 | 44.8 | 36.9 | 87.9  | 14.3 | 19.4 | 2.4  |
| Queue Length 50th (ft)  | 312  | 298  | 246  | 126   | 166  | 159  | 8    |
| Queue Length 95th (ft)  | 447  | 443  | 377  | m#190 | 182  | 179  | m14  |
| Internal Link Dist (ft) |      | 1244 |      |       | 410  | 302  |      |
| Turn Bay Length (ft)    | 190  |      | 190  | 190   |      |      |      |
| Base Capacity (vph)     | 598  | 544  | 575  | 227   | 2826 | 2064 | 852  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0     | 171  | 108  | 96   |
| Spillback Cap Reductn   | 27   | 35   | 36   | 0     | 379  | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0     | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.77 | 0.82 | 0.76 | 0.67  | 0.66 | 0.81 | 0.50 |

#### Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                                                                      |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET  | SER | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Volume (veh/h)                                                       | 0                                                                                  | 0    | 0   | 543                                                                               | 2                                                                                 | 688                                                                               | 146                                                                               | 1572                                                                                | 0    | 0    | 1539                                                                                | 369                                                                                 |
| Number                                                               |                                                                                    |      |     | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                 | 4                                                                                   | 14   | 3    | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               |                                                                                    |      |     | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 0    | 0    | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 |                                                                                    |      |     | 805                                                                               | 0                                                                                 | 448                                                                               | 151                                                                               | 1621                                                                                | 0    | 0    | 1587                                                                                | 380                                                                                 |
| Adj No. of Lanes                                                     |                                                                                    |      |     | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                   | 0    | 0    | 3                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                     |                                                                                    |      |     | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97 | 0.97 | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %                                                 |                                                                                    |      |     | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0    | 0    | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 187                                                                               | 2827                                                                                | 0    | 0    | 2094                                                                                | 652                                                                                 |
| Arrive On Green                                                      |                                                                                    |      |     | 0.36                                                                              | 0.00                                                                              | 0.36                                                                              | 0.21                                                                              | 1.00                                                                                | 0.00 | 0.00 | 0.82                                                                                | 0.82                                                                                |
| Sat Flow, veh/h                                                      |                                                                                    |      |     | 3548                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 5253                                                                                | 0    | 0    | 5253                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                 |                                                                                    |      |     | 805                                                                               | 0                                                                                 | 448                                                                               | 151                                                                               | 1621                                                                                | 0    | 0    | 1587                                                                                | 380                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             |                                                                                    |      |     | 1774                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 1695                                                                                | 0    | 0    | 1695                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                      |                                                                                    |      |     | 22.7                                                                              | 0.0                                                                               | 30.5                                                                              | 9.7                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 17.6                                                                                | 9.8                                                                                 |
| Cycle Q Clear(g_c), s                                                |                                                                                    |      |     | 22.7                                                                              | 0.0                                                                               | 30.5                                                                              | 9.7                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 17.6                                                                                | 9.8                                                                                 |
| Prop In Lane                                                         |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 187                                                                               | 2827                                                                                | 0    | 0    | 2094                                                                                | 652                                                                                 |
| V/C Ratio(X)                                                         |                                                                                    |      |     | 0.64                                                                              | 0.00                                                                              | 0.80                                                                              | 0.81                                                                              | 0.57                                                                                | 0.00 | 0.00 | 0.76                                                                                | 0.58                                                                                |
| Avail Cap(c_a), veh/h                                                |                                                                                    |      |     | 1263                                                                              | 0                                                                                 | 563                                                                               | 228                                                                               | 2827                                                                                | 0    | 0    | 2094                                                                                | 652                                                                                 |
| HCM Platoon Ratio                                                    |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                                | 1.00 | 1.00 | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(l)                                                   |                                                                                    |      |     | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.70                                                                              | 0.70                                                                                | 0.00 | 0.00 | 0.65                                                                                | 0.65                                                                                |
| Uniform Delay (d), s/veh                                             |                                                                                    |      |     | 32.2                                                                              | 0.0                                                                               | 34.7                                                                              | 46.2                                                                              | 0.0                                                                                 | 0.0  | 0.0  | 7.8                                                                                 | 7.1                                                                                 |
| Incr Delay (d2), s/veh                                               |                                                                                    |      |     | 2.5                                                                               | 0.0                                                                               | 11.1                                                                              | 9.5                                                                               | 0.6                                                                                 | 0.0  | 0.0  | 1.7                                                                                 | 2.5                                                                                 |
| Initial Q Delay(d3),s/veh                                            |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             |                                                                                    |      |     | 11.5                                                                              | 0.0                                                                               | 15.0                                                                              | 5.2                                                                               | 0.2                                                                                 | 0.0  | 0.0  | 8.0                                                                                 | 4.5                                                                                 |
| LnGrp Delay(d),s/veh                                                 |                                                                                    |      |     | 34.7                                                                              | 0.0                                                                               | 45.8                                                                              | 55.7                                                                              | 0.6                                                                                 | 0.0  | 0.0  | 9.5                                                                                 | 9.6                                                                                 |
| LnGrp LOS                                                            |                                                                                    |      |     | C                                                                                 |                                                                                   | D                                                                                 | E                                                                                 | A                                                                                   |      |      | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h                                                  |                                                                                    |      |     |                                                                                   | 1253                                                                              |                                                                                   |                                                                                   | 1772                                                                                |      |      | 1967                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    |      |     |                                                                                   | 38.7                                                                              |                                                                                   |                                                                                   | 5.3                                                                                 |      |      | 9.5                                                                                 |                                                                                     |
| Approach LOS                                                         |                                                                                    |      |     |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                   |      |      | A                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2    | 3   | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    | 2    |     | 4                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    | 48.0 |     | 72.0                                                                              |                                                                                   |                                                                                   | 17.3                                                                              | 54.7                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    | 5.3  |     | 5.3                                                                               |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    | 42.7 |     | 66.7                                                                              |                                                                                   |                                                                                   | 15.4                                                                              | 46.7                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    | 33.5 |     | 3.0                                                                               |                                                                                   |                                                                                   | 12.7                                                                              | 20.6                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    | 2.1  |     | 40.3                                                                              |                                                                                   |                                                                                   | 0.1                                                                               | 21.2                                                                                |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |      |     | 15.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |      |     | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 69                                                                                | 110                                                                               | 458                                                                               | 146                                                                               | 127                                                                               | 465                                                                               | 1659                                                                               | 177                                                                                 | 140                                                                                 | 1205                                                                                | 85                                                                                  |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 47.3                                                                              | 47.3                                                                              | 41.0                                                                              | 47.3                                                                              | 47.3                                                                              | 41.0                                                                              | 54.5                                                                               | 54.5                                                                                | 18.2                                                                                | 31.7                                                                                | 31.7                                                                                |
| Total Split (%)      | 39.4%                                                                             | 39.4%                                                                             | 34.2%                                                                             | 39.4%                                                                             | 39.4%                                                                             | 34.2%                                                                             | 45.4%                                                                              | 45.4%                                                                               | 15.2%                                                                               | 26.4%                                                                               | 26.4%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 42.0                                                                              | 42.0                                                                              | 82.1                                                                              | 42.0                                                                              | 42.0                                                                              | 34.8                                                                              | 50.4                                                                               | 50.4                                                                                | 12.4                                                                                | 28.0                                                                                | 28.0                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.68                                                                              | 0.35                                                                              | 0.35                                                                              | 0.29                                                                              | 0.42                                                                               | 0.42                                                                                | 0.10                                                                                | 0.23                                                                                | 0.23                                                                                |
| v/c Ratio            | 0.28                                                                              | 0.18                                                                              | 0.44                                                                              | 0.34                                                                              | 0.53                                                                              | 0.95                                                                              | 0.81                                                                               | 0.24                                                                                | 0.80                                                                                | 0.84                                                                                | 0.20                                                                                |
| Control Delay        | 32.0                                                                              | 28.0                                                                              | 9.4                                                                               | 31.5                                                                              | 27.6                                                                              | 66.5                                                                              | 27.3                                                                               | 4.8                                                                                 | 87.3                                                                                | 38.0                                                                                | 5.5                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 23.5                                                                              | 2.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 32.0                                                                              | 28.0                                                                              | 9.4                                                                               | 31.5                                                                              | 27.6                                                                              | 90.0                                                                              | 29.5                                                                               | 4.8                                                                                 | 87.3                                                                                | 38.0                                                                                | 5.5                                                                                 |
| LOS                  | C                                                                                 | C                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | C                                                                                  | A                                                                                   | F                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 28.8                                                                              |                                                                                   | 39.8                                                                               |                                                                                     |                                                                                     | 40.9                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 35.8

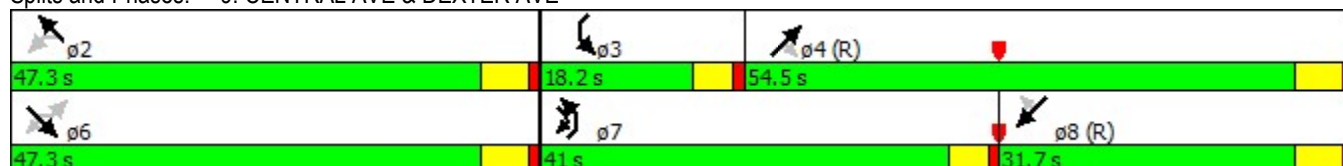
Intersection LOS: D

Intersection Capacity Utilization 86.5%

ICU Level of Service E

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE



## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL  | NWT  | NEL  | NET  | NER  | SWL   | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|------|-------|------|------|
| Lane Group Flow (vph)   | 72   | 115  | 477  | 152  | 336  | 484  | 1728 | 184  | 146   | 1255 | 89   |
| v/c Ratio               | 0.28 | 0.18 | 0.44 | 0.34 | 0.53 | 0.95 | 0.81 | 0.24 | 0.80  | 0.84 | 0.20 |
| Control Delay           | 32.0 | 28.0 | 9.4  | 31.5 | 27.6 | 66.5 | 27.3 | 4.8  | 87.3  | 38.0 | 5.5  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 23.5 | 2.1  | 0.0  | 0.0   | 0.0  | 0.0  |
| Total Delay             | 32.0 | 28.0 | 9.4  | 31.5 | 27.6 | 90.0 | 29.5 | 4.8  | 87.3  | 38.0 | 5.5  |
| Queue Length 50th (ft)  | 40   | 61   | 136  | 86   | 162  | 308  | 342  | 5    | 119   | 185  | 0    |
| Queue Length 95th (ft)  | 81   | 106  | 199  | 146  | 255  | #549 | 439  | m37  | m#213 | #277 | m22  |
| Internal Link Dist (ft) |      | 1321 |      |      | 1337 |      | 302  |      |       | 250  |      |
| Turn Bay Length (ft)    | 140  |      | 140  | 100  |      |      |      |      | 150   |      | 220  |
| Base Capacity (vph)     | 254  | 652  | 1110 | 445  | 638  | 536  | 2133 | 759  | 200   | 1497 | 450  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 67   | 261  | 0    | 0     | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |
| Reduced v/c Ratio       | 0.28 | 0.18 | 0.43 | 0.34 | 0.53 | 1.03 | 0.92 | 0.24 | 0.73  | 0.84 | 0.20 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 69                                                                                | 110                                                                               | 458                                                                               | 146                                                                               | 127                                                                               | 196                                                                               | 465                                                                                | 1659                                                                                | 177                                                                                 | 140                                                                                 | 1205                                                                                | 85                                                                                  |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 72                                                                                | 115                                                                               | 477                                                                               | 152                                                                               | 132                                                                               | 204                                                                               | 484                                                                                | 1728                                                                                | 184                                                                                 | 146                                                                                 | 1255                                                                                | 89                                                                                  |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                  | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 264                                                                               | 652                                                                               | 1006                                                                              | 312                                                                               | 231                                                                               | 358                                                                               | 506                                                                                | 2129                                                                                | 663                                                                                 | 186                                                                                 | 1526                                                                                | 377                                                                                 |
| Arrive On Green                                                    | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.57                                                                               | 0.84                                                                                | 0.84                                                                                | 0.10                                                                                | 0.24                                                                                | 0.24                                                                                |
| Sat Flow, veh/h                                                    | 1040                                                                              | 1863                                                                              | 1583                                                                              | 821                                                                               | 661                                                                               | 1022                                                                              | 1774                                                                               | 5085                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 72                                                                                | 115                                                                               | 477                                                                               | 152                                                                               | 0                                                                                 | 336                                                                               | 484                                                                                | 1728                                                                                | 184                                                                                 | 146                                                                                 | 1255                                                                                | 89                                                                                  |
| Grp Sat Flow(s),veh/h/ln                                           | 1040                                                                              | 1863                                                                              | 1583                                                                              | 821                                                                               | 0                                                                                 | 1682                                                                              | 1774                                                                               | 1695                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 7.2                                                                               | 5.1                                                                               | 18.9                                                                              | 18.9                                                                              | 0.0                                                                               | 19.5                                                                              | 31.0                                                                               | 20.7                                                                                | 3.0                                                                                 | 9.6                                                                                 | 22.3                                                                                | 5.4                                                                                 |
| Cycle Q Clear(g_c), s                                              | 25.6                                                                              | 5.1                                                                               | 18.9                                                                              | 24.0                                                                              | 0.0                                                                               | 19.5                                                                              | 31.0                                                                               | 20.7                                                                                | 3.0                                                                                 | 9.6                                                                                 | 22.3                                                                                | 5.4                                                                                 |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.61                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 264                                                                               | 652                                                                               | 1006                                                                              | 312                                                                               | 0                                                                                 | 589                                                                               | 506                                                                                | 2129                                                                                | 663                                                                                 | 186                                                                                 | 1526                                                                                | 377                                                                                 |
| V/C Ratio(X)                                                       | 0.27                                                                              | 0.18                                                                              | 0.47                                                                              | 0.49                                                                              | 0.00                                                                              | 0.57                                                                              | 0.96                                                                               | 0.81                                                                                | 0.28                                                                                | 0.79                                                                                | 0.82                                                                                | 0.24                                                                                |
| Avail Cap(c_a), veh/h                                              | 264                                                                               | 652                                                                               | 1006                                                                              | 312                                                                               | 0                                                                                 | 589                                                                               | 538                                                                                | 2129                                                                                | 663                                                                                 | 201                                                                                 | 1526                                                                                | 377                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                               | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.77                                                                               | 0.77                                                                                | 0.77                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 41.7                                                                              | 27.0                                                                              | 11.4                                                                              | 35.3                                                                              | 0.0                                                                               | 31.7                                                                              | 25.1                                                                               | 7.4                                                                                 | 5.9                                                                                 | 52.4                                                                                | 43.3                                                                                | 36.9                                                                                |
| Incr Delay (d2), s/veh                                             | 2.5                                                                               | 0.6                                                                               | 1.6                                                                               | 5.3                                                                               | 0.0                                                                               | 4.0                                                                               | 22.7                                                                               | 2.7                                                                                 | 0.8                                                                                 | 15.3                                                                                | 5.1                                                                                 | 1.5                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 2.2                                                                               | 2.8                                                                               | 8.6                                                                               | 4.7                                                                               | 0.0                                                                               | 9.7                                                                               | 18.0                                                                               | 9.5                                                                                 | 1.4                                                                                 | 5.5                                                                                 | 10.4                                                                                | 2.5                                                                                 |
| LnGrp Delay(d),s/veh                                               | 44.2                                                                              | 27.6                                                                              | 13.0                                                                              | 40.7                                                                              | 0.0                                                                               | 35.7                                                                              | 47.8                                                                               | 10.1                                                                                | 6.7                                                                                 | 67.7                                                                                | 48.4                                                                                | 38.4                                                                                |
| LnGrp LOS                                                          | D                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                  | B                                                                                   | A                                                                                   | E                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 664                                                                               |                                                                                   |                                                                                   | 488                                                                               |                                                                                   |                                                                                    | 2396                                                                                |                                                                                     |                                                                                     | 1490                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 18.9                                                                              |                                                                                   |                                                                                   | 37.2                                                                              |                                                                                   |                                                                                    | 17.4                                                                                |                                                                                     |                                                                                     | 49.7                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 47.3                                                                              | 17.2                                                                              | 55.5                                                                              |                                                                                   | 47.3                                                                              | 38.8                                                                               | 33.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 42.0                                                                              | 13.6                                                                              | 49.2                                                                              |                                                                                   | 42.0                                                                              | 36.4                                                                               | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                       |                                                                                   | 27.0                                                                              | 12.6                                                                              | 23.7                                                                              |                                                                                   | 28.6                                                                              | 34.0                                                                               | 25.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 3.4                                                                               | 0.0                                                                               | 19.4                                                                              |                                                                                   | 3.3                                                                               | 0.3                                                                                | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 262                                                                               | 2                                                                                 | 114                                                                               | 12                                                                                | 1                                                                                 | 298                                                                               | 1759                                                                               | 1                                                                                   | 1069                                                                                | 165                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 31.0                                                                               | 11.0                                                                                | 31.0                                                                                | 31.0                                                                                |
| Total Split (s)      | 35.0                                                                              | 35.0                                                                              | 35.0                                                                              | 35.0                                                                              | 35.0                                                                              | 22.0                                                                              | 74.0                                                                               | 11.0                                                                                | 63.0                                                                                | 63.0                                                                                |
| Total Split (%)      | 29.2%                                                                             | 29.2%                                                                             | 29.2%                                                                             | 29.2%                                                                             | 29.2%                                                                             | 18.3%                                                                             | 61.7%                                                                              | 9.2%                                                                                | 52.5%                                                                               | 52.5%                                                                               |
| Yellow Time (s)      | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.6                                                                               | 5.0                                                                                | 3.6                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  |                                                                                   | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.6                                                                               | 6.0                                                                                | 4.6                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  |                                                                                   | 30.1                                                                              | 30.1                                                                              | 30.1                                                                              | 30.1                                                                              | 14.8                                                                              | 77.1                                                                               | 5.0                                                                                 | 59.6                                                                                | 59.6                                                                                |
| Actuated g/C Ratio   |                                                                                   | 0.25                                                                              | 0.25                                                                              | 0.25                                                                              | 0.25                                                                              | 0.12                                                                              | 0.64                                                                               | 0.04                                                                                | 0.50                                                                                | 0.50                                                                                |
| v/c Ratio            |                                                                                   | 0.82                                                                              | 0.25                                                                              | 0.08                                                                              | 0.00                                                                              | 0.74                                                                              | 0.82                                                                               | 0.01                                                                                | 0.64                                                                                | 0.20                                                                                |
| Control Delay        |                                                                                   | 62.9                                                                              | 7.5                                                                               | 36.0                                                                              | 29.0                                                                              | 60.6                                                                              | 24.3                                                                               | 56.0                                                                                | 24.8                                                                                | 3.1                                                                                 |
| Queue Delay          |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          |                                                                                   | 62.9                                                                              | 7.5                                                                               | 36.0                                                                              | 29.0                                                                              | 60.6                                                                              | 24.3                                                                               | 56.0                                                                                | 24.8                                                                                | 3.1                                                                                 |
| LOS                  |                                                                                   | E                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | E                                                                                 | C                                                                                  | E                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 46.2                                                                              |                                                                                   |                                                                                   | 35.1                                                                              |                                                                                   | 29.5                                                                               |                                                                                     | 21.9                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   | C                                                                                  |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 96 (80%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 28.7

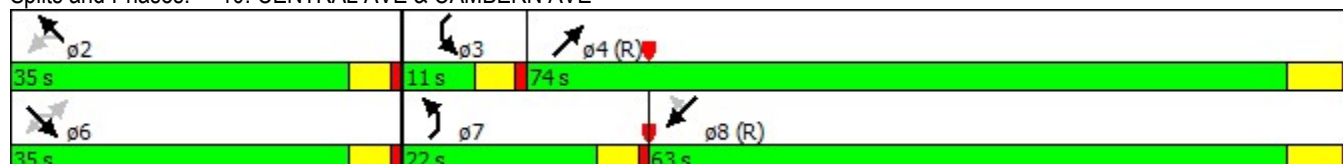
Intersection LOS: C

Intersection Capacity Utilization 87.4%

ICU Level of Service E

Analysis Period (min) 15

### Splits and Phases: 10: CENTRAL AVE & CAMBERN AVE



## Queues

## 10: CENTRAL AVE &amp; CAMBERN AVE

1/27/2017



| Lane Group              | SET  | SER  | NWL  | NWT  | NEL  | NET  | SWL  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 278  | 120  | 13   | 2    | 314  | 1866 | 1    | 1125 | 174  |
| v/c Ratio               | 0.82 | 0.25 | 0.08 | 0.00 | 0.74 | 0.82 | 0.01 | 0.64 | 0.20 |
| Control Delay           | 62.9 | 7.5  | 36.0 | 29.0 | 60.6 | 24.3 | 56.0 | 24.8 | 3.1  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 62.9 | 7.5  | 36.0 | 29.0 | 60.6 | 24.3 | 56.0 | 24.8 | 3.1  |
| Queue Length 50th (ft)  | 204  | 0    | 8    | 1    | 132  | 390  | 1    | 331  | 0    |
| Queue Length 95th (ft)  | #347 | 47   | 25   | 8    | m167 | 472  | 7    | 420  | 38   |
| Internal Link Dist (ft) | 1204 |      |      | 1267 |      | 636  |      | 2064 |      |
| Turn Bay Length (ft)    |      | 200  | 75   |      | 250  |      | 400  |      | 400  |
| Base Capacity (vph)     | 339  | 486  | 169  | 432  | 497  | 2271 | 94   | 1756 | 873  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.82 | 0.25 | 0.08 | 0.00 | 0.63 | 0.82 | 0.01 | 0.64 | 0.20 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



# HCM 2010 Signalized Intersection Summary

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Volume (veh/h)               | 262                                                                               | 2                                                                                 | 114                                                                               | 12                                                                                | 1                                                                                 | 1                                                                                 | 298                                                                                 | 1759                                                                                | 13                                                                                  | 1                                                                                   | 1069                                                                                | 165                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 276                                                                               | 2                                                                                 | 120                                                                               | 13                                                                                | 1                                                                                 | 1                                                                                 | 314                                                                                 | 1852                                                                                | 14                                                                                  | 1                                                                                   | 1125                                                                                | 174                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 400                                                                               | 2                                                                                 | 397                                                                               | 142                                                                               | 215                                                                               | 215                                                                               | 398                                                                                 | 2227                                                                                | 17                                                                                  | 2                                                                                   | 1785                                                                                | 798                                                                                 |
| Arrive On Green              | 0.25                                                                              | 0.25                                                                              | 0.25                                                                              | 0.25                                                                              | 0.25                                                                              | 0.25                                                                              | 0.12                                                                                | 0.62                                                                                | 0.62                                                                                | 0.00                                                                                | 0.50                                                                                | 0.50                                                                                |
| Sat Flow, veh/h              | 1355                                                                              | 10                                                                                | 1583                                                                              | 1264                                                                              | 856                                                                               | 856                                                                               | 3442                                                                                | 3600                                                                                | 27                                                                                  | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 278                                                                               | 0                                                                                 | 120                                                                               | 13                                                                                | 0                                                                                 | 2                                                                                 | 314                                                                                 | 909                                                                                 | 957                                                                                 | 1                                                                                   | 1125                                                                                | 174                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1365                                                                              | 0                                                                                 | 1583                                                                              | 1264                                                                              | 0                                                                                 | 1712                                                                              | 1721                                                                                | 1770                                                                                | 1858                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 22.3                                                                              | 0.0                                                                               | 7.4                                                                               | 1.2                                                                               | 0.0                                                                               | 0.1                                                                               | 10.7                                                                                | 48.4                                                                                | 48.6                                                                                | 0.1                                                                                 | 27.7                                                                                | 7.3                                                                                 |
| Cycle Q Clear(g_c), s        | 23.3                                                                              | 0.0                                                                               | 7.4                                                                               | 23.5                                                                              | 0.0                                                                               | 0.1                                                                               | 10.7                                                                                | 48.4                                                                                | 48.6                                                                                | 0.1                                                                                 | 27.7                                                                                | 7.3                                                                                 |
| Prop In Lane                 | 0.99                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                                |                                                                                     | 0.01                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 402                                                                               | 0                                                                                 | 397                                                                               | 142                                                                               | 0                                                                                 | 429                                                                               | 398                                                                                 | 1095                                                                                | 1149                                                                                | 2                                                                                   | 1785                                                                                | 798                                                                                 |
| V/C Ratio(X)                 | 0.69                                                                              | 0.00                                                                              | 0.30                                                                              | 0.09                                                                              | 0.00                                                                              | 0.00                                                                              | 0.79                                                                                | 0.83                                                                                | 0.83                                                                                | 0.41                                                                                | 0.63                                                                                | 0.22                                                                                |
| Avail Cap(c_a), veh/h        | 402                                                                               | 0                                                                                 | 397                                                                               | 142                                                                               | 0                                                                                 | 429                                                                               | 499                                                                                 | 1095                                                                                | 1149                                                                                | 95                                                                                  | 1785                                                                                | 798                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 42.9                                                                              | 0.0                                                                               | 36.4                                                                              | 53.0                                                                              | 0.0                                                                               | 33.7                                                                              | 51.6                                                                                | 17.9                                                                                | 18.0                                                                                | 59.9                                                                                | 21.6                                                                                | 16.6                                                                                |
| Incr Delay (d2), s/veh       | 9.4                                                                               | 0.0                                                                               | 2.0                                                                               | 1.3                                                                               | 0.0                                                                               | 0.0                                                                               | 5.1                                                                                 | 7.4                                                                                 | 7.1                                                                                 | 36.8                                                                                | 1.7                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 9.7                                                                               | 0.0                                                                               | 3.4                                                                               | 0.5                                                                               | 0.0                                                                               | 0.1                                                                               | 5.3                                                                                 | 25.7                                                                                | 27.0                                                                                | 0.1                                                                                 | 13.9                                                                                | 3.3                                                                                 |
| LnGrp Delay(d),s/veh         | 52.3                                                                              | 0.0                                                                               | 38.4                                                                              | 54.3                                                                              | 0.0                                                                               | 33.7                                                                              | 56.7                                                                                | 25.3                                                                                | 25.1                                                                                | 96.6                                                                                | 23.3                                                                                | 17.2                                                                                |
| LnGrp LOS                    | D                                                                                 |                                                                                   | D                                                                                 | D                                                                                 |                                                                                   | C                                                                                 | E                                                                                   | C                                                                                   | C                                                                                   | F                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 398                                                                               |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                     | 2180                                                                                |                                                                                     |                                                                                     | 1300                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 48.1                                                                              |                                                                                   |                                                                                   | 51.5                                                                              |                                                                                   |                                                                                     | 29.7                                                                                |                                                                                     |                                                                                     | 22.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 35.0                                                                              | 4.8                                                                               | 80.2                                                                              |                                                                                   | 35.0                                                                              | 18.5                                                                                | 66.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.9                                                                               | 4.6                                                                               | 6.0                                                                               |                                                                                   | 4.9                                                                               | 4.6                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 30.1                                                                              | 6.4                                                                               | 68.0                                                                              |                                                                                   | 30.1                                                                              | 17.4                                                                                | 57.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 26.5                                                                              | 3.1                                                                               | 51.4                                                                              |                                                                                   | 25.3                                                                              | 13.7                                                                                | 30.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.5                                                                               | 0.0                                                                               | 13.7                                                                              |                                                                                   | 0.6                                                                               | 0.2                                                                                 | 19.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 29.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017



| Lane Group           | WBL   | WBR   | NBT   | NBR   | SBL   | SBT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 128   | 26    | 1631  | 222   | 36    | 1010  |
| Turn Type            | Prot  | Perm  | NA    | Perm  | Prot  | NA    |
| Protected Phases     | 8     |       | 2     |       | 1     | 6     |
| Permitted Phases     |       | 8     |       | 2     |       |       |
| Detector Phase       | 8     | 8     | 2     | 2     | 1     | 6     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 8.0   | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 38.0  | 38.0  | 20.0  | 20.0  | 11.0  | 39.0  |
| Total Split (s)      | 40.0  | 40.0  | 67.0  | 67.0  | 13.0  | 80.0  |
| Total Split (%)      | 33.3% | 33.3% | 55.8% | 55.8% | 10.8% | 66.7% |
| Yellow Time (s)      | 4.0   | 4.0   | 6.0   | 6.0   | 4.0   | 6.0   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 7.0   | 7.0   | 5.0   | 7.0   |
| Lead/Lag             |       |       | Lag   | Lag   | Lead  |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | None  | None  | Max   | Max   | None  | Max   |
| Act Effect Green (s) | 11.7  | 11.7  | 65.8  | 65.8  | 6.4   | 73.0  |
| Actuated g/C Ratio   | 0.12  | 0.12  | 0.68  | 0.68  | 0.07  | 0.75  |
| v/c Ratio            | 0.62  | 0.13  | 0.48  | 0.20  | 0.32  | 0.39  |
| Control Delay        | 53.0  | 15.3  | 9.2   | 4.5   | 50.8  | 4.8   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 53.0  | 15.3  | 9.2   | 4.5   | 50.8  | 4.8   |
| LOS                  | D     | B     | A     | A     | D     | A     |
| Approach Delay       | 46.6  |       | 8.6   |       |       | 6.4   |
| Approach LOS         | D     |       | A     |       |       | A     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 96.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 9.8

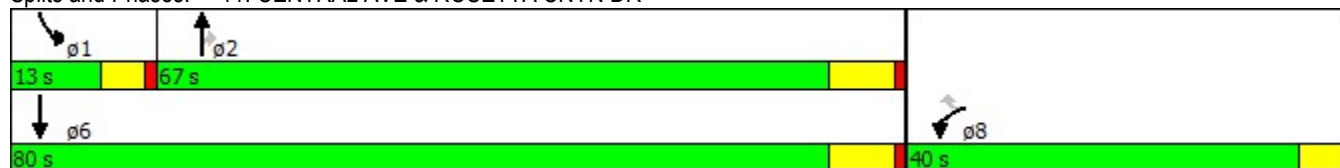
Intersection LOS: A

Intersection Capacity Utilization 48.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: CENTRAL AVE & ROSETTA CNYN DR



## Queues

## 11: CENTRAL AVE &amp; ROSETTA CNYN DR

1/27/2017



| Lane Group              | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 131  | 27   | 1664 | 227  | 37   | 1031 |
| v/c Ratio               | 0.62 | 0.13 | 0.48 | 0.20 | 0.32 | 0.39 |
| Control Delay           | 53.0 | 15.3 | 9.2  | 4.5  | 50.8 | 4.8  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 53.0 | 15.3 | 9.2  | 4.5  | 50.8 | 4.8  |
| Queue Length 50th (ft)  | 78   | 0    | 181  | 25   | 22   | 93   |
| Queue Length 95th (ft)  | 137  | 24   | 263  | 65   | 56   | 150  |
| Internal Link Dist (ft) | 1570 |      | 1523 |      |      | 2926 |
| Turn Bay Length (ft)    |      |      |      | 100  | 250  |      |
| Base Capacity (vph)     | 640  | 590  | 3461 | 1113 | 146  | 2672 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.20 | 0.05 | 0.48 | 0.20 | 0.25 | 0.39 |
| Intersection Summary    |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Volume (veh/h)               | 128                                                                               | 26                                                                                | 1631                                                                              | 222                                                                               | 36                                                                                | 1010                                                                              |   |      |
| Number                       | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |      |
| Adj Flow Rate, veh/h         | 131                                                                               | 27                                                                                | 1664                                                                              | 227                                                                               | 37                                                                                | 1031                                                                              |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |   |      |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              |   |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |      |
| Cap, veh/h                   | 184                                                                               | 164                                                                               | 3479                                                                              | 1083                                                                              | 58                                                                                | 2724                                                                              |   |      |
| Arrive On Green              | 0.10                                                                              | 0.10                                                                              | 0.68                                                                              | 0.68                                                                              | 0.03                                                                              | 0.77                                                                              |   |      |
| Sat Flow, veh/h              | 1774                                                                              | 1583                                                                              | 5253                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              |   |      |
| Grp Volume(v), veh/h         | 131                                                                               | 27                                                                                | 1664                                                                              | 227                                                                               | 37                                                                                | 1031                                                                              |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1583                                                                              | 1695                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              |   |      |
| Q Serve(g_s), s              | 6.8                                                                               | 1.5                                                                               | 14.6                                                                              | 5.0                                                                               | 2.0                                                                               | 9.0                                                                               |   |      |
| Cycle Q Clear(g_c), s        | 6.8                                                                               | 1.5                                                                               | 14.6                                                                              | 5.0                                                                               | 2.0                                                                               | 9.0                                                                               |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Lane Grp Cap(c), veh/h       | 184                                                                               | 164                                                                               | 3479                                                                              | 1083                                                                              | 58                                                                                | 2724                                                                              |   |      |
| V/C Ratio(X)                 | 0.71                                                                              | 0.16                                                                              | 0.48                                                                              | 0.21                                                                              | 0.64                                                                              | 0.38                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 655                                                                               | 584                                                                               | 3479                                                                              | 1083                                                                              | 150                                                                               | 2724                                                                              |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 41.1                                                                              | 38.8                                                                              | 7.0                                                                               | 5.5                                                                               | 45.3                                                                              | 3.5                                                                               |   |      |
| Incr Delay (d2), s/veh       | 1.9                                                                               | 0.2                                                                               | 0.5                                                                               | 0.4                                                                               | 4.2                                                                               | 0.4                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 3.4                                                                               | 0.7                                                                               | 6.9                                                                               | 2.3                                                                               | 1.0                                                                               | 4.4                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 43.0                                                                              | 38.9                                                                              | 7.5                                                                               | 6.0                                                                               | 49.5                                                                              | 3.9                                                                               |   |      |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | D                                                                                 | A                                                                                 |   |      |
| Approach Vol, veh/h          | 158                                                                               |                                                                                   | 1891                                                                              |                                                                                   |                                                                                   | 1068                                                                              |   |      |
| Approach Delay, s/veh        | 42.3                                                                              |                                                                                   | 7.3                                                                               |                                                                                   |                                                                                   | 5.5                                                                               |   |      |
| Approach LOS                 | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |   | 8    |
| Phs Duration (G+Y+Rc), s     | 8.1                                                                               | 71.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 80.0                                                                              |   | 14.8 |
| Change Period (Y+Rc), s      | 5.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               |   | 5.0  |
| Max Green Setting (Gmax), s  | 8.0                                                                               | 60.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 73.0                                                                              |   | 35.0 |
| Max Q Clear Time (g_c+l1), s | 5.0                                                                               | 17.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 12.0                                                                              |   | 9.8  |
| Green Ext Time (p_c), s      | 0.0                                                                               | 33.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 43.8                                                                              |   | 0.2  |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 8.5                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |

HCM 2010 TWSC  
12: COLLIER AVE & PROJECT ACCESS

1/27/2017

Intersection

Int Delay, s/veh 2.6

| Movement                 | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 182  | 520  | 605  | 36   | 0    | 71   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 200  | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 198  | 565  | 658  | 39   | 0    | 77   |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 697    | 0      | 1355   |
| Stage 1              | -      | -      | 677    |
| Stage 2              | -      | -      | 678    |
| Critical Hdwy        | 5.34   | -      | 6.29   |
| Critical Hdwy Stg 1  | -      | -      | 6.64   |
| Critical Hdwy Stg 2  | -      | -      | 5.84   |
| Follow-up Hdwy       | 3.12   | -      | 3.67   |
| Pot Cap-1 Maneuver   | 547    | -      | 170    |
| Stage 1              | -      | -      | 390    |
| Stage 2              | -      | -      | 452    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 547    | -      | 108    |
| Mov Cap-2 Maneuver   | -      | -      | 108    |
| Stage 1              | -      | -      | 390    |
| Stage 2              | -      | -      | 288    |

| Approach             | SE | NW | SW   |
|----------------------|----|----|------|
| HCM Control Delay, s | 4  | 0  | 12.6 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | NWT | NWR | SEL   | SETSWLn1 |
|-----------------------|-----|-----|-------|----------|
| Capacity (veh/h)      | -   | -   | 547   | - 553    |
| HCM Lane V/C Ratio    | -   | -   | 0.362 | - 0.14   |
| HCM Control Delay (s) | -   | -   | 15.3  | - 12.6   |
| HCM Lane LOS          | -   | -   | C     | - B      |
| HCM 95th %tile Q(veh) | -   | -   | 1.6   | - 0.5    |

# Lanes and Geometrics

## 12: COLLIER AVE & PROJECT ACCESS

1/27/2017



| Lane Group          | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           |      | 0%   | 0%   |      | 0%   |      |
| Storage Length (ft) | 200  |      |      | 0    | 0    | 0    |
| Storage Lanes       | 1    |      |      | 0    | 0    | 1    |
| Taper Length (ft)   | 25   |      |      |      | 25   |      |
| Link Speed (mph)    |      | 30   | 30   |      | 30   |      |
| Link Distance (ft)  |      | 543  | 118  |      | 355  |      |
| Travel Time (s)     |      | 12.3 | 2.7  |      | 8.1  |      |

### Intersection Summary

|            |       |
|------------|-------|
| Area Type: | Other |
|------------|-------|

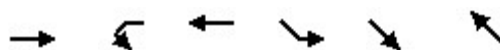
## **Appendix H**

Mitigated Project Completion Conditions (Existing Plus Ambient Growth Plus  
Proposed Project) Intersection Analysis Worksheets

# Timings

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017



| Lane Group           | EBT   | WBL   | WBT   | SEL   | SET   | NWT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↕     |       | ↕     |       | ↕     | ↕     |
| Volume (vph)         | 896   | 5     | 691   | 54    | 2     | 1     |
| Turn Type            | NA    | Perm  | NA    | Perm  | NA    | NA    |
| Protected Phases     | 4     |       | 8     |       | 6     | 2     |
| Permitted Phases     |       | 8     |       | 6     |       |       |
| Detector Phase       | 4     | 8     | 8     | 6     | 6     | 2     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 98.0  | 98.0  | 98.0  | 22.0  | 22.0  | 22.0  |
| Total Split (%)      | 81.7% | 81.7% | 81.7% | 18.3% | 18.3% | 18.3% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   |       | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   |       | 5.3   |       | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | C-Max | C-Max | C-Max | Max   | Max   | Max   |
| Act Effect Green (s) | 92.7  |       | 92.7  |       | 16.7  | 16.7  |
| Actuated g/C Ratio   | 0.77  |       | 0.77  |       | 0.14  | 0.14  |
| v/c Ratio            | 0.66  |       | 0.54  |       | 0.34  | 0.03  |
| Control Delay        | 9.0   |       | 2.0   |       | 49.1  | 27.0  |
| Queue Delay          | 0.0   |       | 0.0   |       | 0.0   | 0.0   |
| Total Delay          | 9.0   |       | 2.0   |       | 49.1  | 27.0  |
| LOS                  | A     |       | A     |       | D     | C     |
| Approach Delay       | 9.0   |       | 2.0   |       | 49.1  | 27.0  |
| Approach LOS         | A     |       | A     |       | D     | C     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 11 (9%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 7.5

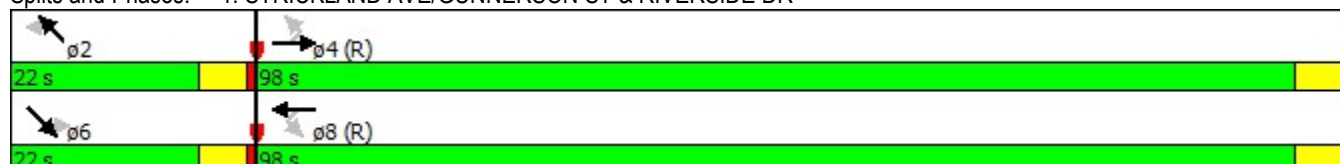
Intersection LOS: A

Intersection Capacity Utilization 66.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR





## Queues

### 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017



| Lane Group              | EBT  | WBT  | SET  | NWT  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 944  | 765  | 65   | 8    |
| v/c Ratio               | 0.66 | 0.54 | 0.34 | 0.03 |
| Control Delay           | 9.0  | 2.0  | 49.1 | 27.0 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.0  | 2.0  | 49.1 | 27.0 |
| Queue Length 50th (ft)  | 284  | 4    | 43   | 1    |
| Queue Length 95th (ft)  | 397  | 5    | 89   | 16   |
| Internal Link Dist (ft) | 1607 | 855  | 805  | 1652 |
| Turn Bay Length (ft)    |      |      |      |      |
| Base Capacity (vph)     | 1439 | 1424 | 194  | 234  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.66 | 0.54 | 0.34 | 0.03 |
| Intersection Summary    |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 0                                                                                 | 896                                                                               | 1                                                                                 | 5                                                                                 | 691                                                                               | 31                                                                                | 54                                                                                 | 2                                                                                   | 6                                                                                   | 0                                                                                   | 1                                                                                   | 7                                                                                   |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 1                                                                                  | 6                                                                                   | 16                                                                                  | 5                                                                                   | 2                                                                                   | 12                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 943                                                                               | 1                                                                                 | 5                                                                                 | 727                                                                               | 33                                                                                | 57                                                                                 | 2                                                                                   | 6                                                                                   | 0                                                                                   | 1                                                                                   | 7                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1437                                                                              | 2                                                                                 | 33                                                                                | 1359                                                                              | 61                                                                                | 225                                                                                | 10                                                                                  | 18                                                                                  | 0                                                                                   | 28                                                                                  | 196                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.14                                                                               | 0.14                                                                                | 0.14                                                                                | 0.00                                                                                | 0.14                                                                                | 0.14                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 1860                                                                              | 2                                                                                 | 3                                                                                 | 1759                                                                              | 79                                                                                | 1213                                                                               | 71                                                                                  | 131                                                                                 | 0                                                                                   | 202                                                                                 | 1412                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 0                                                                                 | 944                                                                               | 765                                                                               | 0                                                                                 | 0                                                                                 | 65                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 8                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 0                                                                                 | 1862                                                                              | 1842                                                                              | 0                                                                                 | 0                                                                                 | 1414                                                                               | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 1614                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 28.1                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 4.6                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.5                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 28.1                                                                              | 19.3                                                                              | 0.0                                                                               | 0.0                                                                               | 5.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.5                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.01                                                                              |                                                                                   | 0.04                                                                              | 0.88                                                                               |                                                                                     | 0.09                                                                                | 0.00                                                                                |                                                                                     | 0.87                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 0                                                                                 | 1439                                                                              | 1453                                                                              | 0                                                                                 | 0                                                                                 | 253                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 225                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.00                                                                              | 0.66                                                                              | 0.53                                                                              | 0.00                                                                              | 0.00                                                                              | 0.26                                                                               | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.04                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 0                                                                                 | 1439                                                                              | 1453                                                                              | 0                                                                                 | 0                                                                                 | 253                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 225                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 6.3                                                                               | 5.3                                                                               | 0.0                                                                               | 0.0                                                                               | 46.7                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 44.7                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.0                                                                               | 2.4                                                                               | 1.4                                                                               | 0.0                                                                               | 0.0                                                                               | 2.4                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.0                                                                               | 15.1                                                                              | 10.3                                                                              | 0.0                                                                               | 0.0                                                                               | 2.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.0                                                                               | 8.6                                                                               | 6.7                                                                               | 0.0                                                                               | 0.0                                                                               | 49.1                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 45.0                                                                                |
| LnGrp LOS                    |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 944                                                                               |                                                                                   |                                                                                   | 765                                                                               |                                                                                   |                                                                                    | 65                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                    | 49.1                                                                                |                                                                                     |                                                                                     | 45.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 22.0                                                                              |                                                                                   | 98.0                                                                              |                                                                                   | 22.0                                                                              |                                                                                    | 98.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 16.7                                                                              |                                                                                   | 92.7                                                                              |                                                                                   | 16.7                                                                              |                                                                                    | 92.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 2.5                                                                               |                                                                                   | 30.1                                                                              |                                                                                   | 7.1                                                                               |                                                                                    | 21.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.2                                                                               |                                                                                   | 23.4                                                                              |                                                                                   | 0.2                                                                               |                                                                                    | 24.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 9.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 4: CRANE ST & COLLIER AVE

1/31/2017



| Lane Group           | SET   | NWL   | NWT   | NEL   | NET   | SWL   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↑↑    | ↑     | ↑     | ↑     | ↑     |       | ↑↑    |
| Volume (vph)         | 628   | 11    | 448   | 4     | 0     | 30    | 0     |
| Turn Type            | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 6     |       | 2     |       | 4     |       | 8     |
| Permitted Phases     |       | 2     |       | 4     |       | 8     |       |
| Detector Phase       | 6     | 2     | 2     | 4     | 4     | 8     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 40.0  | 40.0  | 40.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (%)      | 66.7% | 66.7% | 66.7% | 33.3% | 33.3% | 33.3% | 33.3% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   |
| Lead/Lag             |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | None  | None  | None  | None  |
| Act Effct Green (s)  | 26.6  | 26.6  | 26.6  | 7.3   | 7.3   |       | 7.3   |
| Actuated g/C Ratio   | 0.84  | 0.84  | 0.84  | 0.23  | 0.23  |       | 0.23  |
| v/c Ratio            | 0.26  | 0.02  | 0.34  | 0.01  | 0.03  |       | 0.11  |
| Control Delay        | 2.5   | 3.1   | 3.5   | 11.8  | 0.1   |       | 9.6   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   |
| Total Delay          | 2.5   | 3.1   | 3.5   | 11.8  | 0.1   |       | 9.6   |
| LOS                  | A     | A     | A     | B     | A     |       | A     |
| Approach Delay       | 2.5   |       | 3.5   |       | 2.7   |       | 9.6   |
| Approach LOS         | A     |       | A     |       | A     |       | A     |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 31.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 3.2

Intersection LOS: A

Intersection Capacity Utilization 39.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: CRANE ST & COLLIER AVE

|          |          |
|----------|----------|
| <br>40 s | <br>20 s |
| <br>40 s | <br>20 s |

## Queues

## 4: CRANE ST &amp; COLLIER AVE

1/31/2017



| Lane Group              | SET  | NWL  | NWT  | NEL  | NET  | SWT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 768  | 13   | 527  | 5    | 18   | 47   |
| v/c Ratio               | 0.26 | 0.02 | 0.34 | 0.01 | 0.03 | 0.11 |
| Control Delay           | 2.5  | 3.1  | 3.5  | 11.8 | 0.1  | 9.6  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 2.5  | 3.1  | 3.5  | 11.8 | 0.1  | 9.6  |
| Queue Length 50th (ft)  | 0    | 0    | 0    | 1    | 0    | 3    |
| Queue Length 95th (ft)  | 51   | 5    | 88   | 6    | 0    | 20   |
| Internal Link Dist (ft) | 38   |      | 1917 |      | 1255 | 261  |
| Turn Bay Length (ft)    |      | 150  |      | 90   |      |      |
| Base Capacity (vph)     | 3449 | 659  | 1826 | 960  | 921  | 936  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.22 | 0.02 | 0.29 | 0.01 | 0.02 | 0.05 |
| Intersection Summary    |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 4: CRANE ST & COLLIER AVE

1/31/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 0                                                                                 | 628                                                                               | 25                                                                                | 11                                                                                | 448                                                                               | 0                                                                                 | 4                                                                                   | 0                                                                                   | 15                                                                                  | 30                                                                                  | 0                                                                                   | 10                                                                                  |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 739                                                                               | 29                                                                                | 13                                                                                | 527                                                                               | 0                                                                                 | 5                                                                                   | 0                                                                                   | 18                                                                                  | 35                                                                                  | 0                                                                                   | 12                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 263                                                                               | 2092                                                                              | 82                                                                                | 608                                                                               | 1122                                                                              | 0                                                                                 | 426                                                                                 | 0                                                                                   | 167                                                                                 | 331                                                                                 | 0                                                                                   | 35                                                                                  |
| Arrive On Green              | 0.00                                                                              | 0.60                                                                              | 0.60                                                                              | 0.60                                                                              | 0.60                                                                              | 0.00                                                                              | 0.11                                                                                | 0.00                                                                                | 0.11                                                                                | 0.11                                                                                | 0.00                                                                                | 0.11                                                                                |
| Sat Flow, veh/h              | 872                                                                               | 3472                                                                              | 136                                                                               | 697                                                                               | 1863                                                                              | 0                                                                                 | 1397                                                                                | 0                                                                                   | 1583                                                                                | 964                                                                                 | 0                                                                                   | 330                                                                                 |
| Grp Volume(v), veh/h         | 0                                                                                 | 377                                                                               | 391                                                                               | 13                                                                                | 527                                                                               | 0                                                                                 | 5                                                                                   | 0                                                                                   | 18                                                                                  | 47                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 872                                                                               | 1770                                                                              | 1839                                                                              | 697                                                                               | 1863                                                                              | 0                                                                                 | 1397                                                                                | 0                                                                                   | 1583                                                                                | 1294                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 2.9                                                                               | 2.9                                                                               | 0.3                                                                               | 4.3                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 2.9                                                                               | 2.9                                                                               | 3.2                                                                               | 4.3                                                                               | 0.0                                                                               | 0.1                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.07                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 0.74                                                                                |                                                                                     | 0.26                                                                                |
| Lane Grp Cap(c), veh/h       | 263                                                                               | 1066                                                                              | 1108                                                                              | 608                                                                               | 1122                                                                              | 0                                                                                 | 426                                                                                 | 0                                                                                   | 167                                                                                 | 366                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.00                                                                              | 0.35                                                                              | 0.35                                                                              | 0.02                                                                              | 0.47                                                                              | 0.00                                                                              | 0.01                                                                                | 0.00                                                                                | 0.11                                                                                | 0.13                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 883                                                                               | 2325                                                                              | 2415                                                                              | 1104                                                                              | 2447                                                                              | 0                                                                                 | 1094                                                                                | 0                                                                                   | 924                                                                                 | 1052                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 2.7                                                                               | 2.7                                                                               | 3.6                                                                               | 3.0                                                                               | 0.0                                                                               | 11.0                                                                                | 0.0                                                                                 | 11.1                                                                                | 11.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.2                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.4                                                                               | 1.5                                                                               | 0.1                                                                               | 2.1                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 2.9                                                                               | 2.9                                                                               | 3.6                                                                               | 3.3                                                                               | 0.0                                                                               | 11.0                                                                                | 0.0                                                                                 | 11.4                                                                                | 11.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 768                                                                               |                                                                                   |                                                                                   | 540                                                                               |                                                                                   |                                                                                     | 23                                                                                  |                                                                                     |                                                                                     | 47                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 2.9                                                                               |                                                                                   |                                                                                   | 3.3                                                                               |                                                                                   |                                                                                     | 11.3                                                                                |                                                                                     |                                                                                     | 11.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 20.5                                                                              |                                                                                   | 6.9                                                                               |                                                                                   | 20.5                                                                              |                                                                                     | 6.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 36.0                                                                              |                                                                                   | 16.0                                                                              |                                                                                   | 36.0                                                                              |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 6.3                                                                               |                                                                                   | 2.3                                                                               |                                                                                   | 4.9                                                                               |                                                                                     | 3.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 10.2                                                                              |                                                                                   | 0.2                                                                               |                                                                                   | 10.4                                                                              |                                                                                     | 0.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 5: CHANEY ST & COLLIER AVE

1/31/2017



| Lane Group           | SET   | SER   | NWL   | NWT   | NEL   | NER   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 67    | 488   | 155   | 88    | 329   | 32    |
| Turn Type            | NA    | Perm  | Perm  | NA    | Prot  | Perm  |
| Protected Phases     | 6     |       |       | 2     | 4     |       |
| Permitted Phases     |       | 6     | 2     |       |       | 4     |
| Detector Phase       | 6     | 6     | 2     | 2     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 33.0  | 33.0  | 33.0  | 33.0  | 27.0  | 27.0  |
| Total Split (%)      | 55.0% | 55.0% | 55.0% | 55.0% | 45.0% | 45.0% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   |       | 5.3   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | Min   | None  | None  |
| Act Effect Green (s) | 12.7  | 12.7  |       | 12.7  | 12.8  | 12.8  |
| Actuated g/C Ratio   | 0.34  | 0.34  |       | 0.34  | 0.35  | 0.35  |
| v/c Ratio            | 0.13  | 0.63  |       | 0.60  | 0.64  | 0.07  |
| Control Delay        | 9.6   | 4.8   |       | 16.6  | 16.3  | 4.3   |
| Queue Delay          | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 9.6   | 4.8   |       | 16.6  | 16.3  | 4.3   |
| LOS                  | A     | A     |       | B     | B     | A     |
| Approach Delay       | 5.4   |       |       | 16.6  | 15.2  |       |
| Approach LOS         | A     |       |       | B     | B     |       |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 36.9

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 10.8

Intersection LOS: B

Intersection Capacity Utilization 52.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: CHANEY ST & COLLIER AVE

|      |      |
|------|------|
| 2    | 4    |
| 33 s | 27 s |
| 6    |      |
| 33 s |      |

## Queues

## 5: CHANEY ST &amp; COLLIER AVE

1/31/2017



| Lane Group              | SET  | SER  | NWT  | NEL  | NER  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 81   | 588  | 293  | 396  | 39   |
| v/c Ratio               | 0.13 | 0.63 | 0.60 | 0.64 | 0.07 |
| Control Delay           | 9.6  | 4.8  | 16.6 | 16.3 | 4.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.6  | 4.8  | 16.6 | 16.3 | 4.3  |
| Queue Length 50th (ft)  | 10   | 0    | 43   | 59   | 0    |
| Queue Length 95th (ft)  | 34   | 35   | 115  | 144  | 12   |
| Internal Link Dist (ft) | 1917 |      | 212  | 1503 |      |
| Turn Bay Length (ft)    |      |      |      |      |      |
| Base Capacity (vph)     | 1456 | 1365 | 1103 | 1117 | 1013 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.06 | 0.43 | 0.27 | 0.35 | 0.04 |
| Intersection Summary    |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 5: CHANEY ST & COLLIER AVE

1/31/2017

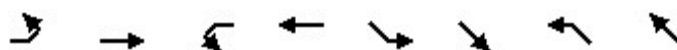
|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |   |   |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |   |
| Volume (veh/h)               | 67                                                                                | 488                                                                               | 155                                                                               | 88                                                                                | 329                                                                               | 32                                                                                |   |   |
| Number                       | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 81                                                                                | 588                                                                               | 187                                                                               | 106                                                                               | 396                                                                               | 39                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 842                                                                               | 716                                                                               | 415                                                                               | 203                                                                               | 484                                                                               | 432                                                                               |   |   |
| Arrive On Green              | 0.45                                                                              | 0.45                                                                              | 0.45                                                                              | 0.45                                                                              | 0.27                                                                              | 0.27                                                                              |   |   |
| Sat Flow, veh/h              | 1863                                                                              | 1583                                                                              | 580                                                                               | 450                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 81                                                                                | 588                                                                               | 293                                                                               | 0                                                                                 | 396                                                                               | 39                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1863                                                                              | 1583                                                                              | 1030                                                                              | 0                                                                                 | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 1.0                                                                               | 12.5                                                                              | 6.5                                                                               | 0.0                                                                               | 8.1                                                                               | 0.7                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 1.0                                                                               | 12.5                                                                              | 7.6                                                                               | 0.0                                                                               | 8.1                                                                               | 0.7                                                                               |   |   |
| Prop In Lane                 |                                                                                   | 1.00                                                                              | 0.64                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 842                                                                               | 716                                                                               | 619                                                                               | 0                                                                                 | 484                                                                               | 432                                                                               |   |   |
| V/C Ratio(X)                 | 0.10                                                                              | 0.82                                                                              | 0.47                                                                              | 0.00                                                                              | 0.82                                                                              | 0.09                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1338                                                                              | 1137                                                                              | 877                                                                               | 0                                                                                 | 998                                                                               | 891                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 6.0                                                                               | 9.2                                                                               | 7.6                                                                               | 0.0                                                                               | 13.1                                                                              | 10.5                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.3                                                                               | 0.2                                                                               | 0.0                                                                               | 1.3                                                                               | 0.0                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 5.6                                                                               | 2.3                                                                               | 0.0                                                                               | 4.0                                                                               | 0.3                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 6.1                                                                               | 10.5                                                                              | 7.8                                                                               | 0.0                                                                               | 14.4                                                                              | 10.5                                                                              |   |   |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 |   |   |
| Approach Vol, veh/h          | 669                                                                               |                                                                                   |                                                                                   | 293                                                                               | 435                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        | 9.9                                                                               |                                                                                   |                                                                                   | 7.8                                                                               | 14.1                                                                              |                                                                                   |   |   |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 22.7                                                                              |                                                                                   | 15.8                                                                              |                                                                                   | 22.7                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 27.7                                                                              |                                                                                   | 21.7                                                                              |                                                                                   | 27.7                                                                              |   |   |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 9.6                                                                               |                                                                                   | 10.1                                                                              |                                                                                   | 14.5                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 3.3                                                                               |                                                                                   | 0.6                                                                               |                                                                                   | 3.0                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 10.8                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |



# Timings

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017



| Lane Group           | EBL   | EBT   | WBL   | WBT   | SEL   | SET   | NWL   | NWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       | ↔     |       | ↔     |       | ↔     |       | ↔     |
| Volume (vph)         | 5     | 991   | 6     | 1019  | 36    | 3     | 1     | 1     |
| Turn Type            | Perm  | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases     |       | 4     |       | 8     |       | 6     |       | 2     |
| Permitted Phases     | 4     |       | 8     |       | 6     |       | 2     |       |
| Detector Phase       | 4     | 4     | 8     | 8     | 6     | 6     | 2     | 2     |
| Switch Phase         |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 22.3  | 22.3  | 22.3  | 22.3  | 22.3  | 22.3  | 21.3  | 21.3  |
| Total Split (s)      | 97.7  | 97.7  | 97.7  | 97.7  | 22.3  | 22.3  | 22.3  | 22.3  |
| Total Split (%)      | 81.4% | 81.4% | 81.4% | 81.4% | 18.6% | 18.6% | 18.6% | 18.6% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) |       | 0.0   |       | 0.0   |       | 0.0   |       | 0.0   |
| Total Lost Time (s)  |       | 5.3   |       | 5.3   |       | 5.3   |       | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |
| Recall Mode          | C-Max | C-Max | C-Max | C-Max | Max   | Max   | Max   | Max   |
| Act Effct Green (s)  |       | 92.4  |       | 92.4  |       | 17.0  |       | 17.0  |
| Actuated g/C Ratio   |       | 0.77  |       | 0.77  |       | 0.14  |       | 0.14  |
| v/c Ratio            |       | 0.73  |       | 0.84  |       | 0.21  |       | 0.02  |
| Control Delay        |       | 11.1  |       | 6.9   |       | 47.0  |       | 33.8  |
| Queue Delay          |       | 0.0   |       | 0.0   |       | 0.0   |       | 0.0   |
| Total Delay          |       | 11.1  |       | 6.9   |       | 47.0  |       | 33.8  |
| LOS                  |       | B     |       | A     |       | D     |       | C     |
| Approach Delay       |       | 11.1  |       | 6.9   |       | 47.0  |       | 33.8  |
| Approach LOS         |       | B     |       | A     |       | D     |       | C     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 65 (54%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 9.6

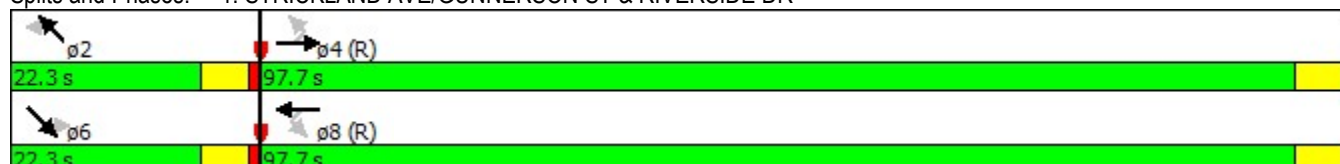
Intersection LOS: A

Intersection Capacity Utilization 81.3%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR



## Queues

### 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017



| Lane Group              | EBT  | WBT  | SET  | NWT  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 1042 | 1187 | 43   | 5    |
| v/c Ratio               | 0.73 | 0.84 | 0.21 | 0.02 |
| Control Delay           | 11.1 | 6.9  | 47.0 | 33.8 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 11.1 | 6.9  | 47.0 | 33.8 |
| Queue Length 50th (ft)  | 357  | 34   | 28   | 1    |
| Queue Length 95th (ft)  | 512  | m42  | 65   | 14   |
| Internal Link Dist (ft) | 1607 | 855  | 805  | 1652 |
| Turn Bay Length (ft)    |      |      |      |      |
| Base Capacity (vph)     | 1426 | 1410 | 201  | 237  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.73 | 0.84 | 0.21 | 0.02 |

#### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 5                                                                                 | 991                                                                               | 5                                                                                 | 6                                                                                 | 1019                                                                              | 115                                                                               | 36                                                                                 | 3                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 3                                                                                   |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 1                                                                                  | 6                                                                                   | 16                                                                                  | 5                                                                                   | 2                                                                                   | 12                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 5                                                                                 | 1032                                                                              | 5                                                                                 | 6                                                                                 | 1061                                                                              | 120                                                                               | 38                                                                                 | 3                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 3                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 32                                                                                | 1419                                                                              | 7                                                                                 | 32                                                                                | 1260                                                                              | 142                                                                               | 234                                                                                | 18                                                                                  | 10                                                                                  | 63                                                                                  | 65                                                                                  | 138                                                                                 |
| Arrive On Green              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 0.14                                                                               | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                |
| Sat Flow, veh/h              | 2                                                                                 | 1843                                                                              | 9                                                                                 | 3                                                                                 | 1637                                                                              | 184                                                                               | 1253                                                                               | 126                                                                                 | 67                                                                                  | 191                                                                                 | 460                                                                                 | 977                                                                                 |
| Grp Volume(v), veh/h         | 1042                                                                              | 0                                                                                 | 0                                                                                 | 1187                                                                              | 0                                                                                 | 0                                                                                 | 43                                                                                 | 0                                                                                   | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1854                                                                              | 0                                                                                 | 0                                                                                 | 1824                                                                              | 0                                                                                 | 0                                                                                 | 1446                                                                               | 0                                                                                   | 0                                                                                   | 1628                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 2.8                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 35.1                                                                              | 0.0                                                                               | 0.0                                                                               | 50.9                                                                              | 0.0                                                                               | 0.0                                                                               | 3.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.01                                                                              |                                                                                   | 0.10                                                                              | 0.88                                                                               |                                                                                     | 0.05                                                                                | 0.20                                                                                |                                                                                     | 0.60                                                                                |
| Lane Grp Cap(c), veh/h       | 1458                                                                              | 0                                                                                 | 0                                                                                 | 1434                                                                              | 0                                                                                 | 0                                                                                 | 261                                                                                | 0                                                                                   | 0                                                                                   | 267                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.71                                                                              | 0.00                                                                              | 0.00                                                                              | 0.83                                                                              | 0.00                                                                              | 0.00                                                                              | 0.16                                                                               | 0.00                                                                                | 0.00                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 1458                                                                              | 0                                                                                 | 0                                                                                 | 1434                                                                              | 0                                                                                 | 0                                                                                 | 261                                                                                | 0                                                                                   | 0                                                                                   | 267                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 7.2                                                                               | 0.0                                                                               | 0.0                                                                               | 9.0                                                                               | 0.0                                                                               | 0.0                                                                               | 45.5                                                                               | 0.0                                                                                 | 0.0                                                                                 | 44.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 3.0                                                                               | 0.0                                                                               | 0.0                                                                               | 5.6                                                                               | 0.0                                                                               | 0.0                                                                               | 1.4                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 18.9                                                                              | 0.0                                                                               | 0.0                                                                               | 27.3                                                                              | 0.0                                                                               | 0.0                                                                               | 1.4                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 10.2                                                                              | 0.0                                                                               | 0.0                                                                               | 14.6                                                                              | 0.0                                                                               | 0.0                                                                               | 46.8                                                                               | 0.0                                                                                 | 0.0                                                                                 | 44.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1042                                                                              |                                                                                   |                                                                                   |                                                                                   | 1187                                                                              |                                                                                   | 43                                                                                 |                                                                                     |                                                                                     |                                                                                     | 5                                                                                   |                                                                                     |
| Approach Delay, s/veh        | 10.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 14.6                                                                              |                                                                                   | 46.8                                                                               |                                                                                     |                                                                                     |                                                                                     | 44.5                                                                                |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   | D                                                                                  |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 22.3                                                                              |                                                                                   | 97.7                                                                              |                                                                                   | 22.3                                                                              |                                                                                   | 97.7                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.0                                                                              |                                                                                   | 92.4                                                                              |                                                                                   | 17.0                                                                              |                                                                                   | 92.4                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 2.3                                                                               |                                                                                   | 37.1                                                                              |                                                                                   | 5.1                                                                               |                                                                                   | 52.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               |                                                                                   | 38.3                                                                              |                                                                                   | 0.1                                                                               |                                                                                   | 30.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 13.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 4: CRANE ST & COLLIER AVE

1/31/2017



| Lane Group           | SET   | NWL   | NWT   | NEL   | NET   | SWL   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↑↑    | ↑     | ↑     | ↑     | ↑     | ↑     | ↑     |
| Volume (vph)         | 467   | 8     | 584   | 44    | 0     | 35    | 0     |
| Turn Type            | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 6     |       | 2     |       | 4     |       | 8     |
| Permitted Phases     |       | 2     |       | 4     |       | 8     |       |
| Detector Phase       | 6     | 2     | 2     | 4     | 4     | 8     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 40.0  | 40.0  | 40.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (%)      | 66.7% | 66.7% | 66.7% | 33.3% | 33.3% | 33.3% | 33.3% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   |
| Lead/Lag             |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | None  | None  | None  | None  |
| Act Effect Green (s) | 26.6  | 26.6  | 26.6  | 7.8   | 7.8   |       | 7.8   |
| Actuated g/C Ratio   | 0.76  | 0.76  | 0.76  | 0.22  | 0.22  |       | 0.22  |
| v/c Ratio            | 0.19  | 0.01  | 0.44  | 0.12  | 0.03  |       | 0.15  |
| Control Delay        | 3.1   | 3.5   | 5.2   | 14.0  | 0.1   |       | 11.4  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   |
| Total Delay          | 3.1   | 3.5   | 5.2   | 14.0  | 0.1   |       | 11.4  |
| LOS                  | A     | A     | A     | B     | A     |       | B     |
| Approach Delay       | 3.1   |       | 5.2   |       | 10.0  |       | 11.4  |
| Approach LOS         | A     |       | A     |       | B     |       | B     |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 35

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 4.8

Intersection LOS: A

Intersection Capacity Utilization 46.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: CRANE ST & COLLIER AVE

|                       |                       |
|-----------------------|-----------------------|
| <p>ø2</p> <p>40 s</p> | <p>ø4</p> <p>20 s</p> |
| <p>ø6</p> <p>40 s</p> | <p>ø8</p> <p>20 s</p> |

## Queues

## 4: CRANE ST &amp; COLLIER AVE

1/31/2017



| Lane Group              | SET  | NWL  | NWT  | NEL  | NET  | SWT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 520  | 9    | 628  | 47   | 19   | 51   |
| v/c Ratio               | 0.19 | 0.01 | 0.44 | 0.12 | 0.03 | 0.15 |
| Control Delay           | 3.1  | 3.5  | 5.2  | 14.0 | 0.1  | 11.4 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 3.1  | 3.5  | 5.2  | 14.0 | 0.1  | 11.4 |
| Queue Length 50th (ft)  | 19   | 1    | 60   | 9    | 0    | 6    |
| Queue Length 95th (ft)  | 41   | 4    | 139  | 29   | 0    | 27   |
| Internal Link Dist (ft) | 38   |      | 1917 |      | 1255 | 261  |
| Turn Bay Length (ft)    |      | 150  |      | 90   |      |      |
| Base Capacity (vph)     | 3381 | 823  | 1788 | 843  | 947  | 720  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.15 | 0.01 | 0.35 | 0.06 | 0.02 | 0.07 |
| Intersection Summary    |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 4: CRANE ST & COLLIER AVE

1/31/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 0                                                                                 | 467                                                                               | 17                                                                                | 8                                                                                 | 584                                                                               | 0                                                                                 | 44                                                                                  | 0                                                                                   | 18                                                                                  | 35                                                                                  | 0                                                                                   | 12                                                                                  |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 502                                                                               | 18                                                                                | 9                                                                                 | 628                                                                               | 0                                                                                 | 47                                                                                  | 0                                                                                   | 19                                                                                  | 38                                                                                  | 0                                                                                   | 13                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 246                                                                               | 2022                                                                              | 72                                                                                | 693                                                                               | 1081                                                                              | 0                                                                                 | 460                                                                                 | 0                                                                                   | 232                                                                                 | 348                                                                                 | 29                                                                                  | 56                                                                                  |
| Arrive On Green              | 0.00                                                                              | 0.58                                                                              | 0.58                                                                              | 0.58                                                                              | 0.58                                                                              | 0.00                                                                              | 0.15                                                                                | 0.00                                                                                | 0.15                                                                                | 0.15                                                                                | 0.00                                                                                | 0.15                                                                                |
| Sat Flow, veh/h              | 795                                                                               | 3486                                                                              | 125                                                                               | 878                                                                               | 1863                                                                              | 0                                                                                 | 1395                                                                                | 0                                                                                   | 1583                                                                                | 907                                                                                 | 200                                                                                 | 379                                                                                 |
| Grp Volume(v), veh/h         | 0                                                                                 | 255                                                                               | 265                                                                               | 9                                                                                 | 628                                                                               | 0                                                                                 | 47                                                                                  | 0                                                                                   | 19                                                                                  | 51                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 795                                                                               | 1770                                                                              | 1841                                                                              | 878                                                                               | 1863                                                                              | 0                                                                                 | 1395                                                                                | 0                                                                                   | 1583                                                                                | 1486                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 2.1                                                                               | 2.1                                                                               | 0.1                                                                               | 6.3                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 2.1                                                                               | 2.1                                                                               | 2.2                                                                               | 6.3                                                                               | 0.0                                                                               | 0.7                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.07                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 0.75                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 246                                                                               | 1027                                                                              | 1068                                                                              | 693                                                                               | 1081                                                                              | 0                                                                                 | 460                                                                                 | 0                                                                                   | 232                                                                                 | 432                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.00                                                                              | 0.25                                                                              | 0.25                                                                              | 0.01                                                                              | 0.58                                                                              | 0.00                                                                              | 0.10                                                                                | 0.00                                                                                | 0.08                                                                                | 0.12                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 762                                                                               | 2175                                                                              | 2263                                                                              | 1263                                                                              | 2290                                                                              | 0                                                                                 | 1018                                                                                | 0                                                                                   | 865                                                                                 | 1005                                                                                | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.6                                                                               | 3.9                                                                               | 0.0                                                                               | 11.0                                                                                | 0.0                                                                                 | 10.8                                                                                | 11.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               | 0.1                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.0                                                                               | 1.1                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                               | 0.3                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 3.1                                                                               | 3.1                                                                               | 3.6                                                                               | 4.4                                                                               | 0.0                                                                               | 11.0                                                                                | 0.0                                                                                 | 10.9                                                                                | 11.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 520                                                                               |                                                                                   |                                                                                   | 637                                                                               |                                                                                   |                                                                                     | 66                                                                                  |                                                                                     |                                                                                     | 51                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 3.1                                                                               |                                                                                   |                                                                                   | 4.4                                                                               |                                                                                   |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 11.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 21.0                                                                              |                                                                                   | 8.3                                                                               |                                                                                   | 21.0                                                                              |                                                                                     | 8.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 36.0                                                                              |                                                                                   | 16.0                                                                              |                                                                                   | 36.0                                                                              |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 8.3                                                                               |                                                                                   | 2.7                                                                               |                                                                                   | 4.1                                                                               |                                                                                     | 2.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 8.7                                                                               |                                                                                   | 0.3                                                                               |                                                                                   | 9.1                                                                               |                                                                                     | 0.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 5: CHANEY ST & COLLIER AVE

1/31/2017



| Lane Group           | SET   | SER   | NWL   | NWT   | NEL   | NER   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↑     | ↑     |       | ↑     | ↑     | ↑     |
| Volume (vph)         | 232   | 222   | 22    | 123   | 355   | 57    |
| Turn Type            | NA    | Perm  | Perm  | NA    | Prot  | Perm  |
| Protected Phases     | 6     |       |       | 2     | 4     |       |
| Permitted Phases     |       | 6     | 2     |       |       | 4     |
| Detector Phase       | 6     | 6     | 2     | 2     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 27.0  | 27.0  | 27.0  | 27.0  | 33.0  | 33.0  |
| Total Split (%)      | 45.0% | 45.0% | 45.0% | 45.0% | 55.0% | 55.0% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   |       | 5.3   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | Min   | None  | None  |
| Act Effect Green (s) | 10.1  | 10.1  |       | 10.1  | 12.1  | 12.1  |
| Actuated g/C Ratio   | 0.30  | 0.30  |       | 0.30  | 0.36  | 0.36  |
| v/c Ratio            | 0.46  | 0.38  |       | 0.31  | 0.62  | 0.10  |
| Control Delay        | 13.2  | 3.9   |       | 11.7  | 13.7  | 3.3   |
| Queue Delay          | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 13.2  | 3.9   |       | 11.7  | 13.7  | 3.3   |
| LOS                  | B     | A     |       | B     | B     | A     |
| Approach Delay       | 8.6   |       |       | 11.7  | 12.3  |       |
| Approach LOS         | A     |       |       | B     | B     |       |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 33.4

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 10.6

Intersection LOS: B

Intersection Capacity Utilization 52.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: CHANEY ST & COLLIER AVE

|                       |                       |
|-----------------------|-----------------------|
| <p>ø2</p> <p>27 s</p> | <p>ø4</p> <p>33 s</p> |
| <p>ø6</p> <p>27 s</p> |                       |

## Queues

## 5: CHANEY ST &amp; COLLIER AVE

1/31/2017



| Lane Group              | SET  | SER  | NWT  | NEL  | NER  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 258  | 247  | 161  | 394  | 63   |
| v/c Ratio               | 0.46 | 0.38 | 0.31 | 0.62 | 0.10 |
| Control Delay           | 13.2 | 3.9  | 11.7 | 13.7 | 3.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 13.2 | 3.9  | 11.7 | 13.7 | 3.3  |
| Queue Length 50th (ft)  | 33   | 0    | 20   | 48   | 0    |
| Queue Length 95th (ft)  | 99   | 35   | 65   | 138  | 15   |
| Internal Link Dist (ft) | 1917 |      | 212  | 1503 |      |
| Turn Bay Length (ft)    |      |      |      |      |      |
| Base Capacity (vph)     | 1278 | 1164 | 1169 | 1498 | 1350 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.20 | 0.21 | 0.14 | 0.26 | 0.05 |
| Intersection Summary    |      |      |      |      |      |



# HCM 2010 Signalized Intersection Summary

## 5: CHANEY ST & COLLIER AVE

1/31/2017

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |   |   |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |   |
| Volume (veh/h)               | 232                                                                               | 222                                                                               | 22                                                                                | 123                                                                               | 355                                                                               | 57                                                                                |   |   |
| Number                       | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 258                                                                               | 247                                                                               | 24                                                                                | 137                                                                               | 394                                                                               | 63                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 535                                                                               | 455                                                                               | 199                                                                               | 460                                                                               | 523                                                                               | 467                                                                               |   |   |
| Arrive On Green              | 0.29                                                                              | 0.29                                                                              | 0.29                                                                              | 0.29                                                                              | 0.29                                                                              | 0.29                                                                              |   |   |
| Sat Flow, veh/h              | 1863                                                                              | 1583                                                                              | 124                                                                               | 1603                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 258                                                                               | 247                                                                               | 161                                                                               | 0                                                                                 | 394                                                                               | 63                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1863                                                                              | 1583                                                                              | 1727                                                                              | 0                                                                                 | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 2.9                                                                               | 3.3                                                                               | 0.0                                                                               | 0.0                                                                               | 5.1                                                                               | 0.7                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 2.9                                                                               | 3.3                                                                               | 1.7                                                                               | 0.0                                                                               | 5.1                                                                               | 0.7                                                                               |   |   |
| Prop In Lane                 |                                                                                   | 1.00                                                                              | 0.15                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 535                                                                               | 455                                                                               | 659                                                                               | 0                                                                                 | 523                                                                               | 467                                                                               |   |   |
| V/C Ratio(X)                 | 0.48                                                                              | 0.54                                                                              | 0.24                                                                              | 0.00                                                                              | 0.75                                                                              | 0.13                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1594                                                                              | 1355                                                                              | 1570                                                                              | 0                                                                                 | 1938                                                                              | 1730                                                                              |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 7.5                                                                               | 7.6                                                                               | 7.1                                                                               | 0.0                                                                               | 8.1                                                                               | 6.6                                                                               |   |   |
| Incr Delay (d2), s/veh       | 0.3                                                                               | 0.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.8                                                                               | 0.0                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.5                                                                               | 1.5                                                                               | 0.9                                                                               | 0.0                                                                               | 2.5                                                                               | 0.3                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 7.7                                                                               | 8.0                                                                               | 7.1                                                                               | 0.0                                                                               | 8.9                                                                               | 6.6                                                                               |   |   |
| LnGrp LOS                    | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |   |   |
| Approach Vol, veh/h          | 505                                                                               |                                                                                   |                                                                                   | 161                                                                               | 457                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        | 7.9                                                                               |                                                                                   |                                                                                   | 7.1                                                                               | 8.6                                                                               |                                                                                   |   |   |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 12.6                                                                              |                                                                                   | 12.8                                                                              |                                                                                   | 12.6                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 21.7                                                                              |                                                                                   | 27.7                                                                              |                                                                                   | 21.7                                                                              |   |   |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 3.7                                                                               |                                                                                   | 7.1                                                                               |                                                                                   | 5.3                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 2.0                                                                               |                                                                                   | 0.7                                                                               |                                                                                   | 1.9                                                                               |   |   |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

## **Appendix I**

Cumulative Conditions (Existing Plus Ambient Growth Plus Cumulative Projects  
Plus Proposed Project) Intersection Analysis Worksheets

**Intersection**

Int Delay, s/veh 17.7

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 1108 | 1    | 5    | 919  | 31   | 54   | 2    | 6    | 0    | 1    | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | 50   | -    | -    | 50   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 1166 | 1    | 5    | 967  | 33   | 57   | 2    | 6    | 0    | 1    | 7    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor2 |       |       | Minor1 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 1000   | 0 | 0 | 1167   | 0 | 0 | 2161   | 2161  | 984   | 2162   | 2178  | 1167  |
| Stage 1              | -      | - | - | -      | - | - | 994    | 994   | -     | 1167   | 1167  | -     |
| Stage 2              | -      | - | - | -      | - | - | 1167   | 1167  | -     | 995    | 1011  | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 692    | - | - | 599    | - | - | ~ 34   | 47    | 301   | 34     | 46    | 236   |
| Stage 1              | -      | - | - | -      | - | - | 295    | 323   | -     | 236    | 268   | -     |
| Stage 2              | -      | - | - | -      | - | - | 236    | 268   | -     | 295    | 317   | -     |
| Platoon blocked, %   |        | - | - |        | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 692    | - | - | 599    | - | - | ~ 32   | 46    | 301   | 32     | 45    | 236   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | ~ 32   | 46    | -     | 32     | 45    | -     |
| Stage 1              | -      | - | - | -      | - | - | 295    | 317   | -     | 236    | 268   | -     |
| Stage 2              | -      | - | - | -      | - | - | 228    | 268   | -     | 281    | 311   | -     |

| Approach             | EB |  | WB  |  | SE       |  | NW |
|----------------------|----|--|-----|--|----------|--|----|
| HCM Control Delay, s | 0  |  | 0.1 |  | \$ 603.6 |  | 29 |
| HCM LOS              |    |  |     |  | F        |  | D  |

| Minor Lane/Major Mvmt | NWLn1 | NWLn2 | EBL | EBT | EBR | WBL   | WBT | WBR | SELn1    | SELn2 |
|-----------------------|-------|-------|-----|-----|-----|-------|-----|-----|----------|-------|
| Capacity (veh/h)      | 45    | 236   | 692 | -   | -   | 599   | -   | -   | 32       | 301   |
| HCM Lane V/C Ratio    | 0.023 | 0.031 | -   | -   | -   | 0.009 | -   | -   | 1.842    | 0.021 |
| HCM Control Delay (s) | 86.9  | 20.7  | 0   | -   | -   | 11.1  | 0   | -   | \$ 666.4 | 17.2  |
| HCM Lane LOS          | F     | C     | A   | -   | -   | B     | A   | -   | F        | C     |
| HCM 95th %tile Q(veh) | 0.1   | 0.1   | 0   | -   | -   | 0     | -   | -   | 6.7      | 0.1   |

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

# Lanes and Geometrics

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 50                                                                                  | 0                                                                                   |                                                                                     | 50                                                                                  |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 1687                                                                              |                                                                                   |                                                                                   | 935                                                                               |                                                                                   |                                                                                    | 885                                                                                 |                                                                                     |                                                                                     | 1732                                                                                |                                                                                     |
| Travel Time (s)      |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017



| Lane Group           | SEL   | SET   | SER   | NWL   | NWT   | NEL   | NET   | NER   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |
| Volume (vph)         | 1     | 59    | 49    | 902   | 76    | 90    | 6     | 1067  | 0     |
| Turn Type            | Split | NA    | Perm  | Split | NA    | Perm  | NA    | pm+ov | NA    |
| Protected Phases     | 6     | 6     |       | 2     | 2     |       | 4     | 2     | 8     |
| Permitted Phases     |       |       | 6     |       |       | 4     |       | 4     |       |
| Detector Phase       | 6     | 6     | 6     | 2     | 2     | 4     | 4     | 2     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 6.0   | 6.0   | 6.0   | 7.0   | 7.0   | 9.0   | 9.0   | 7.0   | 9.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 20.0  | 20.0  | 80.0  | 80.0  | 20.0  | 20.0  | 80.0  | 20.0  |
| Total Split (%)      | 16.7% | 16.7% | 16.7% | 66.7% | 66.7% | 16.7% | 16.7% | 66.7% | 16.7% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 3.9   | 3.9   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |       | 4.9   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |       |
| Recall Mode          | Max   | Max   | Max   | C-Max | C-Max | None  | None  | C-Max | None  |
| Act Effct Green (s)  | 14.7  | 14.7  | 14.7  | 76.9  | 76.9  |       | 12.9  | 94.7  | 12.5  |
| Actuated g/C Ratio   | 0.12  | 0.12  | 0.12  | 0.64  | 0.64  |       | 0.11  | 0.79  | 0.10  |
| v/c Ratio            | 0.00  | 0.29  | 0.21  | 0.87  | 0.08  |       | 0.72  | 0.86  | 0.00  |
| Control Delay        | 46.0  | 51.6  | 9.4   | 21.4  | 4.3   |       | 77.8  | 12.0  | 0.0   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 46.0  | 51.6  | 9.4   | 21.4  | 4.3   |       | 77.8  | 12.0  | 0.0   |
| LOS                  | D     | D     | A     | C     | A     |       | E     | B     | A     |
| Approach Delay       |       | 32.6  |       |       | 20.0  |       | 17.5  |       | 0.0   |
| Approach LOS         |       | C     |       |       | B     |       | B     |       | A     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 71 (59%), Referenced to phase 2:NWTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 19.3

Intersection LOS: B

Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15

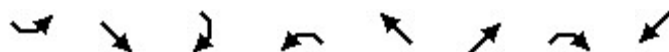
Splits and Phases: 2: RIVERSIDE DR & COLLIER AVE

|        |      |      |
|--------|------|------|
|        |      |      |
| ø2 (R) | ø6   | ø4   |
| 80 s   | 20 s | 20 s |
|        |      | ø8   |
|        |      | 20 s |

## Queues

## 2: RIVERSIDE DR &amp; COLLIER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL  | NWT  | NET  | NER  | SWT  |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 1    | 65   | 54   | 991  | 92   | 106  | 1173 | 3    |
| v/c Ratio               | 0.00 | 0.29 | 0.21 | 0.87 | 0.08 | 0.72 | 0.86 | 0.00 |
| Control Delay           | 46.0 | 51.6 | 9.4  | 21.4 | 4.3  | 77.8 | 12.0 | 0.0  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 46.0 | 51.6 | 9.4  | 21.4 | 4.3  | 77.8 | 12.0 | 0.0  |
| Queue Length 50th (ft)  | 1    | 47   | 0    | 484  | 11   | 80   | 233  | 0    |
| Queue Length 95th (ft)  | 6    | 92   | 28   | #953 | 23   | #149 | 524  | 0    |
| Internal Link Dist (ft) |      | 1295 |      |      | 623  | 2459 |      | 691  |
| Turn Bay Length (ft)    | 200  |      | 200  |      |      |      | 360  |      |
| Base Capacity (vph)     | 216  | 228  | 254  | 1134 | 1181 | 173  | 1365 | 1028 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.00 | 0.29 | 0.21 | 0.87 | 0.08 | 0.61 | 0.86 | 0.00 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM 2010 Signalized Intersection Summary

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017

|                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Volume (veh/h)                                                                                      | 1                                                                                 | 59                                                                                | 49                                                                                | 902                                                                               | 76                                                                                | 7                                                                                 | 90                                                                                 | 6                                                                                   | 1067                                                                                | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                                                | 1                                                                                 | 65                                                                                | 54                                                                                | 991                                                                               | 84                                                                                | 8                                                                                 | 99                                                                                 | 7                                                                                   | 1173                                                                                | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Adj No. of Lanes                                                                                    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                                                    | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 1227                                                                              | 117                                                                               | 215                                                                                | 11                                                                                  | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| Arrive On Green                                                                                     | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.13                                                                               | 0.13                                                                                | 0.13                                                                                | 0.00                                                                                | 0.00                                                                                | 0.13                                                                                |
| Sat Flow, veh/h                                                                                     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1675                                                                              | 160                                                                               | 1248                                                                               | 88                                                                                  | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h                                                                                | 1                                                                                 | 65                                                                                | 54                                                                                | 991                                                                               | 0                                                                                 | 92                                                                                | 106                                                                                | 0                                                                                   | 1173                                                                                | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 0                                                                                 | 1835                                                                              | 1336                                                                               | 0                                                                                   | 1583                                                                                | 0                                                                                   | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s                                                                                     | 0.1                                                                               | 3.8                                                                               | 3.7                                                                               | 40.6                                                                              | 0.0                                                                               | 1.7                                                                               | 8.5                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 0.1                                                                               | 3.8                                                                               | 3.7                                                                               | 40.6                                                                              | 0.0                                                                               | 1.7                                                                               | 9.5                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 |
| Prop In Lane                                                                                        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.09                                                                              | 0.93                                                                               |                                                                                     | 1.00                                                                                | 0.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1344                                                                              | 226                                                                                | 0                                                                                   | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| V/C Ratio(X)                                                                                        | 0.00                                                                              | 0.28                                                                              | 0.28                                                                              | 0.76                                                                              | 0.00                                                                              | 0.07                                                                              | 0.47                                                                               | 0.00                                                                                | 0.86                                                                                | 0.00                                                                                | 0.00                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1344                                                                              | 226                                                                                | 0                                                                                   | 1359                                                                                | 0                                                                                   | 0                                                                                   | 199                                                                                 |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 46.2                                                                              | 47.9                                                                              | 47.8                                                                              | 9.7                                                                               | 0.0                                                                               | 4.5                                                                               | 50.5                                                                               | 0.0                                                                                 | 2.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 45.9                                                                                |
| Incr Delay (d2), s/veh                                                                              | 0.0                                                                               | 3.1                                                                               | 3.5                                                                               | 4.3                                                                               | 0.0                                                                               | 0.1                                                                               | 0.6                                                                                | 0.0                                                                                 | 5.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 0.0                                                                               | 2.2                                                                               | 1.8                                                                               | 21.1                                                                              | 0.0                                                                               | 0.9                                                                               | 3.4                                                                                | 0.0                                                                                 | 40.9                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 46.3                                                                              | 51.0                                                                              | 51.4                                                                              | 14.0                                                                              | 0.0                                                                               | 4.6                                                                               | 51.0                                                                               | 0.0                                                                                 | 8.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 46.0                                                                                |
| LnGrp LOS                                                                                           | D                                                                                 | D                                                                                 | D                                                                                 | B                                                                                 |                                                                                   | A                                                                                 | D                                                                                  |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |
| Approach Vol, veh/h                                                                                 |                                                                                   | 120                                                                               |                                                                                   |                                                                                   | 1083                                                                              |                                                                                   |                                                                                    | 1279                                                                                |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 51.1                                                                              |                                                                                   |                                                                                   | 13.2                                                                              |                                                                                   |                                                                                    | 11.6                                                                                |                                                                                     |                                                                                     | 45.9                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 93.6                                                                              |                                                                                   | 20.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                    | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 5.3                                                                               |                                                                                   | * 5.3                                                                             |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 74.7                                                                              |                                                                                   | * 15                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                        |                                                                                   | 43.6                                                                              |                                                                                   | 18.1                                                                              |                                                                                   | 6.8                                                                               |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 2.4                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.1                                                                               |                                                                                    | 3.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   |                                                                                   | 14.2                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 1019                                                                              | 119                                                                               | 22                                                                                | 28                                                                                | 102                                                                               | 403                                                                               | 42                                                                                 | 93                                                                                  | 994                                                                                 | 261                                                                                 | 923                                                                                 |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                               | NA                                                                                  | Prot                                                                                | NA                                                                                  | pm+ov                                                                               |
| Protected Phases     | 1                                                                                 | 6                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 1                                                                                 | 6                                                                                 | 6                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 11.6                                                                              | 30.5                                                                              | 30.5                                                                              | 8.6                                                                               | 18.0                                                                              | 11.6                                                                              | 8.6                                                                                | 20.0                                                                                | 11.6                                                                                | 42.3                                                                                | 11.6                                                                                |
| Total Split (s)      | 41.7                                                                              | 48.7                                                                              | 48.7                                                                              | 11.0                                                                              | 18.0                                                                              | 40.3                                                                              | 9.6                                                                                | 20.0                                                                                | 40.3                                                                                | 50.7                                                                                | 41.7                                                                                |
| Total Split (%)      | 34.8%                                                                             | 40.6%                                                                             | 40.6%                                                                             | 9.2%                                                                              | 15.0%                                                                             | 33.6%                                                                             | 8.0%                                                                               | 16.7%                                                                               | 33.6%                                                                               | 42.3%                                                                               | 34.8%                                                                               |
| Yellow Time (s)      | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 3.6                                                                               | 3.6                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 4.6                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | C-Max                                                                             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | C-Max                                                                               |
| Act Effct Green (s)  | 43.7                                                                              | 53.6                                                                              | 53.6                                                                              | 6.6                                                                               | 12.7                                                                              | 53.7                                                                              | 4.9                                                                                | 8.1                                                                                 | 35.7                                                                                | 40.8                                                                                | 89.7                                                                                |
| Actuated g/C Ratio   | 0.36                                                                              | 0.45                                                                              | 0.45                                                                              | 0.06                                                                              | 0.11                                                                              | 0.45                                                                              | 0.04                                                                               | 0.07                                                                                | 0.30                                                                                | 0.34                                                                                | 0.75                                                                                |
| v/c Ratio            | 0.91                                                                              | 0.08                                                                              | 0.03                                                                              | 0.32                                                                              | 0.30                                                                              | 0.33                                                                              | 0.34                                                                               | 0.54                                                                                | 1.08                                                                                | 0.46                                                                                | 0.47                                                                                |
| Control Delay        | 42.7                                                                              | 20.5                                                                              | 0.0                                                                               | 62.3                                                                              | 52.0                                                                              | 11.6                                                                              | 62.6                                                                               | 46.1                                                                                | 84.8                                                                                | 34.4                                                                                | 5.7                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 42.7                                                                              | 20.5                                                                              | 0.0                                                                               | 62.3                                                                              | 52.0                                                                              | 11.6                                                                              | 62.6                                                                               | 46.1                                                                                | 84.8                                                                                | 34.4                                                                                | 5.7                                                                                 |
| LOS                  | D                                                                                 | C                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | B                                                                                 | E                                                                                  | D                                                                                   | F                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 39.6                                                                              |                                                                                   |                                                                                   | 22.0                                                                              |                                                                                   |                                                                                    | 50.1                                                                                |                                                                                     | 45.2                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     | D                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 113 (94%), Referenced to phase 1:SEL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 40.7

Intersection LOS: D

Intersection Capacity Utilization 80.9%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 3: CENTRAL AVE & COLLIER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| ø1 (R)                                                                              | ø2                                                                                  | ø3                                                                                  | ø4                                                                                  |
| 41.7 s                                                                              | 18 s                                                                                | 40.3 s                                                                              | 20 s                                                                                |
|  |  |  |  |
| ø5                                                                                  | ø6                                                                                  | ø7                                                                                  | ø8                                                                                  |
| 11 s                                                                                | 48.7 s                                                                              | 9.6 s                                                                               | 50.7 s                                                                              |



## Queues

## 3: CENTRAL AVE &amp; COLLIER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 1132                                                                              | 132                                                                               | 24                                                                                | 31                                                                                | 113                                                                               | 448                                                                               | 47                                                                                 | 144                                                                                 | 1104                                                                                | 290                                                                                 | 1026                                                                                |
| v/c Ratio               | 0.91                                                                              | 0.08                                                                              | 0.03                                                                              | 0.32                                                                              | 0.30                                                                              | 0.33                                                                              | 0.34                                                                               | 0.54                                                                                | 1.08                                                                                | 0.46                                                                                | 0.47                                                                                |
| Control Delay           | 42.7                                                                              | 20.5                                                                              | 0.0                                                                               | 62.3                                                                              | 52.0                                                                              | 11.6                                                                              | 62.6                                                                               | 46.1                                                                                | 84.8                                                                                | 34.4                                                                                | 5.7                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 42.7                                                                              | 20.5                                                                              | 0.0                                                                               | 62.3                                                                              | 52.0                                                                              | 11.6                                                                              | 62.6                                                                               | 46.1                                                                                | 84.8                                                                                | 34.4                                                                                | 5.7                                                                                 |
| Queue Length 50th (ft)  | 398                                                                               | 27                                                                                | 0                                                                                 | 24                                                                                | 43                                                                                | 61                                                                                | 18                                                                                 | 41                                                                                  | ~497                                                                                | 207                                                                                 | 151                                                                                 |
| Queue Length 95th (ft)  | #590                                                                              | m40                                                                               | m0                                                                                | 55                                                                                | 73                                                                                | 103                                                                               | 39                                                                                 | 74                                                                                  | #636                                                                                | m254                                                                                | 200                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1881                                                                              |                                                                                   |                                                                                   | 463                                                                               |                                                                                   |                                                                                    | 1625                                                                                |                                                                                     | 251                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 650                                                                               |                                                                                   | 220                                                                               | 100                                                                               |                                                                                   | 100                                                                               | 140                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 1249                                                                              | 1579                                                                              | 787                                                                               | 106                                                                               | 374                                                                               | 1362                                                                              | 143                                                                                | 450                                                                                 | 1021                                                                                | 704                                                                                 | 2201                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.91                                                                              | 0.08                                                                              | 0.03                                                                              | 0.29                                                                              | 0.30                                                                              | 0.33                                                                              | 0.33                                                                               | 0.32                                                                                | 1.08                                                                                | 0.41                                                                                | 0.47                                                                                |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                                           |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                  | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                       |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)                            | 1019                                                                              | 119                                                                               | 22                                                                                | 28                                                                                | 102                                                                               | 403                                                                               | 42                                                                                  | 93                                                                                  | 37                                                                                  | 994                                                                                 | 261                                                                                 | 923                                                                                 |
| Number                                    | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                    | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                      | 1132                                                                              | 132                                                                               | 24                                                                                | 31                                                                                | 113                                                                               | 448                                                                               | 47                                                                                  | 103                                                                                 | 41                                                                                  | 1104                                                                                | 290                                                                                 | 1026                                                                                |
| Adj No. of Lanes                          | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   |
| Peak Hour Factor                          | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %                      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                | 1184                                                                              | 1496                                                                              | 669                                                                               | 48                                                                                | 375                                                                               | 1124                                                                              | 105                                                                                 | 220                                                                                 | 83                                                                                  | 1024                                                                                | 661                                                                                 | 1947                                                                                |
| Arrive On Green                           | 0.34                                                                              | 0.42                                                                              | 0.42                                                                              | 0.03                                                                              | 0.11                                                                              | 0.11                                                                              | 0.03                                                                                | 0.09                                                                                | 0.09                                                                                | 0.10                                                                                | 0.12                                                                                | 0.12                                                                                |
| Sat Flow, veh/h                           | 3442                                                                              | 3539                                                                              | 1583                                                                              | 1774                                                                              | 3539                                                                              | 2787                                                                              | 3442                                                                                | 2511                                                                                | 953                                                                                 | 3442                                                                                | 1863                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h                      | 1132                                                                              | 132                                                                               | 24                                                                                | 31                                                                                | 113                                                                               | 448                                                                               | 47                                                                                  | 71                                                                                  | 73                                                                                  | 1104                                                                                | 290                                                                                 | 1026                                                                                |
| Grp Sat Flow(s),veh/h/ln                  | 1721                                                                              | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 1393                                                                              | 1721                                                                                | 1770                                                                                | 1695                                                                                | 1721                                                                                | 1863                                                                                | 1393                                                                                |
| Q Serve(g_s), s                           | 38.6                                                                              | 2.7                                                                               | 1.1                                                                               | 2.1                                                                               | 3.5                                                                               | 12.7                                                                              | 1.6                                                                                 | 4.6                                                                                 | 4.9                                                                                 | 35.7                                                                                | 17.4                                                                                | 20.7                                                                                |
| Cycle Q Clear(g_c), s                     | 38.6                                                                              | 2.7                                                                               | 1.1                                                                               | 2.1                                                                               | 3.5                                                                               | 12.7                                                                              | 1.6                                                                                 | 4.6                                                                                 | 4.9                                                                                 | 35.7                                                                                | 17.4                                                                                | 20.7                                                                                |
| Prop In Lane                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.56                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                    | 1184                                                                              | 1496                                                                              | 669                                                                               | 48                                                                                | 375                                                                               | 1124                                                                              | 105                                                                                 | 155                                                                                 | 148                                                                                 | 1024                                                                                | 661                                                                                 | 1947                                                                                |
| V/C Ratio(X)                              | 0.96                                                                              | 0.09                                                                              | 0.04                                                                              | 0.64                                                                              | 0.30                                                                              | 0.40                                                                              | 0.45                                                                                | 0.46                                                                                | 0.49                                                                                | 1.08                                                                                | 0.44                                                                                | 0.53                                                                                |
| Avail Cap(c_a), veh/h                     | 1184                                                                              | 1496                                                                              | 669                                                                               | 95                                                                                | 375                                                                               | 1124                                                                              | 143                                                                                 | 217                                                                                 | 208                                                                                 | 1024                                                                                | 705                                                                                 | 2013                                                                                |
| HCM Platoon Ratio                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                  | 38.5                                                                              | 20.8                                                                              | 20.3                                                                              | 57.8                                                                              | 49.6                                                                              | 25.5                                                                              | 57.2                                                                                | 52.0                                                                                | 52.2                                                                                | 54.1                                                                                | 41.9                                                                                | 11.7                                                                                |
| Incr Delay (d2), s/veh                    | 16.5                                                                              | 0.1                                                                               | 0.1                                                                               | 5.2                                                                               | 2.1                                                                               | 1.1                                                                               | 1.1                                                                                 | 0.8                                                                                 | 0.9                                                                                 | 51.7                                                                                | 0.2                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                  | 21.0                                                                              | 1.3                                                                               | 0.5                                                                               | 1.1                                                                               | 1.8                                                                               | 5.4                                                                               | 0.8                                                                                 | 2.3                                                                                 | 2.3                                                                                 | 24.4                                                                                | 9.0                                                                                 | 8.0                                                                                 |
| LnGrp Delay(d),s/veh                      | 55.0                                                                              | 20.9                                                                              | 20.4                                                                              | 63.0                                                                              | 51.6                                                                              | 26.5                                                                              | 58.3                                                                                | 52.8                                                                                | 53.1                                                                                | 105.8                                                                               | 42.0                                                                                | 11.8                                                                                |
| LnGrp LOS                                 | D                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | E                                                                                   | D                                                                                   | D                                                                                   | F                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h                       | 1288                                                                              |                                                                                   |                                                                                   |                                                                                   | 592                                                                               |                                                                                   |                                                                                     |                                                                                     | 191                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh                     | 50.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 33.2                                                                              |                                                                                   |                                                                                     |                                                                                     | 54.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                              | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                  | 45.9                                                                              | 18.0                                                                              | 40.3                                                                              | 15.8                                                                              | 7.9                                                                               | 56.0                                                                              | 8.2                                                                                 | 47.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                   | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s               | 37.1                                                                              | 12.7                                                                              | 35.7                                                                              | 14.7                                                                              | 6.4                                                                               | 43.4                                                                              | 5.0                                                                                 | 45.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s              | 41.6                                                                              | 15.7                                                                              | 38.7                                                                              | 7.6                                                                               | 5.1                                                                               | 5.7                                                                               | 4.6                                                                                 | 23.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 2.9                                                                               | 0.0                                                                               | 2.2                                                                               | 0.0                                                                                 | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                       |                                                                                   |                                                                                   | 52.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                              |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved changes to right turn type. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |       |      |        |      |      |        |          |       |        |       |  |       |       |       |
|--------------------------|--------|-------|------|--------|------|------|--------|----------|-------|--------|-------|--|-------|-------|-------|
| Int Delay, s/veh         | 1.2    |       |      |        |      |      |        |          |       |        |       |  |       |       |       |
|                          |        |       |      |        |      |      |        |          |       |        |       |  |       |       |       |
| Movement                 | SEL    | SET   | SER  |        | NWL  | NWT  | NWR    |          | NEL   | NET    | NER   |  | SWL   | SWT   | SWR   |
| Vol, veh/h               | 0      | 878   | 25   |        | 11   | 502  | 0      |          | 4     | 0      | 15    |  | 30    | 0     | 10    |
| Conflicting Peds, #/hr   | 0      | 0     | 0    |        | 0    | 0    | 0      |          | 0     | 0      | 0     |  | 0     | 0     | 0     |
| Sign Control             | Free   | Free  | Free |        | Free | Free | Free   |          | Stop  | Stop   | Stop  |  | Stop  | Stop  | Stop  |
| RT Channelized           | -      | -     | None |        | -    | -    | None   |          | -     | -      | None  |  | -     | -     | None  |
| Storage Length           | 0      | -     | -    |        | 150  | -    | -      |          | 90    | -      | -     |  | -     | -     | -     |
| Veh in Median Storage, # | -      | 0     | -    |        | -    | 0    | -      |          | -     | 0      | -     |  | -     | 0     | -     |
| Grade, %                 | -      | 0     | -    |        | -    | 0    | -      |          | -     | 0      | -     |  | -     | 0     | -     |
| Peak Hour Factor         | 85     | 85    | 85   |        | 85   | 85   | 85     |          | 85    | 85     | 85    |  | 85    | 85    | 85    |
| Heavy Vehicles, %        | 2      | 2     | 2    |        | 2    | 2    | 2      |          | 2     | 2      | 2     |  | 2     | 2     | 2     |
| Mvmt Flow                | 0      | 1033  | 29   |        | 13   | 591  | 0      |          | 5     | 0      | 18    |  | 35    | 0     | 12    |
|                          |        |       |      |        |      |      |        |          |       |        |       |  |       |       |       |
| Major/Minor              | Major1 |       |      | Major2 |      |      | Minor1 |          |       | Minor2 |       |  |       |       |       |
| Conflicting Flow All     | 591    | 0     | 0    |        | 1062 | 0    | 0      |          | 1670  | 1664   | 531   |  | 1132  | 1678  | 591   |
| Stage 1                  | -      | -     | -    |        | -    | -    | -      |          | 1048  | 1048   | -     |  | 616   | 616   | -     |
| Stage 2                  | -      | -     | -    |        | -    | -    | -      |          | 622   | 616    | -     |  | 516   | 1062  | -     |
| Critical Hdwy            | 4.12   | -     | -    |        | 4.14 | -    | -      |          | 7.33  | 6.53   | 6.93  |  | 7.33  | 6.53  | 6.23  |
| Critical Hdwy Stg 1      | -      | -     | -    |        | -    | -    | -      |          | 6.53  | 5.53   | -     |  | 6.13  | 5.53  | -     |
| Critical Hdwy Stg 2      | -      | -     | -    |        | -    | -    | -      |          | 6.13  | 5.53   | -     |  | 6.53  | 5.53  | -     |
| Follow-up Hdwy           | 2.218  | -     | -    |        | 2.22 | -    | -      |          | 3.519 | 4.019  | 3.319 |  | 3.519 | 4.019 | 3.319 |
| Pot Cap-1 Maneuver       | 985    | -     | -    |        | 652  | -    | -      |          | 69    | 96     | 494   |  | 169   | 94    | 506   |
| Stage 1                  | -      | -     | -    |        | -    | -    | -      |          | 244   | 304    | -     |  | 477   | 481   | -     |
| Stage 2                  | -      | -     | -    |        | -    | -    | -      |          | 473   | 481    | -     |  | 511   | 299   | -     |
| Platoon blocked, %       |        |       | -    | -      |      |      | -      | -        |       |        |       |  |       |       |       |
| Mov Cap-1 Maneuver       | 985    | -     | -    |        | 652  | -    | -      |          | 66    | 94     | 494   |  | 160   | 92    | 506   |
| Mov Cap-2 Maneuver       | -      | -     | -    |        | -    | -    | -      |          | 66    | 94     | -     |  | 160   | 92    | -     |
| Stage 1                  | -      | -     | -    |        | -    | -    | -      |          | 244   | 304    | -     |  | 477   | 471   | -     |
| Stage 2                  | -      | -     | -    |        | -    | -    | -      |          | 453   | 471    | -     |  | 493   | 299   | -     |
|                          |        |       |      |        |      |      |        |          |       |        |       |  |       |       |       |
| Approach                 | SE     |       |      | NW     |      |      | NE     |          |       | SW     |       |  |       |       |       |
| HCM Control Delay, s     | 0      |       |      | 0.2    |      |      | 23.4   |          |       | 29.6   |       |  |       |       |       |
| HCM LOS                  |        |       |      |        |      |      | C      |          |       | D      |       |  |       |       |       |
|                          |        |       |      |        |      |      |        |          |       |        |       |  |       |       |       |
| Minor Lane/Major Mvmt    | NELn1  | NELn2 | NWL  | NWT    | NWR  | SEL  | SET    | SERSWLn1 |       |        |       |  |       |       |       |
| Capacity (veh/h)         | 66     | 494   | 652  | -      | -    | 985  | -      | -        | 193   |        |       |  |       |       |       |
| HCM Lane V/C Ratio       | 0.071  | 0.036 | 0.02 | -      | -    | -    | -      | -        | 0.244 |        |       |  |       |       |       |
| HCM Control Delay (s)    | 63.7   | 12.6  | 10.6 | -      | -    | 0    | -      | -        | 29.6  |        |       |  |       |       |       |
| HCM Lane LOS             | F      | B     | B    | -      | -    | A    | -      | -        | D     |        |       |  |       |       |       |
| HCM 95th %tile Q(veh)    | 0.2    | 0.1   | 0.1  | -      | -    | 0    | -      | -        | 0.9   |        |       |  |       |       |       |

# Lanes and Geometrics

## 4: CRANE ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 90                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 118                                                                               |                                                                                   |                                                                                   | 1997                                                                              |                                                                                   |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     | 341                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection     |      |
|------------------|------|
| Int Delay, s/veh | 33.4 |

| Movement                 | SET  | SER  | NWL  | NWT  | NEL  | NER  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 92   | 713  | 167  | 111  | 360  | 34   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | 0    | -    | -    | 0    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 83   | 83   | 83   | 83   | 83   | 83   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 111  | 859  | 201  | 134  | 434  | 41   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 111    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | -      |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | -      |
| Pot Cap-1 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | -      |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | SE | NW  | NE    |
|----------------------|----|-----|-------|
| HCM Control Delay, s | 0  | 4.7 | 121.8 |
| HCM LOS              |    |     | F     |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | NWL   | NWT | SET | SER |
|-----------------------|-------|-------|-------|-----|-----|-----|
| Capacity (veh/h)      | 372   | 942   | 1479  | -   | -   | -   |
| HCM Lane V/C Ratio    | 1.166 | 0.043 | 0.136 | -   | -   | -   |
| HCM Control Delay (s) | 132.5 | 9     | 7.8   | 0   | -   | -   |
| HCM Lane LOS          | F     | A     | A     | A   | -   | -   |
| HCM 95th %tile Q(veh) | 17.2  | 0.1   | 0.5   | -   | -   | -   |

| Notes                      |                                |
|----------------------------|--------------------------------|
| ~: Volume exceeds capacity | \$: Delay exceeds 300s         |
| +: Computation Not Defined | *: All major volume in platoon |

# Lanes and Geometrics

## 5: CHANEY ST & COLLIER AVE

1/27/2017

|                             |  |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                  | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |
| Lane Configurations         |  |  |                                                                                   |  |  |  |
| Ideal Flow (vphpl)          | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)             | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Grade (%)                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Storage Length (ft)         |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Storage Lanes               |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)           |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Link Speed (mph)            | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)          | 1997                                                                              |                                                                                   |                                                                                   | 292                                                                               | 1583                                                                              |                                                                                   |
| Travel Time (s)             | 45.4                                                                              |                                                                                   |                                                                                   | 6.6                                                                               | 36.0                                                                              |                                                                                   |
| <b>Intersection Summary</b> |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                  | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

| Intersection              |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh | 13.7 |      |      |      |      |      |      |      |      |      |      |      |
| Intersection LOS          | B    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                  | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Vol, veh/h                | 0    | 0    | 0    | 171  | 0    | 1    | 1    | 0    | 0    | 430  | 1    | 2    |
| Peak Hour Factor          | 0.92 | 0.86 | 0.86 | 0.86 | 0.92 | 0.86 | 0.86 | 0.86 | 0.92 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                 | 0    | 0    | 0    | 199  | 0    | 1    | 1    | 0    | 0    | 500  | 1    | 2    |
| Number of Lanes           | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB   |
|----------------------------|-----|-----|------|
| Opposing Approach          | WB  | EB  | SB   |
| Opposing Lanes             | 1   | 1   | 1    |
| Conflicting Approach Left  | SB  | NB  | EB   |
| Conflicting Lanes Left     | 1   | 1   | 1    |
| Conflicting Approach Right | NB  | SB  | WB   |
| Conflicting Lanes Right    | 1   | 1   | 1    |
| HCM Control Delay          | 9.1 | 8.6 | 15.5 |
| HCM LOS                    | A   | A   | C    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 99%   | 0%    | 50%   | 0%    |
| Vol Thru, %            | 0%    | 0%    | 50%   | 100%  |
| Vol Right, %           | 0%    | 100%  | 0%    | 0%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 433   | 171   | 2     | 0     |
| LT Vol                 | 430   | 0     | 1     | 0     |
| Through Vol            | 1     | 0     | 1     | 0     |
| RT Vol                 | 2     | 171   | 0     | 0     |
| Lane Flow Rate         | 503   | 199   | 2     | 0     |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.642 | 0.252 | 0.004 | 0     |
| Departure Headway (Hd) | 4.591 | 4.567 | 5.529 | 4.983 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 785   | 785   | 645   | 0     |
| Service Time           | 2.63  | 2.598 | 3.581 | 3.042 |
| HCM Lane V/C Ratio     | 0.641 | 0.254 | 0.003 | 0     |
| HCM Control Delay      | 15.5  | 9.1   | 8.6   | 8     |
| HCM Lane LOS           | C     | A     | A     | N     |
| HCM 95th-tile Q        | 4.7   | 1     | 0     | 0     |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement          | SBU  | SBL  | SBT  | SBR  |
|-------------------|------|------|------|------|
| Vol, veh/h        | 0    | 0    | 0    | 0    |
| Peak Hour Factor  | 0.92 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, % | 2    | 2    | 2    | 2    |
| Mvmt Flow         | 0    | 0    | 0    | 0    |
| Number of Lanes   | 0    | 0    | 1    | 0    |

Approach SB

|                            |    |
|----------------------------|----|
| Opposing Approach          | NB |
| Opposing Lanes             | 1  |
| Conflicting Approach Left  | WB |
| Conflicting Lanes Left     | 1  |
| Conflicting Approach Right | EB |
| Conflicting Lanes Right    | 1  |
| HCM Control Delay          | 0  |
| HCM LOS                    | -  |

Lane



# Lanes and Geometrics

## 6: N. SPRING ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 294                                                                               |                                                                                   |                                                                                   | 237                                                                               |                                                                                   |                                                                                    | 822                                                                                 |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                    | 18.7                                                                                |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 407                                                                               | 1                                                                                 | 324                                                                               | 936                                                                               | 605                                                                               | 856                                                                               | 1884                                                                               |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                    |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                  |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 5.0                                                                               | 7.0                                                                                |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 29.3                                                                              | 29.3                                                                              | 11.0                                                                              | 20.0                                                                               |
| Total Split (s)      | 31.0                                                                              | 31.0                                                                              | 31.0                                                                              | 47.0                                                                              | 47.0                                                                              | 42.0                                                                              | 89.0                                                                               |
| Total Split (%)      | 25.8%                                                                             | 25.8%                                                                             | 25.8%                                                                             | 39.2%                                                                             | 39.2%                                                                             | 35.0%                                                                             | 74.2%                                                                              |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                    |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                              |
| Act Effct Green (s)  | 25.7                                                                              | 25.7                                                                              | 25.7                                                                              | 43.2                                                                              | 43.2                                                                              | 35.9                                                                              | 83.7                                                                               |
| Actuated g/C Ratio   | 0.21                                                                              | 0.21                                                                              | 0.21                                                                              | 0.36                                                                              | 0.36                                                                              | 0.30                                                                              | 0.70                                                                               |
| v/c Ratio            | 0.79                                                                              | 0.81                                                                              | 0.70                                                                              | 0.58                                                                              | 0.79                                                                              | 0.94                                                                              | 0.86                                                                               |
| Control Delay        | 61.1                                                                              | 61.6                                                                              | 43.6                                                                              | 17.0                                                                              | 13.2                                                                              | 53.0                                                                              | 8.2                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.5                                                                               | 3.5                                                                               | 3.0                                                                                |
| Total Delay          | 61.1                                                                              | 61.6                                                                              | 43.6                                                                              | 17.0                                                                              | 13.7                                                                              | 56.5                                                                              | 11.2                                                                               |
| LOS                  | E                                                                                 | E                                                                                 | D                                                                                 | B                                                                                 | B                                                                                 | E                                                                                 | B                                                                                  |
| Approach Delay       |                                                                                   | 55.8                                                                              |                                                                                   | 15.7                                                                              |                                                                                   |                                                                                   | 25.3                                                                               |
| Approach LOS         |                                                                                   | E                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 20 (17%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 26.8

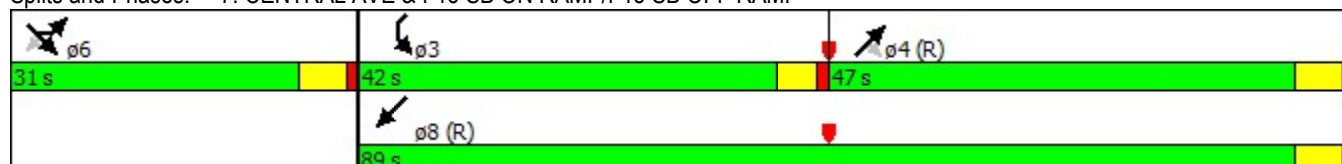
Intersection LOS: C

Intersection Capacity Utilization 89.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP



## Queues

## 7: CENTRAL AVE &amp; I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NET  | NER  | SWL  | SWT  |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 283  | 281  | 258  | 1052 | 680  | 962  | 2117 |
| v/c Ratio               | 0.79 | 0.81 | 0.70 | 0.58 | 0.79 | 0.94 | 0.86 |
| Control Delay           | 61.1 | 61.6 | 43.6 | 17.0 | 13.2 | 53.0 | 8.2  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.5  | 3.5  | 3.0  |
| Total Delay             | 61.1 | 61.6 | 43.6 | 17.0 | 13.7 | 56.5 | 11.2 |
| Queue Length 50th (ft)  | 220  | 216  | 148  | 219  | 333  | 311  | 213  |
| Queue Length 95th (ft)  | #351 | #362 | 247  | m226 | m401 | m328 | m217 |
| Internal Link Dist (ft) |      | 1290 |      | 318  |      |      | 410  |
| Turn Bay Length (ft)    | 200  |      | 200  |      |      | 100  |      |
| Base Capacity (vph)     | 360  | 345  | 371  | 1829 | 858  | 1069 | 2468 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 28   | 57   | 251  |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.79 | 0.81 | 0.70 | 0.58 | 0.82 | 0.95 | 0.95 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |  |  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Volume (veh/h)                                                       | 407                                                                               | 1                                                                                 | 324                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 936                                                                                 | 605                                                                                 | 856                                                                                 | 1884                                                                                | 0                                                                                   |
| Number                                                               | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1863                                                                              | 1863                                                                              | 1863                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h                                                 | 571                                                                               | 0                                                                                 | 243                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1052                                                                                | 680                                                                                 | 962                                                                                 | 2117                                                                                | 0                                                                                   |
| Adj No. of Lanes                                                     | 2                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 3                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Cap, veh/h                                                           | 760                                                                               | 0                                                                                 | 339                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1858                                                                                | 579                                                                                 | 1011                                                                                | 2469                                                                                | 0                                                                                   |
| Arrive On Green                                                      | 0.21                                                                              | 0.00                                                                              | 0.21                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.12                                                                                | 0.12                                                                                | 0.59                                                                                | 1.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                      | 3548                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 5253                                                                                | 1583                                                                                | 3442                                                                                | 3632                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h                                                 | 571                                                                               | 0                                                                                 | 243                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1052                                                                                | 680                                                                                 | 962                                                                                 | 2117                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                             | 1774                                                                              | 0                                                                                 | 1583                                                                              |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1695                                                                                | 1583                                                                                | 1721                                                                                | 1770                                                                                | 0                                                                                   |
| Q Serve(g_s), s                                                      | 18.1                                                                              | 0.0                                                                               | 17.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 23.4                                                                                | 43.9                                                                                | 31.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                | 18.1                                                                              | 0.0                                                                               | 17.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 23.4                                                                                | 43.9                                                                                | 31.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                         | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 760                                                                               | 0                                                                                 | 339                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1858                                                                                | 579                                                                                 | 1011                                                                                | 2469                                                                                | 0                                                                                   |
| V/C Ratio(X)                                                         | 0.75                                                                              | 0.00                                                                              | 0.72                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 0.57                                                                                | 1.18                                                                                | 0.95                                                                                | 0.86                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                | 760                                                                               | 0                                                                                 | 339                                                                               |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  | 1858                                                                                | 579                                                                                 | 1073                                                                                | 2469                                                                                | 0                                                                                   |
| HCM Platoon Ratio                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                               | 0.33                                                                                | 0.33                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                   | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.14                                                                                | 0.14                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                             | 44.2                                                                              | 0.0                                                                               | 43.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 43.8                                                                                | 52.8                                                                                | 24.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                               | 6.8                                                                               | 0.0                                                                               | 12.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 1.3                                                                                 | 96.0                                                                                | 3.5                                                                                 | 0.6                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 9.6                                                                               | 0.0                                                                               | 8.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 11.2                                                                                | 34.7                                                                                | 14.9                                                                                | 0.2                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 50.9                                                                              | 0.0                                                                               | 56.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                | 45.0                                                                                | 148.7                                                                               | 27.4                                                                                | 0.6                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                            | D                                                                                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | D                                                                                   | F                                                                                   | C                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                  |                                                                                   | 814                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 1732                                                                                |                                                                                     |                                                                                     | 3079                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                   | 52.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 85.7                                                                                |                                                                                     |                                                                                     | 9.0                                                                                 |                                                                                     |
| Approach LOS                                                         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                   |                                                                                   | 39.8                                                                              | 49.2                                                                              |                                                                                   | 31.0                                                                              |                                                                                    | 89.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                   |                                                                                   | 37.4                                                                              | 41.7                                                                              |                                                                                   | 25.7                                                                              |                                                                                    | 83.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                   |                                                                                   | 34.4                                                                              | 46.9                                                                              |                                                                                   | 21.1                                                                              |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                   |                                                                                   | 0.9                                                                               | 0.0                                                                               |                                                                                   | 0.9                                                                               |                                                                                    | 53.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                   |                                                                                   | 38.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                               | SWT                                                                               | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 735                                                                               | 0                                                                                 | 710                                                                               | 118                                                                               | 1215                                                                              | 2039                                                                              | 638                                                                                 |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 2                                                                                 | 2                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 2                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 11.0                                                                              | 20.0                                                                              | 28.3                                                                              | 28.3                                                                                |
| Total Split (s)      | 45.0                                                                              | 45.0                                                                              | 45.0                                                                              | 14.0                                                                              | 75.0                                                                              | 61.0                                                                              | 61.0                                                                                |
| Total Split (%)      | 37.5%                                                                             | 37.5%                                                                             | 37.5%                                                                             | 11.7%                                                                             | 62.5%                                                                             | 50.8%                                                                             | 50.8%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                             | C-Max                                                                             | C-Max                                                                               |
| Act Effct Green (s)  | 39.7                                                                              | 39.7                                                                              | 39.7                                                                              | 9.4                                                                               | 69.7                                                                              | 55.7                                                                              | 55.7                                                                                |
| Actuated g/C Ratio   | 0.33                                                                              | 0.33                                                                              | 0.33                                                                              | 0.08                                                                              | 0.58                                                                              | 0.46                                                                              | 0.46                                                                                |
| v/c Ratio            | 1.01                                                                              | 0.99                                                                              | 0.96                                                                              | 0.96                                                                              | 0.46                                                                              | 0.97                                                                              | 0.71                                                                                |
| Control Delay        | 81.3                                                                              | 72.7                                                                              | 65.9                                                                              | 101.1                                                                             | 24.5                                                                              | 26.0                                                                              | 9.1                                                                                 |
| Queue Delay          | 0.0                                                                               | 1.3                                                                               | 0.9                                                                               | 0.0                                                                               | 0.8                                                                               | 8.1                                                                               | 0.2                                                                                 |
| Total Delay          | 81.3                                                                              | 74.0                                                                              | 66.8                                                                              | 101.1                                                                             | 25.3                                                                              | 34.1                                                                              | 9.4                                                                                 |
| LOS                  | F                                                                                 | E                                                                                 | E                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 74.2                                                                              |                                                                                   |                                                                                   | 32.0                                                                              | 28.2                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 105 (88%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 41.3

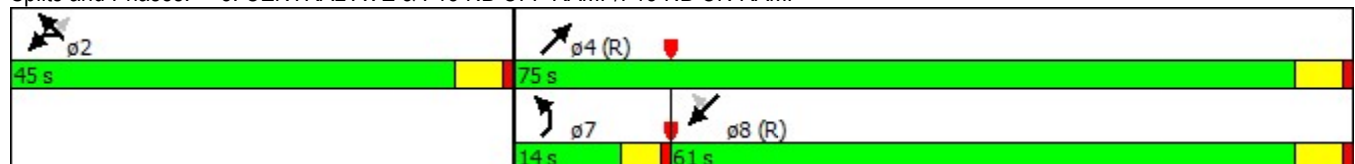
Intersection LOS: D

Intersection Capacity Utilization 89.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP



## Queues

## 8: CENTRAL AVE &amp; I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017



| Lane Group              | NWL  | NWT  | NWR  | NEL   | NET  | SWT  | SWR  |
|-------------------------|------|------|------|-------|------|------|------|
| Lane Group Flow (vph)   | 562  | 543  | 519  | 133   | 1365 | 2291 | 717  |
| v/c Ratio               | 1.01 | 0.99 | 0.96 | 0.96  | 0.46 | 0.97 | 0.71 |
| Control Delay           | 81.3 | 72.7 | 65.9 | 101.1 | 24.5 | 26.0 | 9.1  |
| Queue Delay             | 0.0  | 1.3  | 0.9  | 0.0   | 0.8  | 8.1  | 0.2  |
| Total Delay             | 81.3 | 74.0 | 66.8 | 101.1 | 25.3 | 34.1 | 9.4  |
| Queue Length 50th (ft)  | ~466 | 417  | 373  | 104   | 303  | 281  | 46   |
| Queue Length 95th (ft)  | #701 | #667 | #601 | m#207 | 357  | m226 | m33  |
| Internal Link Dist (ft) |      | 1244 |      |       | 410  | 302  |      |
| Turn Bay Length (ft)    | 190  |      | 190  | 190   |      |      |      |
| Base Capacity (vph)     | 556  | 547  | 539  | 138   | 2953 | 2360 | 1016 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0     | 1144 | 49   | 38   |
| Spillback Cap Reductn   | 0    | 3    | 3    | 0     | 286  | 96   | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0     | 0    | 0    | 0    |
| Reduced v/c Ratio       | 1.01 | 1.00 | 0.97 | 0.96  | 0.75 | 1.01 | 0.73 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                                                                      |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET  | SER | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Volume (veh/h)                                                       | 0                                                                                  | 0    | 0   | 735                                                                               | 0                                                                                 | 710                                                                               | 118                                                                               | 1215                                                                                | 0    | 0    | 2039                                                                                | 638                                                                                 |
| Number                                                               |                                                                                    |      |     | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                 | 4                                                                                   | 14   | 3    | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               |                                                                                    |      |     | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 0    | 0    | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 |                                                                                    |      |     | 1074                                                                              | 0                                                                                 | 532                                                                               | 133                                                                               | 1365                                                                                | 0    | 0    | 2291                                                                                | 717                                                                                 |
| Adj No. of Lanes                                                     |                                                                                    |      |     | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 3                                                                                   | 0    | 0    | 3                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                     |                                                                                    |      |     | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                | 0.89 | 0.89 | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %                                                 |                                                                                    |      |     | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0    | 0    | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           |                                                                                    |      |     | 1174                                                                              | 0                                                                                 | 524                                                                               | 139                                                                               | 2954                                                                                | 0    | 0    | 2360                                                                                | 735                                                                                 |
| Arrive On Green                                                      |                                                                                    |      |     | 0.33                                                                              | 0.00                                                                              | 0.33                                                                              | 0.16                                                                              | 1.00                                                                                | 0.00 | 0.00 | 0.93                                                                                | 0.93                                                                                |
| Sat Flow, veh/h                                                      |                                                                                    |      |     | 3548                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 5253                                                                                | 0    | 0    | 5253                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                 |                                                                                    |      |     | 1074                                                                              | 0                                                                                 | 532                                                                               | 133                                                                               | 1365                                                                                | 0    | 0    | 2291                                                                                | 717                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             |                                                                                    |      |     | 1774                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 1695                                                                                | 0    | 0    | 1695                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                      |                                                                                    |      |     | 34.9                                                                              | 0.0                                                                               | 39.7                                                                              | 8.9                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 39.1                                                                                | 41.3                                                                                |
| Cycle Q Clear(g_c), s                                                |                                                                                    |      |     | 34.9                                                                              | 0.0                                                                               | 39.7                                                                              | 8.9                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 39.1                                                                                | 41.3                                                                                |
| Prop In Lane                                                         |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               |                                                                                    |      |     | 1174                                                                              | 0                                                                                 | 524                                                                               | 139                                                                               | 2954                                                                                | 0    | 0    | 2360                                                                                | 735                                                                                 |
| V/C Ratio(X)                                                         |                                                                                    |      |     | 0.91                                                                              | 0.00                                                                              | 1.02                                                                              | 0.96                                                                              | 0.46                                                                                | 0.00 | 0.00 | 0.97                                                                                | 0.98                                                                                |
| Avail Cap(c_a), veh/h                                                |                                                                                    |      |     | 1174                                                                              | 0                                                                                 | 524                                                                               | 139                                                                               | 2954                                                                                | 0    | 0    | 2360                                                                                | 735                                                                                 |
| HCM Platoon Ratio                                                    |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                                | 1.00 | 1.00 | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)                                                   |                                                                                    |      |     | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.75                                                                              | 0.75                                                                                | 0.00 | 0.00 | 0.11                                                                                | 0.11                                                                                |
| Uniform Delay (d), s/veh                                             |                                                                                    |      |     | 38.5                                                                              | 0.0                                                                               | 40.2                                                                              | 50.4                                                                              | 0.0                                                                                 | 0.0  | 0.0  | 3.7                                                                                 | 3.8                                                                                 |
| Incr Delay (d2), s/veh                                               |                                                                                    |      |     | 12.4                                                                              | 0.0                                                                               | 43.3                                                                              | 53.1                                                                              | 0.4                                                                                 | 0.0  | 0.0  | 2.4                                                                                 | 6.8                                                                                 |
| Initial Q Delay(d3),s/veh                                            |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             |                                                                                    |      |     | 19.0                                                                              | 0.0                                                                               | 23.6                                                                              | 6.4                                                                               | 0.1                                                                                 | 0.0  | 0.0  | 14.9                                                                                | 15.3                                                                                |
| LnGrp Delay(d),s/veh                                                 |                                                                                    |      |     | 51.0                                                                              | 0.0                                                                               | 83.5                                                                              | 103.5                                                                             | 0.4                                                                                 | 0.0  | 0.0  | 6.1                                                                                 | 10.6                                                                                |
| LnGrp LOS                                                            |                                                                                    |      |     | D                                                                                 |                                                                                   | F                                                                                 | F                                                                                 | A                                                                                   |      |      | A                                                                                   | B                                                                                   |
| Approach Vol, veh/h                                                  |                                                                                    |      |     |                                                                                   | 1606                                                                              |                                                                                   |                                                                                   | 1498                                                                                |      |      | 3008                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    |      |     |                                                                                   | 61.7                                                                              |                                                                                   |                                                                                   | 9.5                                                                                 |      |      | 7.2                                                                                 |                                                                                     |
| Approach LOS                                                         |                                                                                    |      |     |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | A                                                                                   |      |      | A                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2    | 3   | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    | 2    |     | 4                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    | 45.0 |     | 75.0                                                                              |                                                                                   |                                                                                   | 14.0                                                                              | 61.0                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    | 5.3  |     | 5.3                                                                               |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    | 39.7 |     | 69.7                                                                              |                                                                                   |                                                                                   | 9.4                                                                               | 55.7                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    | 42.7 |     | 3.0                                                                               |                                                                                   |                                                                                   | 11.9                                                                              | 44.3                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    | 0.0  |     | 52.9                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 10.9                                                                                |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |      |     | 22.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |      |     | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 88                                                                                | 88                                                                                | 491                                                                               | 399                                                                               | 132                                                                               | 380                                                                               | 1283                                                                               | 262                                                                                 | 178                                                                                 | 1735                                                                                | 187                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 58.0                                                                              | 58.0                                                                              | 25.0                                                                              | 58.0                                                                              | 58.0                                                                              | 25.0                                                                              | 43.0                                                                               | 43.0                                                                                | 19.0                                                                                | 37.0                                                                                | 37.0                                                                                |
| Total Split (%)      | 48.3%                                                                             | 48.3%                                                                             | 20.8%                                                                             | 48.3%                                                                             | 48.3%                                                                             | 20.8%                                                                             | 35.8%                                                                              | 35.8%                                                                               | 15.8%                                                                               | 30.8%                                                                               | 30.8%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 52.7                                                                              | 52.7                                                                              | 78.4                                                                              | 52.7                                                                              | 52.7                                                                              | 20.4                                                                              | 37.7                                                                               | 37.7                                                                                | 14.4                                                                                | 31.7                                                                                | 31.7                                                                                |
| Actuated g/C Ratio   | 0.44                                                                              | 0.44                                                                              | 0.65                                                                              | 0.44                                                                              | 0.44                                                                              | 0.17                                                                              | 0.31                                                                               | 0.31                                                                                | 0.12                                                                                | 0.26                                                                                | 0.26                                                                                |
| v/c Ratio            | 0.28                                                                              | 0.12                                                                              | 0.53                                                                              | 0.80                                                                              | 0.44                                                                              | 1.44                                                                              | 0.91                                                                               | 0.44                                                                                | 0.95                                                                                | 1.17                                                                                | 0.40                                                                                |
| Control Delay        | 24.2                                                                              | 20.5                                                                              | 11.6                                                                              | 41.6                                                                              | 20.4                                                                              | 243.5                                                                             | 36.8                                                                               | 7.0                                                                                 | 87.3                                                                                | 116.7                                                                               | 14.7                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 0.8                                                                               | 0.0                                                                               | 0.0                                                                               | 20.6                                                                               | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 24.2                                                                              | 20.5                                                                              | 11.8                                                                              | 42.4                                                                              | 20.4                                                                              | 243.5                                                                             | 57.3                                                                               | 7.3                                                                                 | 87.3                                                                                | 116.8                                                                               | 14.7                                                                                |
| LOS                  | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | F                                                                                 | E                                                                                  | A                                                                                   | F                                                                                   | F                                                                                   | B                                                                                   |
| Approach Delay       |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 32.8                                                                              |                                                                                   | 87.3                                                                               |                                                                                     |                                                                                     | 105.2                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | F                                                                                  |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.44

Intersection Signal Delay: 78.2

Intersection LOS: E

Intersection Capacity Utilization 92.9%

ICU Level of Service F

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |  |  |  |  |
| 58 s                                                                                |                                                                                     |                                                                                     | 43 s                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      | 19 s                                                                                  |                                                                                       |
|  |  |  |  |  |  |  |  |  |  |  |  |
| 58 s                                                                                |                                                                                     |                                                                                     | 25 s                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      | 37 s                                                                                  |                                                                                       |



## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 100                                                                               | 100                                                                               | 558                                                                               | 453                                                                               | 349                                                                               | 432                                                                               | 1458                                                                               | 298                                                                                 | 202                                                                                 | 1972                                                                                | 212                                                                                 |
| v/c Ratio               | 0.28                                                                              | 0.12                                                                              | 0.53                                                                              | 0.80                                                                              | 0.44                                                                              | 1.44                                                                              | 0.91                                                                               | 0.44                                                                                | 0.95                                                                                | 1.17                                                                                | 0.40                                                                                |
| Control Delay           | 24.2                                                                              | 20.5                                                                              | 11.6                                                                              | 41.6                                                                              | 20.4                                                                              | 243.5                                                                             | 36.8                                                                               | 7.0                                                                                 | 87.3                                                                                | 116.7                                                                               | 14.7                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 0.8                                                                               | 0.0                                                                               | 0.0                                                                               | 20.6                                                                               | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 24.2                                                                              | 20.5                                                                              | 11.8                                                                              | 42.4                                                                              | 20.4                                                                              | 243.5                                                                             | 57.3                                                                               | 7.3                                                                                 | 87.3                                                                                | 116.8                                                                               | 14.7                                                                                |
| Queue Length 50th (ft)  | 49                                                                                | 45                                                                                | 183                                                                               | 297                                                                               | 145                                                                               | ~441                                                                              | 443                                                                                | 25                                                                                  | 149                                                                                 | ~520                                                                                | 38                                                                                  |
| Queue Length 95th (ft)  | 90                                                                                | 78                                                                                | 259                                                                               | #435                                                                              | 219                                                                               | m#568                                                                             | m398                                                                               | m44                                                                                 | m#194                                                                               | m#570                                                                               | m49                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1321                                                                              |                                                                                   |                                                                                   | 1337                                                                              |                                                                                   | 302                                                                                |                                                                                     |                                                                                     | 250                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 140                                                                               |                                                                                   | 140                                                                               | 100                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 150                                                                                 |                                                                                     | 220                                                                                 |
| Base Capacity (vph)     | 358                                                                               | 818                                                                               | 1058                                                                              | 566                                                                               | 787                                                                               | 300                                                                               | 1597                                                                               | 681                                                                                 | 212                                                                                 | 1692                                                                                | 527                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 190                                                                                | 89                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 108                                                                               | 18                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 26                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.28                                                                              | 0.12                                                                              | 0.59                                                                              | 0.83                                                                              | 0.44                                                                              | 1.44                                                                              | 1.04                                                                               | 0.50                                                                                | 0.95                                                                                | 1.18                                                                                | 0.40                                                                                |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                                                                    |  |  |  |  |  |  |   |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 88                                                                                | 88                                                                                | 491                                                                               | 399                                                                               | 132                                                                               | 175                                                                               | 380                                                                                 | 1283                                                                                | 262                                                                                 | 178                                                                                 | 1735                                                                                | 187                                                                                 |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 100                                                                               | 100                                                                               | 558                                                                               | 453                                                                               | 150                                                                               | 199                                                                               | 432                                                                                 | 1458                                                                                | 298                                                                                 | 202                                                                                 | 1972                                                                                | 212                                                                                 |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 370                                                                               | 818                                                                               | 965                                                                               | 375                                                                               | 319                                                                               | 424                                                                               | 302                                                                                 | 1598                                                                                | 497                                                                                 | 520                                                                                 | 2838                                                                                | 701                                                                                 |
| Arrive On Green                                                    | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.34                                                                                | 0.63                                                                                | 0.63                                                                                | 0.29                                                                                | 0.44                                                                                | 0.44                                                                                |
| Sat Flow, veh/h                                                    | 1028                                                                              | 1863                                                                              | 1583                                                                              | 773                                                                               | 727                                                                               | 965                                                                               | 1774                                                                                | 5085                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 100                                                                               | 100                                                                               | 558                                                                               | 453                                                                               | 0                                                                                 | 349                                                                               | 432                                                                                 | 1458                                                                                | 298                                                                                 | 202                                                                                 | 1972                                                                                | 212                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                           | 1028                                                                              | 1863                                                                              | 1583                                                                              | 773                                                                               | 0                                                                                 | 1692                                                                              | 1774                                                                                | 1695                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 9.0                                                                               | 3.8                                                                               | 25.5                                                                              | 48.9                                                                              | 0.0                                                                               | 17.5                                                                              | 20.4                                                                                | 30.0                                                                                | 13.5                                                                                | 10.9                                                                                | 29.7                                                                                | 10.3                                                                                |
| Cycle Q Clear(g_c), s                                              | 25.5                                                                              | 3.8                                                                               | 25.5                                                                              | 52.7                                                                              | 0.0                                                                               | 17.5                                                                              | 20.4                                                                                | 30.0                                                                                | 13.5                                                                                | 10.9                                                                                | 29.7                                                                                | 10.3                                                                                |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.57                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 370                                                                               | 818                                                                               | 965                                                                               | 375                                                                               | 0                                                                                 | 743                                                                               | 302                                                                                 | 1598                                                                                | 497                                                                                 | 520                                                                                 | 2838                                                                                | 701                                                                                 |
| V/C Ratio(X)                                                       | 0.27                                                                              | 0.12                                                                              | 0.58                                                                              | 1.21                                                                              | 0.00                                                                              | 0.47                                                                              | 1.43                                                                                | 0.91                                                                                | 0.60                                                                                | 0.39                                                                                | 0.69                                                                                | 0.30                                                                                |
| Avail Cap(c_a), veh/h                                              | 370                                                                               | 818                                                                               | 965                                                                               | 375                                                                               | 0                                                                                 | 743                                                                               | 302                                                                                 | 1598                                                                                | 497                                                                                 | 520                                                                                 | 2838                                                                                | 701                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.77                                                                                | 0.77                                                                                | 0.77                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 32.4                                                                              | 19.9                                                                              | 14.2                                                                              | 39.5                                                                              | 0.0                                                                               | 23.8                                                                              | 39.6                                                                                | 20.9                                                                                | 17.8                                                                                | 33.8                                                                                | 26.9                                                                                | 21.5                                                                                |
| Incr Delay (d2), s/veh                                             | 1.8                                                                               | 0.3                                                                               | 2.5                                                                               | 116.4                                                                             | 0.0                                                                               | 2.1                                                                               | 208.7                                                                               | 7.6                                                                                 | 4.1                                                                                 | 0.2                                                                                 | 1.4                                                                                 | 1.1                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 2.7                                                                               | 2.0                                                                               | 11.7                                                                              | 24.5                                                                              | 0.0                                                                               | 8.6                                                                               | 27.4                                                                                | 14.6                                                                                | 6.4                                                                                 | 5.4                                                                                 | 13.4                                                                                | 4.8                                                                                 |
| LnGrp Delay(d),s/veh                                               | 34.2                                                                              | 20.2                                                                              | 16.7                                                                              | 155.9                                                                             | 0.0                                                                               | 25.9                                                                              | 248.3                                                                               | 28.4                                                                                | 21.9                                                                                | 34.0                                                                                | 28.3                                                                                | 22.6                                                                                |
| LnGrp LOS                                                          | C                                                                                 | C                                                                                 | B                                                                                 | F                                                                                 |                                                                                   | C                                                                                 | F                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 758                                                                               |                                                                                   |                                                                                   | 802                                                                               |                                                                                   |                                                                                     | 2188                                                                                |                                                                                     |                                                                                     | 2386                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 19.5                                                                              |                                                                                   |                                                                                   | 99.3                                                                              |                                                                                   |                                                                                     | 71.0                                                                                |                                                                                     |                                                                                     | 28.3                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 58.0                                                                              | 40.7                                                                              | 43.0                                                                              |                                                                                   | 58.0                                                                              | 25.0                                                                                | 58.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 5.3                                                                               | * 5.3                                                                             |                                                                                   | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 52.7                                                                              | 14.4                                                                              | * 38                                                                              |                                                                                   | 52.7                                                                              | 20.4                                                                                | 31.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                       |                                                                                   | 55.7                                                                              | 13.9                                                                              | 33.0                                                                              |                                                                                   | 28.5                                                                              | 23.4                                                                                | 32.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 0.0                                                                               | 0.0                                                                               | 3.2                                                                               |                                                                                   | 6.4                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 51.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 150                                                                               | 9                                                                                 | 81                                                                                | 122                                                                               | 7                                                                                 | 118                                                                               | 1236                                                                               | 20                                                                                  | 1802                                                                                | 119                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 31.0                                                                               | 11.0                                                                                | 31.0                                                                                | 31.0                                                                                |
| Total Split (s)      | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 75.1                                                                               | 11.0                                                                                | 75.1                                                                                | 75.1                                                                                |
| Total Split (%)      | 28.3%                                                                             | 28.3%                                                                             | 28.3%                                                                             | 28.3%                                                                             | 28.3%                                                                             | 9.2%                                                                              | 62.6%                                                                              | 9.2%                                                                                | 62.6%                                                                               | 62.6%                                                                               |
| Yellow Time (s)      | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.6                                                                               | 5.0                                                                                | 3.6                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  |                                                                                   | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.6                                                                               | 6.0                                                                                | 4.6                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  |                                                                                   | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 29.0                                                                              | 6.4                                                                               | 73.6                                                                               | 5.8                                                                                 | 69.1                                                                                | 69.1                                                                                |
| Actuated g/C Ratio   |                                                                                   | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.05                                                                              | 0.61                                                                               | 0.05                                                                                | 0.58                                                                                | 0.58                                                                                |
| v/c Ratio            |                                                                                   | 0.53                                                                              | 0.19                                                                              | 0.53                                                                              | 0.06                                                                              | 0.70                                                                              | 0.70                                                                               | 0.26                                                                                | 0.95                                                                                | 0.13                                                                                |
| Control Delay        |                                                                                   | 46.5                                                                              | 8.5                                                                               | 48.9                                                                              | 19.7                                                                              | 74.1                                                                              | 10.4                                                                               | 62.5                                                                                | 35.8                                                                                | 2.3                                                                                 |
| Queue Delay          |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          |                                                                                   | 46.5                                                                              | 8.5                                                                               | 48.9                                                                              | 19.7                                                                              | 74.1                                                                              | 10.4                                                                               | 62.5                                                                                | 35.8                                                                                | 2.3                                                                                 |
| LOS                  |                                                                                   | D                                                                                 | A                                                                                 | D                                                                                 | B                                                                                 | E                                                                                 | B                                                                                  | E                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 33.7                                                                              |                                                                                   |                                                                                   | 44.4                                                                              |                                                                                   | 15.4                                                                               |                                                                                     | 34.0                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   | B                                                                                  |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 93 (78%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 27.0

Intersection LOS: C

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 10: CENTRAL AVE & CAMBERN AVE

|                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |
| ø2                                                                                  | ø3                                                                                  | ø4 (R)                                                                              |
| 33.9 s                                                                              | 11 s                                                                                | 75.1 s                                                                              |
|  |  |  |
| ø6                                                                                  | ø7                                                                                  | ø8 (R)                                                                              |
| 33.9 s                                                                              | 11 s                                                                                | 75.1 s                                                                              |

## Queues

## 10: CENTRAL AVE &amp; CAMBERN AVE

1/27/2017



| Lane Group              | SET  | SER  | NWL  | NWT  | NEL  | NET  | SWL  | SWT  | SWR  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 171  | 87   | 131  | 24   | 127  | 1497 | 22   | 1938 | 128  |
| v/c Ratio               | 0.53 | 0.19 | 0.53 | 0.06 | 0.70 | 0.70 | 0.26 | 0.95 | 0.13 |
| Control Delay           | 46.5 | 8.5  | 48.9 | 19.7 | 74.1 | 10.4 | 62.5 | 35.8 | 2.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 46.5 | 8.5  | 48.9 | 19.7 | 74.1 | 10.4 | 62.5 | 35.8 | 2.3  |
| Queue Length 50th (ft)  | 116  | 0    | 89   | 5    | 54   | 113  | 17   | 703  | 0    |
| Queue Length 95th (ft)  | 190  | 41   | 157  | 27   | m63  | m152 | 45   | #918 | 26   |
| Internal Link Dist (ft) | 1204 |      |      | 1267 |      | 636  |      | 2064 |      |
| Turn Bay Length (ft)    |      | 200  | 75   |      | 250  |      | 400  |      | 400  |
| Base Capacity (vph)     | 324  | 448  | 245  | 417  | 183  | 2141 | 94   | 2038 | 965  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.53 | 0.19 | 0.53 | 0.06 | 0.69 | 0.70 | 0.23 | 0.95 | 0.13 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Volume (veh/h)               | 150                                                                               | 9                                                                                 | 81                                                                                | 122                                                                               | 7                                                                                 | 15                                                                                | 118                                                                                 | 1236                                                                                | 156                                                                                 | 20                                                                                  | 1802                                                                                | 119                                                                                 |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 161                                                                               | 10                                                                                | 87                                                                                | 131                                                                               | 8                                                                                 | 16                                                                                | 127                                                                                 | 1329                                                                                | 168                                                                                 | 22                                                                                  | 1938                                                                                | 128                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 363                                                                               | 19                                                                                | 383                                                                               | 231                                                                               | 134                                                                               | 269                                                                               | 184                                                                                 | 1923                                                                                | 242                                                                                 | 38                                                                                  | 2038                                                                                | 912                                                                                 |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.05                                                                                | 0.61                                                                                | 0.61                                                                                | 0.02                                                                                | 0.58                                                                                | 0.58                                                                                |
| Sat Flow, veh/h              | 1260                                                                              | 78                                                                                | 1583                                                                              | 1293                                                                              | 556                                                                               | 1111                                                                              | 3442                                                                                | 3165                                                                                | 398                                                                                 | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 171                                                                               | 0                                                                                 | 87                                                                                | 131                                                                               | 0                                                                                 | 24                                                                                | 127                                                                                 | 740                                                                                 | 757                                                                                 | 22                                                                                  | 1938                                                                                | 128                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1338                                                                              | 0                                                                                 | 1583                                                                              | 1293                                                                              | 0                                                                                 | 1667                                                                              | 1721                                                                                | 1770                                                                                | 1793                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 12.8                                                                              | 0.0                                                                               | 5.3                                                                               | 11.7                                                                              | 0.0                                                                               | 1.3                                                                               | 4.4                                                                                 | 33.8                                                                                | 34.5                                                                                | 1.5                                                                                 | 61.6                                                                                | 4.5                                                                                 |
| Cycle Q Clear(g_c), s        | 14.1                                                                              | 0.0                                                                               | 5.3                                                                               | 24.9                                                                              | 0.0                                                                               | 1.3                                                                               | 4.4                                                                                 | 33.8                                                                                | 34.5                                                                                | 1.5                                                                                 | 61.6                                                                                | 4.5                                                                                 |
| Prop In Lane                 | 0.94                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.67                                                                              | 1.00                                                                                |                                                                                     | 0.22                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 382                                                                               | 0                                                                                 | 383                                                                               | 231                                                                               | 0                                                                                 | 403                                                                               | 184                                                                                 | 1075                                                                                | 1089                                                                                | 38                                                                                  | 2038                                                                                | 912                                                                                 |
| V/C Ratio(X)                 | 0.45                                                                              | 0.00                                                                              | 0.23                                                                              | 0.57                                                                              | 0.00                                                                              | 0.06                                                                              | 0.69                                                                                | 0.69                                                                                | 0.70                                                                                | 0.57                                                                                | 0.95                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 382                                                                               | 0                                                                                 | 383                                                                               | 231                                                                               | 0                                                                                 | 403                                                                               | 184                                                                                 | 1075                                                                                | 1089                                                                                | 95                                                                                  | 2038                                                                                | 912                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 40.5                                                                              | 0.0                                                                               | 36.5                                                                              | 50.3                                                                              | 0.0                                                                               | 35.0                                                                              | 55.8                                                                                | 15.9                                                                                | 16.0                                                                                | 58.2                                                                                | 23.9                                                                                | 11.7                                                                                |
| Incr Delay (d2), s/veh       | 3.8                                                                               | 0.0                                                                               | 1.4                                                                               | 9.7                                                                               | 0.0                                                                               | 0.3                                                                               | 9.0                                                                                 | 3.6                                                                                 | 3.7                                                                                 | 4.9                                                                                 | 11.3                                                                                | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.4                                                                               | 0.0                                                                               | 2.5                                                                               | 4.8                                                                               | 0.0                                                                               | 0.6                                                                               | 2.3                                                                                 | 17.5                                                                                | 17.9                                                                                | 0.8                                                                                 | 33.1                                                                                | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 44.2                                                                              | 0.0                                                                               | 37.9                                                                              | 60.0                                                                              | 0.0                                                                               | 35.3                                                                              | 64.8                                                                                | 19.5                                                                                | 19.7                                                                                | 63.1                                                                                | 35.2                                                                                | 12.1                                                                                |
| LnGrp LOS                    | D                                                                                 |                                                                                   | D                                                                                 | E                                                                                 |                                                                                   | D                                                                                 | E                                                                                   | B                                                                                   | B                                                                                   | E                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 258                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 155                                                                               |                                                                                     | 1624                                                                                |                                                                                     | 2088                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 42.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 56.2                                                                              |                                                                                     | 23.1                                                                                |                                                                                     | 34.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                     | C                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 2                                                                                 |                                                                                   | 3                                                                                 | 4                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 33.9                                                                              |                                                                                   | 7.2                                                                               | 78.9                                                                              | 33.9                                                                              |                                                                                   | 11.0                                                                                | 75.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.9                                                                               |                                                                                   | 4.6                                                                               | 6.0                                                                               | 4.9                                                                               |                                                                                   | 4.6                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 29.0                                                                              |                                                                                   | 6.4                                                                               | 69.1                                                                              | 29.0                                                                              |                                                                                   | 6.4                                                                                 | 69.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 27.9                                                                              |                                                                                   | 4.5                                                                               | 36.8                                                                              | 16.1                                                                              |                                                                                   | 7.4                                                                                 | 64.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               |                                                                                   | 0.0                                                                               | 26.2                                                                              | 0.9                                                                               |                                                                                   | 0.0                                                                                 | 4.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 31.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017



| Lane Group           | WBL   | WBR   | NBT   | NBR   | SBL   | SBT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 387   | 129   | 1136  | 336   | 183   | 1417  |
| Turn Type            | Prot  | Perm  | NA    | Perm  | Prot  | NA    |
| Protected Phases     | 8     |       | 2     |       | 1     | 6     |
| Permitted Phases     |       | 8     |       | 2     |       |       |
| Detector Phase       | 8     | 8     | 2     | 2     | 1     | 6     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 8.0   | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 38.0  | 38.0  | 20.0  | 20.0  | 11.0  | 39.0  |
| Total Split (s)      | 46.0  | 46.0  | 47.0  | 47.0  | 27.0  | 74.0  |
| Total Split (%)      | 38.3% | 38.3% | 39.2% | 39.2% | 22.5% | 61.7% |
| Yellow Time (s)      | 4.0   | 4.0   | 6.0   | 6.0   | 4.0   | 6.0   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 7.0   | 7.0   | 5.0   | 7.0   |
| Lead/Lag             |       |       | Lag   | Lag   | Lead  |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | None  | None  | Max   | Max   | None  | Max   |
| Act Effect Green (s) | 29.4  | 29.4  | 46.4  | 46.4  | 15.9  | 67.3  |
| Actuated g/C Ratio   | 0.27  | 0.27  | 0.43  | 0.43  | 0.15  | 0.62  |
| v/c Ratio            | 0.87  | 0.26  | 0.56  | 0.46  | 0.76  | 0.70  |
| Control Delay        | 56.6  | 6.0   | 26.9  | 14.9  | 64.1  | 17.3  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 56.6  | 6.0   | 26.9  | 14.9  | 64.1  | 17.3  |
| LOS                  | E     | A     | C     | B     | E     | B     |
| Approach Delay       | 43.9  |       | 24.2  |       |       | 22.7  |
| Approach LOS         | D     |       | C     |       |       | C     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 108.8

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 26.4

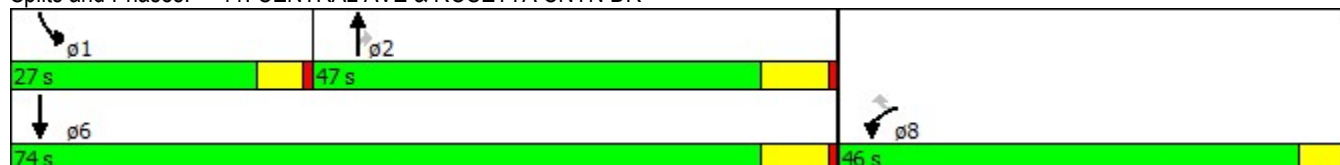
Intersection LOS: C

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 11: CENTRAL AVE & ROSETTA CNYN DR



## Queues

## 11: CENTRAL AVE &amp; ROSETTA CNYN DR

1/27/2017



| Lane Group              | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 416  | 139  | 1222 | 361  | 197  | 1524 |
| v/c Ratio               | 0.87 | 0.26 | 0.56 | 0.46 | 0.76 | 0.70 |
| Control Delay           | 56.6 | 6.0  | 26.9 | 14.9 | 64.1 | 17.3 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 56.6 | 6.0  | 26.9 | 14.9 | 64.1 | 17.3 |
| Queue Length 50th (ft)  | 276  | 0    | 232  | 82   | 133  | 347  |
| Queue Length 95th (ft)  | 394  | 44   | 357  | 209  | 222  | 554  |
| Internal Link Dist (ft) | 1570 |      | 1523 |      |      | 2926 |
| Turn Bay Length (ft)    |      |      |      | 100  | 250  |      |
| Base Capacity (vph)     | 669  | 685  | 2167 | 778  | 359  | 2189 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.62 | 0.20 | 0.56 | 0.46 | 0.55 | 0.70 |

## Intersection Summary

# HCM 2010 Signalized Intersection Summary

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017

|                              |  |  |  |  |  |  |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
| Movement                     | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Volume (veh/h)               | 387                                                                               | 129                                                                               | 1136                                                                              | 336                                                                               | 183                                                                               | 1417                                                                              |   |      |
| Number                       | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |      |
| Adj Flow Rate, veh/h         | 416                                                                               | 139                                                                               | 1222                                                                              | 361                                                                               | 197                                                                               | 1524                                                                              |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |   |      |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              |   |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |      |
| Cap, veh/h                   | 464                                                                               | 414                                                                               | 2250                                                                              | 701                                                                               | 243                                                                               | 2216                                                                              |   |      |
| Arrive On Green              | 0.26                                                                              | 0.26                                                                              | 0.44                                                                              | 0.44                                                                              | 0.14                                                                              | 0.63                                                                              |   |      |
| Sat Flow, veh/h              | 1774                                                                              | 1583                                                                              | 5253                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              |   |      |
| Grp Volume(v), veh/h         | 416                                                                               | 139                                                                               | 1222                                                                              | 361                                                                               | 197                                                                               | 1524                                                                              |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1583                                                                              | 1695                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              |   |      |
| Q Serve(g_s), s              | 24.2                                                                              | 7.6                                                                               | 18.9                                                                              | 17.6                                                                              | 11.5                                                                              | 30.3                                                                              |   |      |
| Cycle Q Clear(g_c), s        | 24.2                                                                              | 7.6                                                                               | 18.9                                                                              | 17.6                                                                              | 11.5                                                                              | 30.3                                                                              |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Lane Grp Cap(c), veh/h       | 464                                                                               | 414                                                                               | 2250                                                                              | 701                                                                               | 243                                                                               | 2216                                                                              |   |      |
| V/C Ratio(X)                 | 0.90                                                                              | 0.34                                                                              | 0.54                                                                              | 0.52                                                                              | 0.81                                                                              | 0.69                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 680                                                                               | 607                                                                               | 2250                                                                              | 701                                                                               | 365                                                                               | 2216                                                                              |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 38.1                                                                              | 32.0                                                                              | 21.9                                                                              | 21.5                                                                              | 44.8                                                                              | 13.1                                                                              |   |      |
| Incr Delay (d2), s/veh       | 8.1                                                                               | 0.2                                                                               | 0.9                                                                               | 2.7                                                                               | 4.6                                                                               | 1.8                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 12.8                                                                              | 3.3                                                                               | 9.0                                                                               | 8.2                                                                               | 5.9                                                                               | 15.1                                                                              |   |      |
| LnGrp Delay(d),s/veh         | 46.2                                                                              | 32.1                                                                              | 22.8                                                                              | 24.2                                                                              | 49.5                                                                              | 14.9                                                                              |   |      |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | B                                                                                 |   |      |
| Approach Vol, veh/h          | 555                                                                               |                                                                                   | 1583                                                                              |                                                                                   |                                                                                   | 1721                                                                              |   |      |
| Approach Delay, s/veh        | 42.7                                                                              |                                                                                   | 23.2                                                                              |                                                                                   |                                                                                   | 18.9                                                                              |   |      |
| Approach LOS                 | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |   | 8    |
| Phs Duration (G+Y+Rc), s     | 19.7                                                                              | 54.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 74.0                                                                              |   | 33.0 |
| Change Period (Y+Rc), s      | 5.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               |   | 5.0  |
| Max Green Setting (Gmax), s  | 22.0                                                                              | 40.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 67.0                                                                              |   | 41.0 |
| Max Q Clear Time (g_c+I1), s | 14.5                                                                              | 21.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 33.3                                                                              |   | 27.2 |
| Green Ext Time (p_c), s      | 0.2                                                                               | 16.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 28.7                                                                              |   | 0.8  |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 24.1                                                                              |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |



HCM 2010 TWSC  
12: COLLIER AVE & PROJECT ACCESS

1/27/2017

Intersection

Int Delay, s/veh 1.9

| Movement                 | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 191  | 959  | 472  | 38   | 0    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 200  | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 208  | 1042 | 513  | 41   | 0    | 66   |

| Major/Minor          | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 554    | 0      | 1470   |
| Stage 1              | -      | -      | 534    |
| Stage 2              | -      | -      | 936    |
| Critical Hdwy        | 5.34   | -      | 6.29   |
| Critical Hdwy Stg 1  | -      | -      | 6.64   |
| Critical Hdwy Stg 2  | -      | -      | 5.84   |
| Follow-up Hdwy       | 3.12   | -      | 3.67   |
| Pot Cap-1 Maneuver   | 639    | -      | 145    |
| Stage 1              | -      | -      | 475    |
| Stage 2              | -      | -      | 333    |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | 639    | -      | 98     |
| Mov Cap-2 Maneuver   | -      | -      | 98     |
| Stage 1              | -      | -      | 475    |
| Stage 2              | -      | -      | 225    |

| Approach             | SE  | NW | SW   |
|----------------------|-----|----|------|
| HCM Control Delay, s | 2.2 | 0  | 11.6 |
| HCM LOS              |     |    | B    |

| Minor Lane/Major Mvmt | NWT | NWR | SEL   | SET | SWLn1 |
|-----------------------|-----|-----|-------|-----|-------|
| Capacity (veh/h)      | -   | -   | 639   | -   | 614   |
| HCM Lane V/C Ratio    | -   | -   | 0.325 | -   | 0.108 |
| HCM Control Delay (s) | -   | -   | 13.3  | -   | 11.6  |
| HCM Lane LOS          | -   | -   | B     | -   | B     |
| HCM 95th %tile Q(veh) | -   | -   | 1.4   | -   | 0.4   |

# Lanes and Geometrics

## 12: COLLIER AVE & PROJECT ACCESS

1/27/2017



| Lane Group          | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           |      | 0%   | 0%   |      | 0%   |      |
| Storage Length (ft) | 200  |      |      | 0    | 0    | 0    |
| Storage Lanes       | 1    |      |      | 0    | 0    | 1    |
| Taper Length (ft)   | 25   |      |      |      | 25   |      |
| Link Speed (mph)    |      | 30   | 30   |      | 30   |      |
| Link Distance (ft)  |      | 543  | 118  |      | 355  |      |
| Travel Time (s)     |      | 12.3 | 2.7  |      | 8.1  |      |

### Intersection Summary

Area Type: Other

**Intersection**

Int Delay, s/veh 30.2

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 5    | 1288 | 5    | 6    | 1314 | 115  | 36   | 3    | 2    | 1    | 1    | 3    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | 50   | -    | -    | 50   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   | 96   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 5    | 1342 | 5    | 6    | 1369 | 120  | 38   | 3    | 2    | 1    | 1    | 3    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor2 |       |       | Minor1 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 1489   | 0 | 0 | 1347   | 0 | 0 | 2796   | 2798  | 1429  | 2798   | 2856  | 1344  |
| Stage 1              | -      | - | - | -      | - | - | 1441   | 1441  | -     | 1355   | 1355  | -     |
| Stage 2              | -      | - | - | -      | - | - | 1355   | 1357  | -     | 1443   | 1501  | -     |
| Critical Hdwy        | 4.12   | - | - | 4.12   | - | - | 7.12   | 6.52  | 6.22  | 7.12   | 6.52  | 6.22  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.12   | 5.52  | -     | 6.12   | 5.52  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.218  | - | - | 3.518  | 4.018 | 3.318 | 3.518  | 4.018 | 3.318 |
| Pot Cap-1 Maneuver   | 451    | - | - | 511    | - | - | ~ 12   | 18    | 165   | 12     | 17    | 186   |
| Stage 1              | -      | - | - | -      | - | - | 165    | 198   | -     | 184    | 218   | -     |
| Stage 2              | -      | - | - | -      | - | - | 184    | 217   | -     | 164    | 185   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 451    | - | - | 511    | - | - | ~ 10   | 16    | 165   | 9      | 15    | 186   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | ~ 10   | 16    | -     | 9      | 15    | -     |
| Stage 1              | -      | - | - | -      | - | - | 158    | 183   | -     | 176    | 208   | -     |
| Stage 2              | -      | - | - | -      | - | - | 172    | 207   | -     | 147    | 171   | -     |

| Approach             | EB  | WB  | SE        | NW    |
|----------------------|-----|-----|-----------|-------|
| HCM Control Delay, s | 0.1 | 0.1 | \$ 2016.5 | 173.7 |
| HCM LOS              |     |     | F         | F     |

| Minor Lane/Major Mvmt | NWLn1    | NWLn2 | EBL   | EBT | EBR | WBL   | WBT | WBR       | SELn1 | SELn2 |
|-----------------------|----------|-------|-------|-----|-----|-------|-----|-----------|-------|-------|
| Capacity (veh/h)      | 11       | 186   | 451   | -   | -   | 511   | -   | -         | 10    | 165   |
| HCM Lane V/C Ratio    | 0.189    | 0.017 | 0.012 | -   | -   | 0.012 | -   | -         | 4.063 | 0.013 |
| HCM Control Delay (s) | \$ 397.2 | 24.7  | 13.1  | 0   | -   | 12.1  | 0   | \$ 2118.5 | 27.1  |       |
| HCM Lane LOS          | F        | C     | B     | A   | -   | B     | A   | -         | F     | D     |
| HCM 95th %tile Q(veh) | 0.5      | 0.1   | 0     | -   | -   | 0     | -   | -         | 6.3   | 0     |

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

# Lanes and Geometrics

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 50                                                                                  | 0                                                                                   |                                                                                     | 50                                                                                  |
| Storage Lanes        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 1687                                                                              |                                                                                   |                                                                                   | 935                                                                               |                                                                                   |                                                                                    | 885                                                                                 |                                                                                     |                                                                                     | 1732                                                                                |                                                                                     |
| Travel Time (s)      |                                                                                   | 38.3                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |   |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 |
| Lane Configurations  |  |  |  |  |  |                                                                                   |  |  |                                                                                     |  |
| Volume (vph)         | 7                                                                                 | 167                                                                               | 150                                                                               | 1263                                                                              | 227                                                                               | 111                                                                               | 6                                                                                   | 1184                                                                                | 27                                                                                  | 19                                                                                  |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                  | pm+ov                                                                               | Perm                                                                                | NA                                                                                  |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                   | 2                                                                                   |                                                                                     | 8                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 | 4                                                                                 | 4                                                                                   | 2                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 7.0                                                                               | 7.0                                                                               | 9.0                                                                               | 9.0                                                                                 | 7.0                                                                                 | 9.0                                                                                 | 9.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (s)      | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 80.0                                                                              | 80.0                                                                              | 20.0                                                                              | 20.0                                                                                | 80.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Total Split (%)      | 16.7%                                                                             | 16.7%                                                                             | 16.7%                                                                             | 66.7%                                                                             | 66.7%                                                                             | 16.7%                                                                             | 16.7%                                                                               | 66.7%                                                                               | 16.7%                                                                               | 16.7%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.9                                                                               | 3.9                                                                                 | 4.3                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               |                                                                                   | 4.9                                                                                 | 5.3                                                                                 |                                                                                     | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                             | C-Max                                                                             | None                                                                              | None                                                                                | C-Max                                                                               | None                                                                                | None                                                                                |
| Act Effct Green (s)  | 14.7                                                                              | 14.7                                                                              | 14.7                                                                              | 76.2                                                                              | 76.2                                                                              |                                                                                   | 13.6                                                                                | 94.7                                                                                |                                                                                     | 13.2                                                                                |
| Actuated g/C Ratio   | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.64                                                                              | 0.64                                                                              |                                                                                   | 0.11                                                                                | 0.79                                                                                |                                                                                     | 0.11                                                                                |
| v/c Ratio            | 0.03                                                                              | 0.77                                                                              | 0.48                                                                              | 1.18                                                                              | 0.22                                                                              |                                                                                   | 0.83                                                                                | 0.97                                                                                |                                                                                     | 0.47                                                                                |
| Control Delay        | 47.0                                                                              | 73.7                                                                              | 12.5                                                                              | 105.2                                                                             | 3.9                                                                               |                                                                                   | 90.5                                                                                | 30.3                                                                                |                                                                                     | 50.8                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Delay          | 47.0                                                                              | 73.7                                                                              | 12.5                                                                              | 105.2                                                                             | 3.9                                                                               |                                                                                   | 90.5                                                                                | 30.3                                                                                |                                                                                     | 50.8                                                                                |
| LOS                  | D                                                                                 | E                                                                                 | B                                                                                 | F                                                                                 | A                                                                                 |                                                                                   | F                                                                                   | C                                                                                   |                                                                                     | D                                                                                   |
| Approach Delay       |                                                                                   | 44.8                                                                              |                                                                                   |                                                                                   | 88.6                                                                              |                                                                                   | 35.7                                                                                |                                                                                     |                                                                                     | 50.8                                                                                |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 53 (44%), Referenced to phase 2:NWTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 61.9

Intersection LOS: E

Intersection Capacity Utilization 104.6%

ICU Level of Service G

Analysis Period (min) 15

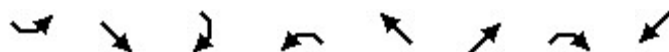
Splits and Phases: 2: RIVERSIDE DR & COLLIER AVE

|                                                                                     |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| ø2 (R)                                                                              | ø6                                                                                    | ø4                                                                                    |
| 80 s                                                                                | 20 s                                                                                  | 20 s                                                                                  |
|                                                                                     |                                                                                       |  |
|                                                                                     |                                                                                       | ø8                                                                                    |
|                                                                                     |                                                                                       | 20 s                                                                                  |

## Queues

## 2: RIVERSIDE DR &amp; COLLIER AVE

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NWL    | NWT  | NET  | NER   | SWT  |
|-------------------------|------|------|------|--------|------|------|-------|------|
| Lane Group Flow (vph)   | 7    | 176  | 158  | 1329   | 261  | 123  | 1246  | 68   |
| v/c Ratio               | 0.03 | 0.77 | 0.48 | 1.18   | 0.22 | 0.83 | 0.97  | 0.47 |
| Control Delay           | 47.0 | 73.7 | 12.5 | 105.2  | 3.9  | 90.5 | 30.3  | 50.8 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0    | 0.0  | 0.0  | 0.0   | 0.0  |
| Total Delay             | 47.0 | 73.7 | 12.5 | 105.2  | 3.9  | 90.5 | 30.3  | 50.8 |
| Queue Length 50th (ft)  | 5    | 134  | 0    | ~1278  | 34   | 93   | 650   | 39   |
| Queue Length 95th (ft)  | 20   | #245 | 63   | m#1500 | m67  | #190 | #1209 | 87   |
| Internal Link Dist (ft) |      | 1295 |      |        | 623  | 2459 |       | 691  |
| Turn Bay Length (ft)    | 200  |      | 200  |        |      |      | 360   |      |
| Base Capacity (vph)     | 216  | 228  | 332  | 1123   | 1170 | 165  | 1284  | 159  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0      | 0    | 0    | 0     | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0      | 0    | 0    | 0     | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0      | 0    | 0    | 0     | 0    |
| Reduced v/c Ratio       | 0.03 | 0.77 | 0.48 | 1.18   | 0.22 | 0.75 | 0.97  | 0.43 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 2: RIVERSIDE DR & COLLIER AVE

1/27/2017

|                                                                                                     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Volume (veh/h)                                                                                      | 7                                                                                 | 167                                                                               | 150                                                                               | 1263                                                                              | 227                                                                               | 21                                                                                | 111                                                                                | 6                                                                                   | 1184                                                                                | 27                                                                                  | 19                                                                                  | 19                                                                                  |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h                                                                                | 7                                                                                 | 176                                                                               | 158                                                                               | 1329                                                                              | 239                                                                               | 22                                                                                | 117                                                                                | 6                                                                                   | 1246                                                                                | 28                                                                                  | 20                                                                                  | 20                                                                                  |
| Adj No. of Lanes                                                                                    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                                                    | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 1231                                                                              | 113                                                                               | 164                                                                                | 5                                                                                   | 1359                                                                                | 42                                                                                  | 29                                                                                  | 12                                                                                  |
| Arrive On Green                                                                                     | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 0.13                                                                               | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                |
| Sat Flow, veh/h                                                                                     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 1681                                                                              | 155                                                                               | 840                                                                                | 43                                                                                  | 1583                                                                                | 0                                                                                   | 232                                                                                 | 97                                                                                  |
| Grp Volume(v), veh/h                                                                                | 7                                                                                 | 176                                                                               | 158                                                                               | 1329                                                                              | 0                                                                                 | 261                                                                               | 123                                                                                | 0                                                                                   | 1246                                                                                | 68                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                              | 0                                                                                 | 1835                                                                              | 883                                                                                | 0                                                                                   | 1583                                                                                | 329                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s                                                                                     | 0.4                                                                               | 11.0                                                                              | 11.7                                                                              | 87.9                                                                              | 0.0                                                                               | 5.3                                                                               | 0.0                                                                                | 0.0                                                                                 | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 0.4                                                                               | 11.0                                                                              | 11.7                                                                              | 87.9                                                                              | 0.0                                                                               | 5.3                                                                               | 15.1                                                                               | 0.0                                                                                 | 15.1                                                                                | 15.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                                                        | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.08                                                                              | 0.95                                                                               |                                                                                     | 1.00                                                                                | 0.41                                                                                |                                                                                     | 0.29                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1344                                                                              | 170                                                                                | 0                                                                                   | 1359                                                                                | 84                                                                                  | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                                                                                        | 0.03                                                                              | 0.77                                                                              | 0.81                                                                              | 1.02                                                                              | 0.00                                                                              | 0.19                                                                              | 0.72                                                                               | 0.00                                                                                | 0.92                                                                                | 0.81                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 217                                                                               | 228                                                                               | 194                                                                               | 1299                                                                              | 0                                                                                 | 1344                                                                              | 170                                                                                | 0                                                                                   | 1359                                                                                | 84                                                                                  | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 46.4                                                                              | 51.0                                                                              | 51.3                                                                              | 16.1                                                                              | 0.0                                                                               | 5.0                                                                               | 53.2                                                                               | 0.0                                                                                 | 2.3                                                                                 | 51.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                                                              | 0.3                                                                               | 21.9                                                                              | 30.0                                                                              | 30.9                                                                              | 0.0                                                                               | 0.3                                                                               | 12.5                                                                               | 0.0                                                                                 | 9.8                                                                                 | 40.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 0.2                                                                               | 7.1                                                                               | 6.7                                                                               | 53.4                                                                              | 0.0                                                                               | 2.8                                                                               | 4.7                                                                                | 0.0                                                                                 | 44.9                                                                                | 3.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 46.7                                                                              | 73.0                                                                              | 81.3                                                                              | 46.9                                                                              | 0.0                                                                               | 5.3                                                                               | 65.7                                                                               | 0.0                                                                                 | 12.1                                                                                | 92.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                                                           | D                                                                                 | E                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | A                                                                                 | E                                                                                  |                                                                                     | B                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h                                                                                 |                                                                                   | 341                                                                               |                                                                                   |                                                                                   | 1590                                                                              |                                                                                   |                                                                                    | 1369                                                                                |                                                                                     |                                                                                     | 68                                                                                  |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 76.3                                                                              |                                                                                   |                                                                                   | 40.1                                                                              |                                                                                   |                                                                                    | 16.9                                                                                |                                                                                     |                                                                                     | 92.6                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 93.6                                                                              |                                                                                   | 20.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                    | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 5.3                                                                               |                                                                                   | * 5.3                                                                             |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 74.7                                                                              |                                                                                   | * 15                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                        |                                                                                   | 90.9                                                                              |                                                                                   | 18.1                                                                              |                                                                                   | 14.7                                                                              |                                                                                    | 17.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 35.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 1190                                                                              | 262                                                                               | 66                                                                                | 43                                                                                | 177                                                                               | 753                                                                               | 193                                                                                | 348                                                                                 | 483                                                                                 | 237                                                                                 | 1057                                                                                |
| Turn Type            | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                               | NA                                                                                  | Prot                                                                                | NA                                                                                  | pm+ov                                                                               |
| Protected Phases     | 1                                                                                 | 6                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 1                                                                                 | 6                                                                                 | 6                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                               | 5.0                                                                               | 5.0                                                                               | 4.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 11.6                                                                              | 30.5                                                                              | 30.5                                                                              | 8.6                                                                               | 18.0                                                                              | 11.6                                                                              | 8.6                                                                                | 20.0                                                                                | 11.6                                                                                | 42.3                                                                                | 11.6                                                                                |
| Total Split (s)      | 47.4                                                                              | 52.2                                                                              | 52.2                                                                              | 13.2                                                                              | 18.0                                                                              | 26.3                                                                              | 12.3                                                                               | 28.3                                                                                | 26.3                                                                                | 42.3                                                                                | 47.4                                                                                |
| Total Split (%)      | 39.5%                                                                             | 43.5%                                                                             | 43.5%                                                                             | 11.0%                                                                             | 15.0%                                                                             | 21.9%                                                                             | 10.3%                                                                              | 23.6%                                                                               | 21.9%                                                                               | 35.3%                                                                               | 39.5%                                                                               |
| Yellow Time (s)      | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 3.6                                                                               | 3.6                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 3.6                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 4.6                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 4.6                                                                                 |
| Lead/Lag             | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | C-Max                                                                             | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | C-Max                                                                               |
| Act Effct Green (s)  | 48.8                                                                              | 56.2                                                                              | 56.2                                                                              | 7.1                                                                               | 12.7                                                                              | 38.5                                                                              | 7.7                                                                                | 18.2                                                                                | 20.5                                                                                | 31.0                                                                                | 85.1                                                                                |
| Actuated g/C Ratio   | 0.41                                                                              | 0.47                                                                              | 0.47                                                                              | 0.06                                                                              | 0.11                                                                              | 0.32                                                                              | 0.06                                                                               | 0.15                                                                                | 0.17                                                                                | 0.26                                                                                | 0.71                                                                                |
| v/c Ratio            | 0.89                                                                              | 0.16                                                                              | 0.08                                                                              | 0.43                                                                              | 0.49                                                                              | 0.81                                                                              | 0.91                                                                               | 0.77                                                                                | 0.86                                                                                | 0.51                                                                                | 0.55                                                                                |
| Control Delay        | 39.9                                                                              | 20.8                                                                              | 0.1                                                                               | 66.7                                                                              | 55.5                                                                              | 39.7                                                                              | 97.8                                                                               | 57.3                                                                                | 52.7                                                                                | 29.6                                                                                | 9.2                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 39.9                                                                              | 20.8                                                                              | 0.1                                                                               | 66.7                                                                              | 55.5                                                                              | 39.7                                                                              | 97.8                                                                               | 57.3                                                                                | 52.7                                                                                | 29.6                                                                                | 9.2                                                                                 |
| LOS                  | D                                                                                 | C                                                                                 | A                                                                                 | E                                                                                 | E                                                                                 | D                                                                                 | F                                                                                  | E                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 34.9                                                                              |                                                                                   |                                                                                   | 43.8                                                                              |                                                                                   |                                                                                    | 70.6                                                                                |                                                                                     | 23.7                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 76 (63%), Referenced to phase 1:SEL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 36.9

Intersection LOS: D

Intersection Capacity Utilization 83.5%

ICU Level of Service E

Analysis Period (min) 15

### Splits and Phases: 3: CENTRAL AVE & COLLIER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| ø1 (R)                                                                              | ø2                                                                                  | ø3                                                                                  | ø4                                                                                  |
| 47.4 s                                                                              | 18 s                                                                                | 26.3 s                                                                              | 28.3 s                                                                              |
|  |  |  |  |
| ø5                                                                                  | ø6                                                                                  | ø7                                                                                  | ø8                                                                                  |
| 13.2 s                                                                              | 52.2 s                                                                              | 12.3 s                                                                              | 42.3 s                                                                              |



## Queues

## 3: CENTRAL AVE &amp; COLLIER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 1240                                                                              | 273                                                                               | 69                                                                                | 45                                                                                | 184                                                                               | 784                                                                               | 201                                                                                | 412                                                                                 | 503                                                                                 | 247                                                                                 | 1101                                                                                |
| v/c Ratio               | 0.89                                                                              | 0.16                                                                              | 0.08                                                                              | 0.43                                                                              | 0.49                                                                              | 0.81                                                                              | 0.91                                                                               | 0.77                                                                                | 0.86                                                                                | 0.51                                                                                | 0.55                                                                                |
| Control Delay           | 39.9                                                                              | 20.8                                                                              | 0.1                                                                               | 66.7                                                                              | 55.5                                                                              | 39.7                                                                              | 97.8                                                                               | 57.3                                                                                | 52.7                                                                                | 29.6                                                                                | 9.2                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 39.9                                                                              | 20.8                                                                              | 0.1                                                                               | 66.7                                                                              | 55.5                                                                              | 39.7                                                                              | 97.8                                                                               | 57.3                                                                                | 52.7                                                                                | 29.6                                                                                | 9.2                                                                                 |
| Queue Length 50th (ft)  | 451                                                                               | 66                                                                                | 0                                                                                 | 34                                                                                | 72                                                                                | 273                                                                               | 81                                                                                 | 158                                                                                 | 174                                                                                 | 148                                                                                 | 265                                                                                 |
| Queue Length 95th (ft)  | m#576                                                                             | m79                                                                               | m0                                                                                | 74                                                                                | 110                                                                               | 360                                                                               | #154                                                                               | 206                                                                                 | m#247                                                                               | m208                                                                                | m373                                                                                |
| Internal Link Dist (ft) |                                                                                   | 1881                                                                              |                                                                                   |                                                                                   | 463                                                                               |                                                                                   |                                                                                    | 1625                                                                                |                                                                                     | 251                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 650                                                                               |                                                                                   | 220                                                                               | 100                                                                               |                                                                                   | 100                                                                               | 140                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 1395                                                                              | 1657                                                                              | 818                                                                               | 126                                                                               | 374                                                                               | 992                                                                               | 220                                                                                | 675                                                                                 | 620                                                                                 | 574                                                                                 | 2013                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.89                                                                              | 0.16                                                                              | 0.08                                                                              | 0.36                                                                              | 0.49                                                                              | 0.79                                                                              | 0.91                                                                               | 0.61                                                                                | 0.81                                                                                | 0.43                                                                                | 0.55                                                                                |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 3: CENTRAL AVE & COLLIER AVE

1/27/2017

|                                           |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                  | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                       |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (veh/h)                            | 1190                                                                              | 262                                                                               | 66                                                                                | 43                                                                                | 177                                                                               | 753                                                                               | 193                                                                                | 348                                                                                 | 48                                                                                  | 483                                                                                 | 237                                                                                 | 1057                                                                                |
| Number                                    | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                  | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                    | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                      | 1240                                                                              | 273                                                                               | 69                                                                                | 45                                                                                | 184                                                                               | 784                                                                               | 201                                                                                | 362                                                                                 | 50                                                                                  | 503                                                                                 | 247                                                                                 | 1101                                                                                |
| Adj No. of Lanes                          | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   |
| Peak Hour Factor                          | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                | 1358                                                                              | 1634                                                                              | 731                                                                               | 69                                                                                | 375                                                                               | 773                                                                               | 221                                                                                | 510                                                                                 | 70                                                                                  | 590                                                                                 | 504                                                                                 | 1853                                                                                |
| Arrive On Green                           | 0.39                                                                              | 0.46                                                                              | 0.46                                                                              | 0.04                                                                              | 0.11                                                                              | 0.11                                                                              | 0.06                                                                               | 0.16                                                                                | 0.16                                                                                | 0.06                                                                                | 0.09                                                                                | 0.09                                                                                |
| Sat Flow, veh/h                           | 3442                                                                              | 3539                                                                              | 1583                                                                              | 1774                                                                              | 3539                                                                              | 2787                                                                              | 3442                                                                               | 3128                                                                                | 429                                                                                 | 3442                                                                                | 1863                                                                                | 2787                                                                                |
| Grp Volume(v), veh/h                      | 1240                                                                              | 273                                                                               | 69                                                                                | 45                                                                                | 184                                                                               | 784                                                                               | 201                                                                                | 204                                                                                 | 208                                                                                 | 503                                                                                 | 247                                                                                 | 1101                                                                                |
| Grp Sat Flow(s),veh/h/ln                  | 1721                                                                              | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 1393                                                                              | 1721                                                                               | 1770                                                                                | 1787                                                                                | 1721                                                                                | 1863                                                                                | 1393                                                                                |
| Q Serve(g_s), s                           | 40.9                                                                              | 5.4                                                                               | 2.9                                                                               | 3.0                                                                               | 5.9                                                                               | 12.7                                                                              | 7.0                                                                                | 13.1                                                                                | 13.3                                                                                | 17.4                                                                                | 15.2                                                                                | 22.8                                                                                |
| Cycle Q Clear(g_c), s                     | 40.9                                                                              | 5.4                                                                               | 2.9                                                                               | 3.0                                                                               | 5.9                                                                               | 12.7                                                                              | 7.0                                                                                | 13.1                                                                                | 13.3                                                                                | 17.4                                                                                | 15.2                                                                                | 22.8                                                                                |
| Prop In Lane                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.24                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                    | 1358                                                                              | 1634                                                                              | 731                                                                               | 69                                                                                | 375                                                                               | 773                                                                               | 221                                                                                | 289                                                                                 | 291                                                                                 | 590                                                                                 | 504                                                                                 | 1853                                                                                |
| V/C Ratio(X)                              | 0.91                                                                              | 0.17                                                                              | 0.09                                                                              | 0.65                                                                              | 0.49                                                                              | 1.01                                                                              | 0.91                                                                               | 0.71                                                                                | 0.72                                                                                | 0.85                                                                                | 0.49                                                                                | 0.59                                                                                |
| Avail Cap(c_a), veh/h                     | 1358                                                                              | 1634                                                                              | 731                                                                               | 127                                                                               | 375                                                                               | 773                                                                               | 221                                                                                | 339                                                                                 | 343                                                                                 | 622                                                                                 | 574                                                                                 | 1959                                                                                |
| HCM Platoon Ratio                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                  | 34.4                                                                              | 18.8                                                                              | 18.2                                                                              | 56.9                                                                              | 50.6                                                                              | 43.4                                                                              | 55.8                                                                               | 47.5                                                                                | 47.6                                                                                | 55.1                                                                                | 46.8                                                                                | 13.2                                                                                |
| Incr Delay (d2), s/veh                    | 9.4                                                                               | 0.2                                                                               | 0.3                                                                               | 3.8                                                                               | 4.5                                                                               | 36.1                                                                              | 36.3                                                                               | 3.8                                                                                 | 4.2                                                                                 | 9.9                                                                                 | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                  | 21.2                                                                              | 2.7                                                                               | 1.3                                                                               | 1.5                                                                               | 3.1                                                                               | 16.6                                                                              | 4.4                                                                                | 6.7                                                                                 | 6.9                                                                                 | 9.1                                                                                 | 7.9                                                                                 | 8.9                                                                                 |
| LnGrp Delay(d),s/veh                      | 43.8                                                                              | 19.1                                                                              | 18.4                                                                              | 60.7                                                                              | 55.2                                                                              | 79.4                                                                              | 92.1                                                                               | 51.3                                                                                | 51.8                                                                                | 65.0                                                                                | 47.1                                                                                | 13.4                                                                                |
| LnGrp LOS                                 | D                                                                                 | B                                                                                 | B                                                                                 | E                                                                                 | E                                                                                 | F                                                                                 | F                                                                                  | D                                                                                   | D                                                                                   | E                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h                       | 1582                                                                              |                                                                                   |                                                                                   |                                                                                   | 1013                                                                              |                                                                                   |                                                                                    |                                                                                     | 613                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh                     | 38.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 74.2                                                                              |                                                                                   |                                                                                    |                                                                                     | 64.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                              | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                  | 52.0                                                                              | 18.0                                                                              | 25.2                                                                              | 24.9                                                                              | 9.3                                                                               | 60.7                                                                              | 12.3                                                                               | 37.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                   | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 4.6                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s               | 42.8                                                                              | 12.7                                                                              | 21.7                                                                              | 23.0                                                                              | 8.6                                                                               | 46.9                                                                              | 7.7                                                                                | 37.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s              | 43.9                                                                              | 15.7                                                                              | 20.4                                                                              | 16.1                                                                              | 6.0                                                                               | 8.4                                                                               | 10.0                                                                               | 25.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                   | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 3.5                                                                               | 0.0                                                                               | 4.5                                                                               | 0.0                                                                                | 4.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                       | 46.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                              | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved changes to right turn type. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection

Int Delay, s/veh 4.4

| Movement                 | SEL  | SET  | SER  | NWL  | NWT  | NWR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h               | 0    | 557  | 17   | 8    | 882  | 0    | 44   | 0    | 18   | 35   | 0    | 12   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 0    | -    | -    | 150  | -    | -    | 90   | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   | 93   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 0    | 599  | 18   | 9    | 948  | 0    | 47   | 0    | 19   | 38   | 0    | 13   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 948    | 0 | 0 | 617    | 0 | 0 | 1580   | 1574  | 309   | 1265   | 1583  | 948   |
| Stage 1              | -      | - | - | -      | - | - | 608    | 608   | -     | 966    | 966   | -     |
| Stage 2              | -      | - | - | -      | - | - | 972    | 966   | -     | 299    | 617   | -     |
| Critical Hdwy        | 4.12   | - | - | 4.14   | - | - | 7.33   | 6.53  | 6.93  | 7.33   | 6.53  | 6.23  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.53   | 5.53  | -     | 6.13   | 5.53  | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.13   | 5.53  | -     | 6.53   | 5.53  | -     |
| Follow-up Hdwy       | 2.218  | - | - | 2.22   | - | - | 3.519  | 4.019 | 3.319 | 3.519  | 4.019 | 3.319 |
| Pot Cap-1 Maneuver   | 724    | - | - | 959    | - | - | 80     | 109   | 688   | 136    | 108   | 315   |
| Stage 1              | -      | - | - | -      | - | - | 450    | 485   | -     | 305    | 332   | -     |
| Stage 2              | -      | - | - | -      | - | - | 303    | 332   | -     | 686    | 480   | -     |
| Platoon blocked, %   |        | - | - |        | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 724    | - | - | 959    | - | - | 76     | 108   | 688   | 131    | 107   | 315   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 76     | 108   | -     | 131    | 107   | -     |
| Stage 1              | -      | - | - | -      | - | - | 450    | 485   | -     | 305    | 329   | -     |
| Stage 2              | -      | - | - | -      | - | - | 288    | 329   | -     | 667    | 480   | -     |

| Approach             | SE | NW  | NE   | SW   |
|----------------------|----|-----|------|------|
| HCM Control Delay, s | 0  | 0.1 | 81.5 | 39.4 |
| HCM LOS              |    |     | F    | E    |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | NWL   | NWT | NWR | SEL | SET | SERSWLn1 |
|-----------------------|-------|-------|-------|-----|-----|-----|-----|----------|
| Capacity (veh/h)      | 76    | 688   | 959   | -   | -   | 724 | -   | - 154    |
| HCM Lane V/C Ratio    | 0.623 | 0.028 | 0.009 | -   | -   | -   | -   | - 0.328  |
| HCM Control Delay (s) | 110.6 | 10.4  | 8.8   | -   | -   | 0   | -   | - 39.4   |
| HCM Lane LOS          | F     | B     | A     | -   | -   | A   | -   | - E      |
| HCM 95th %tile Q(veh) | 2.8   | 0.1   | 0     | -   | -   | 0   | -   | - 1.3    |

# Lanes and Geometrics

## 4: CRANE ST & COLLIER AVE

1/27/2017

|                      |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)   | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)      | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)            |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)  | 0                                                                                 |                                                                                   | 0                                                                                 | 150                                                                               |                                                                                   | 0                                                                                 | 90                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes        | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)    | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)     |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)   |                                                                                   | 118                                                                               |                                                                                   |                                                                                   | 1997                                                                              |                                                                                   |                                                                                     | 1335                                                                                |                                                                                     |                                                                                     | 341                                                                                 |                                                                                     |
| Travel Time (s)      |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Intersection Summary |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:           | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

**Intersection**

Int Delay, s/veh 94

| Movement                 | SET  | SER  | NWL  | NWT  | NEL  | NER  |
|--------------------------|------|------|------|------|------|------|
| Vol, veh/h               | 290  | 254  | 24   | 184  | 592  | 69   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | 0    | -    | -    | 0    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 322  | 282  | 27   | 204  | 658  | 77   |

| Major/Minor          | Major1 |   | Major2 |   | Minor1 |       |
|----------------------|--------|---|--------|---|--------|-------|
| Conflicting Flow All | 0      | 0 | 322    | 0 | 580    | 322   |
| Stage 1              | -      | - | -      | - | 322    | -     |
| Stage 2              | -      | - | -      | - | 258    | -     |
| Critical Hdwy        | -      | - | 4.12   | - | 6.42   | 6.22  |
| Critical Hdwy Stg 1  | -      | - | -      | - | 5.42   | -     |
| Critical Hdwy Stg 2  | -      | - | -      | - | 5.42   | -     |
| Follow-up Hdwy       | -      | - | 2.218  | - | 3.518  | 3.318 |
| Pot Cap-1 Maneuver   | -      | - | 1238   | - | ~ 477  | 719   |
| Stage 1              | -      | - | -      | - | 735    | -     |
| Stage 2              | -      | - | -      | - | 785    | -     |
| Platoon blocked, %   | -      | - |        | - |        |       |
| Mov Cap-1 Maneuver   | -      | - | 1238   | - | ~ 465  | 719   |
| Mov Cap-2 Maneuver   | -      | - | -      | - | ~ 465  | -     |
| Stage 1              | -      | - | -      | - | 735    | -     |
| Stage 2              | -      | - | -      | - | 765    | -     |

| Approach             | SE | NW  | NE    |
|----------------------|----|-----|-------|
| HCM Control Delay, s | 0  | 0.9 | 200.6 |
| HCM LOS              |    |     | F     |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | NWL   | NWT | SET | SER |
|-----------------------|-------|-------|-------|-----|-----|-----|
| Capacity (veh/h)      | 465   | 719   | 1238  | -   | -   | -   |
| HCM Lane V/C Ratio    | 1.415 | 0.107 | 0.022 | -   | -   | -   |
| HCM Control Delay (s) | 222.8 | 10.6  | 8     | 0   | -   | -   |
| HCM Lane LOS          | F     | B     | A     | A   | -   | -   |
| HCM 95th %tile Q(veh) | 31.8  | 0.4   | 0.1   | -   | -   | -   |

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

# Lanes and Geometrics

## 5: CHANEY ST & COLLIER AVE

1/27/2017



| Lane Group          | SET  | SER  | NWL  | NWT  | NEL  | NER  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           | 0%   |      |      | 0%   | 0%   |      |
| Storage Length (ft) |      | 0    | 0    |      | 0    | 0    |
| Storage Lanes       |      | 1    | 0    |      | 1    | 1    |
| Taper Length (ft)   |      |      | 25   |      | 25   |      |
| Link Speed (mph)    | 30   |      |      | 30   | 30   |      |
| Link Distance (ft)  | 1997 |      |      | 292  | 1583 |      |
| Travel Time (s)     | 45.4 |      |      | 6.6  | 36.0 |      |

### Intersection Summary

Area Type: Other

| Intersection              |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Intersection Delay, s/veh | 11.9 |      |      |      |      |      |      |      |      |      |      |      |
| Intersection LOS          | B    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                  | EBU  | EBL  | EBT  | EBR  | WBU  | WBL  | WBT  | WBR  | NBU  | NBL  | NBT  | NBR  |
| Vol, veh/h                | 0    | 0    | 1    | 461  | 0    | 2    | 0    | 1    | 0    | 222  | 1    | 2    |
| Peak Hour Factor          | 0.92 | 0.90 | 0.90 | 0.90 | 0.92 | 0.90 | 0.90 | 0.90 | 0.92 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                 | 0    | 0    | 1    | 512  | 0    | 2    | 0    | 1    | 0    | 247  | 1    | 2    |
| Number of Lanes           | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    |

| Approach                   | EB   | WB  | NB   |
|----------------------------|------|-----|------|
| Opposing Approach          | WB   | EB  | SB   |
| Opposing Lanes             | 1    | 1   | 1    |
| Conflicting Approach Left  | SB   | NB  | EB   |
| Conflicting Lanes Left     | 1    | 1   | 1    |
| Conflicting Approach Right | NB   | SB  | WB   |
| Conflicting Lanes Right    | 1    | 1   | 1    |
| HCM Control Delay          | 12.3 | 8.2 | 11.2 |
| HCM LOS                    | B    | A   | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 99%   | 0%    | 67%   | 0%    |
| Vol Thru, %            | 0%    | 0%    | 0%    | 0%    |
| Vol Right, %           | 1%    | 100%  | 33%   | 100%  |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 225   | 462   | 3     | 1     |
| LT Vol                 | 222   | 0     | 2     | 0     |
| Through Vol            | 1     | 1     | 0     | 0     |
| RT Vol                 | 2     | 461   | 1     | 1     |
| Lane Flow Rate         | 250   | 513   | 3     | 1     |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.36  | 0.574 | 0.005 | 0.001 |
| Departure Headway (Hd) | 5.19  | 4.022 | 5.083 | 4.761 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 688   | 898   | 700   | 742   |
| Service Time           | 3.262 | 2.044 | 3.143 | 2.85  |
| HCM Lane V/C Ratio     | 0.363 | 0.571 | 0.004 | 0.001 |
| HCM Control Delay      | 11.2  | 12.3  | 8.2   | 7.9   |
| HCM Lane LOS           | B     | B     | A     | A     |
| HCM 95th-tile Q        | 1.6   | 3.7   | 0     | 0     |

Intersection

Intersection Delay, s/veh

Intersection LOS

| Movement          | SBU  | SBL  | SBT  | SBR  |
|-------------------|------|------|------|------|
| Vol, veh/h        | 0    | 0    | 0    | 1    |
| Peak Hour Factor  | 0.92 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, % | 2    | 2    | 2    | 2    |
| Mvmt Flow         | 0    | 0    | 0    | 1    |
| Number of Lanes   | 0    | 0    | 1    | 0    |

| Approach                   | SB  |
|----------------------------|-----|
| Opposing Approach          | NB  |
| Opposing Lanes             | 1   |
| Conflicting Approach Left  | WB  |
| Conflicting Lanes Left     | 1   |
| Conflicting Approach Right | EB  |
| Conflicting Lanes Right    | 1   |
| HCM Control Delay          | 7.9 |
| HCM LOS                    | A   |

Lane



# Lanes and Geometrics

## 6: N. SPRING ST & COLLIER AVE

1/27/2017

|                             |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                  | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations         |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Ideal Flow (vphpl)          | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)             | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Grade (%)                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)         | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes               | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)           | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)            |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)          |                                                                                   | 294                                                                               |                                                                                   |                                                                                   | 237                                                                               |                                                                                   |                                                                                    | 822                                                                                 |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Travel Time (s)             |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                    | 18.7                                                                                |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| <b>Intersection Summary</b> |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                  | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NET                                                                               | NER                                                                               | SWL                                                                               | SWT                                                                                |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 803                                                                               | 3                                                                                 | 209                                                                               | 1668                                                                              | 629                                                                               | 842                                                                               | 1780                                                                               |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                 |
| Protected Phases     | 6                                                                                 | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                  |
| Permitted Phases     |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   | 4                                                                                 |                                                                                   |                                                                                    |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                  |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 5.0                                                                               | 7.0                                                                                |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 29.3                                                                              | 29.3                                                                              | 11.0                                                                              | 20.0                                                                               |
| Total Split (s)      | 36.0                                                                              | 36.0                                                                              | 36.0                                                                              | 50.0                                                                              | 50.0                                                                              | 34.0                                                                              | 84.0                                                                               |
| Total Split (%)      | 30.0%                                                                             | 30.0%                                                                             | 30.0%                                                                             | 41.7%                                                                             | 41.7%                                                                             | 28.3%                                                                             | 70.0%                                                                              |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                    |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | C-Max                                                                             | C-Max                                                                             | None                                                                              | C-Max                                                                              |
| Act Effct Green (s)  | 30.7                                                                              | 30.7                                                                              | 30.7                                                                              | 44.7                                                                              | 44.7                                                                              | 29.4                                                                              | 78.7                                                                               |
| Actuated g/C Ratio   | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.37                                                                              | 0.37                                                                              | 0.24                                                                              | 0.66                                                                               |
| v/c Ratio            | 1.01                                                                              | 1.03                                                                              | 0.45                                                                              | 0.92                                                                              | 0.71                                                                              | 1.04                                                                              | 0.80                                                                               |
| Control Delay        | 91.1                                                                              | 97.2                                                                              | 29.0                                                                              | 38.2                                                                              | 8.1                                                                               | 85.3                                                                              | 14.0                                                                               |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               | 0.7                                                                                |
| Total Delay          | 91.1                                                                              | 97.2                                                                              | 29.0                                                                              | 38.2                                                                              | 8.3                                                                               | 85.3                                                                              | 14.7                                                                               |
| LOS                  | F                                                                                 | F                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 | F                                                                                 | B                                                                                  |
| Approach Delay       |                                                                                   | 82.0                                                                              |                                                                                   | 30.0                                                                              |                                                                                   |                                                                                   | 37.3                                                                               |
| Approach LOS         |                                                                                   | F                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 116 (97%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 42.2

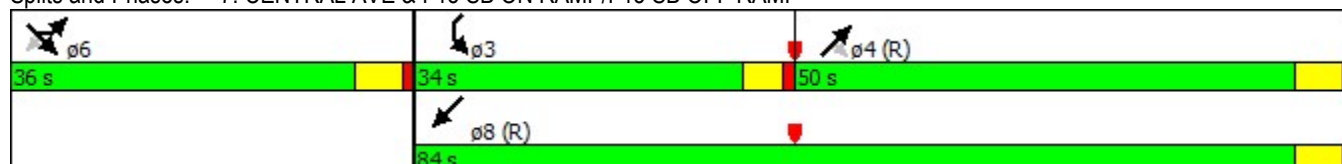
Intersection LOS: D

Intersection Capacity Utilization 100.1%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP



## Queues

## 7: CENTRAL AVE &amp; I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017



| Lane Group              | SEL  | SET  | SER  | NET  | NER  | SWL   | SWT  |
|-------------------------|------|------|------|------|------|-------|------|
| Lane Group Flow (vph)   | 435  | 426  | 196  | 1738 | 655  | 877   | 1854 |
| v/c Ratio               | 1.01 | 1.03 | 0.45 | 0.92 | 0.71 | 1.04  | 0.80 |
| Control Delay           | 91.1 | 97.2 | 29.0 | 38.2 | 8.1  | 85.3  | 14.0 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.3  | 0.0   | 0.7  |
| Total Delay             | 91.1 | 97.2 | 29.0 | 38.2 | 8.3  | 85.3  | 14.7 |
| Queue Length 50th (ft)  | ~363 | ~387 | 89   | 449  | 99   | ~392  | 293  |
| Queue Length 95th (ft)  | #587 | #613 | 167  | #543 | m184 | m#388 | m291 |
| Internal Link Dist (ft) |      | 1290 |      | 318  |      |       | 410  |
| Turn Bay Length (ft)    | 200  |      | 200  |      |      | 100   |      |
| Base Capacity (vph)     | 430  | 412  | 431  | 1894 | 929  | 841   | 2320 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 36   | 0     | 182  |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0     | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0     | 0    |
| Reduced v/c Ratio       | 1.01 | 1.03 | 0.45 | 0.92 | 0.73 | 1.04  | 0.87 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 7: CENTRAL AVE & I-15 SB ON RAMP/I-15 SB OFF RAMP

1/27/2017

|                                                                      |  |                                                                                   |                                                                                   |      |     |      |      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET                                                                               | SER                                                                               | NWL  | NWT | NWR  | NEL  | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |   |  |  |      |     |      |      |  |  |  |  |  |
| Volume (veh/h)                                                       | 803                                                                                | 3                                                                                 | 209                                                                               | 0    | 0   | 0    | 0    | 1668                                                                                | 629                                                                                 | 842                                                                                 | 1780                                                                                | 0                                                                                   |
| Number                                                               | 1                                                                                  | 6                                                                                 | 16                                                                                |      |     |      | 7    | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  | 0                                                                                  | 0                                                                                 | 0                                                                                 |      |     |      | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  | 1.00                                                                               |                                                                                   | 1.00                                                                              |      |     |      | 1.00 |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     | 1.00                                                                               | 1.00                                                                              | 1.00                                                                              |      |     |      | 1.00 | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               | 1863                                                                               | 1863                                                                              | 1863                                                                              |      |     |      | 0    | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 0                                                                                   |
| Adj Flow Rate, veh/h                                                 | 905                                                                                | 0                                                                                 | 146                                                                               |      |     |      | 0    | 1738                                                                                | 655                                                                                 | 877                                                                                 | 1854                                                                                | 0                                                                                   |
| Adj No. of Lanes                                                     | 2                                                                                  | 0                                                                                 | 1                                                                                 |      |     |      | 0    | 3                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor                                                     | 0.96                                                                               | 0.96                                                                              | 0.96                                                                              |      |     |      | 0.96 | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                                 | 2                                                                                  | 2                                                                                 | 2                                                                                 |      |     |      | 0    | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Cap, veh/h                                                           | 908                                                                                | 0                                                                                 | 405                                                                               |      |     |      | 0    | 1894                                                                                | 590                                                                                 | 843                                                                                 | 2321                                                                                | 0                                                                                   |
| Arrive On Green                                                      | 0.26                                                                               | 0.00                                                                              | 0.26                                                                              |      |     |      | 0.00 | 0.12                                                                                | 0.12                                                                                | 0.49                                                                                | 1.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h                                                      | 3548                                                                               | 0                                                                                 | 1583                                                                              |      |     |      | 0    | 5253                                                                                | 1583                                                                                | 3442                                                                                | 3632                                                                                | 0                                                                                   |
| Grp Volume(v), veh/h                                                 | 905                                                                                | 0                                                                                 | 146                                                                               |      |     |      | 0    | 1738                                                                                | 655                                                                                 | 877                                                                                 | 1854                                                                                | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                             | 1774                                                                               | 0                                                                                 | 1583                                                                              |      |     |      | 0    | 1695                                                                                | 1583                                                                                | 1721                                                                                | 1770                                                                                | 0                                                                                   |
| Q Serve(g_s), s                                                      | 30.6                                                                               | 0.0                                                                               | 9.1                                                                               |      |     |      | 0.0  | 40.5                                                                                | 44.7                                                                                | 29.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s                                                | 30.6                                                                               | 0.0                                                                               | 9.1                                                                               |      |     |      | 0.0  | 40.5                                                                                | 44.7                                                                                | 29.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                                                         | 1.00                                                                               |                                                                                   | 1.00                                                                              |      |     |      | 0.00 |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h                                               | 908                                                                                | 0                                                                                 | 405                                                                               |      |     |      | 0    | 1894                                                                                | 590                                                                                 | 843                                                                                 | 2321                                                                                | 0                                                                                   |
| V/C Ratio(X)                                                         | 1.00                                                                               | 0.00                                                                              | 0.36                                                                              |      |     |      | 0.00 | 0.92                                                                                | 1.11                                                                                | 1.04                                                                                | 0.80                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h                                                | 908                                                                                | 0                                                                                 | 405                                                                               |      |     |      | 0    | 1894                                                                                | 590                                                                                 | 843                                                                                 | 2321                                                                                | 0                                                                                   |
| HCM Platoon Ratio                                                    | 1.00                                                                               | 1.00                                                                              | 1.00                                                                              |      |     |      | 1.00 | 0.33                                                                                | 0.33                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                |
| Upstream Filter(l)                                                   | 1.00                                                                               | 0.00                                                                              | 1.00                                                                              |      |     |      | 0.00 | 1.00                                                                                | 1.00                                                                                | 0.09                                                                                | 0.09                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh                                             | 44.6                                                                               | 0.0                                                                               | 36.6                                                                              |      |     |      | 0.0  | 50.8                                                                                | 52.6                                                                                | 30.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh                                               | 29.2                                                                               | 0.0                                                                               | 2.5                                                                               |      |     |      | 0.0  | 8.6                                                                                 | 71.2                                                                                | 22.1                                                                                | 0.3                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh                                            | 0.0                                                                                | 0.0                                                                               | 0.0                                                                               |      |     |      | 0.0  | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             | 18.6                                                                               | 0.0                                                                               | 4.3                                                                               |      |     |      | 0.0  | 20.6                                                                                | 31.3                                                                                | 16.4                                                                                | 0.1                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh                                                 | 73.8                                                                               | 0.0                                                                               | 39.1                                                                              |      |     |      | 0.0  | 59.4                                                                                | 123.8                                                                               | 52.7                                                                                | 0.3                                                                                 | 0.0                                                                                 |
| LnGrp LOS                                                            | E                                                                                  |                                                                                   | D                                                                                 |      |     |      |      | E                                                                                   | F                                                                                   | F                                                                                   | A                                                                                   |                                                                                     |
| Approach Vol, veh/h                                                  |                                                                                    | 1051                                                                              |                                                                                   |      |     |      |      | 2393                                                                                |                                                                                     |                                                                                     | 2731                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    | 68.9                                                                              |                                                                                   |      |     |      |      | 77.0                                                                                |                                                                                     |                                                                                     | 17.1                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                    | E                                                                                 |                                                                                   |      |     |      |      | E                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2                                                                                 | 3                                                                                 | 4    | 5   | 6    | 7    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    |                                                                                   | 3                                                                                 | 4    |     | 6    |      | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    |                                                                                   | 34.0                                                                              | 50.0 |     | 36.0 |      | 84.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    |                                                                                   | 4.6                                                                               | 5.3  |     | 5.3  |      | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    |                                                                                   | 29.4                                                                              | 44.7 |     | 30.7 |      | 78.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    |                                                                                   | 32.4                                                                              | 47.7 |     | 33.6 |      | 3.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    |                                                                                   | 0.0                                                                               | 0.0  |     | 0.0  |      | 57.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |                                                                                   |                                                                                   |      |     |      |      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |                                                                                   | 49.2                                                                              |      |     |      |      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |                                                                                   | D                                                                                 |      |     |      |      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |                                                                                   |                                                                                   |      |     |      |      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |                                                                                   |                                                                                   |      |     |      |      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                      |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                               | SWT                                                                               | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |
| Volume (vph)         | 610                                                                               | 2                                                                                 | 943                                                                               | 239                                                                               | 2186                                                                              | 2019                                                                              | 560                                                                                 |
| Turn Type            | Split                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | NA                                                                                | Perm                                                                                |
| Protected Phases     | 2                                                                                 | 2                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 8                                                                                 |                                                                                     |
| Permitted Phases     |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 8                                                                                   |
| Detector Phase       | 2                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 7.0                                                                               | 7.0                                                                               | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 11.0                                                                              | 20.0                                                                              | 28.3                                                                              | 28.3                                                                                |
| Total Split (s)      | 45.0                                                                              | 45.0                                                                              | 45.0                                                                              | 21.0                                                                              | 75.0                                                                              | 54.0                                                                              | 54.0                                                                                |
| Total Split (%)      | 37.5%                                                                             | 37.5%                                                                             | 37.5%                                                                             | 17.5%                                                                             | 62.5%                                                                             | 45.0%                                                                             | 45.0%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                             | C-Max                                                                             | C-Max                                                                               |
| Act Effct Green (s)  | 39.7                                                                              | 39.7                                                                              | 39.7                                                                              | 16.4                                                                              | 69.7                                                                              | 48.7                                                                              | 48.7                                                                                |
| Actuated g/C Ratio   | 0.33                                                                              | 0.33                                                                              | 0.33                                                                              | 0.14                                                                              | 0.58                                                                              | 0.41                                                                              | 0.41                                                                                |
| v/c Ratio            | 1.00                                                                              | 1.07                                                                              | 0.97                                                                              | 1.02                                                                              | 0.76                                                                              | 1.01                                                                              | 0.65                                                                                |
| Control Delay        | 77.9                                                                              | 99.9                                                                              | 68.4                                                                              | 91.5                                                                              | 20.2                                                                              | 36.7                                                                              | 6.4                                                                                 |
| Queue Delay          | 0.0                                                                               | 15.0                                                                              | 42.0                                                                              | 0.0                                                                               | 0.9                                                                               | 0.3                                                                               | 0.3                                                                                 |
| Total Delay          | 77.9                                                                              | 114.9                                                                             | 110.4                                                                             | 91.5                                                                              | 21.1                                                                              | 36.9                                                                              | 6.8                                                                                 |
| LOS                  | E                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | C                                                                                 | D                                                                                 | A                                                                                   |
| Approach Delay       |                                                                                   | 100.6                                                                             |                                                                                   |                                                                                   | 28.0                                                                              | 30.4                                                                              |                                                                                     |
| Approach LOS         |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 109 (91%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 46.2

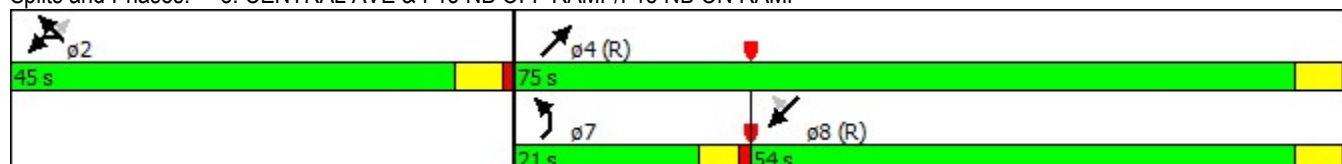
Intersection LOS: D

Intersection Capacity Utilization 100.1%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP



## Queues

## 8: CENTRAL AVE &amp; I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017



| Lane Group              | NWL  | NWT   | NWR   | NEL   | NET  | SWT  | SWR  |
|-------------------------|------|-------|-------|-------|------|------|------|
| Lane Group Flow (vph)   | 554  | 524   | 525   | 246   | 2254 | 2081 | 577  |
| v/c Ratio               | 1.00 | 1.07  | 0.97  | 1.02  | 0.76 | 1.01 | 0.65 |
| Control Delay           | 77.9 | 99.9  | 68.4  | 91.5  | 20.2 | 36.7 | 6.4  |
| Queue Delay             | 0.0  | 15.0  | 42.0  | 0.0   | 0.9  | 0.3  | 0.3  |
| Total Delay             | 77.9 | 114.9 | 110.4 | 91.5  | 21.1 | 36.9 | 6.8  |
| Queue Length 50th (ft)  | 448  | ~493  | 381   | ~208  | 341  | ~265 | 15   |
| Queue Length 95th (ft)  | #696 | #732  | #625  | m#231 | m384 | m245 | m19  |
| Internal Link Dist (ft) |      | 1244  |       |       | 410  | 302  |      |
| Turn Bay Length (ft)    | 190  |       | 190   | 190   |      |      |      |
| Base Capacity (vph)     | 556  | 489   | 539   | 241   | 2953 | 2063 | 892  |
| Starvation Cap Reductn  | 0    | 0     | 0     | 0     | 383  | 2    | 58   |
| Spillback Cap Reductn   | 0    | 172   | 181   | 0     | 274  | 0    | 0    |
| Storage Cap Reductn     | 0    | 0     | 0     | 0     | 0    | 0    | 0    |
| Reduced v/c Ratio       | 1.00 | 1.65  | 1.47  | 1.02  | 0.88 | 1.01 | 0.69 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 8: CENTRAL AVE & I-15 NB OFF RAMP/I-15 NB ON RAMP

1/27/2017

|                                                                      |  |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                             | SEL                                                                                | SET  | SER | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                               | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                  |                                                                                    |      |     |  |  |  |  |  |      |      |  |  |
| Volume (veh/h)                                                       | 0                                                                                  | 0    | 0   | 610                                                                               | 2                                                                                 | 943                                                                               | 239                                                                               | 2186                                                                                | 0    | 0    | 2019                                                                                | 560                                                                                 |
| Number                                                               |                                                                                    |      |     | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                 | 4                                                                                   | 14   | 3    | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                  |                                                                                    |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0    | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                  |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00 | 1.00 |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                     |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00 | 1.00 | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                               |                                                                                    |      |     | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 0    | 0    | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                 |                                                                                    |      |     | 420                                                                               | 0                                                                                 | 1197                                                                              | 246                                                                               | 2254                                                                                | 0    | 0    | 2081                                                                                | 577                                                                                 |
| Adj No. of Lanes                                                     |                                                                                    |      |     | 1                                                                                 | 0                                                                                 | 2                                                                                 | 1                                                                                 | 3                                                                                   | 0    | 0    | 3                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                     |                                                                                    |      |     | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97 | 0.97 | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %                                                 |                                                                                    |      |     | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0    | 0    | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                           |                                                                                    |      |     | 587                                                                               | 0                                                                                 | 1048                                                                              | 242                                                                               | 2954                                                                                | 0    | 0    | 2064                                                                                | 643                                                                                 |
| Arrive On Green                                                      |                                                                                    |      |     | 0.33                                                                              | 0.00                                                                              | 0.33                                                                              | 0.27                                                                              | 1.00                                                                                | 0.00 | 0.00 | 0.81                                                                                | 0.81                                                                                |
| Sat Flow, veh/h                                                      |                                                                                    |      |     | 1774                                                                              | 0                                                                                 | 3167                                                                              | 1774                                                                              | 5253                                                                                | 0    | 0    | 5253                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                 |                                                                                    |      |     | 420                                                                               | 0                                                                                 | 1197                                                                              | 246                                                                               | 2254                                                                                | 0    | 0    | 2081                                                                                | 577                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                             |                                                                                    |      |     | 1774                                                                              | 0                                                                                 | 1583                                                                              | 1774                                                                              | 1695                                                                                | 0    | 0    | 1695                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                      |                                                                                    |      |     | 24.9                                                                              | 0.0                                                                               | 39.7                                                                              | 16.4                                                                              | 0.0                                                                                 | 0.0  | 0.0  | 48.7                                                                                | 30.4                                                                                |
| Cycle Q Clear(g_c), s                                                |                                                                                    |      |     | 24.9                                                                              | 0.0                                                                               | 39.7                                                                              | 16.4                                                                              | 0.0                                                                                 | 0.0  | 0.0  | 48.7                                                                                | 30.4                                                                                |
| Prop In Lane                                                         |                                                                                    |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 0.00 | 0.00 |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                               |                                                                                    |      |     | 587                                                                               | 0                                                                                 | 1048                                                                              | 242                                                                               | 2954                                                                                | 0    | 0    | 2064                                                                                | 643                                                                                 |
| V/C Ratio(X)                                                         |                                                                                    |      |     | 0.72                                                                              | 0.00                                                                              | 1.14                                                                              | 1.01                                                                              | 0.76                                                                                | 0.00 | 0.00 | 1.01                                                                                | 0.90                                                                                |
| Avail Cap(c_a), veh/h                                                |                                                                                    |      |     | 587                                                                               | 0                                                                                 | 1048                                                                              | 242                                                                               | 2954                                                                                | 0    | 0    | 2064                                                                                | 643                                                                                 |
| HCM Platoon Ratio                                                    |                                                                                    |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                                | 1.00 | 1.00 | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)                                                   |                                                                                    |      |     | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.24                                                                              | 0.24                                                                                | 0.00 | 0.00 | 0.24                                                                                | 0.24                                                                                |
| Uniform Delay (d), s/veh                                             |                                                                                    |      |     | 35.2                                                                              | 0.0                                                                               | 40.2                                                                              | 43.6                                                                              | 0.0                                                                                 | 0.0  | 0.0  | 11.3                                                                                | 9.6                                                                                 |
| Incr Delay (d2), s/veh                                               |                                                                                    |      |     | 7.3                                                                               | 0.0                                                                               | 75.8                                                                              | 31.8                                                                              | 0.5                                                                                 | 0.0  | 0.0  | 11.8                                                                                | 5.3                                                                                 |
| Initial Q Delay(d3),s/veh                                            |                                                                                    |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                                 | 0.0  | 0.0  | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                             |                                                                                    |      |     | 13.3                                                                              | 0.0                                                                               | 28.3                                                                              | 10.1                                                                              | 0.1                                                                                 | 0.0  | 0.0  | 23.3                                                                                | 13.1                                                                                |
| LnGrp Delay(d),s/veh                                                 |                                                                                    |      |     | 42.5                                                                              | 0.0                                                                               | 116.0                                                                             | 75.5                                                                              | 0.5                                                                                 | 0.0  | 0.0  | 23.1                                                                                | 14.9                                                                                |
| LnGrp LOS                                                            |                                                                                    |      |     | D                                                                                 |                                                                                   | F                                                                                 | F                                                                                 | A                                                                                   |      |      | F                                                                                   | B                                                                                   |
| Approach Vol, veh/h                                                  |                                                                                    |      |     |                                                                                   | 1617                                                                              |                                                                                   |                                                                                   | 2500                                                                                |      |      | 2658                                                                                |                                                                                     |
| Approach Delay, s/veh                                                |                                                                                    |      |     |                                                                                   | 96.9                                                                              |                                                                                   |                                                                                   | 7.8                                                                                 |      |      | 21.3                                                                                |                                                                                     |
| Approach LOS                                                         |                                                                                    |      |     |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | A                                                                                   |      |      | C                                                                                   |                                                                                     |
| Timer                                                                | 1                                                                                  | 2    | 3   | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Assigned Phs                                                         |                                                                                    | 2    |     | 4                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 8                                                                                   |      |      |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                             |                                                                                    | 45.0 |     | 75.0                                                                              |                                                                                   |                                                                                   | 21.0                                                                              | 54.0                                                                                |      |      |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                              |                                                                                    | 5.3  |     | 5.3                                                                               |                                                                                   |                                                                                   | 4.6                                                                               | 5.3                                                                                 |      |      |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                          |                                                                                    | 39.7 |     | 69.7                                                                              |                                                                                   |                                                                                   | 16.4                                                                              | 48.7                                                                                |      |      |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                         |                                                                                    | 42.7 |     | 3.0                                                                               |                                                                                   |                                                                                   | 19.4                                                                              | 51.7                                                                                |      |      |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                              |                                                                                    | 0.0  |     | 59.3                                                                              |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                 |      |      |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                          |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                  |                                                                                    |      |     | 34.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                         |                                                                                    |      |     | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| <b>Notes</b>                                                         |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |
| User approved volume balancing among the lanes for turning movement. |                                                                                    |      |     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |      |                                                                                     |                                                                                     |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 90                                                                                | 113                                                                               | 458                                                                               | 434                                                                               | 130                                                                               | 465                                                                               | 2114                                                                               | 591                                                                                 | 279                                                                                 | 1588                                                                                | 106                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 47.3                                                                              | 47.3                                                                              | 38.0                                                                              | 47.3                                                                              | 47.3                                                                              | 38.0                                                                              | 54.0                                                                               | 54.0                                                                                | 18.7                                                                                | 34.7                                                                                | 34.7                                                                                |
| Total Split (%)      | 39.4%                                                                             | 39.4%                                                                             | 31.7%                                                                             | 39.4%                                                                             | 39.4%                                                                             | 31.7%                                                                             | 45.0%                                                                              | 45.0%                                                                               | 15.6%                                                                               | 28.9%                                                                               | 28.9%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 42.0                                                                              | 42.0                                                                              | 80.7                                                                              | 42.0                                                                              | 42.0                                                                              | 33.4                                                                              | 48.7                                                                               | 48.7                                                                                | 14.1                                                                                | 29.4                                                                                | 29.4                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.67                                                                              | 0.35                                                                              | 0.35                                                                              | 0.28                                                                              | 0.41                                                                               | 0.41                                                                                | 0.12                                                                                | 0.24                                                                                | 0.24                                                                                |
| v/c Ratio            | 0.54                                                                              | 0.18                                                                              | 0.44                                                                              | 1.02                                                                              | 0.68                                                                              | 0.98                                                                              | 1.07                                                                               | 0.69                                                                                | 1.41                                                                                | 1.05                                                                                | 0.24                                                                                |
| Control Delay        | 45.2                                                                              | 28.0                                                                              | 9.1                                                                               | 87.8                                                                              | 31.0                                                                              | 67.8                                                                              | 72.1                                                                               | 13.3                                                                                | 234.0                                                                               | 66.4                                                                                | 5.5                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 37.6                                                                              | 14.1                                                                               | 1.3                                                                                 | 0.0                                                                                 | 8.2                                                                                 | 0.0                                                                                 |
| Total Delay          | 45.2                                                                              | 28.0                                                                              | 9.1                                                                               | 87.8                                                                              | 31.0                                                                              | 105.4                                                                             | 86.3                                                                               | 14.6                                                                                | 234.0                                                                               | 74.7                                                                                | 5.5                                                                                 |
| LOS                  | D                                                                                 | C                                                                                 | A                                                                                 | F                                                                                 | C                                                                                 | F                                                                                 | F                                                                                  | B                                                                                   | F                                                                                   | E                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 17.3                                                                              |                                                                                   |                                                                                   | 59.8                                                                              |                                                                                   | 75.7                                                                               |                                                                                     |                                                                                     | 93.5                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   | E                                                                                  |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.41

Intersection Signal Delay: 73.1

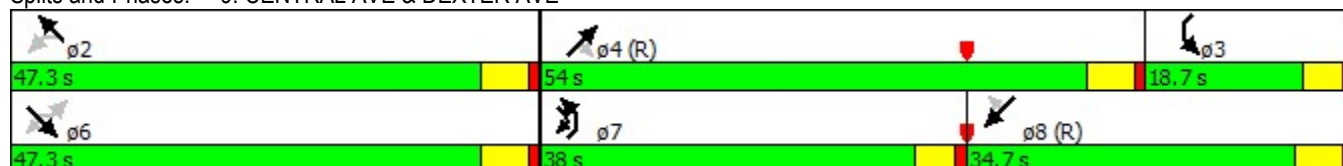
Intersection LOS: E

Intersection Capacity Utilization 105.7%

ICU Level of Service G

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE





## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

1/27/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 94                                                                                | 118                                                                               | 477                                                                               | 452                                                                               | 440                                                                               | 484                                                                               | 2202                                                                               | 616                                                                                 | 291                                                                                 | 1654                                                                                | 110                                                                                 |
| v/c Ratio               | 0.54                                                                              | 0.18                                                                              | 0.44                                                                              | 1.02                                                                              | 0.68                                                                              | 0.98                                                                              | 1.07                                                                               | 0.69                                                                                | 1.41                                                                                | 1.05                                                                                | 0.24                                                                                |
| Control Delay           | 45.2                                                                              | 28.0                                                                              | 9.1                                                                               | 87.8                                                                              | 31.0                                                                              | 67.8                                                                              | 72.1                                                                               | 13.3                                                                                | 234.0                                                                               | 66.4                                                                                | 5.5                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 37.6                                                                              | 14.1                                                                               | 1.3                                                                                 | 0.0                                                                                 | 8.2                                                                                 | 0.0                                                                                 |
| Total Delay             | 45.2                                                                              | 28.0                                                                              | 9.1                                                                               | 87.8                                                                              | 31.0                                                                              | 105.4                                                                             | 86.3                                                                               | 14.6                                                                                | 234.0                                                                               | 74.7                                                                                | 5.5                                                                                 |
| Queue Length 50th (ft)  | 58                                                                                | 63                                                                                | 131                                                                               | ~372                                                                              | 222                                                                               | 342                                                                               | ~713                                                                               | 123                                                                                 | ~300                                                                                | ~399                                                                                | 6                                                                                   |
| Queue Length 95th (ft)  | 121                                                                               | 108                                                                               | 197                                                                               | #579                                                                              | 343                                                                               | m#523                                                                             | m#755                                                                              | m171                                                                                | m#405                                                                               | m#461                                                                               | m13                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1321                                                                              |                                                                                   |                                                                                   | 1337                                                                              |                                                                                   | 302                                                                                |                                                                                     |                                                                                     | 250                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 140                                                                               |                                                                                   | 140                                                                               | 100                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 150                                                                                 |                                                                                     | 220                                                                                 |
| Base Capacity (vph)     | 173                                                                               | 652                                                                               | 1087                                                                              | 442                                                                               | 651                                                                               | 492                                                                               | 2063                                                                               | 894                                                                                 | 207                                                                                 | 1569                                                                                | 455                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 72                                                                                | 308                                                                                | 119                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 30                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.54                                                                              | 0.18                                                                              | 0.44                                                                              | 1.02                                                                              | 0.68                                                                              | 1.15                                                                              | 1.25                                                                               | 0.79                                                                                | 1.41                                                                                | 1.07                                                                                | 0.24                                                                                |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

1/27/2017

|                                                                    |  |  |  |  |  |  |   |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 90                                                                                | 113                                                                               | 458                                                                               | 434                                                                               | 130                                                                               | 293                                                                               | 465                                                                                 | 2114                                                                                | 591                                                                                 | 279                                                                                 | 1588                                                                                | 106                                                                                 |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 94                                                                                | 118                                                                               | 477                                                                               | 452                                                                               | 135                                                                               | 305                                                                               | 484                                                                                 | 2202                                                                                | 616                                                                                 | 291                                                                                 | 1654                                                                                | 110                                                                                 |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 177                                                                               | 652                                                                               | 995                                                                               | 311                                                                               | 178                                                                               | 403                                                                               | 494                                                                                 | 2064                                                                                | 643                                                                                 | 550                                                                                 | 2841                                                                                | 702                                                                                 |
| Arrive On Green                                                    | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.28                                                                                | 0.41                                                                                | 0.41                                                                                | 0.31                                                                                | 0.44                                                                                | 0.44                                                                                |
| Sat Flow, veh/h                                                    | 945                                                                               | 1863                                                                              | 1583                                                                              | 819                                                                               | 509                                                                               | 1150                                                                              | 1774                                                                                | 5085                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 94                                                                                | 118                                                                               | 477                                                                               | 452                                                                               | 0                                                                                 | 440                                                                               | 484                                                                                 | 2202                                                                                | 616                                                                                 | 291                                                                                 | 1654                                                                                | 110                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                           | 945                                                                               | 1863                                                                              | 1583                                                                              | 819                                                                               | 0                                                                                 | 1660                                                                              | 1774                                                                                | 1695                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 11.6                                                                              | 5.3                                                                               | 19.2                                                                              | 36.7                                                                              | 0.0                                                                               | 28.1                                                                              | 32.5                                                                                | 48.7                                                                                | 45.4                                                                                | 16.2                                                                                | 23.2                                                                                | 5.0                                                                                 |
| Cycle Q Clear(g_c), s                                              | 38.7                                                                              | 5.3                                                                               | 19.2                                                                              | 42.0                                                                              | 0.0                                                                               | 28.1                                                                              | 32.5                                                                                | 48.7                                                                                | 45.4                                                                                | 16.2                                                                                | 23.2                                                                                | 5.0                                                                                 |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.69                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 177                                                                               | 652                                                                               | 995                                                                               | 311                                                                               | 0                                                                                 | 581                                                                               | 494                                                                                 | 2064                                                                                | 643                                                                                 | 550                                                                                 | 2841                                                                                | 702                                                                                 |
| V/C Ratio(X)                                                       | 0.53                                                                              | 0.18                                                                              | 0.48                                                                              | 1.45                                                                              | 0.00                                                                              | 0.76                                                                              | 0.98                                                                                | 1.07                                                                                | 0.96                                                                                | 0.53                                                                                | 0.58                                                                                | 0.16                                                                                |
| Avail Cap(c_a), veh/h                                              | 177                                                                               | 652                                                                               | 995                                                                               | 311                                                                               | 0                                                                                 | 581                                                                               | 494                                                                                 | 2064                                                                                | 643                                                                                 | 550                                                                                 | 2841                                                                                | 702                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.49                                                                                | 0.49                                                                                | 0.49                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 51.1                                                                              | 27.1                                                                              | 11.9                                                                              | 45.2                                                                              | 0.0                                                                               | 34.5                                                                              | 43.0                                                                                | 35.7                                                                                | 34.7                                                                                | 34.2                                                                                | 25.1                                                                                | 20.0                                                                                |
| Incr Delay (d2), s/veh                                             | 10.9                                                                              | 0.6                                                                               | 1.7                                                                               | 221.7                                                                             | 0.0                                                                               | 8.9                                                                               | 23.6                                                                                | 35.9                                                                                | 16.8                                                                                | 0.5                                                                                 | 0.9                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 3.6                                                                               | 2.8                                                                               | 8.8                                                                               | 29.4                                                                              | 0.0                                                                               | 14.3                                                                              | 19.1                                                                                | 29.6                                                                                | 22.9                                                                                | 8.0                                                                                 | 10.4                                                                                | 2.3                                                                                 |
| LnGrp Delay(d),s/veh                                               | 62.1                                                                              | 27.7                                                                              | 13.5                                                                              | 266.9                                                                             | 0.0                                                                               | 43.4                                                                              | 66.5                                                                                | 71.6                                                                                | 51.5                                                                                | 34.7                                                                                | 25.9                                                                                | 20.5                                                                                |
| LnGrp LOS                                                          | E                                                                                 | C                                                                                 | B                                                                                 | F                                                                                 |                                                                                   | D                                                                                 | E                                                                                   | F                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 689                                                                               |                                                                                   |                                                                                   | 892                                                                               |                                                                                   |                                                                                     | 3302                                                                                |                                                                                     |                                                                                     | 2055                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 156.7                                                                             |                                                                                   |                                                                                     | 67.1                                                                                |                                                                                     |                                                                                     | 26.9                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 47.3                                                                              | 43.2                                                                              | 54.0                                                                              |                                                                                   | 47.3                                                                              | 38.0                                                                                | 59.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 5.3                                                                               | * 5.3                                                                             |                                                                                   | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 42.0                                                                              | 14.1                                                                              | * 49                                                                              |                                                                                   | 42.0                                                                              | 33.4                                                                                | 29.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                       |                                                                                   | 45.0                                                                              | 19.2                                                                              | 51.7                                                                              |                                                                                   | 41.7                                                                              | 35.5                                                                                | 26.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.2                                                                               | 0.0                                                                                 | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 62.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                      |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 262                                                                               | 10                                                                                | 114                                                                               | 195                                                                               | 9                                                                                 | 298                                                                               | 2073                                                                               | 26                                                                                  | 1349                                                                                | 165                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 33.9                                                                              | 33.9                                                                              | 11.0                                                                              | 31.0                                                                               | 11.0                                                                                | 31.0                                                                                | 31.0                                                                                |
| Total Split (s)      | 37.0                                                                              | 37.0                                                                              | 37.0                                                                              | 37.0                                                                              | 37.0                                                                              | 18.0                                                                              | 72.0                                                                               | 11.0                                                                                | 65.0                                                                                | 65.0                                                                                |
| Total Split (%)      | 30.8%                                                                             | 30.8%                                                                             | 30.8%                                                                             | 30.8%                                                                             | 30.8%                                                                             | 15.0%                                                                             | 60.0%                                                                              | 9.2%                                                                                | 54.2%                                                                               | 54.2%                                                                               |
| Yellow Time (s)      | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.9                                                                               | 3.6                                                                               | 5.0                                                                                | 3.6                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  |                                                                                   | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.6                                                                               | 6.0                                                                                | 4.6                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  |                                                                                   | 32.1                                                                              | 32.1                                                                              | 32.1                                                                              | 32.1                                                                              | 13.4                                                                              | 70.4                                                                               | 5.9                                                                                 | 59.0                                                                                | 59.0                                                                                |
| Actuated g/C Ratio   |                                                                                   | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.11                                                                              | 0.59                                                                               | 0.05                                                                                | 0.49                                                                                | 0.49                                                                                |
| v/c Ratio            |                                                                                   | 0.82                                                                              | 0.23                                                                              | 1.11                                                                              | 0.08                                                                              | 0.82                                                                              | 1.16                                                                               | 0.31                                                                                | 0.82                                                                                | 0.20                                                                                |
| Control Delay        |                                                                                   | 60.7                                                                              | 6.7                                                                               | 141.8                                                                             | 15.6                                                                              | 40.2                                                                              | 90.3                                                                               | 64.5                                                                                | 30.7                                                                                | 3.0                                                                                 |
| Queue Delay          |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          |                                                                                   | 60.7                                                                              | 6.7                                                                               | 141.8                                                                             | 15.6                                                                              | 40.2                                                                              | 90.3                                                                               | 64.5                                                                                | 30.7                                                                                | 3.0                                                                                 |
| LOS                  |                                                                                   | E                                                                                 | A                                                                                 | F                                                                                 | B                                                                                 | D                                                                                 | F                                                                                  | E                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 44.7                                                                              |                                                                                   |                                                                                   | 122.9                                                                             |                                                                                   | 84.5                                                                               |                                                                                     | 28.3                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   | F                                                                                  |                                                                                     | C                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 95 (79%), Referenced to phase 4:NET and 8:SWT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 64.8

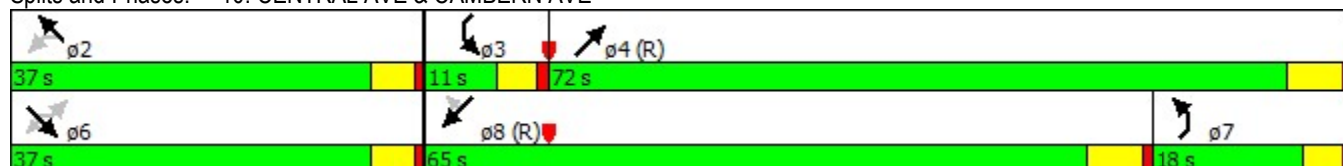
Intersection LOS: E

Intersection Capacity Utilization 102.3%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 10: CENTRAL AVE & CAMBERN AVE



## Queues

## 10: CENTRAL AVE &amp; CAMBERN AVE

1/27/2017



| Lane Group              | SET  | SER  | NWL   | NWT  | NEL  | NET    | SWL  | SWT  | SWR  |
|-------------------------|------|------|-------|------|------|--------|------|------|------|
| Lane Group Flow (vph)   | 287  | 120  | 205   | 36   | 314  | 2387   | 27   | 1420 | 174  |
| v/c Ratio               | 0.82 | 0.23 | 1.11  | 0.08 | 0.82 | 1.16   | 0.31 | 0.82 | 0.20 |
| Control Delay           | 60.7 | 6.7  | 141.8 | 15.6 | 40.2 | 90.3   | 64.5 | 30.7 | 3.0  |
| Queue Delay             | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0    | 0.0  | 0.0  | 0.0  |
| Total Delay             | 60.7 | 6.7  | 141.8 | 15.6 | 40.2 | 90.3   | 64.5 | 30.7 | 3.0  |
| Queue Length 50th (ft)  | 209  | 0    | ~182  | 5    | 132  | ~1243  | 21   | 476  | 0    |
| Queue Length 95th (ft)  | #354 | 44   | #337  | 32   | m135 | m#1164 | 52   | 576  | 36   |
| Internal Link Dist (ft) | 1204 |      |       | 1267 |      | 636    |      | 2064 |      |
| Turn Bay Length (ft)    |      | 200  | 75    |      | 250  |        | 400  |      | 400  |
| Base Capacity (vph)     | 352  | 514  | 184   | 461  | 383  | 2055   | 94   | 1740 | 866  |
| Starvation Cap Reductn  | 0    | 0    | 0     | 0    | 0    | 0      | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0     | 0    | 0    | 0      | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0     | 0    | 0    | 0      | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.82 | 0.23 | 1.11  | 0.08 | 0.82 | 1.16   | 0.29 | 0.82 | 0.20 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 10: CENTRAL AVE & CAMBERN AVE

1/27/2017

|                                                                                                     |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                            | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                                                 |                                                                                   |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Volume (veh/h)                                                                                      | 262                                                                               | 10                                                                                | 114                                                                               | 195                                                                               | 9                                                                                 | 26                                                                                | 298                                                                                 | 2073                                                                                | 195                                                                                 | 26                                                                                  | 1349                                                                                | 165                                                                                 |
| Number                                                                                              | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                                                                | 276                                                                               | 11                                                                                | 120                                                                               | 205                                                                               | 9                                                                                 | 27                                                                                | 314                                                                                 | 2182                                                                                | 205                                                                                 | 27                                                                                  | 1420                                                                                | 174                                                                                 |
| Adj No. of Lanes                                                                                    | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                                                    | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %                                                                                | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                          | 392                                                                               | 13                                                                                | 424                                                                               | 139                                                                               | 110                                                                               | 330                                                                               | 883                                                                                 | 2408                                                                                | 223                                                                                 | 44                                                                                  | 1740                                                                                | 778                                                                                 |
| Arrive On Green                                                                                     | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.26                                                                                | 0.74                                                                                | 0.74                                                                                | 0.02                                                                                | 0.49                                                                                | 0.49                                                                                |
| Sat Flow, veh/h                                                                                     | 1246                                                                              | 50                                                                                | 1583                                                                              | 1254                                                                              | 411                                                                               | 1234                                                                              | 3442                                                                                | 3276                                                                                | 303                                                                                 | 1774                                                                                | 3539                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                                                                | 287                                                                               | 0                                                                                 | 120                                                                               | 205                                                                               | 0                                                                                 | 36                                                                                | 314                                                                                 | 1163                                                                                | 1224                                                                                | 27                                                                                  | 1420                                                                                | 174                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                                                            | 1296                                                                              | 0                                                                                 | 1583                                                                              | 1254                                                                              | 0                                                                                 | 1645                                                                              | 1721                                                                                | 1770                                                                                | 1809                                                                                | 1774                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                                                     | 23.6                                                                              | 0.0                                                                               | 7.2                                                                               | 7.6                                                                               | 0.0                                                                               | 2.0                                                                               | 9.0                                                                                 | 60.9                                                                                | 66.5                                                                                | 1.8                                                                                 | 40.9                                                                                | 7.5                                                                                 |
| Cycle Q Clear(g_c), s                                                                               | 25.5                                                                              | 0.0                                                                               | 7.2                                                                               | 32.1                                                                              | 0.0                                                                               | 2.0                                                                               | 9.0                                                                                 | 60.9                                                                                | 66.5                                                                                | 1.8                                                                                 | 40.9                                                                                | 7.5                                                                                 |
| Prop In Lane                                                                                        | 0.96                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.75                                                                              | 1.00                                                                                |                                                                                     | 0.17                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                              | 406                                                                               | 0                                                                                 | 424                                                                               | 139                                                                               | 0                                                                                 | 440                                                                               | 883                                                                                 | 1301                                                                                | 1330                                                                                | 44                                                                                  | 1740                                                                                | 778                                                                                 |
| V/C Ratio(X)                                                                                        | 0.71                                                                              | 0.00                                                                              | 0.28                                                                              | 1.48                                                                              | 0.00                                                                              | 0.08                                                                              | 0.36                                                                                | 0.89                                                                                | 0.92                                                                                | 0.62                                                                                | 0.82                                                                                | 0.22                                                                                |
| Avail Cap(c_a), veh/h                                                                               | 406                                                                               | 0                                                                                 | 424                                                                               | 139                                                                               | 0                                                                                 | 440                                                                               | 883                                                                                 | 1301                                                                                | 1330                                                                                | 95                                                                                  | 1740                                                                                | 778                                                                                 |
| HCM Platoon Ratio                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                  | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                            | 42.5                                                                              | 0.0                                                                               | 34.8                                                                              | 57.9                                                                              | 0.0                                                                               | 32.9                                                                              | 36.5                                                                                | 12.3                                                                                | 13.0                                                                                | 58.0                                                                                | 25.9                                                                                | 17.4                                                                                |
| Incr Delay (d2), s/veh                                                                              | 10.0                                                                              | 0.0                                                                               | 1.7                                                                               | 248.8                                                                             | 0.0                                                                               | 0.4                                                                               | 0.1                                                                                 | 9.7                                                                                 | 11.8                                                                                | 5.1                                                                                 | 4.4                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh                                                                           | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                            | 10.1                                                                              | 0.0                                                                               | 3.4                                                                               | 14.2                                                                              | 0.0                                                                               | 0.9                                                                               | 4.3                                                                                 | 32.6                                                                                | 37.0                                                                                | 0.9                                                                                 | 21.0                                                                                | 3.4                                                                                 |
| LnGrp Delay(d),s/veh                                                                                | 52.5                                                                              | 0.0                                                                               | 36.5                                                                              | 306.6                                                                             | 0.0                                                                               | 33.3                                                                              | 36.6                                                                                | 22.0                                                                                | 24.8                                                                                | 63.1                                                                                | 30.3                                                                                | 18.1                                                                                |
| LnGrp LOS                                                                                           | D                                                                                 |                                                                                   | D                                                                                 | F                                                                                 |                                                                                   | C                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h                                                                                 |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 241                                                                               |                                                                                   |                                                                                     | 2701                                                                                |                                                                                     |                                                                                     | 1621                                                                                |                                                                                     |
| Approach Delay, s/veh                                                                               |                                                                                   | 47.8                                                                              |                                                                                   |                                                                                   | 265.8                                                                             |                                                                                   |                                                                                     | 24.9                                                                                |                                                                                     |                                                                                     | 29.5                                                                                |                                                                                     |
| Approach LOS                                                                                        |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                                                                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                                                        |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                            |                                                                                   | 37.0                                                                              | 7.6                                                                               | 94.3                                                                              |                                                                                   | 37.0                                                                              | 36.9                                                                                | 65.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                             |                                                                                   | 4.9                                                                               | 4.6                                                                               | 6.0                                                                               |                                                                                   | 4.9                                                                               | 6.0                                                                                 | * 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                         |                                                                                   | 32.1                                                                              | 6.4                                                                               | 66.0                                                                              |                                                                                   | 32.1                                                                              | 13.4                                                                                | * 59                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                        |                                                                                   | 35.1                                                                              | 4.8                                                                               | 68.5                                                                              |                                                                                   | 27.5                                                                              | 12.0                                                                                | 43.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                             |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.9                                                                               | 0.1                                                                                 | 7.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 40.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                                                        |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017



| Lane Group           | WBL   | WBR   | NBT   | NBR   | SBL   | SBT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |
| Volume (vph)         | 155   | 30    | 1885  | 276   | 43    | 1267  |
| Turn Type            | Prot  | Perm  | NA    | Perm  | Prot  | NA    |
| Protected Phases     | 8     |       | 2     |       | 1     | 6     |
| Permitted Phases     |       | 8     |       | 2     |       |       |
| Detector Phase       | 8     | 8     | 2     | 2     | 1     | 6     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 8.0   | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 38.0  | 38.0  | 20.0  | 20.0  | 11.0  | 39.0  |
| Total Split (s)      | 39.0  | 39.0  | 69.0  | 69.0  | 12.0  | 81.0  |
| Total Split (%)      | 32.5% | 32.5% | 57.5% | 57.5% | 10.0% | 67.5% |
| Yellow Time (s)      | 4.0   | 4.0   | 6.0   | 6.0   | 4.0   | 6.0   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 7.0   | 7.0   | 5.0   | 7.0   |
| Lead/Lag             |       |       | Lag   | Lag   | Lead  |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | None  | None  | Max   | Max   | None  | Max   |
| Act Effect Green (s) | 13.1  | 13.1  | 67.1  | 67.1  | 6.3   | 74.1  |
| Actuated g/C Ratio   | 0.13  | 0.13  | 0.68  | 0.68  | 0.06  | 0.75  |
| v/c Ratio            | 0.68  | 0.13  | 0.56  | 0.25  | 0.39  | 0.49  |
| Control Delay        | 55.6  | 14.2  | 10.6  | 5.2   | 56.0  | 6.1   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 55.6  | 14.2  | 10.6  | 5.2   | 56.0  | 6.1   |
| LOS                  | E     | B     | B     | A     | E     | A     |
| Approach Delay       | 48.8  |       | 9.9   |       |       | 7.8   |
| Approach LOS         | D     |       | A     |       |       | A     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 99.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 11.1

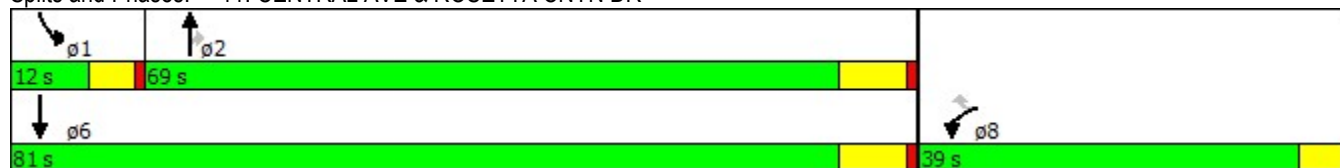
Intersection LOS: B

Intersection Capacity Utilization 55.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: CENTRAL AVE & ROSETTA CNYN DR



## Queues

## 11: CENTRAL AVE &amp; ROSETTA CNYN DR

1/27/2017



| Lane Group              | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 158  | 31   | 1923 | 282  | 44   | 1293 |
| v/c Ratio               | 0.68 | 0.13 | 0.56 | 0.25 | 0.39 | 0.49 |
| Control Delay           | 55.6 | 14.2 | 10.6 | 5.2  | 56.0 | 6.1  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 55.6 | 14.2 | 10.6 | 5.2  | 56.0 | 6.1  |
| Queue Length 50th (ft)  | 96   | 0    | 244  | 38   | 27   | 142  |
| Queue Length 95th (ft)  | 163  | 26   | 337  | 87   | 65   | 228  |
| Internal Link Dist (ft) | 1570 |      | 1523 |      |      | 2926 |
| Turn Bay Length (ft)    |      |      |      | 100  | 250  |      |
| Base Capacity (vph)     | 607  | 563  | 3437 | 1110 | 125  | 2642 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.26 | 0.06 | 0.56 | 0.25 | 0.35 | 0.49 |
| Intersection Summary    |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 11: CENTRAL AVE & ROSETTA CNYN DR

1/27/2017

|                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|------|
|                              |  |  |  |  |  |  |   |      |
| Movement                     | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |   |      |
| Lane Configurations          |  |  |  |  |  |  |   |      |
| Volume (veh/h)               | 155                                                                               | 30                                                                                | 1885                                                                              | 276                                                                               | 43                                                                                | 1267                                                                              |   |      |
| Number                       | 3                                                                                 | 18                                                                                | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 |   |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |      |
| Adj Flow Rate, veh/h         | 158                                                                               | 31                                                                                | 1923                                                                              | 282                                                                               | 44                                                                                | 1293                                                                              |   |      |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 3                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |   |      |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              |   |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |      |
| Cap, veh/h                   | 211                                                                               | 188                                                                               | 3400                                                                              | 1059                                                                              | 68                                                                                | 2684                                                                              |   |      |
| Arrive On Green              | 0.12                                                                              | 0.12                                                                              | 0.67                                                                              | 0.67                                                                              | 0.04                                                                              | 0.76                                                                              |   |      |
| Sat Flow, veh/h              | 1774                                                                              | 1583                                                                              | 5253                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              |   |      |
| Grp Volume(v), veh/h         | 158                                                                               | 31                                                                                | 1923                                                                              | 282                                                                               | 44                                                                                | 1293                                                                              |   |      |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1583                                                                              | 1695                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              |   |      |
| Q Serve(g_s), s              | 8.4                                                                               | 1.7                                                                               | 19.7                                                                              | 7.0                                                                               | 2.4                                                                               | 13.6                                                                              |   |      |
| Cycle Q Clear(g_c), s        | 8.4                                                                               | 1.7                                                                               | 19.7                                                                              | 7.0                                                                               | 2.4                                                                               | 13.6                                                                              |   |      |
| Prop In Lane                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |   |      |
| Lane Grp Cap(c), veh/h       | 211                                                                               | 188                                                                               | 3400                                                                              | 1059                                                                              | 68                                                                                | 2684                                                                              |   |      |
| V/C Ratio(X)                 | 0.75                                                                              | 0.16                                                                              | 0.57                                                                              | 0.27                                                                              | 0.64                                                                              | 0.48                                                                              |   |      |
| Avail Cap(c_a), veh/h        | 618                                                                               | 552                                                                               | 3400                                                                              | 1059                                                                              | 127                                                                               | 2684                                                                              |   |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |      |
| Uniform Delay (d), s/veh     | 41.6                                                                              | 38.6                                                                              | 8.6                                                                               | 6.5                                                                               | 46.3                                                                              | 4.5                                                                               |   |      |
| Incr Delay (d2), s/veh       | 2.0                                                                               | 0.2                                                                               | 0.7                                                                               | 0.6                                                                               | 3.7                                                                               | 0.6                                                                               |   |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |      |
| %ile BackOfQ(50%),veh/ln     | 4.2                                                                               | 0.8                                                                               | 9.3                                                                               | 3.2                                                                               | 1.2                                                                               | 6.7                                                                               |   |      |
| LnGrp Delay(d),s/veh         | 43.6                                                                              | 38.8                                                                              | 9.3                                                                               | 7.1                                                                               | 50.0                                                                              | 5.1                                                                               |   |      |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | D                                                                                 | A                                                                                 |   |      |
| Approach Vol, veh/h          | 189                                                                               |                                                                                   | 2205                                                                              |                                                                                   |                                                                                   | 1337                                                                              |   |      |
| Approach Delay, s/veh        | 42.8                                                                              |                                                                                   | 9.0                                                                               |                                                                                   |                                                                                   | 6.6                                                                               |   |      |
| Approach LOS                 | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |   |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |   | 8    |
| Phs Duration (G+Y+Rc), s     | 8.8                                                                               | 72.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 81.0                                                                              |   | 16.6 |
| Change Period (Y+Rc), s      | 5.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               |   | 5.0  |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 62.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 74.0                                                                              |   | 34.0 |
| Max Q Clear Time (g_c+l1), s | 5.4                                                                               | 22.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 16.6                                                                              |   | 11.4 |
| Green Ext Time (p_c), s      | 0.0                                                                               | 35.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 49.5                                                                              |   | 0.3  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                   |                                                                                   |   |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |      |



HCM 2010 TWSC  
12: COLLIER AVE & PROJECT ACCESS

1/27/2017

| Intersection             |        |      |        |      |        |      |
|--------------------------|--------|------|--------|------|--------|------|
| Int Delay, s/veh         | 3      |      |        |      |        |      |
|                          |        |      |        |      |        |      |
| Movement                 | SEL    | SET  | NWT    | NWR  | SWL    | SWR  |
| Vol, veh/h               | 182    | 610  | 903    | 36   | 0      | 71   |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0    | 0      | 0    |
| Sign Control             | Free   | Free | Free   | Free | Stop   | Stop |
| RT Channelized           | -      | None | -      | None | -      | None |
| Storage Length           | 200    | -    | -      | -    | -      | 0    |
| Veh in Median Storage, # | -      | 0    | 0      | -    | 0      | -    |
| Grade, %                 | -      | 0    | 0      | -    | 0      | -    |
| Peak Hour Factor         | 92     | 92   | 92     | 92   | 92     | 92   |
| Heavy Vehicles, %        | 2      | 2    | 2      | 2    | 2      | 2    |
| Mvmt Flow                | 198    | 663  | 982    | 39   | 0      | 77   |
|                          |        |      |        |      |        |      |
| Major/Minor              | Major1 |      | Major2 |      | Minor2 |      |
| Conflicting Flow All     | 1021   | 0    | -      | 0    | 1728   | 510  |
| Stage 1                  | -      | -    | -      | -    | 1001   | -    |
| Stage 2                  | -      | -    | -      | -    | 727    | -    |
| Critical Hdwy            | 5.34   | -    | -      | -    | 6.29   | 7.14 |
| Critical Hdwy Stg 1      | -      | -    | -      | -    | 6.64   | -    |
| Critical Hdwy Stg 2      | -      | -    | -      | -    | 5.84   | -    |
| Follow-up Hdwy           | 3.12   | -    | -      | -    | 3.67   | 3.92 |
| Pot Cap-1 Maneuver       | 382    | -    | -      | -    | 102    | 435  |
| Stage 1                  | -      | -    | -      | -    | 247    | -    |
| Stage 2                  | -      | -    | -      | -    | 427    | -    |
| Platoon blocked, %       |        | -    | -      | -    |        |      |
| Mov Cap-1 Maneuver       | 382    | -    | -      | -    | 49     | 435  |
| Mov Cap-2 Maneuver       | -      | -    | -      | -    | 49     | -    |
| Stage 1                  | -      | -    | -      | -    | 247    | -    |
| Stage 2                  | -      | -    | -      | -    | 206    | -    |
|                          |        |      |        |      |        |      |
| Approach                 | SE     |      | NW     |      | SW     |      |
| HCM Control Delay, s     | 5.5    |      | 0      |      | 15.1   |      |
| HCM LOS                  | C      |      |        |      |        |      |
|                          |        |      |        |      |        |      |
| Minor Lane/Major Mvmt    | NWT    | NWR  | SEL    | SET  | SWLn1  |      |
| Capacity (veh/h)         | -      | -    | 382    | -    | 435    |      |
| HCM Lane V/C Ratio       | -      | -    | 0.518  | -    | 0.177  |      |
| HCM Control Delay (s)    | -      | -    | 24.1   | -    | 15.1   |      |
| HCM Lane LOS             | -      | -    | C      | -    | C      |      |
| HCM 95th %tile Q(veh)    | -      | -    | 2.9    | -    | 0.6    |      |

# Lanes and Geometrics

## 12: COLLIER AVE & PROJECT ACCESS

1/27/2017



| Lane Group          | SEL  | SET  | NWT  | NWR  | SWL  | SWR  |
|---------------------|------|------|------|------|------|------|
| Lane Configurations |      |      |      |      |      |      |
| Ideal Flow (vphpl)  | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft)     | 12   | 12   | 12   | 12   | 12   | 12   |
| Grade (%)           |      | 0%   | 0%   |      | 0%   |      |
| Storage Length (ft) | 200  |      |      | 0    | 0    | 0    |
| Storage Lanes       | 1    |      |      | 0    | 0    | 1    |
| Taper Length (ft)   | 25   |      |      |      | 25   |      |
| Link Speed (mph)    |      | 30   | 30   |      | 30   |      |
| Link Distance (ft)  |      | 543  | 118  |      | 355  |      |
| Travel Time (s)     |      | 12.3 | 2.7  |      | 8.1  |      |

### Intersection Summary

|            |       |
|------------|-------|
| Area Type: | Other |
|------------|-------|

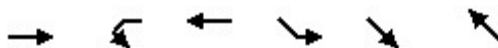
## **Appendix J**

Mitigated Cumulative Conditions (Existing Plus Ambient Growth Plus  
Cumulative Projects Plus Proposed Project) Intersection Analysis Worksheets

# Timings

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017



| Lane Group           | EBT   | WBL   | WBT   | SEL   | SET   | NWT   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↔     |       | ↔     |       | ↔     | ↔     |
| Volume (vph)         | 1108  | 5     | 919   | 54    | 2     | 1     |
| Turn Type            | NA    | Perm  | NA    | Perm  | NA    | NA    |
| Protected Phases     | 4     |       | 8     |       | 6     | 2     |
| Permitted Phases     |       | 8     |       | 6     |       |       |
| Detector Phase       | 4     | 8     | 8     | 6     | 6     | 2     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 98.7  | 98.7  | 98.7  | 21.3  | 21.3  | 21.3  |
| Total Split (%)      | 82.3% | 82.3% | 82.3% | 17.8% | 17.8% | 17.8% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   |       | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   |       | 5.3   |       | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | C-Max | C-Max | C-Max | Max   | Max   | Max   |
| Act Effect Green (s) | 93.4  |       | 93.4  |       | 16.0  | 16.0  |
| Actuated g/C Ratio   | 0.78  |       | 0.78  |       | 0.13  | 0.13  |
| v/c Ratio            | 0.80  |       | 0.70  |       | 0.35  | 0.04  |
| Control Delay        | 13.5  |       | 1.9   |       | 50.2  | 27.4  |
| Queue Delay          | 0.0   |       | 0.0   |       | 0.0   | 0.0   |
| Total Delay          | 13.5  |       | 1.9   |       | 50.2  | 27.4  |
| LOS                  | B     |       | A     |       | D     | C     |
| Approach Delay       | 13.5  |       | 1.9   |       | 50.2  | 27.4  |
| Approach LOS         | B     |       | A     |       | D     | C     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 26 (22%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 9.5

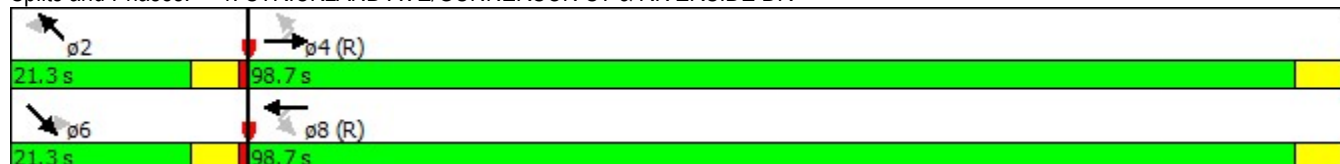
Intersection LOS: A

Intersection Capacity Utilization 77.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR



## Queues

### 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017



| Lane Group              | EBT  | WBT  | SET  | NWT  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 1167 | 1005 | 65   | 8    |
| v/c Ratio               | 0.80 | 0.70 | 0.35 | 0.04 |
| Control Delay           | 13.5 | 1.9  | 50.2 | 27.4 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 13.5 | 1.9  | 50.2 | 27.4 |
| Queue Length 50th (ft)  | 448  | 7    | 43   | 1    |
| Queue Length 95th (ft)  | 664  | m6   | 90   | 16   |
| Internal Link Dist (ft) | 1607 | 855  | 805  | 1652 |
| Turn Bay Length (ft)    |      |      |      |      |
| Base Capacity (vph)     | 1450 | 1437 | 186  | 225  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.80 | 0.70 | 0.35 | 0.04 |

#### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 0                                                                                 | 1108                                                                              | 1                                                                                 | 5                                                                                 | 919                                                                               | 31                                                                                | 54                                                                                 | 2                                                                                   | 6                                                                                   | 0                                                                                   | 1                                                                                   | 7                                                                                   |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 1                                                                                  | 6                                                                                   | 16                                                                                  | 5                                                                                   | 2                                                                                   | 12                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1166                                                                              | 1                                                                                 | 5                                                                                 | 967                                                                               | 33                                                                                | 57                                                                                 | 2                                                                                   | 6                                                                                   | 0                                                                                   | 1                                                                                   | 7                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1448                                                                              | 1                                                                                 | 32                                                                                | 1387                                                                              | 47                                                                                | 218                                                                                | 10                                                                                  | 17                                                                                  | 0                                                                                   | 27                                                                                  | 188                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.13                                                                               | 0.13                                                                                | 0.13                                                                                | 0.00                                                                                | 0.13                                                                                | 0.13                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 1861                                                                              | 2                                                                                 | 2                                                                                 | 1782                                                                              | 61                                                                                | 1211                                                                               | 72                                                                                  | 130                                                                                 | 0                                                                                   | 202                                                                                 | 1412                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 0                                                                                 | 1167                                                                              | 1005                                                                              | 0                                                                                 | 0                                                                                 | 65                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 8                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 0                                                                                 | 1862                                                                              | 1845                                                                              | 0                                                                                 | 0                                                                                 | 1414                                                                               | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 1614                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 44.6                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 4.6                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.5                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 44.6                                                                              | 31.6                                                                              | 0.0                                                                               | 0.0                                                                               | 5.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.5                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   | 0.03                                                                              | 0.88                                                                               |                                                                                     | 0.09                                                                                | 0.00                                                                                |                                                                                     | 0.87                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 0                                                                                 | 1450                                                                              | 1466                                                                              | 0                                                                                 | 0                                                                                 | 245                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 215                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.00                                                                              | 0.81                                                                              | 0.69                                                                              | 0.00                                                                              | 0.00                                                                              | 0.27                                                                               | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.04                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 0                                                                                 | 1450                                                                              | 1466                                                                              | 0                                                                                 | 0                                                                                 | 245                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 215                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 7.9                                                                               | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 47.3                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 45.3                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.0                                                                               | 4.9                                                                               | 2.6                                                                               | 0.0                                                                               | 0.0                                                                               | 2.6                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.0                                                                               | 24.3                                                                              | 16.7                                                                              | 0.0                                                                               | 0.0                                                                               | 2.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.0                                                                               | 12.8                                                                              | 9.1                                                                               | 0.0                                                                               | 0.0                                                                               | 50.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 45.6                                                                                |
| LnGrp LOS                    |                                                                                   |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1167                                                                              |                                                                                   |                                                                                   | 1005                                                                              |                                                                                   |                                                                                    | 65                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 12.8                                                                              |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                    | 50.0                                                                                |                                                                                     |                                                                                     | 45.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 21.3                                                                              |                                                                                   | 98.7                                                                              |                                                                                   | 21.3                                                                              |                                                                                    | 98.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 16.0                                                                              |                                                                                   | 93.4                                                                              |                                                                                   | 16.0                                                                              |                                                                                    | 93.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 2.5                                                                               |                                                                                   | 46.6                                                                              |                                                                                   | 7.1                                                                               |                                                                                    | 33.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.1                                                                               |                                                                                   | 21.0                                                                              |                                                                                   | 0.1                                                                               |                                                                                    | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 12.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 4: CRANE ST & COLLIER AVE

1/31/2017



| Lane Group           | SET   | NWL   | NWT   | NEL   | NET   | SWL   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↑↑    | ↖     | ↗     | ↖     | ↗     | ↖     | ↗     |
| Volume (vph)         | 878   | 11    | 502   | 4     | 0     | 30    | 0     |
| Turn Type            | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 6     |       | 2     |       | 4     |       | 8     |
| Permitted Phases     |       | 2     |       | 4     |       | 8     |       |
| Detector Phase       | 6     | 2     | 2     | 4     | 4     | 8     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 40.0  | 40.0  | 40.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (%)      | 66.7% | 66.7% | 66.7% | 33.3% | 33.3% | 33.3% | 33.3% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   |
| Lead/Lag             |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | None  | None  | None  | None  |
| Act Effect Green (s) | 30.8  | 30.8  | 30.8  | 7.5   | 7.5   |       | 7.5   |
| Actuated g/C Ratio   | 0.86  | 0.86  | 0.86  | 0.21  | 0.21  |       | 0.21  |
| v/c Ratio            | 0.35  | 0.03  | 0.37  | 0.01  | 0.04  |       | 0.12  |
| Control Delay        | 2.6   | 2.9   | 3.4   | 14.5  | 0.2   |       | 11.7  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   |
| Total Delay          | 2.6   | 2.9   | 3.4   | 14.5  | 0.2   |       | 11.7  |
| LOS                  | A     | A     | A     | B     | A     |       | B     |
| Approach Delay       | 2.6   |       | 3.4   |       | 3.3   |       | 11.7  |
| Approach LOS         | A     |       | A     |       | A     |       | B     |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 36

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 3.1

Intersection LOS: A

Intersection Capacity Utilization 42.0%

ICU Level of Service A

Analysis Period (min) 15

### Splits and Phases: 4: CRANE ST & COLLIER AVE

|            |            |
|------------|------------|
| ø2<br>40 s | ø4<br>20 s |
| ø6<br>40 s | ø8<br>20 s |

## Queues

## 4: CRANE ST &amp; COLLIER AVE

1/31/2017



| Lane Group              | SET  | NWL  | NWT  | NEL  | NET  | SWT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 1062 | 13   | 591  | 5    | 18   | 47   |
| v/c Ratio               | 0.35 | 0.03 | 0.37 | 0.01 | 0.04 | 0.12 |
| Control Delay           | 2.6  | 2.9  | 3.4  | 14.5 | 0.2  | 11.7 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 2.6  | 2.9  | 3.4  | 14.5 | 0.2  | 11.7 |
| Queue Length 50th (ft)  | 0    | 0    | 0    | 1    | 0    | 4    |
| Queue Length 95th (ft)  | 78   | 5    | 104  | 7    | 0    | 24   |
| Internal Link Dist (ft) | 38   |      | 1917 |      | 1255 | 261  |
| Turn Bay Length (ft)    |      | 150  |      | 90   |      |      |
| Base Capacity (vph)     | 3272 | 453  | 1729 | 855  | 787  | 835  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.32 | 0.03 | 0.34 | 0.01 | 0.02 | 0.06 |
| Intersection Summary    |      |      |      |      |      |      |



# HCM 2010 Signalized Intersection Summary

## 4: CRANE ST & COLLIER AVE

1/31/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 0                                                                                 | 878                                                                               | 25                                                                                | 11                                                                                | 502                                                                               | 0                                                                                 | 4                                                                                   | 0                                                                                   | 15                                                                                  | 30                                                                                  | 0                                                                                   | 10                                                                                  |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1033                                                                              | 29                                                                                | 13                                                                                | 591                                                                               | 0                                                                                 | 5                                                                                   | 0                                                                                   | 18                                                                                  | 35                                                                                  | 0                                                                                   | 12                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 221                                                                               | 2297                                                                              | 64                                                                                | 491                                                                               | 1217                                                                              | 0                                                                                 | 375                                                                                 | 0                                                                                   | 160                                                                                 | 290                                                                                 | 7                                                                                   | 35                                                                                  |
| Arrive On Green              | 0.00                                                                              | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.65                                                                              | 0.00                                                                              | 0.10                                                                                | 0.00                                                                                | 0.10                                                                                | 0.10                                                                                | 0.00                                                                                | 0.10                                                                                |
| Sat Flow, veh/h              | 822                                                                               | 3516                                                                              | 99                                                                                | 529                                                                               | 1863                                                                              | 0                                                                                 | 1397                                                                                | 0                                                                                   | 1583                                                                                | 958                                                                                 | 66                                                                                  | 351                                                                                 |
| Grp Volume(v), veh/h         | 0                                                                                 | 520                                                                               | 542                                                                               | 13                                                                                | 591                                                                               | 0                                                                                 | 5                                                                                   | 0                                                                                   | 18                                                                                  | 47                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 822                                                                               | 1770                                                                              | 1845                                                                              | 529                                                                               | 1863                                                                              | 0                                                                                 | 1397                                                                                | 0                                                                                   | 1583                                                                                | 1375                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 4.7                                                                               | 4.7                                                                               | 0.4                                                                               | 5.2                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 4.7                                                                               | 4.7                                                                               | 5.1                                                                               | 5.2                                                                               | 0.0                                                                               | 0.1                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.05                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 0.74                                                                                |                                                                                     | 0.26                                                                                |
| Lane Grp Cap(c), veh/h       | 221                                                                               | 1156                                                                              | 1205                                                                              | 491                                                                               | 1217                                                                              | 0                                                                                 | 375                                                                                 | 0                                                                                   | 160                                                                                 | 332                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.00                                                                              | 0.45                                                                              | 0.45                                                                              | 0.03                                                                              | 0.49                                                                              | 0.00                                                                              | 0.01                                                                                | 0.00                                                                                | 0.11                                                                                | 0.14                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 594                                                                               | 1958                                                                              | 2042                                                                              | 730                                                                               | 2061                                                                              | 0                                                                                 | 921                                                                                 | 0                                                                                   | 779                                                                                 | 892                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 2.8                                                                               | 2.8                                                                               | 4.0                                                                               | 2.9                                                                               | 0.0                                                                               | 13.2                                                                                | 0.0                                                                                 | 13.3                                                                                | 13.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.3                                                                               | 0.3                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.3                                                                               | 2.3                                                                               | 0.1                                                                               | 2.7                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 3.0                                                                               | 3.0                                                                               | 4.0                                                                               | 3.2                                                                               | 0.0                                                                               | 13.2                                                                                | 0.0                                                                                 | 13.6                                                                                | 13.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1062                                                                              |                                                                                   |                                                                                   | 604                                                                               |                                                                                   |                                                                                     | 23                                                                                  |                                                                                     |                                                                                     | 47                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   | 3.2                                                                               |                                                                                   |                                                                                     | 13.5                                                                                |                                                                                     |                                                                                     | 13.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 25.3                                                                              |                                                                                   | 7.3                                                                               |                                                                                   | 25.3                                                                              |                                                                                     | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 36.0                                                                              |                                                                                   | 16.0                                                                              |                                                                                   | 36.0                                                                              |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 7.2                                                                               |                                                                                   | 2.3                                                                               |                                                                                   | 6.7                                                                               |                                                                                     | 3.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 14.0                                                                              |                                                                                   | 0.2                                                                               |                                                                                   | 14.1                                                                              |                                                                                     | 0.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 5: CHANEY ST & COLLIER AVE

1/31/2017



| Lane Group           | SET   | SER   | NWL   | NWT   | NEL   | NER   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↑     | ↑     |       | ↑     | ↑     | ↑     |
| Volume (vph)         | 92    | 713   | 167   | 111   | 360   | 34    |
| Turn Type            | NA    | Perm  | Perm  | NA    | Prot  | Perm  |
| Protected Phases     | 6     |       |       | 2     | 4     |       |
| Permitted Phases     |       | 6     | 2     |       |       | 4     |
| Detector Phase       | 6     | 6     | 2     | 2     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 34.0  | 34.0  | 34.0  | 34.0  | 26.0  | 26.0  |
| Total Split (%)      | 56.7% | 56.7% | 56.7% | 56.7% | 43.3% | 43.3% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   |       | 5.3   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | Min   | None  | None  |
| Act Effect Green (s) | 15.2  | 15.2  |       | 15.2  | 14.1  | 14.1  |
| Actuated g/C Ratio   | 0.37  | 0.37  |       | 0.37  | 0.35  | 0.35  |
| v/c Ratio            | 0.16  | 0.76  |       | 0.64  | 0.71  | 0.07  |
| Control Delay        | 9.4   | 6.2   |       | 17.2  | 20.7  | 5.2   |
| Queue Delay          | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 9.4   | 6.2   |       | 17.2  | 20.7  | 5.2   |
| LOS                  | A     | A     |       | B     | C     | A     |
| Approach Delay       | 6.5   |       |       | 17.2  | 19.3  |       |
| Approach LOS         | A     |       |       | B     | B     |       |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 40.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 11.9

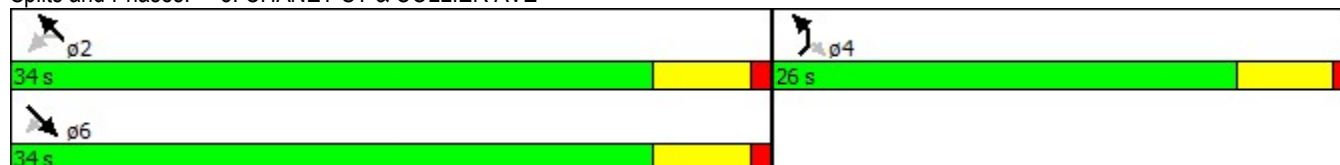
Intersection LOS: B

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: CHANEY ST & COLLIER AVE



## Queues

## 5: CHANEY ST &amp; COLLIER AVE

1/31/2017



| Lane Group              | SET  | SER  | NWT  | NEL  | NER  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 111  | 859  | 335  | 434  | 41   |
| v/c Ratio               | 0.16 | 0.76 | 0.64 | 0.71 | 0.07 |
| Control Delay           | 9.4  | 6.2  | 17.2 | 20.7 | 5.2  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.4  | 6.2  | 17.2 | 20.7 | 5.2  |
| Queue Length 50th (ft)  | 15   | 0    | 57   | 76   | 0    |
| Queue Length 95th (ft)  | 40   | 32   | 125  | 200  | 15   |
| Internal Link Dist (ft) | 1917 |      | 212  | 1503 |      |
| Turn Bay Length (ft)    |      |      |      |      |      |
| Base Capacity (vph)     | 1383 | 1396 | 1041 | 975  | 890  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.08 | 0.62 | 0.32 | 0.45 | 0.05 |
| Intersection Summary    |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 5: CHANEY ST & COLLIER AVE

1/31/2017

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |   |   |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |   |
| Volume (veh/h)               | 92                                                                                | 713                                                                               | 167                                                                               | 111                                                                               | 360                                                                               | 34                                                                                |   |   |
| Number                       | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 111                                                                               | 859                                                                               | 201                                                                               | 134                                                                               | 434                                                                               | 41                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 981                                                                               | 834                                                                               | 343                                                                               | 204                                                                               | 495                                                                               | 441                                                                               |   |   |
| Arrive On Green              | 0.53                                                                              | 0.53                                                                              | 0.53                                                                              | 0.53                                                                              | 0.28                                                                              | 0.28                                                                              |   |   |
| Sat Flow, veh/h              | 1863                                                                              | 1583                                                                              | 451                                                                               | 387                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 111                                                                               | 859                                                                               | 335                                                                               | 0                                                                                 | 434                                                                               | 41                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1863                                                                              | 1583                                                                              | 838                                                                               | 0                                                                                 | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 1.6                                                                               | 28.7                                                                              | 14.5                                                                              | 0.0                                                                               | 12.7                                                                              | 1.0                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 1.6                                                                               | 28.7                                                                              | 16.1                                                                              | 0.0                                                                               | 12.7                                                                              | 1.0                                                                               |   |   |
| Prop In Lane                 |                                                                                   | 1.00                                                                              | 0.60                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 981                                                                               | 834                                                                               | 547                                                                               | 0                                                                                 | 495                                                                               | 441                                                                               |   |   |
| V/C Ratio(X)                 | 0.11                                                                              | 1.03                                                                              | 0.61                                                                              | 0.00                                                                              | 0.88                                                                              | 0.09                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 981                                                                               | 834                                                                               | 547                                                                               | 0                                                                                 | 674                                                                               | 601                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 6.5                                                                               | 12.9                                                                              | 9.4                                                                               | 0.0                                                                               | 18.8                                                                              | 14.5                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 39.1                                                                              | 1.5                                                                               | 0.0                                                                               | 7.9                                                                               | 0.0                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 21.3                                                                              | 4.0                                                                               | 0.0                                                                               | 7.2                                                                               | 0.5                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 6.5                                                                               | 52.0                                                                              | 10.9                                                                              | 0.0                                                                               | 26.6                                                                              | 14.6                                                                              |   |   |
| LnGrp LOS                    | A                                                                                 | F                                                                                 | B                                                                                 |                                                                                   | C                                                                                 | B                                                                                 |   |   |
| Approach Vol, veh/h          | 970                                                                               |                                                                                   |                                                                                   | 335                                                                               | 475                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        | 46.8                                                                              |                                                                                   |                                                                                   | 10.9                                                                              | 25.6                                                                              |                                                                                   |   |   |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 34.0                                                                              |                                                                                   | 20.5                                                                              |                                                                                   | 34.0                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 28.7                                                                              |                                                                                   | 20.7                                                                              |                                                                                   | 28.7                                                                              |   |   |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 18.1                                                                              |                                                                                   | 14.7                                                                              |                                                                                   | 30.7                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 4.1                                                                               |                                                                                   | 0.5                                                                               |                                                                                   | 0.0                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 34.4                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

# Timings

## 9: CENTRAL AVE & DEXTER AVE

1/31/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 88                                                                                | 88                                                                                | 491                                                                               | 399                                                                               | 132                                                                               | 380                                                                               | 1283                                                                               | 262                                                                                 | 178                                                                                 | 1735                                                                                | 187                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 58.0                                                                              | 58.0                                                                              | 25.0                                                                              | 58.0                                                                              | 58.0                                                                              | 25.0                                                                              | 43.0                                                                               | 43.0                                                                                | 19.0                                                                                | 37.0                                                                                | 37.0                                                                                |
| Total Split (%)      | 48.3%                                                                             | 48.3%                                                                             | 20.8%                                                                             | 48.3%                                                                             | 48.3%                                                                             | 20.8%                                                                             | 35.8%                                                                              | 35.8%                                                                               | 15.8%                                                                               | 30.8%                                                                               | 30.8%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 52.7                                                                              | 52.7                                                                              | 78.4                                                                              | 52.7                                                                              | 52.7                                                                              | 20.4                                                                              | 37.7                                                                               | 37.7                                                                                | 14.4                                                                                | 31.7                                                                                | 31.7                                                                                |
| Actuated g/C Ratio   | 0.44                                                                              | 0.44                                                                              | 0.65                                                                              | 0.44                                                                              | 0.44                                                                              | 0.17                                                                              | 0.31                                                                               | 0.31                                                                                | 0.12                                                                                | 0.26                                                                                | 0.26                                                                                |
| v/c Ratio            | 0.28                                                                              | 0.12                                                                              | 0.53                                                                              | 0.80                                                                              | 0.44                                                                              | 1.44                                                                              | 0.99                                                                               | 0.46                                                                                | 0.95                                                                                | 1.17                                                                                | 0.40                                                                                |
| Control Delay        | 24.2                                                                              | 20.5                                                                              | 11.6                                                                              | 41.6                                                                              | 20.4                                                                              | 243.5                                                                             | 48.6                                                                               | 7.7                                                                                 | 87.3                                                                                | 116.7                                                                               | 14.7                                                                                |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 0.8                                                                               | 0.0                                                                               | 0.0                                                                               | 32.3                                                                               | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay          | 24.2                                                                              | 20.5                                                                              | 11.8                                                                              | 42.4                                                                              | 20.4                                                                              | 243.5                                                                             | 80.9                                                                               | 7.9                                                                                 | 87.3                                                                                | 116.8                                                                               | 14.7                                                                                |
| LOS                  | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | F                                                                                 | F                                                                                  | A                                                                                   | F                                                                                   | F                                                                                   | B                                                                                   |
| Approach Delay       |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 32.8                                                                              |                                                                                   | 104.1                                                                              |                                                                                     |                                                                                     | 105.2                                                                               |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | F                                                                                  |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.44

Intersection Signal Delay: 84.2

Intersection LOS: F

Intersection Capacity Utilization 92.9%

ICU Level of Service F

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |  |  |  |  |
| 58 s                                                                                |                                                                                     |                                                                                     | 43 s                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      | 19 s                                                                                  |                                                                                       |
|  |  |  |  |  |  |  |  |  |  |  |  |
| 58 s                                                                                |                                                                                     |                                                                                     | 25 s                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      | 37 s                                                                                  |                                                                                       |

## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

1/31/2017

|                         |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Group Flow (vph)   | 100                                                                               | 100                                                                               | 558                                                                               | 453                                                                               | 349                                                                               | 432                                                                               | 1488                                                                               | 268                                                                                 | 202                                                                                 | 1972                                                                                | 212                                                                                 |
| v/c Ratio               | 0.28                                                                              | 0.12                                                                              | 0.53                                                                              | 0.80                                                                              | 0.44                                                                              | 1.44                                                                              | 0.99                                                                               | 0.46                                                                                | 0.95                                                                                | 1.17                                                                                | 0.40                                                                                |
| Control Delay           | 24.2                                                                              | 20.5                                                                              | 11.6                                                                              | 41.6                                                                              | 20.4                                                                              | 243.5                                                                             | 48.6                                                                               | 7.7                                                                                 | 87.3                                                                                | 116.7                                                                               | 14.7                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 0.8                                                                               | 0.0                                                                               | 0.0                                                                               | 32.3                                                                               | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 24.2                                                                              | 20.5                                                                              | 11.8                                                                              | 42.4                                                                              | 20.4                                                                              | 243.5                                                                             | 80.9                                                                               | 7.9                                                                                 | 87.3                                                                                | 116.8                                                                               | 14.7                                                                                |
| Queue Length 50th (ft)  | 49                                                                                | 45                                                                                | 183                                                                               | 297                                                                               | 145                                                                               | ~441                                                                              | 479                                                                                | 29                                                                                  | 149                                                                                 | ~520                                                                                | 38                                                                                  |
| Queue Length 95th (ft)  | 90                                                                                | 78                                                                                | 259                                                                               | #435                                                                              | 219                                                                               | m#568                                                                             | m#530                                                                              | m51                                                                                 | m#194                                                                               | m#570                                                                               | m49                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 1321                                                                              |                                                                                   |                                                                                   | 1337                                                                              |                                                                                   | 302                                                                                |                                                                                     |                                                                                     | 250                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 140                                                                               |                                                                                   | 140                                                                               | 100                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 150                                                                                 |                                                                                     | 220                                                                                 |
| Base Capacity (vph)     | 358                                                                               | 818                                                                               | 1058                                                                              | 566                                                                               | 787                                                                               | 300                                                                               | 1506                                                                               | 589                                                                                 | 212                                                                                 | 1692                                                                                | 527                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 134                                                                                | 47                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 108                                                                               | 18                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 26                                                                                  | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.28                                                                              | 0.12                                                                              | 0.59                                                                              | 0.83                                                                              | 0.44                                                                              | 1.44                                                                              | 1.08                                                                               | 0.49                                                                                | 0.95                                                                                | 1.18                                                                                | 0.40                                                                                |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

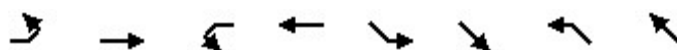
1/31/2017

|                                                                    |  |  |  |  |  |  |   |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 88                                                                                | 88                                                                                | 491                                                                               | 399                                                                               | 132                                                                               | 175                                                                               | 380                                                                                 | 1283                                                                                | 262                                                                                 | 178                                                                                 | 1735                                                                                | 187                                                                                 |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 100                                                                               | 100                                                                               | 558                                                                               | 453                                                                               | 150                                                                               | 199                                                                               | 432                                                                                 | 1458                                                                                | 298                                                                                 | 202                                                                                 | 1972                                                                                | 212                                                                                 |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 370                                                                               | 818                                                                               | 965                                                                               | 375                                                                               | 319                                                                               | 424                                                                               | 302                                                                                 | 1756                                                                                | 497                                                                                 | 520                                                                                 | 2838                                                                                | 701                                                                                 |
| Arrive On Green                                                    | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.44                                                                              | 0.34                                                                                | 0.63                                                                                | 0.63                                                                                | 0.29                                                                                | 0.44                                                                                | 0.44                                                                                |
| Sat Flow, veh/h                                                    | 1028                                                                              | 1863                                                                              | 1583                                                                              | 773                                                                               | 727                                                                               | 965                                                                               | 1774                                                                                | 5588                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 100                                                                               | 100                                                                               | 558                                                                               | 453                                                                               | 0                                                                                 | 349                                                                               | 432                                                                                 | 1458                                                                                | 298                                                                                 | 202                                                                                 | 1972                                                                                | 212                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                           | 1028                                                                              | 1863                                                                              | 1583                                                                              | 773                                                                               | 0                                                                                 | 1692                                                                              | 1774                                                                                | 1863                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 9.0                                                                               | 3.8                                                                               | 25.5                                                                              | 48.9                                                                              | 0.0                                                                               | 17.5                                                                              | 20.4                                                                                | 24.3                                                                                | 13.5                                                                                | 10.9                                                                                | 29.7                                                                                | 10.3                                                                                |
| Cycle Q Clear(g_c), s                                              | 25.5                                                                              | 3.8                                                                               | 25.5                                                                              | 52.7                                                                              | 0.0                                                                               | 17.5                                                                              | 20.4                                                                                | 24.3                                                                                | 13.5                                                                                | 10.9                                                                                | 29.7                                                                                | 10.3                                                                                |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.57                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 370                                                                               | 818                                                                               | 965                                                                               | 375                                                                               | 0                                                                                 | 743                                                                               | 302                                                                                 | 1756                                                                                | 497                                                                                 | 520                                                                                 | 2838                                                                                | 701                                                                                 |
| V/C Ratio(X)                                                       | 0.27                                                                              | 0.12                                                                              | 0.58                                                                              | 1.21                                                                              | 0.00                                                                              | 0.47                                                                              | 1.43                                                                                | 0.83                                                                                | 0.60                                                                                | 0.39                                                                                | 0.69                                                                                | 0.30                                                                                |
| Avail Cap(c_a), veh/h                                              | 370                                                                               | 818                                                                               | 965                                                                               | 375                                                                               | 0                                                                                 | 743                                                                               | 302                                                                                 | 1756                                                                                | 497                                                                                 | 520                                                                                 | 2838                                                                                | 701                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.77                                                                                | 0.77                                                                                | 0.77                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 32.4                                                                              | 19.9                                                                              | 14.2                                                                              | 39.5                                                                              | 0.0                                                                               | 23.8                                                                              | 39.6                                                                                | 19.8                                                                                | 17.8                                                                                | 33.8                                                                                | 26.9                                                                                | 21.5                                                                                |
| Incr Delay (d2), s/veh                                             | 1.8                                                                               | 0.3                                                                               | 2.5                                                                               | 116.4                                                                             | 0.0                                                                               | 2.1                                                                               | 208.7                                                                               | 3.7                                                                                 | 4.1                                                                                 | 0.2                                                                                 | 1.4                                                                                 | 1.1                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 2.7                                                                               | 2.0                                                                               | 11.7                                                                              | 24.5                                                                              | 0.0                                                                               | 8.6                                                                               | 27.4                                                                                | 12.7                                                                                | 6.4                                                                                 | 5.4                                                                                 | 13.4                                                                                | 4.8                                                                                 |
| LnGrp Delay(d),s/veh                                               | 34.2                                                                              | 20.2                                                                              | 16.7                                                                              | 155.9                                                                             | 0.0                                                                               | 25.9                                                                              | 248.3                                                                               | 23.5                                                                                | 21.9                                                                                | 34.0                                                                                | 28.3                                                                                | 22.6                                                                                |
| LnGrp LOS                                                          | C                                                                                 | C                                                                                 | B                                                                                 | F                                                                                 |                                                                                   | C                                                                                 | F                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 758                                                                               |                                                                                   |                                                                                   | 802                                                                               |                                                                                   |                                                                                     | 2188                                                                                |                                                                                     |                                                                                     | 2386                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 19.5                                                                              |                                                                                   |                                                                                   | 99.3                                                                              |                                                                                   |                                                                                     | 67.7                                                                                |                                                                                     |                                                                                     | 28.3                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 58.0                                                                              | 40.7                                                                              | 43.0                                                                              |                                                                                   | 58.0                                                                              | 25.0                                                                                | 58.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 5.3                                                                               | * 5.3                                                                             |                                                                                   | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 52.7                                                                              | 14.4                                                                              | * 38                                                                              |                                                                                   | 52.7                                                                              | 20.4                                                                                | 31.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                       |                                                                                   | 55.7                                                                              | 13.9                                                                              | 27.3                                                                              |                                                                                   | 28.5                                                                              | 23.4                                                                                | 32.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 0.0                                                                               | 0.0                                                                               | 5.9                                                                               |                                                                                   | 6.4                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 50.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017



| Lane Group           | EBL   | EBT   | WBL   | WBT   | SEL   | SET   | NWL   | NWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       | ↔     |       | ↔     |       | ↔     |       | ↔     |
| Volume (vph)         | 5     | 1288  | 6     | 1314  | 36    | 3     | 1     | 1     |
| Turn Type            | Perm  | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases     |       | 4     |       | 8     |       | 6     |       | 2     |
| Permitted Phases     | 4     |       | 8     |       | 6     |       | 2     |       |
| Detector Phase       | 4     | 4     | 8     | 8     | 6     | 6     | 2     | 2     |
| Switch Phase         |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 98.7  | 98.7  | 98.7  | 98.7  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (%)      | 82.3% | 82.3% | 82.3% | 82.3% | 17.8% | 17.8% | 17.8% | 17.8% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) |       | 0.0   |       | 0.0   |       | 0.0   |       | 0.0   |
| Total Lost Time (s)  |       | 5.3   |       | 5.3   |       | 5.3   |       | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |       |
| Recall Mode          | C-Max | C-Max | C-Max | C-Max | Max   | Max   | Max   | Max   |
| Act Effct Green (s)  |       | 93.4  |       | 93.4  |       | 16.0  |       | 16.0  |
| Actuated g/C Ratio   |       | 0.78  |       | 0.78  |       | 0.13  |       | 0.13  |
| v/c Ratio            |       | 0.94  |       | 1.05  |       | 0.23  |       | 0.02  |
| Control Delay        |       | 25.2  |       | 32.8  |       | 48.3  |       | 34.6  |
| Queue Delay          |       | 0.0   |       | 0.0   |       | 0.0   |       | 0.0   |
| Total Delay          |       | 25.2  |       | 32.8  |       | 48.3  |       | 34.6  |
| LOS                  |       | C     |       | C     |       | D     |       | C     |
| Approach Delay       |       | 25.2  |       | 32.8  |       | 48.3  |       | 34.6  |
| Approach LOS         |       | C     |       | C     |       | D     |       | C     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 7 (6%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 29.4

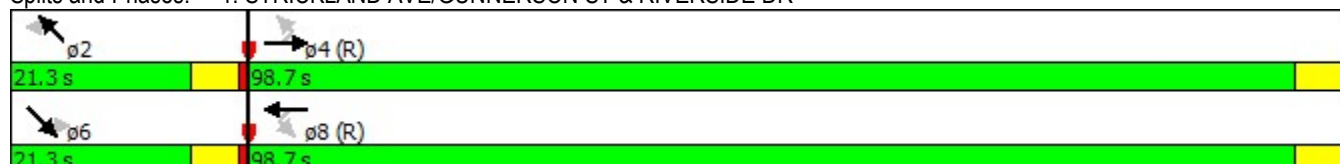
Intersection LOS: C

Intersection Capacity Utilization 96.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR





## Queues

### 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017



| Lane Group              | EBT   | WBT   | SET  | NWT  |
|-------------------------|-------|-------|------|------|
| Lane Group Flow (vph)   | 1352  | 1495  | 43   | 5    |
| v/c Ratio               | 0.94  | 1.05  | 0.23 | 0.02 |
| Control Delay           | 25.2  | 32.8  | 48.3 | 34.6 |
| Queue Delay             | 0.0   | 0.0   | 0.0  | 0.0  |
| Total Delay             | 25.2  | 32.8  | 48.3 | 34.6 |
| Queue Length 50th (ft)  | 716   | ~1297 | 29   | 1    |
| Queue Length 95th (ft)  | #1281 | m60   | 66   | 14   |
| Internal Link Dist (ft) | 1607  | 855   | 805  | 1652 |
| Turn Bay Length (ft)    |       |       |      |      |
| Base Capacity (vph)     | 1442  | 1429  | 188  | 222  |
| Starvation Cap Reductn  | 0     | 0     | 0    | 0    |
| Spillback Cap Reductn   | 0     | 0     | 0    | 0    |
| Storage Cap Reductn     | 0     | 0     | 0    | 0    |
| Reduced v/c Ratio       | 0.94  | 1.05  | 0.23 | 0.02 |

#### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 1: STRICKLAND AVE/GUNNERSON ST & RIVERSIDE DR

1/31/2017

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | SEL                                                                                 | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                     |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 5                                                                                 | 1288                                                                              | 5                                                                                 | 6                                                                                 | 1314                                                                              | 115                                                                               | 36                                                                                  | 3                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 3                                                                                   |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 1                                                                                   | 6                                                                                   | 16                                                                                  | 5                                                                                   | 2                                                                                   | 12                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 5                                                                                 | 1342                                                                              | 5                                                                                 | 6                                                                                 | 1369                                                                              | 120                                                                               | 38                                                                                  | 3                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 3                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 31                                                                                | 1434                                                                              | 5                                                                                 | 32                                                                                | 1310                                                                              | 114                                                                               | 223                                                                                 | 17                                                                                  | 9                                                                                   | 61                                                                                  | 62                                                                                  | 130                                                                                 |
| Arrive On Green              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                |
| Sat Flow, veh/h              | 2                                                                                 | 1843                                                                              | 7                                                                                 | 2                                                                                 | 1682                                                                              | 147                                                                               | 1251                                                                                | 128                                                                                 | 67                                                                                  | 186                                                                                 | 466                                                                                 | 978                                                                                 |
| Grp Volume(v), veh/h         | 1352                                                                              | 0                                                                                 | 0                                                                                 | 1495                                                                              | 0                                                                                 | 0                                                                                 | 43                                                                                  | 0                                                                                   | 0                                                                                   | 5                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1852                                                                              | 0                                                                                 | 0                                                                                 | 1832                                                                              | 0                                                                                 | 0                                                                                 | 1446                                                                                | 0                                                                                   | 0                                                                                   | 1630                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 22.7                                                                              | 0.0                                                                               | 0.0                                                                               | 2.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 70.7                                                                              | 0.0                                                                               | 0.0                                                                               | 93.4                                                                              | 0.0                                                                               | 0.0                                                                               | 3.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   | 0.08                                                                              | 0.88                                                                                |                                                                                     | 0.05                                                                                | 0.20                                                                                |                                                                                     | 0.60                                                                                |
| Lane Grp Cap(c), veh/h       | 1471                                                                              | 0                                                                                 | 0                                                                                 | 1456                                                                              | 0                                                                                 | 0                                                                                 | 249                                                                                 | 0                                                                                   | 0                                                                                   | 253                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.92                                                                              | 0.00                                                                              | 0.00                                                                              | 1.03                                                                              | 0.00                                                                              | 0.00                                                                              | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 1471                                                                              | 0                                                                                 | 0                                                                                 | 1456                                                                              | 0                                                                                 | 0                                                                                 | 249                                                                                 | 0                                                                                   | 0                                                                                   | 253                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 10.8                                                                              | 0.0                                                                               | 0.0                                                                               | 14.2                                                                              | 0.0                                                                               | 0.0                                                                               | 46.4                                                                                | 0.0                                                                                 | 0.0                                                                                 | 45.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 10.7                                                                              | 0.0                                                                               | 0.0                                                                               | 30.7                                                                              | 0.0                                                                               | 0.0                                                                               | 1.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 39.7                                                                              | 0.0                                                                               | 0.0                                                                               | 60.5                                                                              | 0.0                                                                               | 0.0                                                                               | 1.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 21.5                                                                              | 0.0                                                                               | 0.0                                                                               | 44.9                                                                              | 0.0                                                                               | 0.0                                                                               | 47.9                                                                                | 0.0                                                                                 | 0.0                                                                                 | 45.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | C                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1352                                                                              |                                                                                   |                                                                                   | 1495                                                                              |                                                                                   |                                                                                     | 43                                                                                  |                                                                                     |                                                                                     | 5                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.5                                                                              |                                                                                   |                                                                                   | 44.9                                                                              |                                                                                   |                                                                                     | 47.9                                                                                |                                                                                     |                                                                                     | 45.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 21.3                                                                              |                                                                                   | 98.7                                                                              |                                                                                   | 21.3                                                                              |                                                                                     | 98.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                     | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 16.0                                                                              |                                                                                   | 93.4                                                                              |                                                                                   | 16.0                                                                              |                                                                                     | 93.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 2.3                                                                               |                                                                                   | 72.7                                                                              |                                                                                   | 5.1                                                                               |                                                                                     | 95.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.1                                                                               |                                                                                   | 18.6                                                                              |                                                                                   | 0.1                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 34.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 4: CRANE ST & COLLIER AVE

1/31/2017



| Lane Group           | SET   | NWL   | NWT   | NEL   | NET   | SWL   | SWT   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↑↑    | ↑     | ↑     | ↑     | ↑     |       | ↑↑    |
| Volume (vph)         | 557   | 8     | 882   | 44    | 0     | 35    | 0     |
| Turn Type            | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases     | 6     |       | 2     |       | 4     |       | 8     |
| Permitted Phases     |       | 2     |       | 4     |       | 8     |       |
| Detector Phase       | 6     | 2     | 2     | 4     | 4     | 8     | 8     |
| Switch Phase         |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (s)      | 40.0  | 40.0  | 40.0  | 20.0  | 20.0  | 20.0  | 20.0  |
| Total Split (%)      | 66.7% | 66.7% | 66.7% | 33.3% | 33.3% | 33.3% | 33.3% |
| Yellow Time (s)      | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   |
| Total Lost Time (s)  | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   |
| Lead/Lag             |       |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | None  | None  | None  | None  |
| Act Effct Green (s)  | 37.1  | 37.1  | 37.1  | 8.1   | 8.1   |       | 8.1   |
| Actuated g/C Ratio   | 0.82  | 0.82  | 0.82  | 0.18  | 0.18  |       | 0.18  |
| v/c Ratio            | 0.21  | 0.01  | 0.62  | 0.15  | 0.04  |       | 0.19  |
| Control Delay        | 2.6   | 2.9   | 6.9   | 20.2  | 0.1   |       | 16.2  |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   |
| Total Delay          | 2.6   | 2.9   | 6.9   | 20.2  | 0.1   |       | 16.2  |
| LOS                  | A     | A     | A     | C     | A     |       | B     |
| Approach Delay       | 2.6   |       | 6.9   |       | 14.5  |       | 16.2  |
| Approach LOS         | A     |       | A     |       | B     |       | B     |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 45.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 5.9

Intersection LOS: A

Intersection Capacity Utilization 62.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: CRANE ST & COLLIER AVE

|          |          |
|----------|----------|
| <br>40 s | <br>20 s |
| <br>40 s | <br>20 s |

## Queues

## 4: CRANE ST &amp; COLLIER AVE

1/31/2017



| Lane Group              | SET  | NWL  | NWT  | NEL  | NET  | SWT  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 617  | 9    | 948  | 47   | 19   | 51   |
| v/c Ratio               | 0.21 | 0.01 | 0.62 | 0.15 | 0.04 | 0.19 |
| Control Delay           | 2.6  | 2.9  | 6.9  | 20.2 | 0.1  | 16.2 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 2.6  | 2.9  | 6.9  | 20.2 | 0.1  | 16.2 |
| Queue Length 50th (ft)  | 25   | 1    | 127  | 14   | 0    | 10   |
| Queue Length 95th (ft)  | 48   | 4    | 295  | 36   | 0    | 33   |
| Internal Link Dist (ft) | 38   |      | 1917 |      | 1255 | 261  |
| Turn Bay Length (ft)    |      | 150  |      | 90   |      |      |
| Base Capacity (vph)     | 2874 | 635  | 1518 | 640  | 774  | 551  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.21 | 0.01 | 0.62 | 0.07 | 0.02 | 0.09 |
| Intersection Summary    |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 4: CRANE ST & COLLIER AVE

1/31/2017

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (veh/h)               | 0                                                                                 | 557                                                                               | 17                                                                                | 8                                                                                 | 882                                                                               | 0                                                                                 | 44                                                                                  | 0                                                                                   | 18                                                                                  | 35                                                                                  | 0                                                                                   | 12                                                                                  |
| Number                       | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 599                                                                               | 18                                                                                | 9                                                                                 | 948                                                                               | 0                                                                                 | 47                                                                                  | 0                                                                                   | 19                                                                                  | 38                                                                                  | 0                                                                                   | 13                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 178                                                                               | 2371                                                                              | 71                                                                                | 667                                                                               | 1259                                                                              | 0                                                                                 | 365                                                                                 | 0                                                                                   | 200                                                                                 | 273                                                                                 | 22                                                                                  | 48                                                                                  |
| Arrive On Green              | 0.00                                                                              | 0.68                                                                              | 0.68                                                                              | 0.68                                                                              | 0.68                                                                              | 0.00                                                                              | 0.13                                                                                | 0.00                                                                                | 0.13                                                                                | 0.13                                                                                | 0.00                                                                                | 0.13                                                                                |
| Sat Flow, veh/h              | 589                                                                               | 3508                                                                              | 105                                                                               | 803                                                                               | 1863                                                                              | 0                                                                                 | 1395                                                                                | 0                                                                                   | 1583                                                                                | 929                                                                                 | 172                                                                                 | 377                                                                                 |
| Grp Volume(v), veh/h         | 0                                                                                 | 302                                                                               | 315                                                                               | 9                                                                                 | 948                                                                               | 0                                                                                 | 47                                                                                  | 0                                                                                   | 19                                                                                  | 51                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 589                                                                               | 1770                                                                              | 1844                                                                              | 803                                                                               | 1863                                                                              | 0                                                                                 | 1395                                                                                | 0                                                                                   | 1583                                                                                | 1478                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 2.7                                                                               | 2.7                                                                               | 0.2                                                                               | 13.6                                                                              | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.4                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 2.7                                                                               | 2.7                                                                               | 2.9                                                                               | 13.6                                                                              | 0.0                                                                               | 1.0                                                                                 | 0.0                                                                                 | 0.4                                                                                 | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.06                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 0.75                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 178                                                                               | 1196                                                                              | 1246                                                                              | 667                                                                               | 1259                                                                              | 0                                                                                 | 365                                                                                 | 0                                                                                   | 200                                                                                 | 342                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.00                                                                              | 0.25                                                                              | 0.25                                                                              | 0.01                                                                              | 0.75                                                                              | 0.00                                                                              | 0.13                                                                                | 0.00                                                                                | 0.09                                                                                | 0.15                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 304                                                                               | 1575                                                                              | 1641                                                                              | 839                                                                               | 1658                                                                              | 0                                                                                 | 740                                                                                 | 0                                                                                   | 626                                                                                 | 728                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 2.6                                                                               | 2.6                                                                               | 3.1                                                                               | 4.3                                                                               | 0.0                                                                               | 15.9                                                                                | 0.0                                                                                 | 15.6                                                                                | 15.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               | 0.0                                                                               | 1.4                                                                               | 0.0                                                                               | 0.2                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.3                                                                               | 1.3                                                                               | 0.0                                                                               | 7.1                                                                               | 0.0                                                                               | 0.5                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 2.7                                                                               | 2.7                                                                               | 3.1                                                                               | 5.7                                                                               | 0.0                                                                               | 16.0                                                                                | 0.0                                                                                 | 15.8                                                                                | 16.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | B                                                                                   |                                                                                     | B                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 617                                                                               |                                                                                   |                                                                                   | 957                                                                               |                                                                                   |                                                                                     | 66                                                                                  |                                                                                     |                                                                                     | 51                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 5.7                                                                               |                                                                                   |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     | 16.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 31.3                                                                              |                                                                                   | 9.1                                                                               |                                                                                   | 31.3                                                                              |                                                                                     | 9.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 36.0                                                                              |                                                                                   | 16.0                                                                              |                                                                                   | 36.0                                                                              |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s |                                                                                   | 15.6                                                                              |                                                                                   | 3.0                                                                               |                                                                                   | 4.7                                                                               |                                                                                     | 3.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 11.7                                                                              |                                                                                   | 0.3                                                                               |                                                                                   | 14.9                                                                              |                                                                                     | 0.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 5.3                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Timings

## 5: CHANEY ST & COLLIER AVE

1/31/2017



| Lane Group           | SET   | SER   | NWL   | NWT   | NEL   | NER   |
|----------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  | ↑     | ↑     |       | ↑     | ↑     | ↑     |
| Volume (vph)         | 290   | 254   | 24    | 184   | 592   | 69    |
| Turn Type            | NA    | Perm  | Perm  | NA    | Prot  | Perm  |
| Protected Phases     | 6     |       |       | 2     | 4     |       |
| Permitted Phases     |       | 6     | 2     |       |       | 4     |
| Detector Phase       | 6     | 6     | 2     | 2     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |
| Minimum Initial (s)  | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)    | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  | 21.3  |
| Total Split (s)      | 24.0  | 24.0  | 24.0  | 24.0  | 36.0  | 36.0  |
| Total Split (%)      | 40.0% | 40.0% | 40.0% | 40.0% | 60.0% | 60.0% |
| Yellow Time (s)      | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   | 4.3   |
| All-Red Time (s)     | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.3   | 5.3   |       | 5.3   | 5.3   | 5.3   |
| Lead/Lag             |       |       |       |       |       |       |
| Lead-Lag Optimize?   |       |       |       |       |       |       |
| Recall Mode          | Min   | Min   | Min   | Min   | None  | None  |
| Act Effect Green (s) | 12.7  | 12.7  |       | 12.7  | 20.6  | 20.6  |
| Actuated g/C Ratio   | 0.28  | 0.28  |       | 0.28  | 0.46  | 0.46  |
| v/c Ratio            | 0.61  | 0.43  |       | 0.47  | 0.81  | 0.10  |
| Control Delay        | 20.7  | 4.8   |       | 18.3  | 19.7  | 2.6   |
| Queue Delay          | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |
| Total Delay          | 20.7  | 4.8   |       | 18.3  | 19.7  | 2.6   |
| LOS                  | C     | A     |       | B     | B     | A     |
| Approach Delay       | 13.3  |       |       | 18.3  | 17.9  |       |
| Approach LOS         | B     |       |       | B     | B     |       |

### Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 44.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 16.2

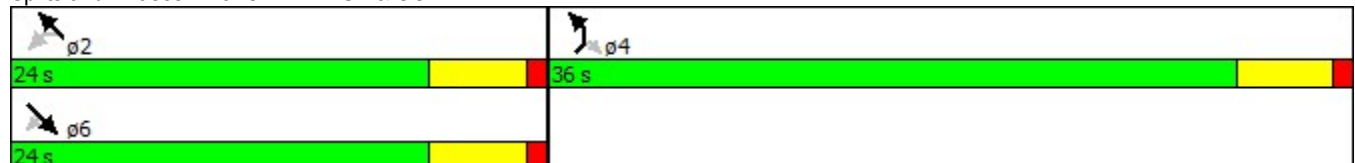
Intersection LOS: B

Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: CHANEY ST & COLLIER AVE



## Queues

## 5: CHANEY ST &amp; COLLIER AVE

1/31/2017



| Lane Group              | SET  | SER  | NWT  | NEL  | NER  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 322  | 282  | 231  | 658  | 77   |
| v/c Ratio               | 0.61 | 0.43 | 0.47 | 0.81 | 0.10 |
| Control Delay           | 20.7 | 4.8  | 18.3 | 19.7 | 2.6  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 20.7 | 4.8  | 18.3 | 19.7 | 2.6  |
| Queue Length 50th (ft)  | 69   | 0    | 47   | 129  | 0    |
| Queue Length 95th (ft)  | 166  | 45   | 121  | 288  | 16   |
| Internal Link Dist (ft) | 1917 |      | 212  | 1503 |      |
| Turn Bay Length (ft)    |      |      |      |      |      |
| Base Capacity (vph)     | 840  | 868  | 777  | 1282 | 1168 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.38 | 0.32 | 0.30 | 0.51 | 0.07 |
| Intersection Summary    |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 5: CHANEY ST & COLLIER AVE

1/31/2017

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NER                                                                               |   |   |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |   |
| Volume (veh/h)               | 290                                                                               | 254                                                                               | 24                                                                                | 184                                                                               | 592                                                                               | 69                                                                                |   |   |
| Number                       | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 322                                                                               | 282                                                                               | 27                                                                                | 204                                                                               | 658                                                                               | 77                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 515                                                                               | 437                                                                               | 136                                                                               | 428                                                                               | 757                                                                               | 676                                                                               |   |   |
| Arrive On Green              | 0.28                                                                              | 0.28                                                                              | 0.28                                                                              | 0.28                                                                              | 0.43                                                                              | 0.43                                                                              |   |   |
| Sat Flow, veh/h              | 1863                                                                              | 1583                                                                              | 86                                                                                | 1549                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 322                                                                               | 282                                                                               | 231                                                                               | 0                                                                                 | 658                                                                               | 77                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1863                                                                              | 1583                                                                              | 1634                                                                              | 0                                                                                 | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 5.4                                                                               | 5.6                                                                               | 0.1                                                                               | 0.0                                                                               | 12.1                                                                              | 1.0                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 5.4                                                                               | 5.6                                                                               | 5.5                                                                               | 0.0                                                                               | 12.1                                                                              | 1.0                                                                               |   |   |
| Prop In Lane                 |                                                                                   | 1.00                                                                              | 0.12                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 515                                                                               | 437                                                                               | 564                                                                               | 0                                                                                 | 757                                                                               | 676                                                                               |   |   |
| V/C Ratio(X)                 | 0.63                                                                              | 0.64                                                                              | 0.41                                                                              | 0.00                                                                              | 0.87                                                                              | 0.11                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 976                                                                               | 829                                                                               | 965                                                                               | 0                                                                                 | 1525                                                                              | 1361                                                                              |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 11.3                                                                              | 11.4                                                                              | 10.7                                                                              | 0.0                                                                               | 9.3                                                                               | 6.2                                                                               |   |   |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.6                                                                               | 0.2                                                                               | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 2.8                                                                               | 2.5                                                                               | 1.9                                                                               | 0.0                                                                               | 5.9                                                                               | 0.5                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 11.8                                                                              | 12.0                                                                              | 10.9                                                                              | 0.0                                                                               | 10.6                                                                              | 6.2                                                                               |   |   |
| LnGrp LOS                    | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |   |   |
| Approach Vol, veh/h          | 604                                                                               |                                                                                   |                                                                                   | 231                                                                               | 735                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        | 11.9                                                                              |                                                                                   |                                                                                   | 10.9                                                                              | 10.1                                                                              |                                                                                   |   |   |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 15.2                                                                              |                                                                                   | 20.5                                                                              |                                                                                   | 15.2                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |                                                                                   | 5.3                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 18.7                                                                              |                                                                                   | 30.7                                                                              |                                                                                   | 18.7                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 7.5                                                                               |                                                                                   | 14.1                                                                              |                                                                                   | 7.6                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 2.3                                                                               |                                                                                   | 1.2                                                                               |                                                                                   | 2.3                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 10.9                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |



# Timings

## 9: CENTRAL AVE & DEXTER AVE

1/31/2017

|                      |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NEL                                                                               | NET                                                                                | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph)         | 90                                                                                | 113                                                                               | 458                                                                               | 434                                                                               | 130                                                                               | 465                                                                               | 2114                                                                               | 591                                                                                 | 279                                                                                 | 1588                                                                                | 106                                                                                 |
| Turn Type            | Perm                                                                              | NA                                                                                | pm+ov                                                                             | Perm                                                                              | NA                                                                                | Prot                                                                              | NA                                                                                 | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases     |                                                                                   | 6                                                                                 | 7                                                                                 |                                                                                   | 2                                                                                 | 7                                                                                 | 4                                                                                  |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases     | 6                                                                                 |                                                                                   | 6                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |
| Detector Phase       | 6                                                                                 | 6                                                                                 | 7                                                                                 | 2                                                                                 | 2                                                                                 | 7                                                                                 | 4                                                                                  | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)  | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 10.0                                                                              | 10.0                                                                              | 9.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 9.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)    | 20.0                                                                              | 20.0                                                                              | 13.6                                                                              | 47.3                                                                              | 47.3                                                                              | 13.6                                                                              | 28.2                                                                               | 28.2                                                                                | 13.6                                                                                | 29.1                                                                                | 29.1                                                                                |
| Total Split (s)      | 47.3                                                                              | 47.3                                                                              | 38.0                                                                              | 47.3                                                                              | 47.3                                                                              | 38.0                                                                              | 54.0                                                                               | 54.0                                                                                | 18.7                                                                                | 34.7                                                                                | 34.7                                                                                |
| Total Split (%)      | 39.4%                                                                             | 39.4%                                                                             | 31.7%                                                                             | 39.4%                                                                             | 39.4%                                                                             | 31.7%                                                                             | 45.0%                                                                              | 45.0%                                                                               | 15.6%                                                                               | 28.9%                                                                               | 28.9%                                                                               |
| Yellow Time (s)      | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                               | 4.3                                                                               | 3.6                                                                               | 4.3                                                                                | 4.3                                                                                 | 3.6                                                                                 | 4.3                                                                                 | 4.3                                                                                 |
| All-Red Time (s)     | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s) | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)  | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                               | 5.3                                                                               | 4.6                                                                               | 5.3                                                                                | 5.3                                                                                 | 4.6                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lead/Lag             |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   |                                                                                   | Lead                                                                              | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode          | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | C-Max                                                                              | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Act Effct Green (s)  | 42.0                                                                              | 42.0                                                                              | 80.7                                                                              | 42.0                                                                              | 42.0                                                                              | 33.4                                                                              | 48.7                                                                               | 48.7                                                                                | 14.1                                                                                | 29.4                                                                                | 29.4                                                                                |
| Actuated g/C Ratio   | 0.35                                                                              | 0.35                                                                              | 0.67                                                                              | 0.35                                                                              | 0.35                                                                              | 0.28                                                                              | 0.41                                                                               | 0.41                                                                                | 0.12                                                                                | 0.24                                                                                | 0.24                                                                                |
| v/c Ratio            | 0.54                                                                              | 0.18                                                                              | 0.44                                                                              | 1.02                                                                              | 0.68                                                                              | 0.98                                                                              | 1.16                                                                               | 0.71                                                                                | 1.41                                                                                | 1.05                                                                                | 0.24                                                                                |
| Control Delay        | 45.2                                                                              | 28.0                                                                              | 9.1                                                                               | 87.8                                                                              | 31.0                                                                              | 67.8                                                                              | 111.4                                                                              | 14.4                                                                                | 234.0                                                                               | 66.4                                                                                | 5.5                                                                                 |
| Queue Delay          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 37.6                                                                              | 0.3                                                                                | 1.2                                                                                 | 0.0                                                                                 | 8.2                                                                                 | 0.0                                                                                 |
| Total Delay          | 45.2                                                                              | 28.0                                                                              | 9.1                                                                               | 87.8                                                                              | 31.0                                                                              | 105.4                                                                             | 111.7                                                                              | 15.6                                                                                | 234.0                                                                               | 74.7                                                                                | 5.5                                                                                 |
| LOS                  | D                                                                                 | C                                                                                 | A                                                                                 | F                                                                                 | C                                                                                 | F                                                                                 | F                                                                                  | B                                                                                   | F                                                                                   | E                                                                                   | A                                                                                   |
| Approach Delay       |                                                                                   | 17.3                                                                              |                                                                                   |                                                                                   | 59.8                                                                              |                                                                                   | 94.7                                                                               |                                                                                     |                                                                                     | 93.5                                                                                |                                                                                     |
| Approach LOS         |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   | F                                                                                  |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of Green, Master Intersection

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.41

Intersection Signal Delay: 82.2

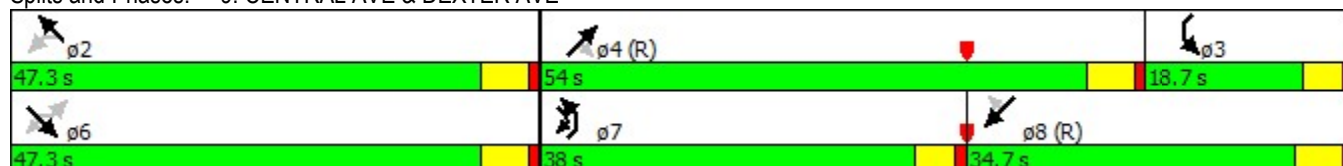
Intersection LOS: F

Intersection Capacity Utilization 110.1%

ICU Level of Service H

Analysis Period (min) 15

### Splits and Phases: 9: CENTRAL AVE & DEXTER AVE



## Queues

## 9: CENTRAL AVE &amp; DEXTER AVE

1/31/2017



| Lane Group              | SEL  | SET  | SER  | NWL  | NWT  | NEL   | NET   | NER  | SWL   | SWT   | SWR  |
|-------------------------|------|------|------|------|------|-------|-------|------|-------|-------|------|
| Lane Group Flow (vph)   | 94   | 118  | 477  | 452  | 440  | 484   | 2264  | 554  | 291   | 1654  | 110  |
| v/c Ratio               | 0.54 | 0.18 | 0.44 | 1.02 | 0.68 | 0.98  | 1.16  | 0.71 | 1.41  | 1.05  | 0.24 |
| Control Delay           | 45.2 | 28.0 | 9.1  | 87.8 | 31.0 | 67.8  | 111.4 | 14.4 | 234.0 | 66.4  | 5.5  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 37.6  | 0.3   | 1.2  | 0.0   | 8.2   | 0.0  |
| Total Delay             | 45.2 | 28.0 | 9.1  | 87.8 | 31.0 | 105.4 | 111.7 | 15.6 | 234.0 | 74.7  | 5.5  |
| Queue Length 50th (ft)  | 58   | 63   | 131  | ~372 | 222  | 342   | ~832  | 137  | ~300  | ~399  | 6    |
| Queue Length 95th (ft)  | 121  | 108  | 197  | #579 | 343  | m#523 | m#875 | m186 | m#405 | m#461 | m13  |
| Internal Link Dist (ft) |      | 1321 |      |      | 1337 |       | 302   |      |       | 250   |      |
| Turn Bay Length (ft)    | 140  |      | 140  | 100  |      |       |       |      | 150   |       | 220  |
| Base Capacity (vph)     | 173  | 652  | 1087 | 442  | 651  | 492   | 1945  | 776  | 207   | 1569  | 455  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 72    | 216   | 78   | 0     | 0     | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0     | 0     | 0    | 0     | 30    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0     | 0     | 0    | 0     | 0     | 0    |
| Reduced v/c Ratio       | 0.54 | 0.18 | 0.44 | 1.02 | 0.68 | 1.15  | 1.31  | 0.79 | 1.41  | 1.07  | 0.24 |

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 2010 Signalized Intersection Summary

## 9: CENTRAL AVE & DEXTER AVE

1/31/2017

|                                                                    |  |  |  |  |  |  |   |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Volume (veh/h)                                                     | 90                                                                                | 113                                                                               | 458                                                                               | 434                                                                               | 130                                                                               | 293                                                                               | 465                                                                                 | 2114                                                                                | 591                                                                                 | 279                                                                                 | 1588                                                                                | 106                                                                                 |
| Number                                                             | 1                                                                                 | 6                                                                                 | 16                                                                                | 5                                                                                 | 2                                                                                 | 12                                                                                | 7                                                                                   | 4                                                                                   | 14                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln                                             | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h                                               | 94                                                                                | 118                                                                               | 477                                                                               | 452                                                                               | 135                                                                               | 305                                                                               | 484                                                                                 | 2202                                                                                | 616                                                                                 | 291                                                                                 | 1654                                                                                | 110                                                                                 |
| Adj No. of Lanes                                                   | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                   | 3                                                                                   | 1                                                                                   | 1                                                                                   | 4                                                                                   | 1                                                                                   |
| Peak Hour Factor                                                   | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 177                                                                               | 652                                                                               | 995                                                                               | 311                                                                               | 178                                                                               | 403                                                                               | 494                                                                                 | 2268                                                                                | 643                                                                                 | 550                                                                                 | 2841                                                                                | 702                                                                                 |
| Arrive On Green                                                    | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.35                                                                              | 0.28                                                                                | 0.41                                                                                | 0.41                                                                                | 0.31                                                                                | 0.44                                                                                | 0.44                                                                                |
| Sat Flow, veh/h                                                    | 945                                                                               | 1863                                                                              | 1583                                                                              | 819                                                                               | 509                                                                               | 1150                                                                              | 1774                                                                                | 5588                                                                                | 1583                                                                                | 1774                                                                                | 6408                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h                                               | 94                                                                                | 118                                                                               | 477                                                                               | 452                                                                               | 0                                                                                 | 440                                                                               | 484                                                                                 | 2202                                                                                | 616                                                                                 | 291                                                                                 | 1654                                                                                | 110                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                           | 945                                                                               | 1863                                                                              | 1583                                                                              | 819                                                                               | 0                                                                                 | 1660                                                                              | 1774                                                                                | 1863                                                                                | 1583                                                                                | 1774                                                                                | 1602                                                                                | 1583                                                                                |
| Q Serve(g_s), s                                                    | 11.6                                                                              | 5.3                                                                               | 19.2                                                                              | 36.7                                                                              | 0.0                                                                               | 28.1                                                                              | 32.5                                                                                | 46.4                                                                                | 45.4                                                                                | 16.2                                                                                | 23.2                                                                                | 5.0                                                                                 |
| Cycle Q Clear(g_c), s                                              | 38.7                                                                              | 5.3                                                                               | 19.2                                                                              | 42.0                                                                              | 0.0                                                                               | 28.1                                                                              | 32.5                                                                                | 46.4                                                                                | 45.4                                                                                | 16.2                                                                                | 23.2                                                                                | 5.0                                                                                 |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.69                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 177                                                                               | 652                                                                               | 995                                                                               | 311                                                                               | 0                                                                                 | 581                                                                               | 494                                                                                 | 2268                                                                                | 643                                                                                 | 550                                                                                 | 2841                                                                                | 702                                                                                 |
| V/C Ratio(X)                                                       | 0.53                                                                              | 0.18                                                                              | 0.48                                                                              | 1.45                                                                              | 0.00                                                                              | 0.76                                                                              | 0.98                                                                                | 0.97                                                                                | 0.96                                                                                | 0.53                                                                                | 0.58                                                                                | 0.16                                                                                |
| Avail Cap(c_a), veh/h                                              | 177                                                                               | 652                                                                               | 995                                                                               | 311                                                                               | 0                                                                                 | 581                                                                               | 494                                                                                 | 2268                                                                                | 643                                                                                 | 550                                                                                 | 2841                                                                                | 702                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.49                                                                                | 0.49                                                                                | 0.49                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                           | 51.1                                                                              | 27.1                                                                              | 11.9                                                                              | 45.2                                                                              | 0.0                                                                               | 34.5                                                                              | 43.0                                                                                | 35.0                                                                                | 34.7                                                                                | 34.2                                                                                | 25.1                                                                                | 20.0                                                                                |
| Incr Delay (d2), s/veh                                             | 10.9                                                                              | 0.6                                                                               | 1.7                                                                               | 221.7                                                                             | 0.0                                                                               | 8.9                                                                               | 23.6                                                                                | 8.1                                                                                 | 16.8                                                                                | 0.5                                                                                 | 0.9                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 3.6                                                                               | 2.8                                                                               | 8.8                                                                               | 29.4                                                                              | 0.0                                                                               | 14.3                                                                              | 19.1                                                                                | 25.6                                                                                | 22.9                                                                                | 8.0                                                                                 | 10.4                                                                                | 2.3                                                                                 |
| LnGrp Delay(d),s/veh                                               | 62.1                                                                              | 27.7                                                                              | 13.5                                                                              | 266.9                                                                             | 0.0                                                                               | 43.4                                                                              | 66.5                                                                                | 43.1                                                                                | 51.5                                                                                | 34.7                                                                                | 25.9                                                                                | 20.5                                                                                |
| LnGrp LOS                                                          | E                                                                                 | C                                                                                 | B                                                                                 | F                                                                                 |                                                                                   | D                                                                                 | E                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 689                                                                               |                                                                                   |                                                                                   | 892                                                                               |                                                                                   |                                                                                     | 3302                                                                                |                                                                                     |                                                                                     | 2055                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 156.7                                                                             |                                                                                   |                                                                                     | 48.1                                                                                |                                                                                     |                                                                                     | 26.9                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                                                              | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                                                       |                                                                                   | 2                                                                                 | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           |                                                                                   | 47.3                                                                              | 43.2                                                                              | 54.0                                                                              |                                                                                   | 47.3                                                                              | 38.0                                                                                | 59.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            |                                                                                   | 5.3                                                                               | 5.3                                                                               | * 5.3                                                                             |                                                                                   | 5.3                                                                               | 4.6                                                                                 | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        |                                                                                   | 42.0                                                                              | 14.1                                                                              | * 49                                                                              |                                                                                   | 42.0                                                                              | 33.4                                                                                | 29.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                       |                                                                                   | 45.0                                                                              | 19.2                                                                              | 49.4                                                                              |                                                                                   | 41.7                                                                              | 35.5                                                                                | 26.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.2                                                                               | 0.0                                                                                 | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay                                                |                                                                                   |                                                                                   | 53.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                                                       |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## **Appendix K**

Study Freeway Segment Analysis Worksheets

THIS PAGE INTENTIONALLY LEFT BLANK

**Existing Conditions  
Study Freeway Segment Analysis Worksheets**

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: NB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2896  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 770   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1083  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1083 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 15.5 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: NB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3325  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 884   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1244  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1244 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 17.8 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.



Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: SB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2353  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 626   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 880   | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 880  | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 12.6 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: SB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3416  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 909   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1278  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1278 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.9 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 18.3 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: NB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2731  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 726   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1022  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1022 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 14.6 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: NB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2884  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 767   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1079  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1079 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 15.4 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: SB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3400  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 904   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1272  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1272 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.9 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 18.2 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: SB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 4118  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 1095  | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1541  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1541 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 68.7 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 22.4 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

**Existing Plus Project Conditions  
Study Freeway Segment Analysis Worksheets**

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: NB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2917  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 776   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1091  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1091 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 15.6 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.



Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: NB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3352  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 891   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1254  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1254 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 17.9 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: SB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2380  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 633   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 890   | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 890  | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 12.7 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: SB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3437  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 914   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1286  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1286 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.9 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 18.4 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: NB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2753  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 732   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1030  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1030 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 14.7 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: NB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2907  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 773   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1088  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1088 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 15.5 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: SB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3423  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 910   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1281  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1281 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.9 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 18.3 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: SB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 4140  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 1101  | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1549  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1549 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 68.6 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 22.6 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

**Project Completion Conditions  
(Existing Plus Ambient Growth Plus Proposed Project)  
Study Freeway Segment Analysis Worksheets**



Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: NB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+AMBIENT+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3033  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 807   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1135  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1135 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 16.2 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: NB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+AMBIENT+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3485  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 927   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1304  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1304 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.9 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 18.7 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: SB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+AMBIENT+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2474  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 658   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 926   | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 926  | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 13.2 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: SB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+AMBIENT+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3574  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 951   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1337  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1337 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.8 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 19.2 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: NB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+AMBIENT+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2862  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 761   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1071  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1071 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 15.3 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: NB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+AMBIENT+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3022  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 804   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1131  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1131 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 16.2 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: SB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+AMBIENT+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3559  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 947   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1331  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1331 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.8 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 19.1 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: SB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXSITING+AMBIENT+PROJECT  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 4305  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 1145  | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1611  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1611 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 68.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 23.7 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.



**Cumulative Conditions  
(Existing Plus Ambient Growth Plus Cumulative Projects Plus  
Proposed Project)  
Study Freeway Segment Analysis Worksheets**

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: NB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3234  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 860   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1210  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1210 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 17.3 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: NB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3738  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 994   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1398  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1398 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.5 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 20.1 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: SB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 2690  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 715   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1006  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1006 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 14.4 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: AM Peak  
Freeway/Direction: SB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3813  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 1014  | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1426  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1426 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.4 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 20.5 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: NB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3146  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 837   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1177  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1177 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 16.8 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: NB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3345  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 890   | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1251  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1251 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 70.0 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 17.9 | pc/mi/ln |
| Level of service, LOS          | B    |          |

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: SB I-15  
From/To: North of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 3831  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 1019  | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1433  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |      |          |
|--------------------------------|------|----------|
| Flow rate, vp                  | 1433 | pc/h/ln  |
| Free-flow speed, FFS           | 70.0 | mi/h     |
| Average passenger-car speed, S | 69.4 | mi/h     |
| Number of lanes, N             | 3    |          |
| Density, D                     | 20.7 | pc/mi/ln |
| Level of service, LOS          | C    |          |

Overall results are not computed when free-flow speed is less than 55 mph.



Phone: Fax:  
E-mail:

---

Operational Analysis

---

Analyst: AT  
Agency or Company: RK  
Date Performed: 10/06/2016  
Analysis Time Period: PM Peak  
Freeway/Direction: SB I-15  
From/To: South of Central Avenue  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

---

Flow Inputs and Adjustments

---

|                               |       |         |
|-------------------------------|-------|---------|
| Volume, V                     | 4633  | veh/h   |
| Peak-hour factor, PHF         | 0.94  |         |
| Peak 15-min volume, v15       | 1232  | v       |
| Trucks and buses              | 11    | %       |
| Recreational vehicles         | 0     | %       |
| Terrain type:                 | Level |         |
| Grade                         | -     | %       |
| Segment length                | -     | mi      |
| Trucks and buses PCE, ET      | 1.5   |         |
| Recreational vehicle PCE, ER  | 1.2   |         |
| Heavy vehicle adjustment, fHV | 0.948 |         |
| Driver population factor, fp  | 1.00  |         |
| Flow rate, vp                 | 1733  | pc/h/ln |

---

Speed Inputs and Adjustments

---

|                                   |          |          |
|-----------------------------------|----------|----------|
| Lane width                        | -        | ft       |
| Right-side lateral clearance      | -        | ft       |
| Total ramp density, TRD           | -        | ramps/mi |
| Number of lanes, N                | 3        |          |
| Free-flow speed:                  | Measured |          |
| FFS or BFFS                       | 70.0     | mi/h     |
| Lane width adjustment, fLW        | -        | mi/h     |
| Lateral clearance adjustment, fLC | -        | mi/h     |
| TRD adjustment                    | -        | mi/h     |
| Free-flow speed, FFS              | 70.0     | mi/h     |

---

LOS and Performance Measures

---

|                                |       |          |
|--------------------------------|-------|----------|
| Flow rate, vp                  | 1733  | pc/h/ln  |
| Free-flow speed, FFS           | 70.0  | mi/h     |
| Average passenger-car speed, S | 66.7  | mi/h     |
| Number of lanes, N             | 3     |          |
| Density, D                     | 26.0- | pc/mi/ln |
| Level of service, LOS          | C     |          |

Overall results are not computed when free-flow speed is less than 55 mph.

## **Appendix L**

Study Freeway Ramp Merge & Diverge Analysis Worksheets

THIS PAGE INTENTIONALLY LEFT BLANK

**Existing Conditions**  
**Study Freeway Ramp Merge & Diverge Analysis Worksheets**

Flow rate, vp 3395 597 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.591 Using Equation 1

FM

v = v (P ) = 2008 pc/h  
12 F FM

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 3992         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1387 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2008       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 3992   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 22.4$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.339 |     |
| Space mean speed in ramp influence area, | S = 50.6  | mph |
| Space mean speed in outer lanes,         | S = 51.8  | mph |
| Space mean speed for all vehicles,       | S = 51.0  | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: AM Peak  
Freeway/Dir of Travel: NB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 2896  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 514   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 2896    | 514   |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 804     | 143   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 3898 1300 pcph

Phone:  
E-mail:

Fax:

Diverge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: NB I-15 Off-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: Existing (2015)  
 Description: Central Plaza Project

Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3325    | vph |

Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1120  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3325    | 1120    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 924     | 311     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00 %  | 0.00 %  |               | %   |
| Length                        | 0.00 mi | 0.00 mi |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
 EQ  
 P = 0.603 Using Equation 5  
 FD  

$$v_{12} = v_R + (v_F - v_R) \frac{P}{FD} = 2866 \text{ pc/h}$$

Capacity Checks

|                                                       | Actual    | Maximum                                  | LOS F? |
|-------------------------------------------------------|-----------|------------------------------------------|--------|
| $v_{12} = v_{Fi}$                                     | 3898      | 6750                                     | No     |
| $v_{12} = v_F - v_{F0}$                               | 2598      | 6750                                     | No     |
| $v_{12} = v_R$                                        | 1300      | 2000                                     | No     |
| $v_{12} = v_R$                                        | 1032 pc/h | (Equation 13-14 or 13-17)                |        |
| Is $v_{12} \text{ or } v_{av34} > 2700 \text{ pc/h?}$ |           | No                                       |        |
| Is $v_{12} \text{ or } v_{av34} > 1.5 v_{12} / 2$     |           | No                                       |        |
| If yes, $v_{12A} = 2866$                              |           | (Equation 13-15, 13-16, 13-18, or 13-19) |        |

Flow Entering Diverge Influence Area

|          | Actual | Max Desirable | Violation? |
|----------|--------|---------------|------------|
| $v_{12}$ | 2866   | 4400          | No         |

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 24.4 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

|                                          |              |     |
|------------------------------------------|--------------|-----|
| Intermediate speed variable,             | $D = 0.545$  |     |
| Space mean speed in ramp influence area, | $S_R = 47.9$ | mph |
| Space mean speed in outer lanes,         | $S_0 = 60.2$ | mph |
| Space mean speed for all vehicles,       | $S = 50.7$   | mph |

Flow rate, vp 2758 546 pcph

Phone:  
E-mail:

Fax:

## Diverge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: SB I-15 Off-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: Existing (2015)  
 Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 2353    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 470   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 2353    | 470     |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 654     | 131     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00    | % 0.00  | %             | %   |
| Length                        | 0.00    | mi 0.00 | mi            | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
 EQ  
 P = 0.666 Using Equation 5  
 FD  
 $v = v + (v - v) P = 2019$  pc/h  
 12 R F R FD

## Capacity Checks

|                        | Actual   | Maximum                                  | LOS F? |
|------------------------|----------|------------------------------------------|--------|
| v = v                  | 2758     | 6750                                     | No     |
| Fi F                   |          |                                          |        |
| v = v - v              | 2212     | 6750                                     | No     |
| F0 F R                 |          |                                          |        |
| v                      | 546      | 2000                                     | No     |
| R                      |          |                                          |        |
| v or v                 | 739 pc/h | (Equation 13-14 or 13-17)                |        |
| 3 av34                 |          |                                          |        |
| Is v or v > 2700 pc/h? |          | No                                       |        |
| 3 av34                 |          |                                          |        |
| Is v or v > 1.5 v /2   |          | No                                       |        |
| 3 av34                 |          |                                          |        |
| If yes, v = 2019       |          | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A                    |          |                                          |        |

## Flow Entering Diverge Influence Area

|    | Actual | Max Desirable | Violation? |
|----|--------|---------------|------------|
| v  | 2019   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 17.1$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence B

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.477 |     |
| Space mean speed in ramp influence area, | S = 48.8  | mph |
| Space mean speed in outer lanes,         | S = 60.3  | mph |
| Space mean speed for all vehicles,       | S = 51.4  | mph |

Flow rate, vp 4004 1342 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.591 Using Equation 1

FM

v = v (P ) = 2368 pc/h  
12 F FM

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 5346         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1636 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2368       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 5346   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 30.7$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.445 |     |
| Space mean speed in ramp influence area, | S = 49.2  | mph |
| Space mean speed in outer lanes,         | S = 50.9  | mph |
| Space mean speed for all vehicles,       | S = 49.7  | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: AM Peak  
Freeway/Dir of Travel: SB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 3416  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1156  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 3416    | 1156  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 949     | 321   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |



Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: NB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 2731  | vph |

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 476   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 2731    | 476     |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 759     | 132     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         |         |         |               |     |
| Length                        | %<br>mi | %<br>mi | %<br>mi       |     |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

### Estimation of V12 Merge Areas

$L =$  (Equation 13-6 or 13-7)  
 $P = 0.591$  Using Equation 1  
 $v_{12} = v_F (P_{FM}) = 1893 \text{ pc/h}$

|                        | Actual    | Maximum                                  | LOS F? |
|------------------------|-----------|------------------------------------------|--------|
| v                      | 3754      | 6750                                     | No     |
| F0                     |           |                                          |        |
| v or v                 | 1308 pc/h | (Equation 13-14 or 13-17)                |        |
| 3 av34                 |           |                                          |        |
| Is v or v > 2700 pc/h? | No        |                                          |        |
| 3 av34                 |           |                                          |        |
| Is v or v > 1.5 v /2   | No        |                                          |        |
| 3 av34                 |           |                                          |        |
| If yes, v = 1893       |           | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A                    |           |                                          |        |

|     | Actual | Max Desirable | Violation? |
|-----|--------|---------------|------------|
| v   | 3754   | 4600          | No         |
| R12 |        |               |            |

Density,  $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 21.2$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence C

|                                          |                     |     |
|------------------------------------------|---------------------|-----|
| Intermediate speed variable,             | M = 0.331           |     |
| Space mean speed in ramp influence area, | $S^S = 50.7$        | mph |
| Space mean speed in outer lanes,         | $S^R = 52.1$        | mph |
| Space mean speed for all vehicles,       | $S^{\theta} = 51.2$ | mph |

Phone: Fax:  
E-mail:

## Diverge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: NB I-15 Off-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 2884    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1164  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 2884    | 1164    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 801     | 323     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00    | % 0.00  | %             | %   |
| Length                        | 0.00    | mi 0.00 | mi            | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

Flow rate, vp 3381 1352 pcph

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.613 Using Equation 5  
FD  
 $v = v + (v - v) P = 2596$  pc/h  
12 R F R FD

## Capacity Checks

|                        | Actual   | Maximum                                  | LOS F? |
|------------------------|----------|------------------------------------------|--------|
| v = v                  | 3381     | 6750                                     | No     |
| Fi F                   |          |                                          |        |
| v = v - v              | 2029     | 6750                                     | No     |
| F0 F R                 |          |                                          |        |
| v                      | 1352     | 2000                                     | No     |
| R                      |          |                                          |        |
| v or v                 | 785 pc/h | (Equation 13-14 or 13-17)                |        |
| 3 av34                 |          |                                          |        |
| Is v or v > 2700 pc/h? |          | No                                       |        |
| 3 av34                 |          |                                          |        |
| Is v or v > 1.5 v /2   |          | No                                       |        |
| 3 av34                 |          |                                          |        |
| If yes, v = 2596       |          | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A                    |          |                                          |        |

## Flow Entering Diverge Influence Area

|    | Actual | Max Desirable | Violation? |
|----|--------|---------------|------------|
| v  | 2596   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 22.1$  pc/mi/ln  
R 12 D  
Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.550 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 47.9  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 60.3  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 50.3  | mph |

Flow rate, vp 3986 803 pcph

Phone:  
E-mail:

Fax:

## Diverge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: SB I-15 Off-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: Existing (2015)  
 Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3400    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 692   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3400    | 692     |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 944     | 192     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00    | % 0.00  | %             | %   |
| Length                        | 0.00    | mi 0.00 | mi            | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
 EQ  
 P = 0.623 Using Equation 5  
 FD  

$$v_{12} = v_R + (v_F - v_R) \frac{P}{FD} = 2787 \text{ pc/h}$$

## Capacity Checks

|                                                       | Actual    | Maximum                                  | LOS F? |
|-------------------------------------------------------|-----------|------------------------------------------|--------|
| $v_{12} = v_{Fi}$                                     | 3986      | 6750                                     | No     |
| $v_{12} = v_F - v_{F0}$                               | 3183      | 6750                                     | No     |
| $v_{12} = v_R$                                        | 803       | 2000                                     | No     |
| $v_{12} = v_R$                                        | 1199 pc/h | (Equation 13-14 or 13-17)                |        |
| Is $v_{12} \text{ or } v_{av34} > 2700 \text{ pc/h?}$ |           | No                                       |        |
| Is $v_{12} \text{ or } v_{av34} > 1.5 v_{12} / 2$     |           | No                                       |        |
| If yes, $v_{12A} = 2787$                              |           | (Equation 13-15, 13-16, 13-18, or 13-19) |        |

## Flow Entering Diverge Influence Area

|          | Actual | Max Desirable | Violation? |
|----------|--------|---------------|------------|
| $v_{12}$ | 2787   | 4400          | No         |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 23.7 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |              |     |
|------------------------------------------|--------------|-----|
| Intermediate speed variable,             | $D = 0.500$  |     |
| Space mean speed in ramp influence area, | $S_R = 48.5$ | mph |
| Space mean speed in outer lanes,         | $S_0 = 59.6$ | mph |
| Space mean speed for all vehicles,       | $S = 51.4$   | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: SB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: Existing (2015)  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on Freeway          | 4118  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1081  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 4118    | 1081  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 1144    | 300   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 4827 1255 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)  
EQ  
P = 0.591 Using Equation 1  
FM  
 $v_{12} = v_F (P_{FM}) = 2855$  pc/h

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 6082         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1972 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2855       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 6082   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 33.8$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.524 |     |
| Space mean speed in ramp influence area, | S = 48.2  | mph |
| Space mean speed in outer lanes,         | S = 49.7  | mph |
| Space mean speed for all vehicles,       | S = 48.7  | mph |

**Existing Plus Project Conditions  
Study Freeway Ramp Merge & Diverge Analysis Worksheets**

Flow rate, vp 3419 621 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.591 Using Equation 1

FM

 $v_{12} = v_F (P_{FM}) = 2022 \text{ pc/h}$ 

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 4040         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1397 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2022       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 4040   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 22.7 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.341 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 50.6  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 51.8  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 51.0  | mph |

Phone: Fax:

E-mail:

## Merge Analysis

Analyst: AT

Agency/Co.: RK

Date performed: 10/06/2016

Analysis time period: AM Peak

Freeway/Dir of Travel: NB I-15 On-Ramp at Central

Junction: I-15/Central Ave

Jurisdiction: CT Dist 8 / Lake Elsinore

Analysis Year: EXISTING+PROJECT

Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 2917  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 535   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 2917    | 535   |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 810     | 149   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Phone: Fax:  
E-mail:

## Diverge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: AM Peak  
Freeway/Dir of Travel: NB I-15 Off-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3352    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1147  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3352    | 1147    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 931     | 319     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00 %  | 0.00 %  |               | %   |
| Length                        | 0.00 mi | 0.00 mi |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

Flow rate, vp 3929 1332 pcph

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.601 Using Equation 5  
FD  
 $v = v + (v - v) P = 2892$  pc/h  
12 R F R FD

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v = v     | 3929         | 6750                                     | No     |
| Fi F      |              |                                          |        |
| v = v - v | 2597         | 6750                                     | No     |
| F0 F R    |              |                                          |        |
| v         | 1332         | 2000                                     | No     |
| R         |              |                                          |        |
| v or v    | 1037 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    |              |                                          |        |
| If yes, v | = 2892       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Diverge Influence Area

|    |        |               |            |
|----|--------|---------------|------------|
|    | Actual | Max Desirable | Violation? |
| v  | 2892   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 24.6$  pc/mi/ln  
R 12 D  
Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.548 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 47.9  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 60.2  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 50.6  | mph |

Flow rate, vp 2790 577 pcph

Phone:  
E-mail:

Fax:

## Diverge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: SB I-15 Off-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: EXISTING+PROJECT  
 Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 2380    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 497   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 2380    | 497     |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 661     | 138     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00    | % 0.00  | %             | %   |
| Length                        | 0.00    | mi 0.00 | mi            | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
 EQ  
 P = 0.664 Using Equation 5  
 FD  
 $v = v + (v - v) P = 2046$  pc/h  
 12 R F R FD

## Capacity Checks

|           | Actual       | Maximum                                  | LOS F? |
|-----------|--------------|------------------------------------------|--------|
| v = v     | 2790         | 6750                                     | No     |
| Fi F      |              |                                          |        |
| v = v - v | 2213         | 6750                                     | No     |
| F0 F R    |              |                                          |        |
| v         | 577          | 2000                                     | No     |
| R         |              |                                          |        |
| v or v    | 744 pc/h     | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    |              |                                          |        |
| If yes, v | = 2046       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Diverge Influence Area

|    | Actual | Max Desirable | Violation? |
|----|--------|---------------|------------|
| v  | 2046   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 17.3$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence B

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.480 |     |
| Space mean speed in ramp influence area, | S = 48.8  | mph |
| Space mean speed in outer lanes,         | S = 60.3  | mph |
| Space mean speed for all vehicles,       | S = 51.4  | mph |



Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: AM Peak  
Freeway/Dir of Travel: SB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 3437  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1177  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 3437    | 1177  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 955     | 327   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 4029 1367 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)  
EQ  
P = 0.591 Using Equation 1  
FM  
 $v_{12} = v_F (P_{FM}) = 2383$  pc/h

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 5396         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1646 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2383       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 5396   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 31.0$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.452 |     |
| Space mean speed in ramp influence area, | S = 49.1  | mph |
| Space mean speed in outer lanes,         | S = 50.9  | mph |
| Space mean speed for all vehicles,       | S = 49.6  | mph |

Flow rate, vp 3227 578 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.591 Using Equation 1

FM

 $v_{12} = v_F (P_{FM}) = 1909 \text{ pc/h}$ 

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 3805         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1318 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 1909       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 3805   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 21.5 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.333 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 50.7  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 52.1  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 51.1  | mph |

Phone: Fax:

E-mail:

## Merge Analysis

Analyst: AT

Agency/Co.: RK

Date performed: 10/06/2016

Analysis time period: PM Peak

Freeway/Dir of Travel: NB I-15 On-Ramp at Central

Junction: I-15/Central Ave

Jurisdiction: CT Dist 8 / Lake Elsinore

Analysis Year: EXISTING+PROJECT

Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 2753  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 498   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 2753    | 498   |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 765     | 138   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 3408 1378 pcph

Phone:  
E-mail:

Fax:

## Diverge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: NB I-15 Off-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: EXISTING+PROJECT  
 Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 2907    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1187  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 2907    | 1187    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 808     | 330     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00    | % 0.00  | %             | %   |
| Length                        | 0.00    | mi 0.00 | mi            | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
 EQ  
 P = 0.611 Using Equation 5  
 FD  

$$v_{12} = v_R + (v_F - v_R) \frac{P}{FD} = 2619 \text{ pc/h}$$

## Capacity Checks

|                                                       | Actual   | Maximum                                  | LOS F? |
|-------------------------------------------------------|----------|------------------------------------------|--------|
| $v_{12} = v_{Fi}$                                     | 3408     | 6750                                     | No     |
| $v_{12} = v_F - v_{F0}$                               | 2030     | 6750                                     | No     |
| $v_{12} = v_R$                                        | 1378     | 2000                                     | No     |
| $v_{12} = v_R$                                        | 789 pc/h | (Equation 13-14 or 13-17)                |        |
| Is $v_{12} \text{ or } v_{av34} > 2700 \text{ pc/h?}$ |          | No                                       |        |
| Is $v_{12} \text{ or } v_{av34} > 1.5 v_{12} / 2$     |          | No                                       |        |
| If yes, $v_{12A} = 2619$                              |          | (Equation 13-15, 13-16, 13-18, or 13-19) |        |

## Flow Entering Diverge Influence Area

|          | Actual | Max Desirable | Violation? |
|----------|--------|---------------|------------|
| $v_{12}$ | 2619   | 4400          | No         |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 22.3 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.552 |     |
| Space mean speed in ramp influence area, | S = 47.8  | mph |
| Space mean speed in outer lanes,         | S = 60.3  | mph |
| Space mean speed for all vehicles,       | S = 50.2  | mph |

Phone: Fax:  
E-mail:

## Diverge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: SB I-15 Off-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3423    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 715   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3423    | 715     |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 951     | 199     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00    | % 0.00  | %             | %   |
| Length                        | 0.00    | mi 0.00 | mi            | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

Flow rate, vp 4013 830 pcph

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.621 Using Equation 5  
FD  
v = v + (v - v ) P = 2808 pc/h  
12 R F R FD

## Capacity Checks

|                        | Actual    | Maximum                                  | LOS F? |
|------------------------|-----------|------------------------------------------|--------|
| v = v                  | 4013      | 6750                                     | No     |
| Fi F                   |           |                                          |        |
| v = v - v              | 3183      | 6750                                     | No     |
| F0 F R                 |           |                                          |        |
| v                      | 830       | 2000                                     | No     |
| R                      |           |                                          |        |
| v or v                 | 1205 pc/h | (Equation 13-14 or 13-17)                |        |
| 3 av34                 |           |                                          |        |
| Is v or v > 2700 pc/h? |           | No                                       |        |
| 3 av34                 |           |                                          |        |
| Is v or v > 1.5 v /2   |           | No                                       |        |
| 3 av34                 |           |                                          |        |
| If yes, v = 2808       |           | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A                    |           |                                          |        |

## Flow Entering Diverge Influence Area

|    | Actual | Max Desirable | Violation? |
|----|--------|---------------|------------|
| v  | 2808   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density, D = 4.252 + 0.0086 v - 0.009 L = 23.9 pc/mi/ln  
R 12 D  
Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.503 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 48.5  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 59.5  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 51.3  | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: SB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 4140  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1103  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 4140    | 1103  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 1150    | 306   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 4853 1281 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)  
EQ  
P = 0.591 Using Equation 1  
FM  
 $v_{12} = v_F (P_{FM}) = 2871$  pc/h

## Capacity Checks

|           |              |         |                                          |
|-----------|--------------|---------|------------------------------------------|
|           | Actual       | Maximum | LOS F?                                   |
| v         | 6134         | 6750    | No                                       |
| F0        |              |         |                                          |
| v or v    | 1982 pc/h    |         | (Equation 13-14 or 13-17)                |
| 3 av34    |              |         |                                          |
| Is v or v | > 2700 pc/h? | No      |                                          |
| 3 av34    |              |         |                                          |
| Is v or v | > 1.5 v /2   | No      |                                          |
| 3 av34    | 12           |         |                                          |
| If yes, v | = 2871       |         | (Equation 13-15, 13-16, 13-18, or 13-19) |
| 12A       |              |         |                                          |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 6134   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 34.1$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.534 |     |
| Space mean speed in ramp influence area, | S = 48.1  | mph |
| Space mean speed in outer lanes,         | S = 49.7  | mph |
| Space mean speed for all vehicles,       | S = 48.6  | mph |

**Project Completion Conditions  
(Existing Plus Ambient Growth Plus Proposed Project)  
Study Freeway Ramp Merge & Diverge Analysis Worksheets**

Flow rate, vp 3555 646 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.591 Using Equation 1

FM

 $v = v \left( \frac{P}{F} \right) = 2103 \text{ pc/h}$ 

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 4201         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1452 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2103       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 4201   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 23.5 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.347 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 50.5  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 51.6  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 50.9  | mph |

Phone: Fax:

E-mail:

## Merge Analysis

Analyst: AT

Agency/Co.: RK

Date performed: 10/06/2016

Analysis time period: AM Peak

Freeway/Dir of Travel: NB I-15 On-Ramp at Central

Junction: I-15/Central Ave

Jurisdiction: CT Dist 8 / Lake Elsinore

Analysis Year: EXISTING+AMBIENT+PROJECT

Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 3033  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 556   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 3033    | 556   |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 843     | 154   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Phone: Fax:  
E-mail:

## Diverge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: AM Peak  
Freeway/Dir of Travel: NB I-15 Off-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+AMBIENT+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3485    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1192  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3485    | 1192    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 968     | 331     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00    | % 0.00  | %             | %   |
| Length                        | 0.00    | mi 0.00 | mi            | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

Flow rate, vp 4085 1384 pcph

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)

EQ

P = 0.594 Using Equation 5

FD

$v = v + (v - v) P = 2989$  pc/h  
12 R F R FD

## Capacity Checks

|               | Actual       | Maximum                                  | LOS F? |
|---------------|--------------|------------------------------------------|--------|
| $v = v$       | 4085         | 6750                                     | No     |
| $F_i F$       |              |                                          |        |
| $v = v - v$   | 2701         | 6750                                     | No     |
| $F_0 F R$     |              |                                          |        |
| $v$           | 1384         | 2000                                     | No     |
| $R$           |              |                                          |        |
| $v$ or $v$    | 1096 pc/h    | (Equation 13-14 or 13-17)                |        |
| $3$ av34      |              |                                          |        |
| Is $v$ or $v$ | > 2700 pc/h? | No                                       |        |
| $3$ av34      |              |                                          |        |
| Is $v$ or $v$ | > 1.5 $v$ /2 | No                                       |        |
| $3$ av34      |              |                                          |        |
| If yes, $v$   | = 2989       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A           |              |                                          |        |

## Flow Entering Diverge Influence Area

|     | Actual | Max Desirable | Violation? |
|-----|--------|---------------|------------|
| $v$ | 2989   | 4400          | No         |
| 12  |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 25.5$  pc/mi/ln  
R 12 D  
Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.553 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 47.8  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 60.0  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 50.6  | mph |



|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.482 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 48.7  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 60.3  | mph |
|                                          | θ         |     |
| Space mean speed for all vehicles,       | S = 51.4  | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: AM Peak  
Freeway/Dir of Travel: SB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+AMBIENT+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 3574  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1223  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 3574    | 1223  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 993     | 340   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 4190 1420 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)  
EQ  
P = 0.591 Using Equation 1  
FM  
 $v_{12} = v_F (P_{FM}) = 2478$  pc/h

## Capacity Checks

|           |              |         |                                          |
|-----------|--------------|---------|------------------------------------------|
|           | Actual       | Maximum | LOS F?                                   |
| v         | 5610         | 6750    | No                                       |
| F0        |              |         |                                          |
| v or v    | 1712 pc/h    |         | (Equation 13-14 or 13-17)                |
| 3 av34    |              |         |                                          |
| Is v or v | > 2700 pc/h? | No      |                                          |
| 3 av34    |              |         |                                          |
| Is v or v | > 1.5 v /2   | No      |                                          |
| 3 av34    | 12           |         |                                          |
| If yes, v | = 2478       |         | (Equation 13-15, 13-16, 13-18, or 13-19) |
| 12A       |              |         |                                          |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 5610   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 \frac{v}{R} + 0.0078 \frac{v}{R^{12}} - 0.00627 \frac{L}{A} = 32.1$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.478 |     |
| Space mean speed in ramp influence area, | S = 48.8  | mph |
| Space mean speed in outer lanes,         | S = 50.6  | mph |
| Space mean speed for all vehicles,       | S = 49.3  | mph |

Flow rate, vp 3355 600 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.591 Using Equation 1

FM

v = v (P ) = 1984 pc/h  
12 F FM

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 3955         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1371 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 1984       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 3955   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 22.2$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.338 |     |
| Space mean speed in ramp influence area, | S = 50.6  | mph |
| Space mean speed in outer lanes,         | S = 51.9  | mph |
| Space mean speed for all vehicles,       | S = 51.0  | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: NB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+AMBIENT+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 2862  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 517   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 2862    | 517   |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 795     | 144   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Phone: Fax:  
E-mail:

## Diverge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: NB I-15 Off-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+AMBIENT+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3022    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1234  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3022    | 1234    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 839     | 343     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00 %  | 0.00 %  |               | %   |
| Length                        | 0.00 mi | 0.00 mi |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

Flow rate, vp 3542 1433 pcph

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)

EQ

P = 0.606 Using Equation 5

FD

$v = v + (v - v) P = 2710$  pc/h  
12 R F R FD

## Capacity Checks

|               | Actual       | Maximum | LOS F?                                   |
|---------------|--------------|---------|------------------------------------------|
| $v = v$       | 3542         | 6750    | No                                       |
| $F_i F$       |              |         |                                          |
| $v = v - v$   | 2109         | 6750    | No                                       |
| $F_0 F R$     |              |         |                                          |
| $v$           | 1433         | 2000    | No                                       |
| $R$           |              |         |                                          |
| $v$ or $v$    | 832 pc/h     |         | (Equation 13-14 or 13-17)                |
| $3$ av34      |              |         |                                          |
| Is $v$ or $v$ | > 2700 pc/h? | No      |                                          |
| $3$ av34      |              |         |                                          |
| Is $v$ or $v$ | > 1.5 v /2   | No      |                                          |
| $3$ av34      |              |         |                                          |
| If yes, v     | = 2710       |         | (Equation 13-15, 13-16, 13-18, or 13-19) |
| 12A           |              |         |                                          |

## Flow Entering Diverge Influence Area

|     | Actual | Max Desirable | Violation? |
|-----|--------|---------------|------------|
| $v$ | 2710   | 4400          | No         |
| 12  |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 23.1$  pc/mi/ln  
R 12 D  
Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.557 |     |
| Space mean speed in ramp influence area, | S = 47.8  | mph |
| Space mean speed in outer lanes,         | S = 60.3  | mph |
| Space mean speed for all vehicles,       | S = 50.2  | mph |

Phone: Fax:  
E-mail:

## Diverge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: SB I-15 Off-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+AMBIENT+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3559    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 743   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3559    | 743     |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 989     | 206     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00 %  | 0.00 %  |               | %   |
| Length                        | 0.00 mi | 0.00 mi |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

Flow rate, vp 4172 863 pcph

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)

EQ

P = 0.616 Using Equation 5

FD

$v = v_R + (v_F - v_R) \frac{P}{FD}$  = 2901 pc/h

## Capacity Checks

|                                      | Actual    | Maximum                                  | LOS F? |
|--------------------------------------|-----------|------------------------------------------|--------|
| $v = v_F$                            | 4172      | 6750                                     | No     |
| $v = v_F - v_R$                      | 3309      | 6750                                     | No     |
| $v_R$                                | 863       | 2000                                     | No     |
| $v_R$ or $v_F$                       | 1271 pc/h | (Equation 13-14 or 13-17)                |        |
| Is $v_R$ or $v_F$ > 2700 pc/h?       |           | No                                       |        |
| Is $v_R$ or $v_F$ > 1.5 $v_{12}$ / 2 |           | No                                       |        |
| If yes, $v_{12A}$ = 2901             |           | (Equation 13-15, 13-16, 13-18, or 13-19) |        |

## Flow Entering Diverge Influence Area

|          | Actual | Max Desirable | Violation? |
|----------|--------|---------------|------------|
| $v_{12}$ | 2901   | 4400          | No         |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 \frac{v}{12} - 0.009 \frac{L}{D}$  = 24.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.506 |     |
| Space mean speed in ramp influence area, | S = 48.4  | mph |
| Space mean speed in outer lanes,         | S = 59.3  | mph |
| Space mean speed for all vehicles,       | S = 51.3  | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: SB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: EXISTING+AMBIENT+PROJECT  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 4305  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1146  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 4305    | 1146  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 1196    | 318   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 5046 1331 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)  
EQ  
P = 0.591 Using Equation 1  
FM  
 $v_{12} = v_F (P_{FM}) = 2985$  pc/h

## Capacity Checks

|           |              |         |                                          |
|-----------|--------------|---------|------------------------------------------|
|           | Actual       | Maximum | LOS F?                                   |
| v         | 6377         | 6750    | No                                       |
| F0        |              |         |                                          |
| v or v    | 2061 pc/h    |         | (Equation 13-14 or 13-17)                |
| 3 av34    |              |         |                                          |
| Is v or v | > 2700 pc/h? | No      |                                          |
| 3 av34    |              |         |                                          |
| Is v or v | > 1.5 v /2   | No      |                                          |
| 3 av34    | 12           |         |                                          |
| If yes, v | = 2985       |         | (Equation 13-15, 13-16, 13-18, or 13-19) |
| 12A       |              |         |                                          |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 6377   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 35.4$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence E

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.578 |     |
| Space mean speed in ramp influence area, | S = 47.5  | mph |
| Space mean speed in outer lanes,         | S = 49.4  | mph |
| Space mean speed for all vehicles,       | S = 48.1  | mph |

**Mitigated Project Completion Conditions  
(Existing Plus Ambient Growth Plus Proposed Project)  
Study Freeway Ramp Merge & Diverge Analysis Worksheets**

Flow rate, vp 4190 1420 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.040 Using Equation 4

FM

 $v_{12} = v_F (P_{FM}) = 169 \text{ pc/h}$ 

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 5610         | 9000                                     | No     |
| F0        |              |                                          |        |
| v or v    | 2010 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | Yes                                      |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 1676       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 5610   | 4600          | No         |
| 12A |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 25.8 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.372 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 50.2  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 52.3  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 51.1  | mph |

Phone: Fax:

E-mail:

## Merge Analysis

Analyst: AT

Agency/Co.: RK

Date performed: 10/06/2016

Analysis time period: AM Peak

Freeway/Dir of Travel: SB I-15 On-Ramp at Central

Junction: I-15/Central Ave

Jurisdiction: CT Dist 8 / Lake Elsinore

Analysis Year: MITIG EXISTING+AMBIENT+PROJECT

Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 4     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 3574  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1223  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 3574    | 1223  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 993     | 340   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |



Flow rate, vp 5046 1331 pcph

Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)  
 EQ  
 P = 0.051 Using Equation 4  
 FM  
 $v_{12} = v_F (P_{FM}) = 259$  pc/h

Capacity Checks

|                                                                 | Actual    | Maximum | LOS F?                                   |
|-----------------------------------------------------------------|-----------|---------|------------------------------------------|
| v <sub>F0</sub>                                                 | 6377      | 9000    | No                                       |
| v <sub>3</sub> or v <sub>av34</sub>                             | 2393 pc/h |         | (Equation 13-14 or 13-17)                |
| Is v <sub>3</sub> or v <sub>av34</sub> > 2700 pc/h?             |           | No      |                                          |
| Is v <sub>3</sub> or v <sub>av34</sub> > 1.5 v <sub>12</sub> /2 |           | Yes     |                                          |
| If yes, v <sub>12A</sub> = 2018                                 |           |         | (Equation 13-15, 13-16, 13-18, or 13-19) |

Flow Entering Merge Influence Area

|                  | Actual | Max Desirable | Violation? |
|------------------|--------|---------------|------------|
| v <sub>12A</sub> | 6377   | 4600          | No         |

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 27.8$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M = 0.397

Space mean speed in ramp influence area, S<sub>R</sub> = 49.8 mph

Space mean speed in outer lanes, S<sub>R</sub> = 51.3 mph

Space mean speed for all vehicles, S<sub>0</sub> = 50.5 mph

Phone:  
 E-mail:

Fax:

#### Merge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: SB I-15 On-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: MITIG EXISTING+AMBIENT+PROJECT  
 Description: Central Plaza Project

#### Freeway Data

|                            | Merge |     |
|----------------------------|-------|-----|
| Type of analysis           | 4     |     |
| Number of lanes in freeway | 55.0  | mph |
| Free-flow speed on freeway | 4305  | vph |
| Volume on freeway          |       |     |

#### On Ramp Data

|                                   | Right |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | 1     |     |
| Number of lanes in ramp           | 35.0  | mph |
| Free-flow speed on ramp           | 1146  | vph |
| Volume on ramp                    | 500   | ft  |
| Length of first accel/decel lane  |       | ft  |
| Length of second accel/decel lane |       |     |

#### Adjacent Ramp Data (if one exists)

|                           | No |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? |    |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

#### Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 4305    | 1146  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 1196    | 318   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

**Cumulative Conditions  
(Existing Plus Ambient Growth Plus Cumulative Projects Plus  
Proposed Project)  
Study Freeway Ramp Merge & Diverge Analysis Worksheets**

Flow rate, vp 3791 879 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.591 Using Equation 1

FM

 $v = v_{12} \left( \frac{P}{F_{FM}} \right) = 2242 \text{ pc/h}$ 

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 4670         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1549 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2242       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 4670   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 26.3 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.374 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 50.1  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 51.2  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 50.5  | mph |

Phone: Fax:

E-mail:

## Merge Analysis

Analyst: AT

Agency/Co.: RK

Date performed: 10/06/2016

Analysis time period: AM Peak

Freeway/Dir of Travel: NB I-15 On-Ramp at Central

Junction: I-15/Central Ave

Jurisdiction: CT Dist 8 / Lake Elsinore

Analysis Year: E+A+C+P

Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 3234  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 757   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 3234    | 757   |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 898     | 210   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 4382 1678 pcph

Phone:  
E-mail:

Fax:

## Diverge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: NB I-15 Off-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: E+A+C+P  
 Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3738    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1445  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3738    | 1445    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 1038    | 401     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00 %  | 0.00 %  |               | %   |
| Length                        | 0.00 mi | 0.00 mi |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
 EQ  
 P = 0.573 Using Equation 5  
 FD  
 $v = v + (v - v) P = 3228$  pc/h  
 12 R F R FD

## Capacity Checks

|                        | Actual    | Maximum                                  | LOS F? |
|------------------------|-----------|------------------------------------------|--------|
| v = v                  | 4382      | 6750                                     | No     |
| Fi F                   |           |                                          |        |
| v = v - v              | 2704      | 6750                                     | No     |
| F0 F R                 |           |                                          |        |
| v                      | 1678      | 2000                                     | No     |
| R                      |           |                                          |        |
| v or v                 | 1154 pc/h | (Equation 13-14 or 13-17)                |        |
| 3 av34                 |           |                                          |        |
| Is v or v > 2700 pc/h? |           | No                                       |        |
| 3 av34                 |           |                                          |        |
| Is v or v > 1.5 v /2   |           | No                                       |        |
| 3 av34                 |           |                                          |        |
| If yes, v = 3228       |           | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A                    |           |                                          |        |

## Flow Entering Diverge Influence Area

|    | Actual | Max Desirable | Violation? |
|----|--------|---------------|------------|
| v  | 3228   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 27.5$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.579 |     |
| Space mean speed in ramp influence area, | S = 47.5  | mph |
| Space mean speed in outer lanes,         | S = 59.7  | mph |
| Space mean speed for all vehicles,       | S = 50.2  | mph |

Flow rate, vp 3153 850 pcph

Phone:  
E-mail:

Fax:

## Diverge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: AM Peak  
 Freeway/Dir of Travel: SB I-15 Off-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: E+A+C+P  
 Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 2690    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 732   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 2690    | 732     |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 747     | 203     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00 %  | 0.00 %  |               | %   |
| Length                        | 0.00 mi | 0.00 mi |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)

EQ

P = 0.642 Using Equation 5

FD

v = v + (v - v ) P = 2329 pc/h  
12 R F R FD

## Capacity Checks

|                        |          |                                          |        |
|------------------------|----------|------------------------------------------|--------|
|                        | Actual   | Maximum                                  | LOS F? |
| v = v                  | 3153     | 6750                                     | No     |
| Fi F                   |          |                                          |        |
| v = v - v              | 2303     | 6750                                     | No     |
| F0 F R                 |          |                                          |        |
| v                      | 850      | 2000                                     | No     |
| R                      |          |                                          |        |
| v or v                 | 824 pc/h | (Equation 13-14 or 13-17)                |        |
| 3 av34                 |          |                                          |        |
| Is v or v > 2700 pc/h? |          | No                                       |        |
| 3 av34                 |          |                                          |        |
| Is v or v > 1.5 v /2   |          | No                                       |        |
| 3 av34                 |          |                                          |        |
| If yes, v = 2329       |          | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A                    |          |                                          |        |

## Flow Entering Diverge Influence Area

|    |        |               |            |
|----|--------|---------------|------------|
|    | Actual | Max Desirable | Violation? |
| v  | 2329   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density, D = 4.252 + 0.0086 v - 0.009 L = 19.8 pc/mi/ln  
R 12 D  
 Level of service for ramp-freeway junction areas of influence B

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.505 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 48.4  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 60.3  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 51.1  | mph |

$L =$  (Equation 13-6 or 13-7)  
 $P = 0.591$  Using Equation 1  
 $v_{12} = v_F (P_F) = 2644$  pc/h

## Capacity Checks

|                                  | Actual<br>6168 | Maximum<br>6750                          | LOS F?<br>No |
|----------------------------------|----------------|------------------------------------------|--------------|
| v<br>F0                          |                |                                          |              |
| v or v<br>3 av34                 | 1826 pc/h      | (Equation 13-14 or 13-17)                |              |
| Is v or v<br>3 av34 > 2700 pc/h? |                | No                                       |              |
| Is v or v<br>3 av34 > 1.5 v /2   |                | No                                       |              |
| If yes, v<br>12A = 2644          |                | (Equation 13-15, 13-16, 13-18, or 13-19) |              |

Flow Entering Merge Influence Area

|       | Actual | Max Desirable | Violation? |
|-------|--------|---------------|------------|
| v R12 | 6168   | 4600          | No         |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 \text{ } \underset{R}{V} + 0.0078 \text{ } \underset{R}{V} - 0.00627 \text{ } \underset{A}{L} = 35.4 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence E

## Speed Estimation

|                                          |                |         |     |
|------------------------------------------|----------------|---------|-----|
| Intermediate speed variable,             | M              | = 0.586 |     |
|                                          | S              |         |     |
| Space mean speed in ramp influence area, | S <sup>R</sup> | = 47.4  | mph |
| Space mean speed in outer lanes,         | S <sup>0</sup> | = 50.2  | mph |
| Space mean speed for all vehicles,       | S              | = 48.2  | mph |

---

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |         |
|-------------------------------|---------|---------|---------------|---------|
| Volume, V (vph)               | 3813    | 1462    |               | vph     |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |         |
| Peak 15-min volume, v15       | 1059    | 406     |               | v       |
| Trucks and buses              | 11      | 9       |               | %       |
| Recreational vehicles         | 0       | 0       |               | %       |
| Terrain type:                 | Level   | Level   |               |         |
| Grade                         |         |         |               |         |
| Length                        | %<br>mi | %<br>mi | %<br>mi       | %<br>mi |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |         |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |         |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |         |
| Driver population factor, fP  | 1.00    | 1.00    |               |         |

Flow rate, vp 3688 930 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.591 Using Equation 1

FM

v = v (P ) = 2181 pc/h  
12 F FM

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 4618         | 6750                                     | No     |
| F0        |              |                                          |        |
| v or v    | 1507 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2181       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 4618   | 4600          | No         |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 26.2$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.374 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 50.1  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 51.4  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 50.5  | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: NB I-15 On-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: E+A+C+P  
 Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 3146  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 801   | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 3146    | 801   |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 874     | 223   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Phone: Fax:  
E-mail:

## Diverge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: NB I-15 Off-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3345    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1557  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3345    | 1557    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 929     | 433     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00 %  | 0.00 %  |               | %   |
| Length                        | 0.00 mi | 0.00 mi |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

Flow rate, vp 3921 1808 pcph

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
EQ  
P = 0.579 Using Equation 5  
FD  
 $v = v + (v - v) P = 3031$  pc/h  
12 R F R FD

## Capacity Checks

|                        |          |                                          |        |
|------------------------|----------|------------------------------------------|--------|
|                        | Actual   | Maximum                                  | LOS F? |
| v = v                  | 3921     | 6750                                     | No     |
| Fi F                   |          |                                          |        |
| v = v - v              | 2113     | 6750                                     | No     |
| F0 F R                 |          |                                          |        |
| v                      | 1808     | 2000                                     | No     |
| R                      |          |                                          |        |
| v or v                 | 890 pc/h | (Equation 13-14 or 13-17)                |        |
| 3 av34                 |          |                                          |        |
| Is v or v > 2700 pc/h? |          | No                                       |        |
| 3 av34                 |          |                                          |        |
| Is v or v > 1.5 v /2   |          | No                                       |        |
| 3 av34                 |          |                                          |        |
| If yes, v = 3031       |          | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A                    |          |                                          |        |

## Flow Entering Diverge Influence Area

|    |        |               |            |
|----|--------|---------------|------------|
|    | Actual | Max Desirable | Violation? |
| v  | 3031   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 25.8$  pc/mi/ln  
R 12 D  
Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.591 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 47.3  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 60.3  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 49.8  | mph |



Flow rate, vp 4491 1179 pcph

Phone:  
E-mail:

Fax:

## Diverge Analysis

Analyst: AT  
 Agency/Co.: RK  
 Date performed: 10/06/2016  
 Analysis time period: PM Peak  
 Freeway/Dir of Travel: SB I-15 Off-Ramp at Central  
 Junction: I-15/Central Ave  
 Jurisdiction: CT Dist 8 / Lake Elsinore  
 Analysis Year: E+A+C+P  
 Description: Central Plaza Project

## Freeway Data

|                            |         |     |
|----------------------------|---------|-----|
| Type of analysis           | Diverge |     |
| Number of lanes in freeway | 3       |     |
| Free-flow speed on freeway | 55.0    | mph |
| Volume on freeway          | 3831    | vph |

## Off Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-Flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1015  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent ramp   |    | vph |
| Position of adjacent ramp |    |     |
| Type of adjacent ramp     |    |     |
| Distance to adjacent ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp    | Adjacent Ramp |     |
|-------------------------------|---------|---------|---------------|-----|
| Volume, V (vph)               | 3831    | 1015    |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90    |               |     |
| Peak 15-min volume, v15       | 1064    | 282     |               | v   |
| Trucks and buses              | 11      | 9       |               | %   |
| Recreational vehicles         | 0       | 0       |               | %   |
| Terrain type:                 | Level   | Level   |               |     |
| Grade                         | 0.00 %  | 0.00 %  |               | %   |
| Length                        | 0.00 mi | 0.00 mi |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5     |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2     |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957   |               |     |
| Driver population factor, fP  | 1.00    | 1.00    |               |     |

## Estimation of V12 Diverge Areas

L = (Equation 13-12 or 13-13)  
 EQ  
 P = 0.593 Using Equation 5  
 FD  
 $v = v + (v - v) P = 3145$  pc/h  
 12 R F R FD

## Capacity Checks

|           | Actual       | Maximum                                  | LOS F? |
|-----------|--------------|------------------------------------------|--------|
| v = v     | 4491         | 6750                                     | No     |
| Fi F      |              |                                          |        |
| v = v - v | 3312         | 6750                                     | No     |
| F0 F R    |              |                                          |        |
| v         | 1179         | 2000                                     | No     |
| R         |              |                                          |        |
| v or v    | 1346 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    |              |                                          |        |
| If yes, v | = 3145       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Diverge Influence Area

|    | Actual | Max Desirable | Violation? |
|----|--------|---------------|------------|
| v  | 3145   | 4400          | No         |
| 12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v - 0.009 L = 26.8$  pc/mi/ln  
 R 12 D  
 Level of service for ramp-freeway junction areas of influence C

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | D = 0.534 |     |
| Space mean speed in ramp influence area, | S = 48.1  | mph |
| Space mean speed in outer lanes,         | S = 59.0  | mph |
| Space mean speed for all vehicles,       | S = 50.9  | mph |

Phone: Fax:  
E-mail:

## Merge Analysis

Analyst: AT  
Agency/Co.: RK  
Date performed: 10/06/2016  
Analysis time period: PM Peak  
Freeway/Dir of Travel: SB I-15 On-Ramp at Central  
Junction: I-15/Central Ave  
Jurisdiction: CT Dist 8 / Lake Elsinore  
Analysis Year: E+A+C+P  
Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 3     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 4633  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1474  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 4633    | 1474  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 1287    | 409   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 5431 1711 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)  
EQ  
P = 0.591 Using Equation 1  
FM  
 $v_{12} = v_F (P_{FM}) = 3212$  pc/h

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 7142         | 6750                                     | Yes    |
| F0        |              |                                          |        |
| v or v    | 2219 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | No                                       |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | No                                       |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 3212       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 7142   | 4600          | Yes        |
| R12 |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 40.0$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence F

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.822 |     |
| Space mean speed in ramp influence area, | S = 44.3  | mph |
| Space mean speed in outer lanes,         | S = 48.8  | mph |
| Space mean speed for all vehicles,       | S = 45.6  | mph |

**Mitigated Cumulative Conditions  
(Existing Plus Ambient Growth Plus Cumulative Projects Plus  
Proposed Project)  
Study Freeway Ramp Merge & Diverge Analysis Worksheets**

Flow rate, vp 4470 1698 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.006 Using Equation 4

FM

 $v = v \left( \frac{P}{F} \right) = 25 \text{ pc/h}$ 

## Capacity Checks

|           |              |         |                                          |
|-----------|--------------|---------|------------------------------------------|
|           | Actual       | Maximum | LOS F?                                   |
| v         | 6168         | 9000    | No                                       |
| F0        |              |         |                                          |
| v or v    | 2222 pc/h    |         | (Equation 13-14 or 13-17)                |
| 3 av34    |              |         |                                          |
| Is v or v | > 2700 pc/h? | No      |                                          |
| 3 av34    |              |         |                                          |
| Is v or v | > 1.5 v /2   | Yes     |                                          |
| 3 av34    | 12           |         |                                          |
| If yes, v | = 1788       |         | (Equation 13-15, 13-16, 13-18, or 13-19) |
| 12A       |              |         |                                          |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 6168   | 4600          | No         |
| 12A |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 28.7 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.413 |     |
|                                          | S         |     |
| Space mean speed in ramp influence area, | S = 49.6  | mph |
|                                          | R         |     |
| Space mean speed in outer lanes,         | S = 52.0  | mph |
|                                          | 0         |     |
| Space mean speed for all vehicles,       | S = 50.6  | mph |

Phone: Fax:

E-mail:

## Merge Analysis

Analyst: AT

Agency/Co.: RK

Date performed: 10/06/2016

Analysis time period: AM Peak

Freeway/Dir of Travel: SB I-15 On-Ramp at Central

Junction: I-15/Central Ave

Jurisdiction: CT Dist 8 / Lake Elsinore

Analysis Year: MITIGATED E+A+C+P

Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 4     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 3813  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1462  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 3813    | 1462  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 1059    | 406   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |

Flow rate, vp 5431 1711 pcph

## Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.004 Using Equation 4

FM

 $v_{12} = v_F (P_{FM}) = 21 \text{ pc/h}$ 

## Capacity Checks

|           |              |                                          |        |
|-----------|--------------|------------------------------------------|--------|
|           | Actual       | Maximum                                  | LOS F? |
| v         | 7142         | 9000                                     | No     |
| F0        |              |                                          |        |
| v or v    | 2705 pc/h    | (Equation 13-14 or 13-17)                |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 2700 pc/h? | Yes                                      |        |
| 3 av34    |              |                                          |        |
| Is v or v | > 1.5 v /2   | Yes                                      |        |
| 3 av34    | 12           |                                          |        |
| If yes, v | = 2172       | (Equation 13-15, 13-16, 13-18, or 13-19) |        |
| 12A       |              |                                          |        |

## Flow Entering Merge Influence Area

|     |        |               |            |
|-----|--------|---------------|------------|
|     | Actual | Max Desirable | Violation? |
| v   | 7142   | 4600          | No         |
| 12A |        |               |            |

## Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 31.8 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D

## Speed Estimation

|                                          |           |     |
|------------------------------------------|-----------|-----|
| Intermediate speed variable,             | M = 0.475 |     |
| Space mean speed in ramp influence area, | S = 48.8  | mph |
| Space mean speed in outer lanes,         | S = 50.9  | mph |
| Space mean speed for all vehicles,       | S = 49.8  | mph |

Phone: Fax:

E-mail:

## Merge Analysis

Analyst: AT

Agency/Co.: RK

Date performed: 10/06/2016

Analysis time period: PM Peak

Freeway/Dir of Travel: SB I-15 On-Ramp at Central

Junction: I-15/Central Ave

Jurisdiction: CT Dist 8 / Lake Elsinore

Analysis Year: MITIGATED E+A+C+P

Description: Central Plaza Project

## Freeway Data

|                            |       |     |
|----------------------------|-------|-----|
| Type of analysis           | Merge |     |
| Number of lanes in freeway | 4     |     |
| Free-flow speed on freeway | 55.0  | mph |
| Volume on freeway          | 4633  | vph |

## On Ramp Data

|                                   |       |     |
|-----------------------------------|-------|-----|
| Side of freeway                   | Right |     |
| Number of lanes in ramp           | 1     |     |
| Free-flow speed on ramp           | 35.0  | mph |
| Volume on ramp                    | 1474  | vph |
| Length of first accel/decel lane  | 500   | ft  |
| Length of second accel/decel lane |       | ft  |

## Adjacent Ramp Data (if one exists)

|                           |    |     |
|---------------------------|----|-----|
| Does adjacent ramp exist? | No |     |
| Volume on adjacent Ramp   |    | vph |
| Position of adjacent Ramp |    |     |
| Type of adjacent Ramp     |    |     |
| Distance to adjacent Ramp |    | ft  |

## Conversion to pc/h Under Base Conditions

| Junction Components           | Freeway | Ramp  | Adjacent Ramp |     |
|-------------------------------|---------|-------|---------------|-----|
| Volume, V (vph)               | 4633    | 1474  |               | vph |
| Peak-hour factor, PHF         | 0.90    | 0.90  |               |     |
| Peak 15-min volume, v15       | 1287    | 409   |               | v   |
| Trucks and buses              | 11      | 9     |               | %   |
| Recreational vehicles         | 0       | 0     |               | %   |
| Terrain type:                 | Level   | Level |               |     |
| Grade                         | %       | %     |               | %   |
| Length                        | mi      | mi    |               | mi  |
| Trucks and buses PCE, ET      | 1.5     | 1.5   |               |     |
| Recreational vehicle PCE, ER  | 1.2     | 1.2   |               |     |
| Heavy vehicle adjustment, fHV | 0.948   | 0.957 |               |     |
| Driver population factor, fP  | 1.00    | 1.00  |               |     |