KUNZMAN ASSOCIATES, INC.

CANYON HILLS - CHRISTENSEN PROPERTY

TRAFFIC IMPACT ANALYSIS (REVISED)

February 2, 2015

Traffic Engineering | Transportation Planning | Parking | Noise/Vibration | Expert Witness
Air Quality | Global Climate Change | Health Risk Assessment

KUNZMAN ASSOCIATES, INC.

CANYON HILLS – CHRISTENSEN PROPERTY

TRAFFIC IMPACT ANALYSIS (REVISED)

February 2, 2015

Prepared by:

Perrie Ilercil, P.E.
Carl Ballard, LEED GA
William Kunzman, P.E.

REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. KUNZMAN
No. TR0056
TRAFFIC
STATE OF CALIFORNIA

1111 Town & Country Road, Suite 34
Orange, California 92868
(714) 973-8383

www.traffic-engineer.com

5590c

Table of Contents

I. Executive Summary 1
- A. Project Description 1
- B. Definition of Deficiency and Significant Impact 1
- C. Existing Traffic Conditions 1
- D. Traffic Impacts 2
- E. Roadway Improvements 3

II. Congestion Management Program Methodology 4
- A. Congestion Management Plan 4
- B. Prescribed Methodology for a Traffic Impact Analysis 5
- C. Mitigation Measures 5

III. Project Description 6
- A. Location 6
- B. Proposed Development 6
- C. Site Plan 6
- D. Phasing and Timing 6

IV. Existing Traffic Conditions 9
- A. Study Area 9
- B. Surrounding Street System 9
- C. Existing Travel Lanes and Intersection Controls 9
- D. Existing Average Daily Traffic Volumes 10
- E. Existing Intersection Delay 10
- F. Existing Traffic Signal Warrant Analysis 10
- G. Existing City of Lake Elsinore Circulation Plan 11
- H. Transit Service 11

V. Project Traffic 19
- A. Trip Generation 19
- B. Trip Distribution 19
- C. Trip Assignment 19
- D. Modal Split 20

VI. Existing Plus Project Traffic Conditions 26
- A. Method of Projection 26
- B. Average Daily Traffic Volumes 26
- C. Intersection Delay 26

VII. Opening Year Traffic Conditions 31
- A. Method of Projection 31
- B. Other Development 31
- C. Average Daily Traffic Volumes 31
- D. Opening Year (2016) Intersection Delay 31

VIII. Recommendations 51
- A. Site Access 51
- B. Roadway Improvements 51
  - 1. On- Site 51
  - 2. Off-Site 51
- C. Construction Traffic 52

APPENDICES

Appendix A – Glossary of Transportation Terms

Appendix B – City of Lake Elsinore Scoping Agreement

Appendix C – Traffic Count Worksheets

Appendix D – Explanation and Calculation of Intersection Delay

Appendix E – Traffic Signal Warrant Worksheet

List of Tables

Table 1. Existing Intersection Delay and Level of Service 12
Table 2. Project Trip Generation 21
Table 3. Existing Plus Project Intersection Delay and Level of Service 27
Table 4. Other Development Trip Generation 33
Table 5. Opening Year (2016) Without Project Intersection Delay and Level of Service 34
Table 6. Opening Year (2016) With Project Intersection Delay and Level of Service 35
Table 7. Project Fair Share Intersection Traffic Contribution 53

List of Figures

Figure 1. Project Location Map 7
Figure 2. Site Plan 8
Figure 3. Existing Through Travel Lanes and Intersection Controls 13
Figure 4. Existing Average Daily Traffic Volumes 14
Figure 5. Existing Morning Peak Hour Intersection Turning Movement Volumes 15
Figure 6. Existing Evening Peak Hour Intersection Turning Movement Volumes 16
Figure 7. City of Lake Elsinore General Plan Circulation Element 17
Figure 8. City of Lake Elsinore General Plan Roadway Cross-Sections 18
Figure 9. Project Trip Distribution 22
Figure 10. Project Average Daily Traffic Volumes 23
Figure 11. Project Morning Peak Hour Intersection Turning Movement Volumes 24
Figure 12. Project Evening Peak Hour Intersection Turning Movement Volumes 25
Figure 13. Existing Plus Project Average Daily Traffic Volumes 28
Figure 14. Existing Plus Project Morning Peak Hour Intersection Turning Movement Volumes 29
Figure 15. Existing Plus Project Evening Peak Hour Intersection Turning Movement Volumes 30
Figure 16. Other Development Traffic Analysis Zone Map 36
Figure 17. Other Development Trip Distribution - Traffic Analysis Zone 1 37
Figure 18. Other Development Trip Distribution - Traffic Analysis Zone 2 38
Figure 19. Other Development Trip Distribution - Traffic Analysis Zone 3 39
Figure 20. Other Development Trip Distribution - Traffic Analysis Zone 4 40
Figure 21. Other Development Trip Distribution - Traffic Analysis Zone 5 41
Figure 22. Other Development Average Daily Traffic Volumes 42
Figure 23. Other Development Morning Peak Hour Intersection Turning Movement Volumes 43
Figure 24. Other Development Evening Peak Hour Intersection Turning Movement Volumes 44
Figure 25. Opening Year (2016) Without Project Average Daily Traffic Volumes 45
Figure 26. Opening Year (2016) With Project Average Daily Traffic Volumes 46
Figure 27. Opening Year (2016) Without Project Morning Peak Hour Intersection Turning Movement Volumes 47
Figure 28. Opening Year (2016) Without Project Evening Peak Hour Intersection Turning Movement Volumes 48
Figure 29. Opening Year (2016) With Project Morning Peak Hour Intersection Turning Movement Volumes 49
Figure 30. Opening Year (2016) With Project Evening Peak Hour Intersection Turning Movement Volumes 50
Figure 31. Circulation Recommendations 54

I. Executive Summary

This section summarizes the existing traffic conditions, project traffic impacts, and the proposed mitigation measures. Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to transportation engineering, a glossary of terms is provided in Appendix A.

A. Project Description

This report contains the traffic impact analysis for the proposed Canyon Hills – Christensen Property. The project site is located on the south side of Holland Road and east of Hermosa Drive which is approximately 2.8 miles east of Railroad Canyon Road in the City of Lake Elsinore. The project is proposed to be developed with 74 single-family detached residential dwelling units.

B. Definition of Deficiency and Significant Impact

The following definitions of deficiencies and significant impacts have been developed in accordance with the City of Lake Elsinore requirements:

The definition of an intersection deficiency has been obtained from the City of Lake Elsinore General Plan. The General Plan states that peak hour intersection operations of Level of Service D or better are generally acceptable. Therefore, any intersection operating at Level of Service E to F will be considered deficient

C. Existing Traffic Conditions

1. The project site is currently undeveloped and is not generating significant trips.

2. The existing roadway adjacent to the project is Holland Road.

3. The study area intersections currently operate at acceptable Levels of Service during the peak hours for existing traffic conditions, except for the following study area intersection that currently operates at an unacceptable Level of Service during the morning peak hour:

   Murrieta Road (NS) at:
   Holland Road (EW) - #3

4. A traffic signal appears to currently be warranted for existing traffic conditions at the following study area intersection in the City of Menifee (see Appendix E):

   Murrieta Road (NS) at:
   Holland Road (EW) - #3

The unsignalized intersection has been evaluated for a traffic signal using the California Department of Transportation Warrant 3 Peak Hour traffic signal warrant analysis, as specified in the California Manual of Uniform Traffic Control Devices (January 2012).

D. Traffic Impacts

1. The proposed development is projected to generate approximately 704 daily vehicle trips, 55 of which will occur during the morning peak hour and 74 of which will occur during the evening peak hour.

2. For Existing Plus Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at an unacceptable Level of Service during the morning peak hour, without improvements:

   Murrieta Road (NS) at:
   Holland Road (EW) - #3

   The study area intersections are projected to operate within acceptable Levels of Service during the peak hours, with improvements.

3. Based upon discussions with Cities of Lake Elsinore and Menifee staff, the Canyon Hills, Audie Murphy Ranch, Calder Ranch, and Sycamore at Hidden Hills areas which are currently not built out were included as other development.

4. For Opening Year (2016) Without Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

   Murrieta Road (NS) at:
   Holland Road (EW) - #3

5. For Opening Year (2016) With Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

   Murrieta Road (NS) at:
   Holland Road (EW) - #3

   The study area intersections are projected to operate within acceptable Levels of Service during the peak hours, with improvements.

E. Roadway Improvements

The following measures are recommended to mitigate the impact of the project on traffic circulation:

On-Site

1. Site-specific circulation and access recommendations are depicted on Figure 31.

2. Construct Holland Road from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

3. Construct Corson Avenue from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary, or pay cash in lieu for improvements as approved by the City Engineer.

4. On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

5. Sight distance at project accesses should be reviewed with respect to California Department of Transportation/City of Lake Elsinore standards in conjunction with the preparation of final grading, landscaping, and street improvement plans. The final grading, landscaping, and street improvement plans shall demonstrate that sight distance standards are met. Such plans must be reviewed by the City and approved as consistent with this measure prior to issue of grading permits.

Off-Site

1. The project does not contribute enough trips to the adjacent street to require it to be upgraded from the proposed local street classification. As shown on Figure 26, the average daily traffic volumes on Hermosa Drive with the project and other development contributions (see Figure 19) is 1,190 vehicles per day. This in below the 1,600 vehicle per day threshold for a local street classification.

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

3. The project should participate in the phased construction of the off-site intersection improvements and traffic signalization through payment of established City of Lake Elsinore fees, participation in the Western Riverside Transportation Uniform Mitigation Fees program, assessment district, community facilities district financing and/or appropriate fair share financing agreement, and construction of off-site facilities under appropriate fee credit agreements.

II. Congestion Management Program Methodology

This section discusses the Congestion Management Plan. The purpose, prescribed methodology, and definition of a significant traffic impact are discussed.

A. Congestion Management Plan

The Congestion Management Plan is a result of Proposition 111 which was a statewide initiative approved by the voters in June, 1990. The proposition allowed for a nine cent per gallon state gasoline tax increase over a five year period.

Proposition 111 explicitly stated that the new gas tax revenues were to be used to fix existing traffic problems and was not to be used to promote future development. For a City to get its share of the Proposition 111 gas tax, it has to follow certain procedures specified by the State Legislature. The legislation requires that a traffic impact analysis be prepared for new development. The traffic impact analysis is prepared to monitor and fix traffic problems caused by new development.

The Legislature requires that adjacent jurisdictions use a standard methodology for conducting a traffic impact analysis. To assure that adjacent jurisdictions use a standard methodology in preparing a traffic impact analysis, one common procedure is that all Cities within a County, and the County agency itself, adopt and use one standard methodology for conducting a traffic impact analysis.

Although each City has developed standards for preparing a traffic impact analysis, traffic impact analysis requirements do vary in detail from one City to another, but not in overall intent or concept. The general approach selected by each City for conducting a traffic impact analysis has common elements.

The general approach for conducting a traffic impact analysis is that existing peak hour traffic is counted and the percent of roadway capacity currently being used is determined. Then growth in traffic is accounted for and added to existing traffic and the percent of roadway capacity used is again determined. The project traffic is then added and the percent of roadway capacity used is again determined. If the new project adds traffic to an overcrowded facility, then the new project has to mitigate the traffic impact so that the facility operates at a level that is no worse than before the project traffic was added.

If the project size is below a certain minimum threshold level, then a project does not have to have a traffic impact analysis prepared, once it is shown or agreed that the project is below the minimum threshold.

If a project is bigger than the minimum threshold size, then a traffic impact analysis is required.

B. Prescribed Methodology for a Traffic Impact Analysis

The traffic impact analysis must include all monitored intersections to which the project adds traffic above a certain minimum amount.

In the City of Lake Elsinore, the minimum project added trips that is needed before an intersection has to be studied is 50 or more peak hour trips.

The City of Lake Elsinore allows Level of Service D to be used as a maximum acceptable threshold for the study area intersections.

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D) based on the Highway Capacity Manual. To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection. Signalized intersections are considered deficient (Level of Service F) if the overall intersection critical volume to capacity ratio equals or exceeds 1.0, even if the level of service defined by the delay value is below the defined Level of Service standard. The Volume to Capacity ratio is defined as the critical volumes divided by the intersection capacity. A Volume to Capacity ratio greater than 1.0 implies an infinite queue.

The Level of Service analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of three seconds per phase. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings has also been considered in the signalized intersection analysis.

Project trips are generated using rates and procedures contained in the Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012.

This traffic analysis has been prepared in accordance with the traffic impact analysis requirements.

The project generated trips were added to the study area intersections, and a full intersection analysis was conducted, even when the project added trips failed to meet the minimum thresholds that require an intersection analysis.

C. Mitigation Measures

If a project is large enough to require that a traffic impact analysis be prepared, and if the project adds traffic to an intersection above a minimum threshold, and if the intersection is operating at above an acceptable level of operation, then the project must mitigate its traffic impact.

Traffic mitigation can be in many forms including adding lanes. Lanes can sometimes be obtained through restriping or elimination of parking, and sometimes require spot roadway widening.

III. Project Description

This section discusses the project's location and proposed development. Figure 1 shows the project location and Figure 2 illustrates the site plan.

A. Location

The project site is located on the south side of Holland Road and east of Hermosa Drive which is approximately 2.8 miles east of Railroad Canyon Road in the City of Lake Elsinore.

B. Proposed Development

The proposed land use for the project site consists of 74 single-family detached residential dwelling units. The proposed project will have access to Holland Road via Hermosa Drive, Elina Road and Obaria Way through the adjacent Canyon Hills Planning Area 32. Hermosa Drive, Elina Road and Obaria Way are proposed roadways to be utilized by the Canyon Hills Planning Area 32 project and are currently under construction.

C. Site Plan

Figure 2 illustrates the site plan.

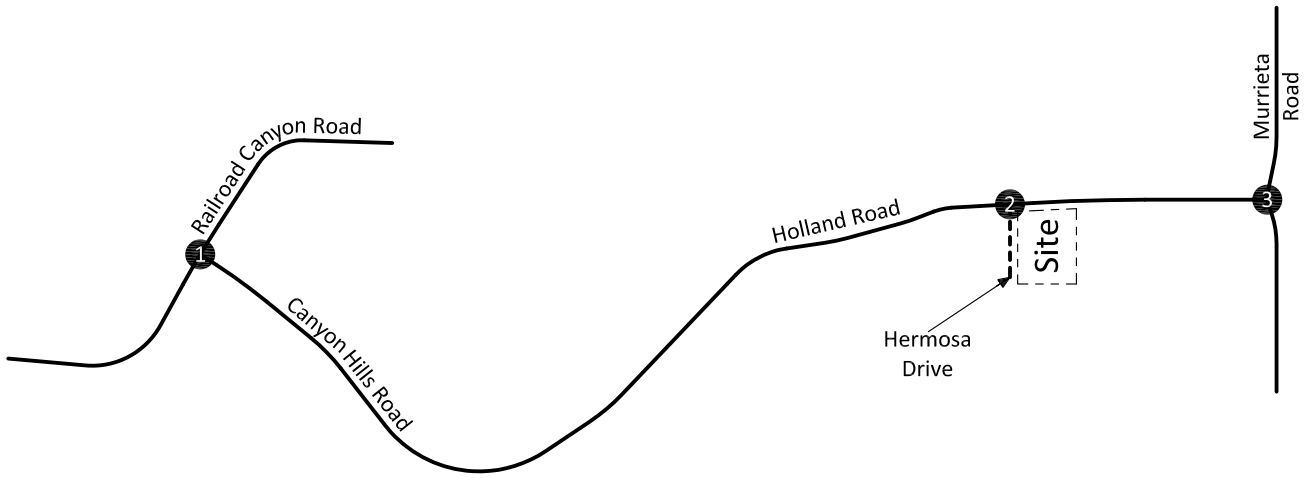
The following describes the proposed land use from a traffic engineering viewpoint:

Single-Family Detached Residential. The primary market for these units will be families with children. As a result, peak traffic volumes will occur during home-to-work and work-to-home trips. Child-related trips such as home-to-school or home-to-Little League are also a significant factor in the daily trip generation, but they have a smaller influence on peak hour volumes.

D. Phasing and Timing

The proposed project is anticipated for opening in Year 2016 and is proposed to be built in one phase. With completion of the adjacent developments, Hermosa Drive will provide access to Holland Road, approximately 2.8 miles east of Railroad Canyon Road by the project opening year. Project access to Hermosa Drive is dependent upon completion of the adjacent Canyon Hills Planning Area 32 to the west of the project site. This traffic impact analysis is based upon 2 years of background traffic growth (2014-2016).

Figure 1
Project Location Map



Legend

1 = Intersection Reference Number

N

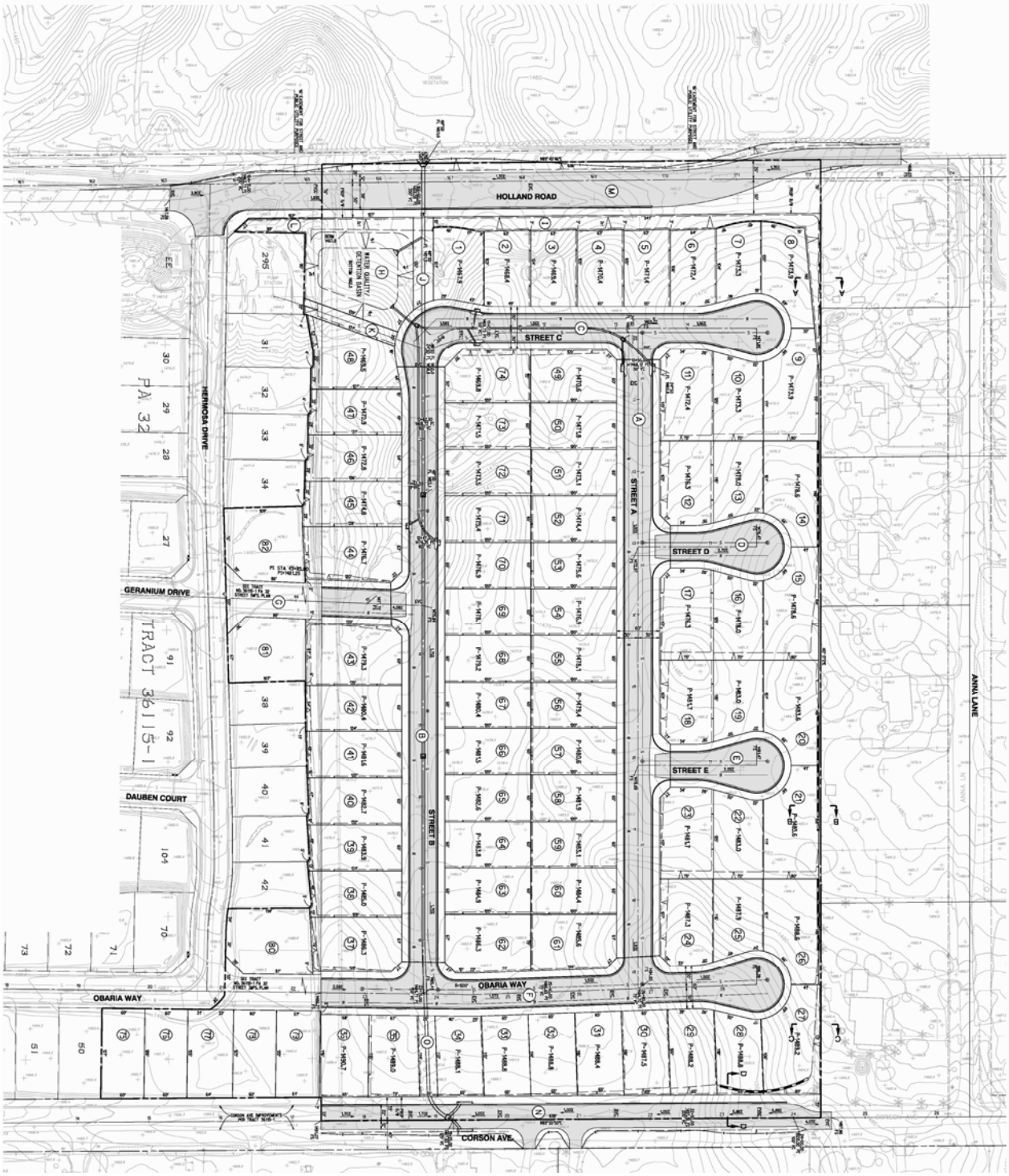
NTS

5590c/1

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 2
Site Plan



NTS

5590c/2

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

IV. Existing Traffic Conditions

Traffic conditions as they exist today are discussed below and illustrated on Figures 3 to 8.

A. Study Area

Appendix B includes the scoping agreement with City of Lake Elsinore staff. The study area includes the following intersections:

Railroad Canyon Road (NS) at:
Canyon Hills Road (EW) - #1

Hermosa Drive (NS) at:
Holland Road (EW) - #2

Murrieta Road (NS) at:
Holland Road (EW) - #3

B. Surrounding Street System

Existing roadways within the study area include Railroad Canyon Road, Murrieta Road, and Canyon Hills Road/Holland Road.

Railroad Canyon Road: This north-south six-lane divided roadway is classified as an Urban Arterial (120 foot right-of-way) on the City of Lake Elsinore General Plan Circulation Element. It currently carries approximately 28,000 to 30,800 vehicles per day in the study area.

Murrieta Road: This north-south two-lane undivided roadway is classified as an Arterial on the City of Menifee General Plan Circulation Element. It currently carries approximately 7,800 to 10,400 vehicles per day in the study area.

Canyon Hills Road/Holland Road: This east-west two-lane undivided to four-lane divided roadway is classified as a Major Roadway (100 foot right-of-way) on the City of Lake Elsinore General Plan Circulation Element. It currently carries approximately 4,300 to 16,300 vehicles per day in the study area.

C. Existing Travel Lanes and Intersection Controls

Figure 3 identifies the existing roadway conditions for study area roadways. The number of through lanes for existing roadways and the existing intersection controls are identified.

D. Existing Average Daily Traffic Volumes

Figure 4 depicts the existing average daily traffic volumes. The existing average daily traffic volumes have been factored from peak hour counts (see Appendix C) made for Kunzman Associates, Inc. in February 2014 using the following formula for each intersection leg:

PM Peak Hour (Approach Volume + Exit Volume) x 12 = Leg Volume.

This is a conservative estimate and may over estimate the average daily traffic volumes.

E. Existing Intersection Delay

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D). To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection.

The existing delay and Level of Service for intersections in the vicinity of the project are shown in Table 1. Existing delay is based upon manual weekday morning and evening peak hour counts made for Kunzman Associates, Inc. in February 2014 (see Figures 5 and 6). Traffic count worksheets are provided in Appendix C.

There are two peak hours in a weekday. The morning peak hour is between 7 AM and 9 AM, and the evening peak hour is between 4 PM and 6 PM. The actual peak hour within the two hour interval is the four consecutive 15 minute periods with the highest total volume when all movements are added together. Explicit peak hour factors have been calculated using the data collected for this project

The study area intersections currently operate at acceptable Levels of Service during the peak hours for existing traffic conditions, except for the following study area intersection that is projected to operate at an unacceptable Level of Service during the morning peak hour, without improvements:

Murrieta Road (NS) at:
Holland Road (EW) - #3

Existing delay worksheets are provided in Appendix D.

It should be noted that the Murrieta Road and Holland Road intersection is in the City of Menifee. This intersection is listed as an “Enhanced Intersection location that may require additional lanes and/or right-of-way in order to satisfy the City of Menifee peak hour intersection LOS criteria” per the City of Menifee General Plan.

F. Existing Traffic Signal Warrant Analysis

A traffic signal appears to currently be warranted for existing traffic conditions at the following study area intersection in the City of Menifee (see Appendix E):

Murrieta Road (NS) at:
Holland Road (EW) - #3

The unsignalized intersection has been evaluated for a traffic signal using the California Department of Transportation Warrant 3 Peak Hour traffic signal warrant analysis, as specified in the California Manual of Uniform Traffic Control Devices (January 2012).

G. Existing City of Lake Elsinore Circulation Plan

Figure 7 shows the current City of Lake Elsinore General Plan Circulation Element. Both existing and future roadways are included in the Circulation Element of the General Plan and are graphically depicted on Figure 7. This figure shows the nature and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the land use element of the General Plan. The City of Lake Elsinore General Plan roadway cross-sections are illustrated on Figure 8.

H. Transit Service

The study area is currently served by the Riverside Transit Agency Route 40 along Railroad Canyon Road.

Table 1

Existing Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Railroad Canyon Road (NS) at: Canyon Hills Road (EW) - #1	Lake Elsinore	TS	1	3	1 >	1	3	1	1	0.5	0.5	1.5	1	0.5	28.2-C	23.3-C
Murrieta Road (NS) at: Holland Road (EW) - #3	Menifee	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	99.9-F[4]	19.8-C

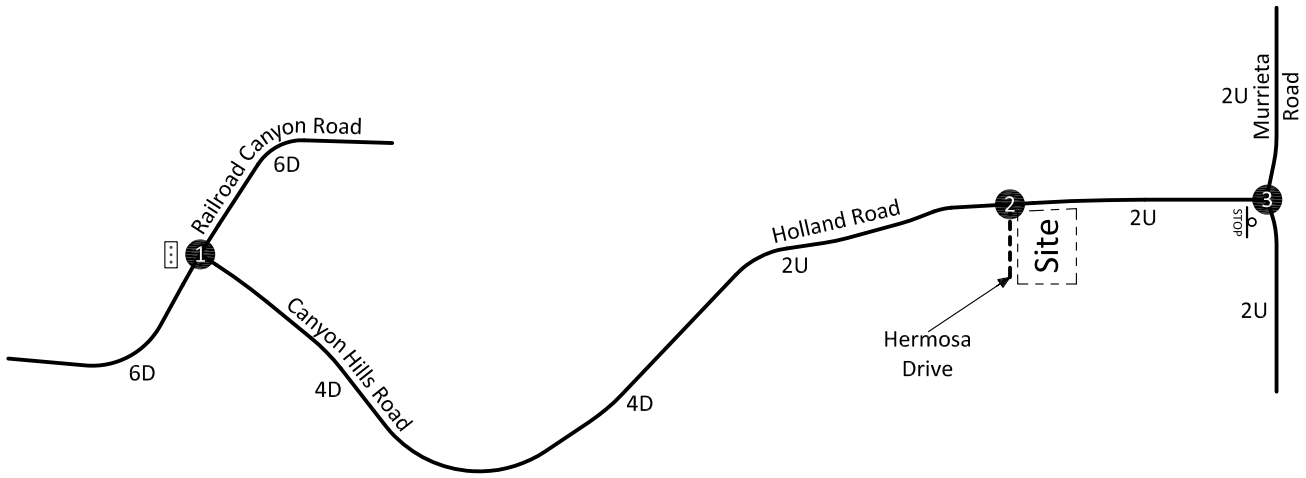
[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. L = Left; T = Through; R = Right; > = Right Turn Overlap

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; CSS = Cross Street Stop

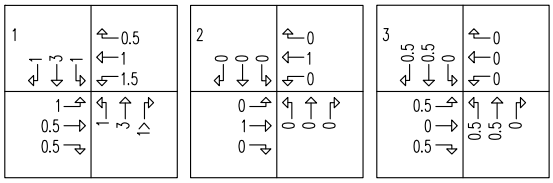
[4] 99.9-F = Delay High, Intersection Unstable, Level of Service F.

Figure 3
Existing Through Travel Lanes and Intersection Controls



Legend

- = Traffic Signal
- STOP = Stop Sign
- 4 = Through Travel Lanes
- D = Divided
- U = Undivided
- > = Right Turn Overlap



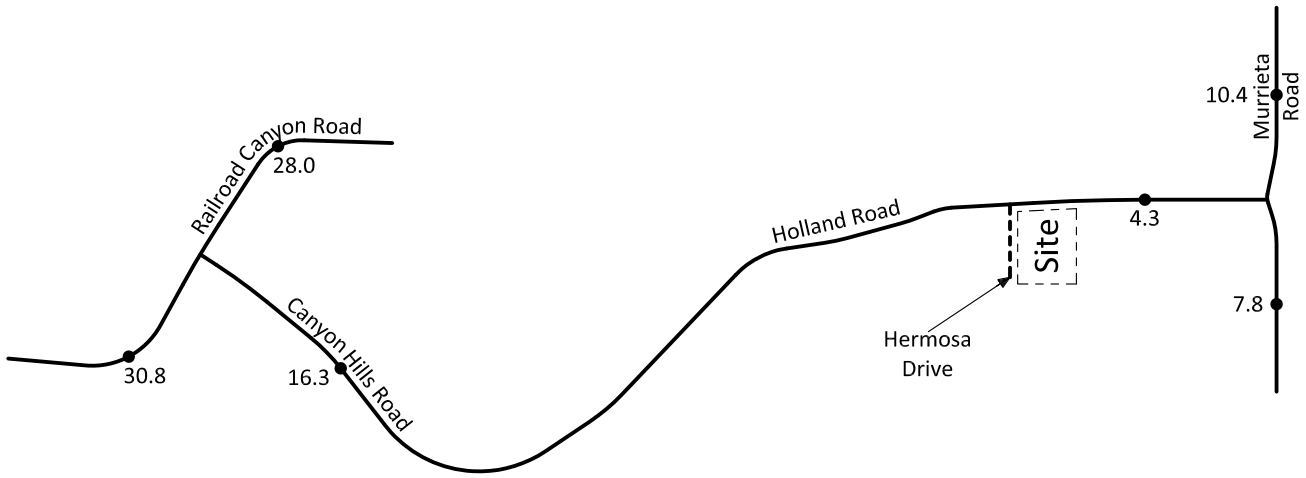
N
NTS

5590c/3

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 4
Existing Average Daily Traffic Volumes



Legend

7.8 = Vehicles Per Day (1,000's)

N

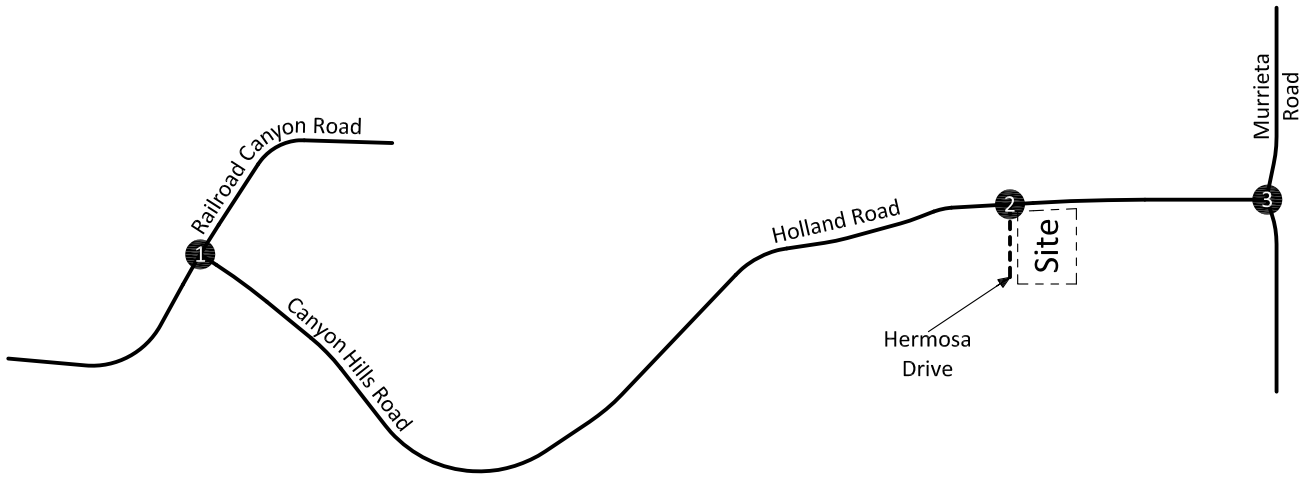
NTS

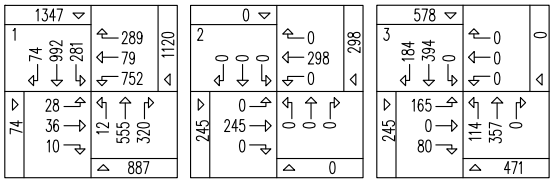
5590c/4

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 5
Existing Morning Peak Hour Intersection Turning Movement Volumes





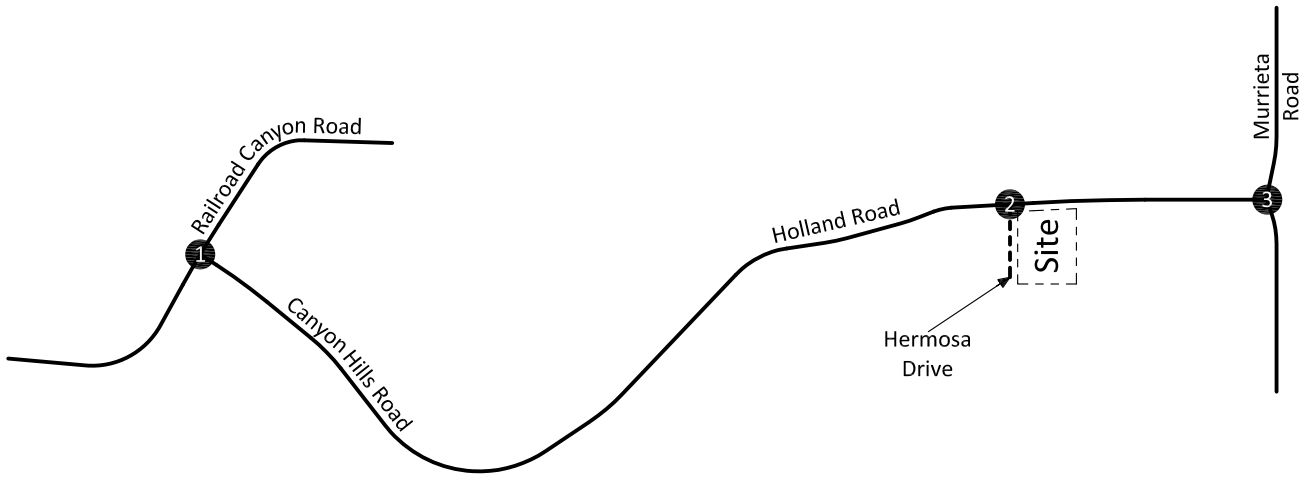
NTS

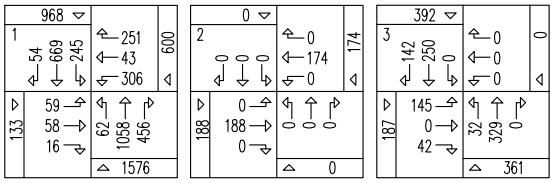
5590c/5

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 6
Existing Evening Peak Hour Intersection Turning Movement Volumes





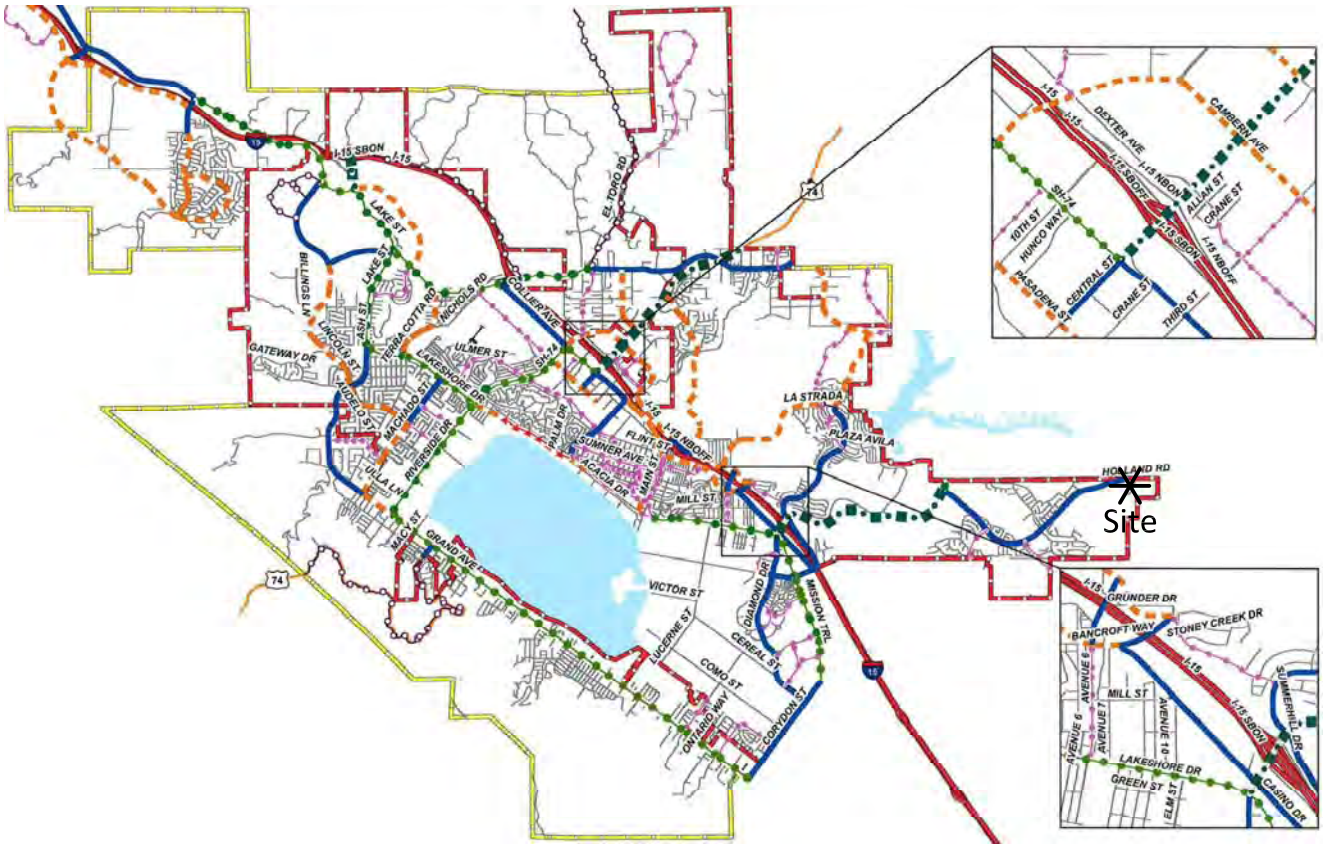
N

NTS

5590c/6

Intersection reference numbers are in upper left corner of turning movement boxes.

Figure 7
City of Lake Elsinore General Plan Circulation Element



Legend

- AUGMENTED URBAN ARTERIAL (8-LANES)
- URBAN ARTERIAL (6-LANES / 120' R.O.W.)
- MAJOR (4-LANES / 100' R.O.W.)
- SECONDARY (4-LANES / 90' R.O.W.)
- COLLECTOR (2-LANES / 68' R.O.W.)
- DIVIDED COLLECTOR (2-LANES WITH POTENTIAL AUGMENTED INTERSECTIONS
- NEW SPECIAL ROADWAY
- I-15
- SHWY-74
- SPHERE OF INFLUENCE
- CITY BOUNDARY

N

NTS

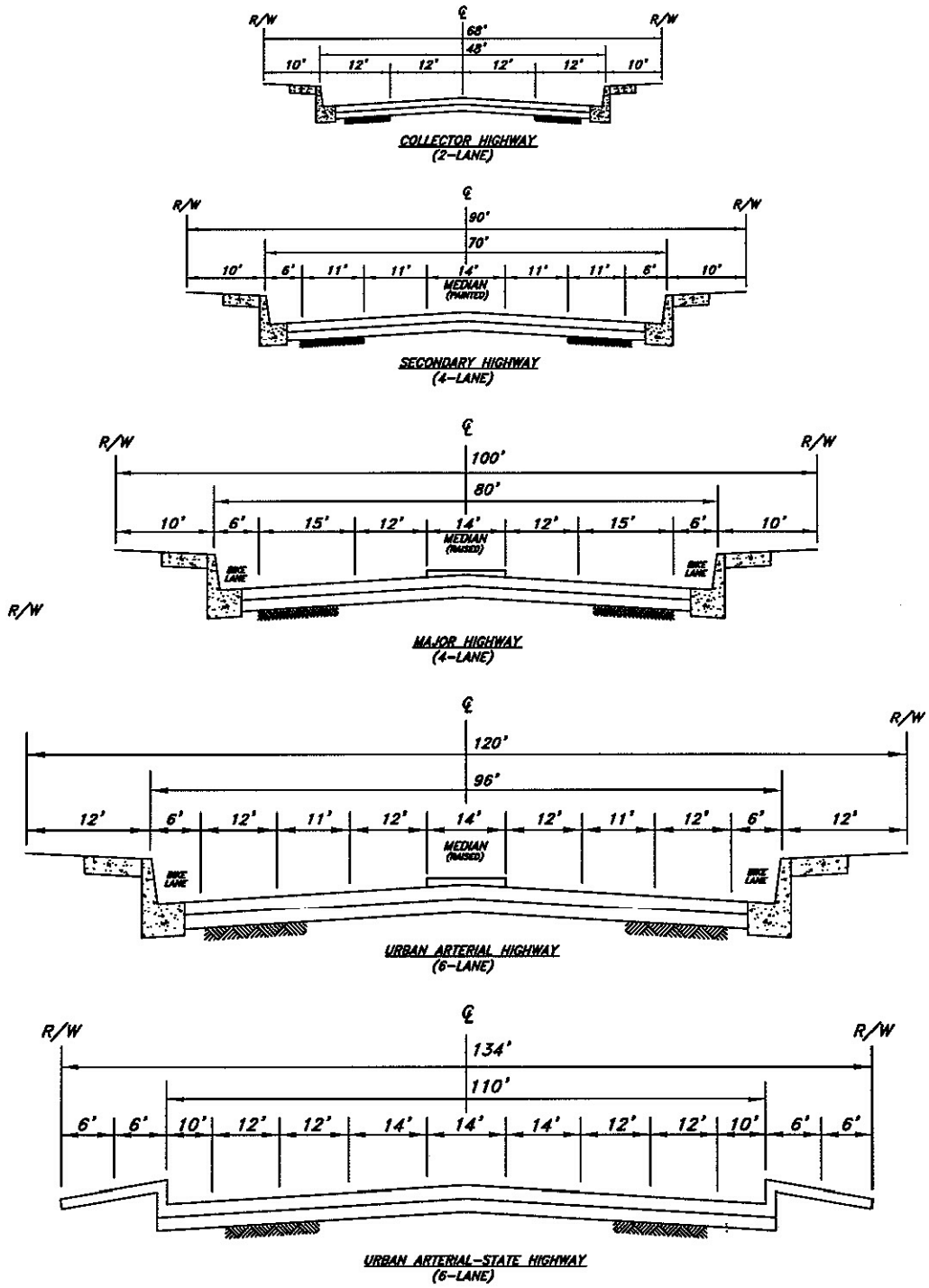
Source: City of Lake Elsinore

5590c/7

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 8
City of Lake Elsinore General Plan Roadway Cross-Sections



Source: City of Lake Elsinore

5590c/8

V. Project Traffic

Traffic Conditions for the proposed project are discussed below and illustrated on Figures 9 to 12. The proposed land use for the project site consists of 74 single-family detached residential dwelling units. The proposed project will have access to Hermosa Drive (proposed) via Elina Road and Obaria Way through the adjacent Canyon Hills Planning Area 32 project which is currently under construction.

A. Trip Generation

The trips generated by the project are determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are predicated on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and life styles remain similar to what are known today. A major change in these variables may affect trip generation rates.

Trip generation rates were determined for daily traffic and morning peak hour inbound and outbound traffic, and evening peak hour inbound and outbound traffic for the proposed land use. By multiplying the trip generation rates by the land use quantity, the traffic volumes are determined. Table 2 shows the project trip generation based upon rates obtained from the Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012.

As shown in Table 2, the proposed development is projected to generate approximately 704 daily vehicle trips, 55 of which will occur during the morning peak hour and 74 of which will occur during the evening peak hour.

B. Trip Distribution

Figure 9 displays the directional distribution of the project trips for the proposed land use.

To determine the trip distribution for the proposed project, peak hour traffic counts of the existing directional distribution of traffic for existing areas in the vicinity of the site, and other additional information on future development and traffic impacts in the area were reviewed.

C. Trip Assignment

Based on the identified trip generation and distribution, project average daily traffic volumes have been calculated and shown on Figure 10. Morning and evening peak hour intersection turning movement volumes expected from the project are shown on Figures 11 and 12.

D. Modal Split

The traffic reducing potential of public transit has not been considered in this report. Essentially the traffic projections are conservative in that public transit might be able to reduce the traffic volumes.

Table 2

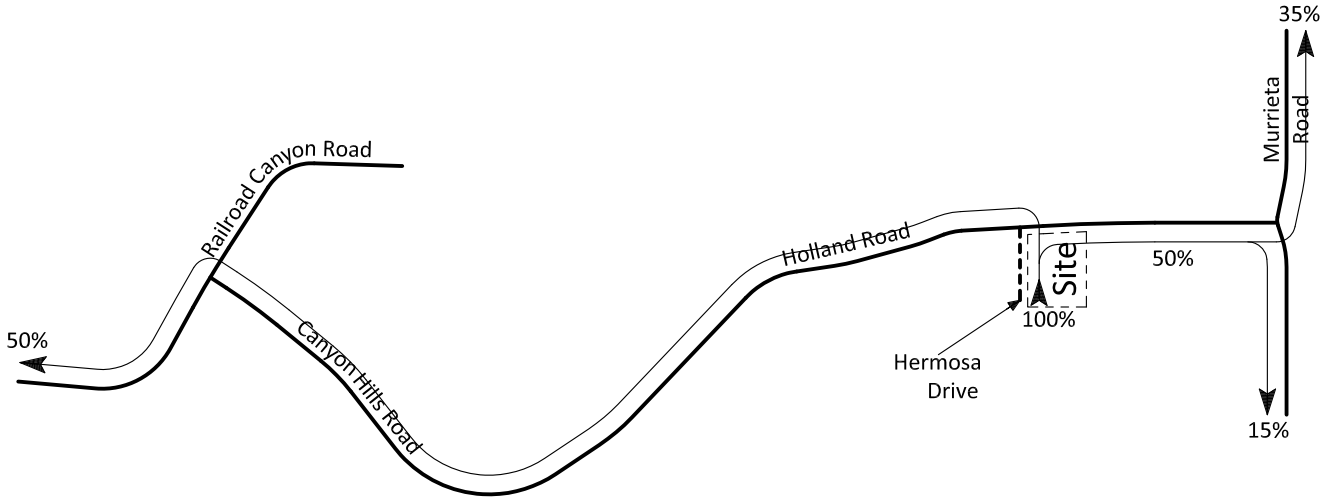
Project Trip Generation[1]

Land Use	Quantity	Units[2]	Peak Hour						Daily
			Morning			Evening			
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rate									
Single-Family Detached Residential		DU	0.19	0.56	0.75	0.63	0.37	1.00	9.52
Trips Generated									
Single-Family Detached Residential	74	DU	14	41	55	47	27	74	704

[1] Source: Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012, Land Use Category 210.

[2] DU = Dwelling Unit

Figure 9
Project Trip Distribution



Legend

10% = Percent To/From Project

N

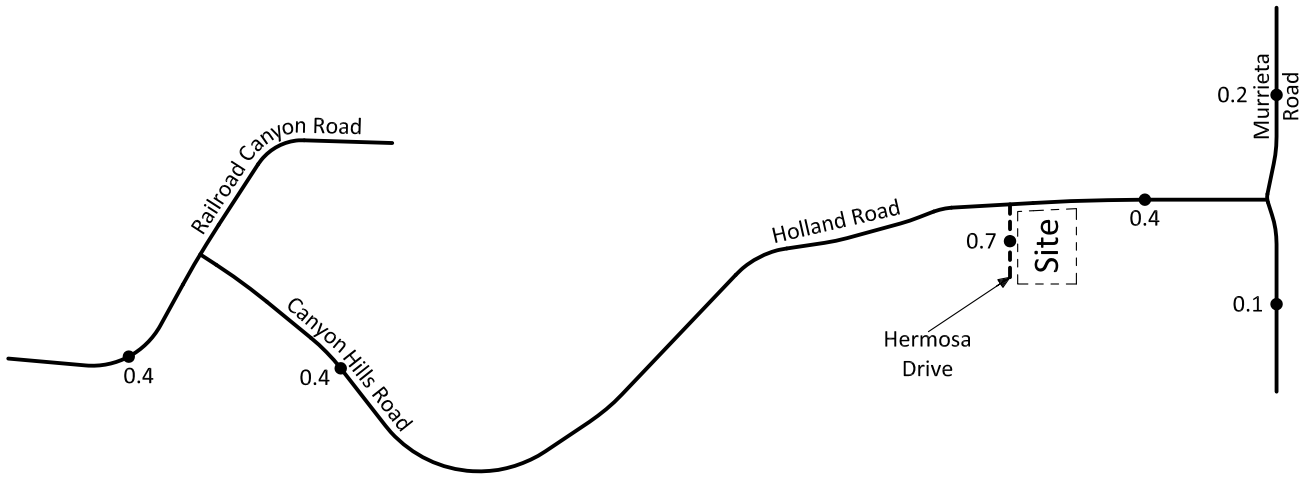
NTS

5590c/9

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 10
Project Average Daily Traffic Volumes



Legend

0.1 = Vehicles Per Day (1,000's)

N

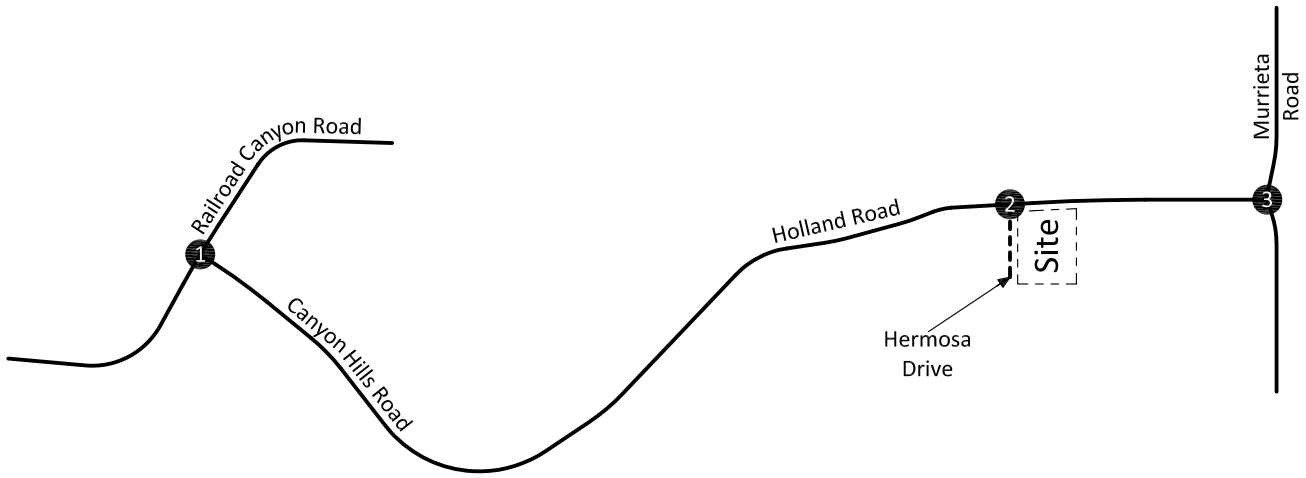
NTS

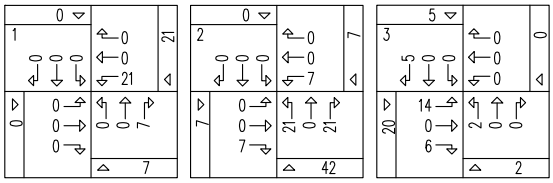
5590c/10

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 11
Project Morning Peak Hour Intersection Turning Movement Volumes





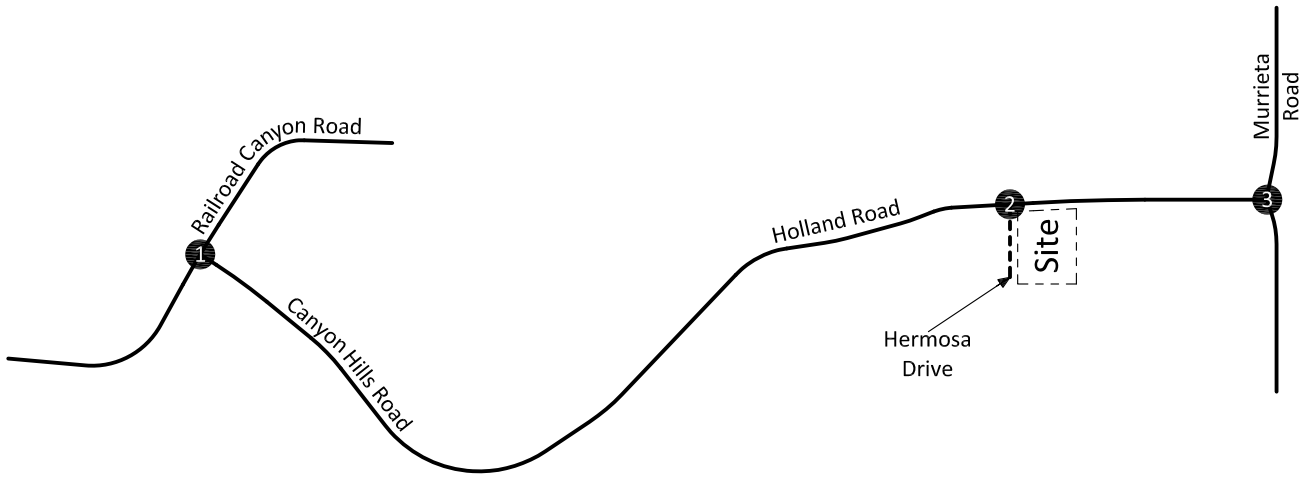
N

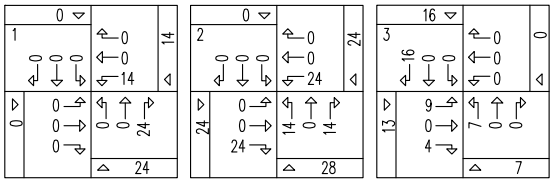
NTS

5590c/11

Intersection reference numbers are in upper left corner of turning movement boxes.

Figure 12
Project Evening Peak Hour Intersection Turning Movement Volumes





N
NTS

5590c/12

Intersection reference numbers are in upper left corner of turning movement boxes.

VI. Existing Plus Project Traffic Conditions

Once the project-related trips are assigned to the existing street network and added to existing volumes, the traffic impact can be assessed. Figures 13 to 15 illustrate the Existing Plus Project traffic conditions.

A. Method of Projection

To assess Existing Plus Project traffic conditions, project traffic is combined with existing traffic.

B. Average Daily Traffic Volumes

Upon project completion and occupancy, the Existing Plus Project average daily traffic volumes are as illustrated on Figure 13.

C. Intersection Delay

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D). To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection.

The delay and Level of Service for Existing Plus Project traffic conditions have been calculated and are shown in Table 3. Existing Plus Project morning and evening peak hour intersection turning movement volumes are shown on Figures 14 and 15, respectively.

For Existing Plus Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at an unacceptable Level of Service during the morning peak hour, without improvements:

Murrieta Road (NS) at:
Holland Road (EW) - #3

The study area intersections are projected to operate within acceptable Levels of Service during the peak hours, with improvements. Existing Plus Project delay worksheets are provided in Appendix D.

It should be noted that the Murrieta Road and Holland Road intersection is in the City of Menifee. This intersection is listed as an “Enhanced Intersection location that may require additional lanes and/or right-of-way in order to satisfy the City of Menifee peak hour intersection LOS criteria” per the City of Menifee General Plan.

Table 3

Existing Plus Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Railroad Canyon Road (NS) at:																
Canyon Hills Road (EW) - #1	Lake Elsinore	TS	1	3	1	1	3	1	1	0.5	0.5	1.5	1	0.5	28.6-C	23.3-C
Hermosa Drive (NS) at:																
Holland Road (EW) - #2	Lake Elsinore	**CSS**	**1**	**0**	**d**	0	0	0	0	0.5	0.5	0.5	0.5	0	11.4-B	10.5-B
Murrieta Road (NS) at:																
Holland Road (EW) - #3	Menifee															
-Without Improvements		CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	99.9-F[4]	21.4-C
-With Improvements		**TS**	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	23.9-C	9.0-A

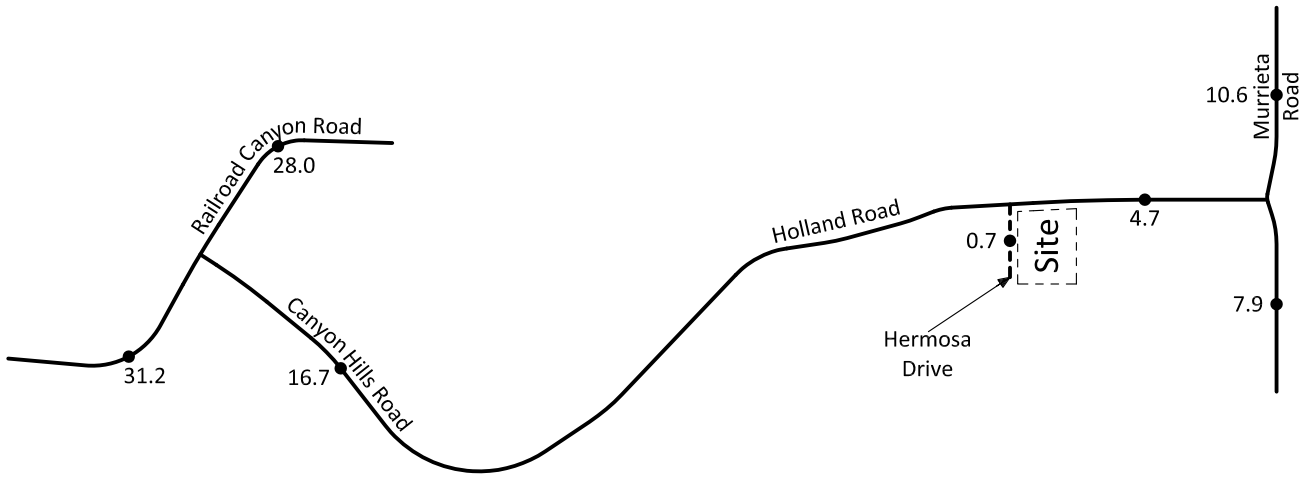
[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. L = Left; T = Through; R = Right; > = Right Turn Overlap**CSS** = Improvements

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; CSS = Cross Street Stop

[4] 99.9-F = Delay High, Intersection Unstable, Level of Service F.

Figure 13
Existing Plus Project Average Daily Traffic Volumes



Legend

7.9 = Vehicles Per Day (1,000's)

N

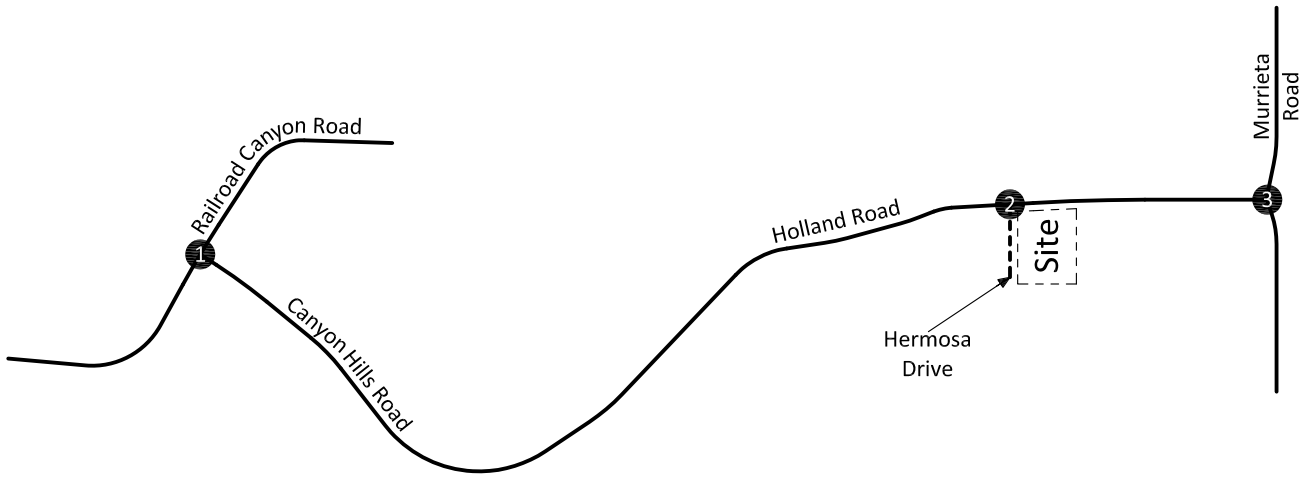
NTS

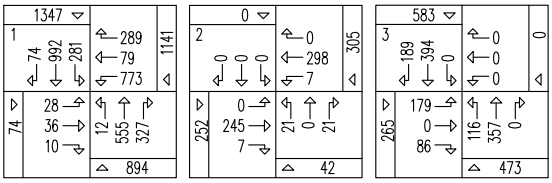
5590c/13

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 14
Existing Plus Project
Morning Peak Hour Intersection Turning Movement Volumes



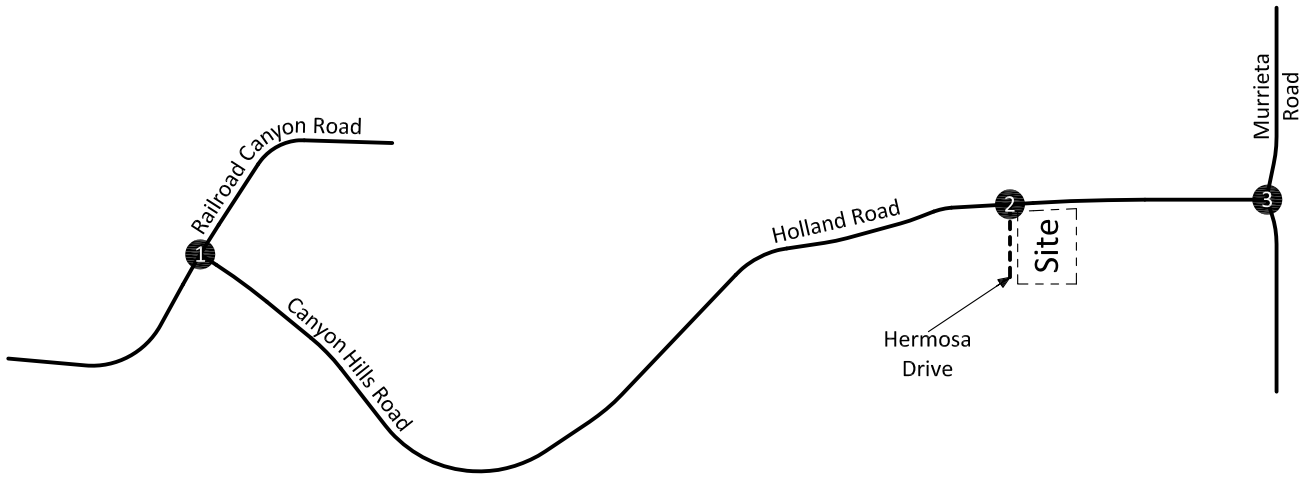


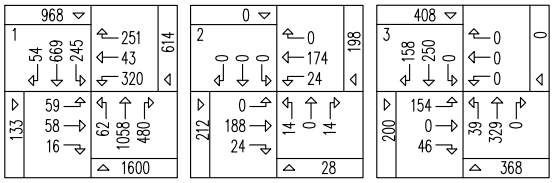
NTS

5590c/14

Intersection reference numbers are in upper left corner of turning movement boxes.

Figure 15
Existing Plus Project
Evening Peak Hour Intersection Turning Movement Volumes





NTS

5590c/15

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 35 YEARS OF EXCELLENT SERVICE

VII. Opening Year Traffic Conditions

Figures 16 to 30 illustrate the Opening Year traffic conditions.

A. Method of Projection

To assess Opening Year traffic conditions, existing traffic is combined with areawide growth. The Opening Year for analysis purposes in this report is 2016.

To account for areawide growth on roadways, traffic volumes have been calculated based on a "conservative" 2.0 percent annual growth rate of existing traffic volumes over the two (2) year period.

B. Other Development

Table 4 lists the proposed land use for the other development (see Figure 16). Table 4 shows the daily and peak hour vehicle trips generated by the other development in the study area. A list of other potential developments within the study area has been provided by the City of Lake Elsinore and City of Menifee planning departments. Potential developments within the study area are included in the analysis if they are not currently built, they are approved, their approval has not expired, and they would contribute traffic to the study area intersections. Figures 17 to 21 contain the directional distribution and trip assignment of the other development trips.

Figure 22 shows the average daily traffic volumes that can be expected for the other development traffic conditions. Other development morning and evening peak hour intersection turning movement volumes are shown on Figures 23 and 24, respectively.

C. Average Daily Traffic Volumes

The Opening Year (2016) Without Project average daily traffic volumes are as illustrated on Figure 25 and Opening Year (2016) With Project average daily traffic volumes are as illustrated on Figure 26.

D. Opening Year (2016) Intersection Delay

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D). To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection.

The delay and Level of Service for Opening Year (2016) Without Project traffic conditions have been calculated and are shown in Table 5. Opening Year (2016) Without Project morning and evening peak hour intersection turning movement volumes are shown on Figures 27 and 28, respectively.

For Opening Year (2016) Without Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

Murrieta Road (NS) at:
Holland Road (EW) - #3

The delay and Level of Service for Opening Year (2016) With Project traffic conditions have been calculated and are shown in Table 6. Opening Year (2016) With Project morning and evening peak hour intersection turning movement volumes are shown on Figures 29 and 30, respectively.

For Opening Year (2016) With Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

Murrieta Road (NS) at:
Holland Road (EW) - #3

The study area intersections are projected to operate within acceptable Levels of Service during the peak hours, with improvements. Opening Year (2016) delay worksheets are provided in Appendix D.

It should be noted that the Murrieta Road and Holland Road intersection is in the City of Menifee. This intersection is listed as an "Enhanced Intersection location that may require additional lanes and/or right-of-way in order to satisfy the City of Menifee peak hour intersection LOS criteria" per the City of Menifee General Plan.

Table 4

Other Development Trip Generation[1]

Traffic Analysis Zone	Other Development	Quantity	Units[2]	Peak Hour						Daily
				Morning			Evening			
				Inbound	Outbound	Total	Inbound	Outbound	Total	
1	Canyon Hills Planning Area - 1A, 1B, 2A, 2C & 2D	130	DU	25	73	98	82	48	130	1,238
2	Canyon Hills Planning Area - 25, 28A, 28B, 31 & 32[3&4]	396	DU	75	222	297	249	147	396	3,770
3	Canyon Hills Planning Area -32[4]	49	DU	9	27	36	31	18	49	466
4	Audie Murphy Planning Area - 14-21, 23, 25, 27-28, 32-38[3]	340	DU	65	190	255	214	126	340	3,237
5	Calder Ranch & Sycamore at Hidden Hills[3]	247	DU	47	138	185	156	91	247	2,351
Total		1,162	DU	221	650	871	732	430	1,162	11,062

[1] Source: Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012, Land Use Category 210.

[2] DU = Dwelling Unit

[3] Dwelling units adjusted to reflect build out of specific planning areas or percent completion of subdivisions.

[4] Canyon Hills Planning Area 32 split to reflect trip distribution on Hermosa Drive.

Table 5

Opening Year (2016) Without Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Railroad Canyon Road (NS) at:																
Canyon Hills Road (EW) - #1	Lake Elsinore	TS	1	3	1	1	3	1	1	0.5	0.5	1.5	1	0.5	34.6-C	25.0-C
Hermosa Drive (NS) at:																
Holland Road (EW) - #2	Lake Elsinore	**CSS**	**1**	**0**	**d**	0	0	0	0	0.5	0.5	0.5	0.5	0	12.9-B	11.7-B
Murrieta Road (NS) at:																
Holland Road (EW) - #3	Menifee															
-Without Improvements		CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	99.9-F[4]	90.7-F
-With Improvements		**TS**	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	13.8-B	10.2-B

[1] 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. L = Left; T = Through; R = Right; > = Right Turn Overlap**CSS** = Improvements

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; CSS = Cross Street Stop

[4] 99.9-F = Delay High, Intersection Unstable, Level of Service F.

Table 6

Opening Year (2016) With Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Railroad Canyon Road (NS) at:																
Canyon Hills Road (EW) - #1	Lake Elsinore	TS	1	3	1	1	3	1	1	0.5	0.5	1.5	1	0.5	35.0-C	25.2-C
Hermosa Drive (NS) at:																
Holland Road (EW) - #2	Lake Elsinore	**CSS**	**1**	**0**	**d**	0	0	0	0	0.5	0.5	0.5	0.5	0	13.5-B	12.5-B
Murrieta Road (NS) at:																
Holland Road (EW) - #3	Menifee															
-Without Improvements		CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	99.9-F[4]	99.9-F[4]
-With Improvements		**TS**	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	14.5-B	10.5-B

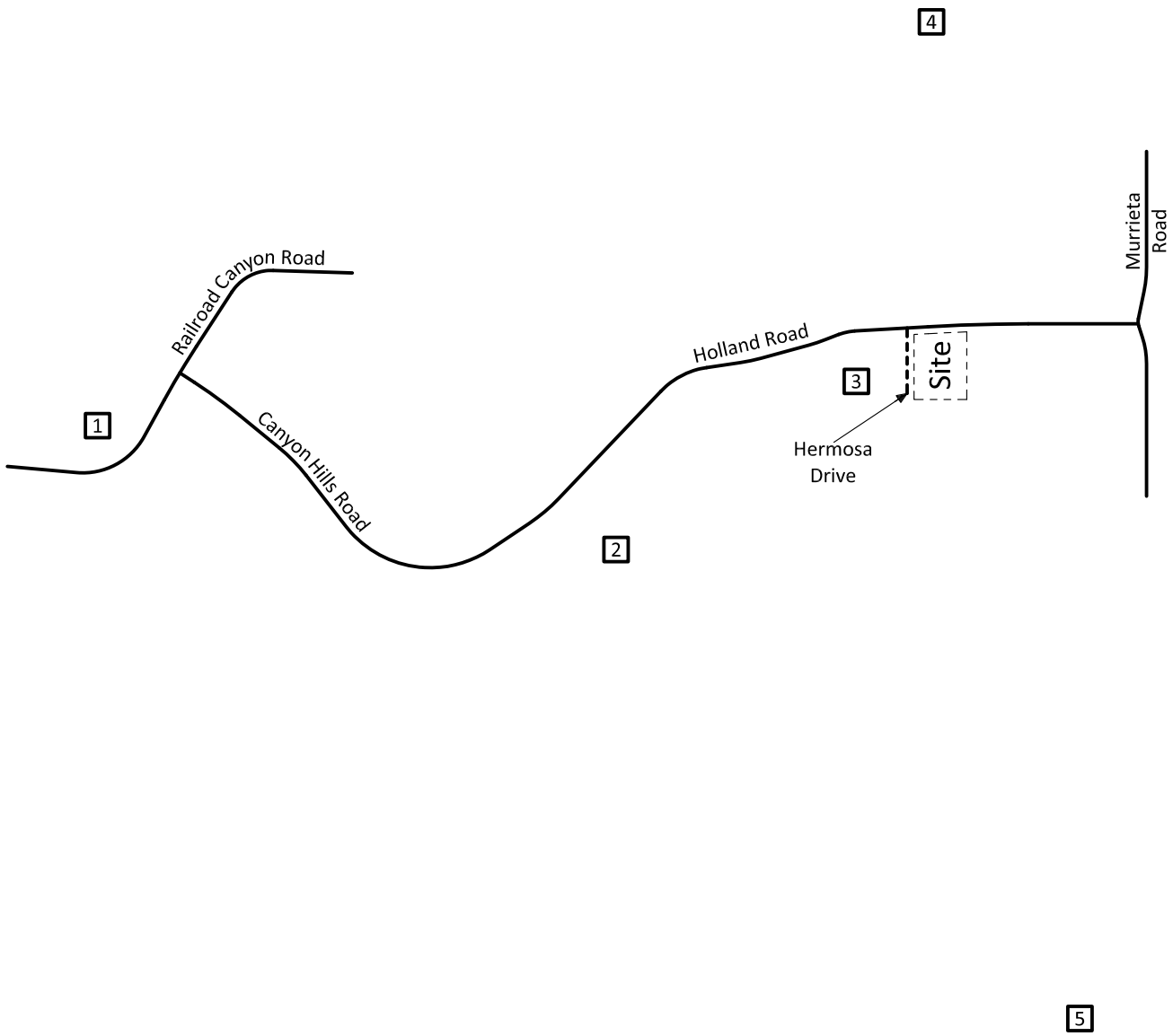
[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. L = Left; T = Through; R = Right; > = Right Turn Overlap**CSS** = Improvements

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; CSS = Cross Street Stop

[4] 99.9-F = Delay High, Intersection Unstable, Level of Service F.

Figure 16
Other Development Traffic Analysis Zone Map



Legend

1 = Traffic Analysis Zone Number

N

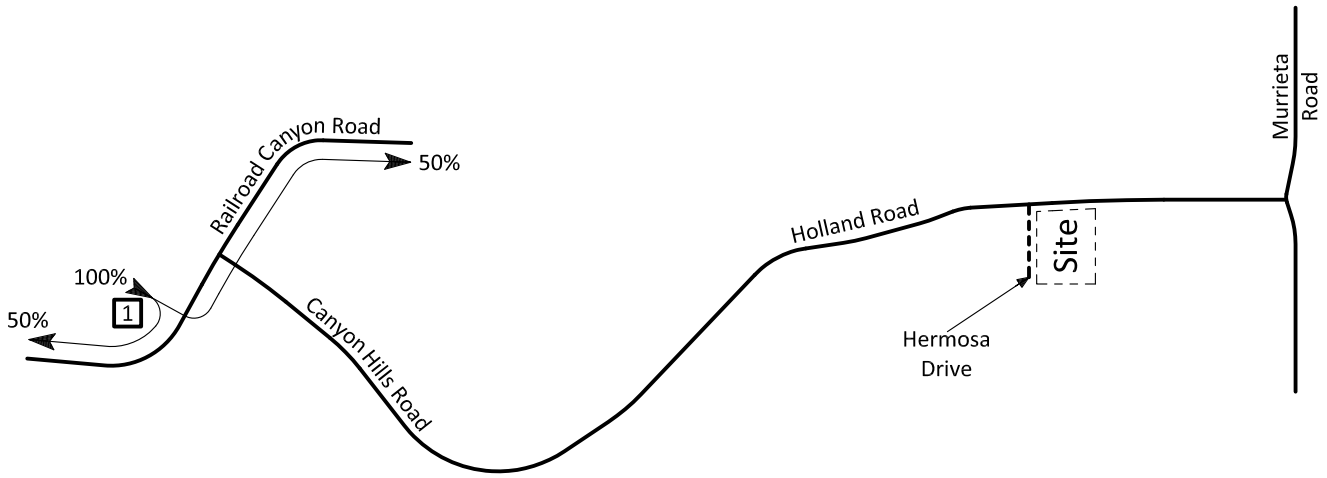
NTS

5590c/16

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 17
Other Development Trip Distribution - Traffic Analysis Zone 1



Legend

10% = Percent To/From Project

N

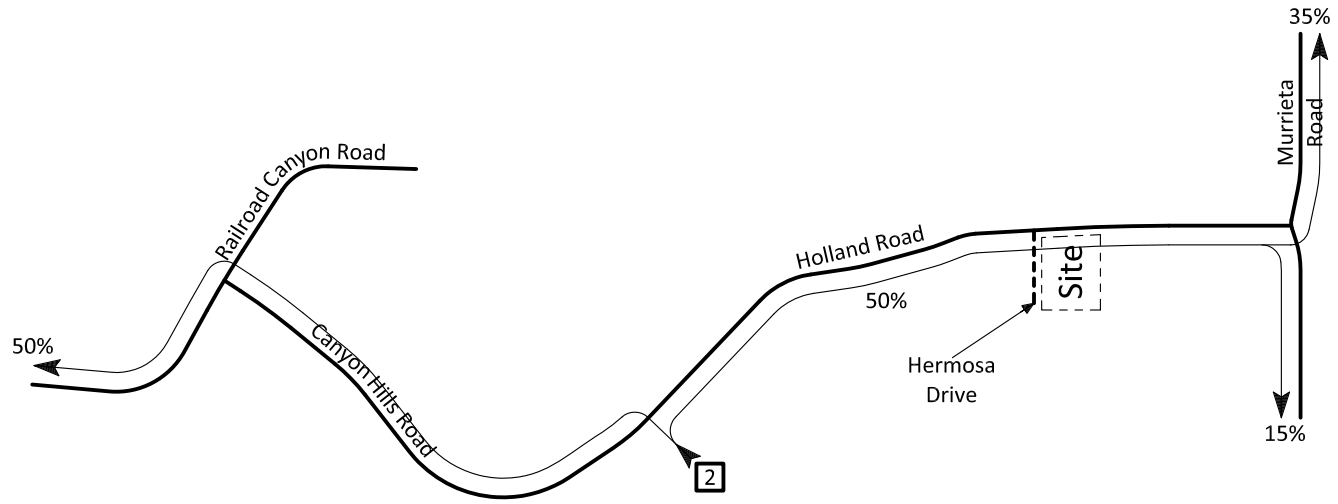
NTS

5590c/17

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 18
Other Development Trip Distribution - Traffic Analysis Zone 2



Legend

10% = Percent To/From Project

N

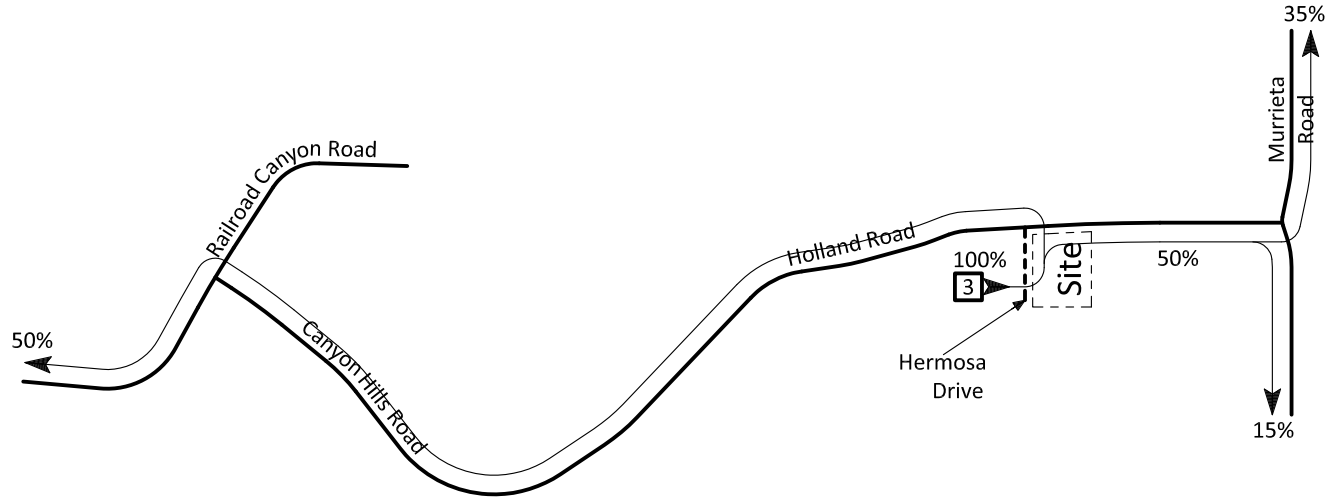
NTS

5590c/18

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 19
Other Development Trip Distribution - Traffic Analysis Zone 3



Legend

10% = Percent To/From Project

N

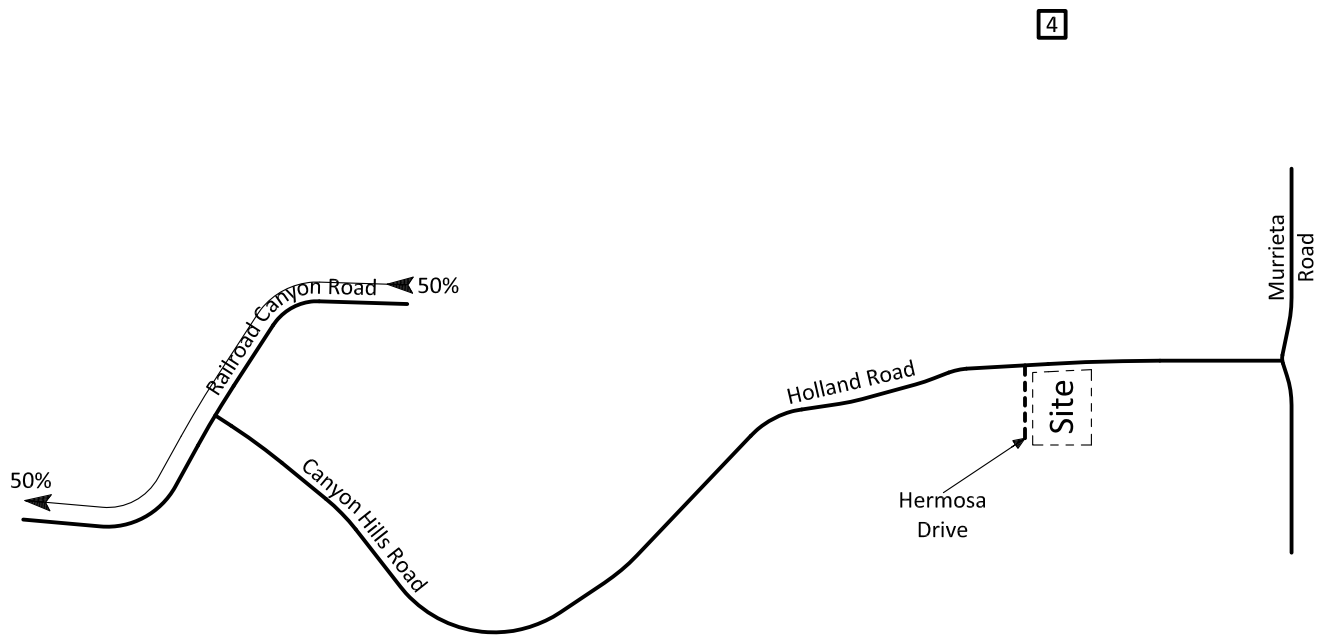
NTS

5590c/19

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 20
Other Development Trip Distribution - Traffic Analysis Zone 4



Legend

10% = Percent To/From Project

N

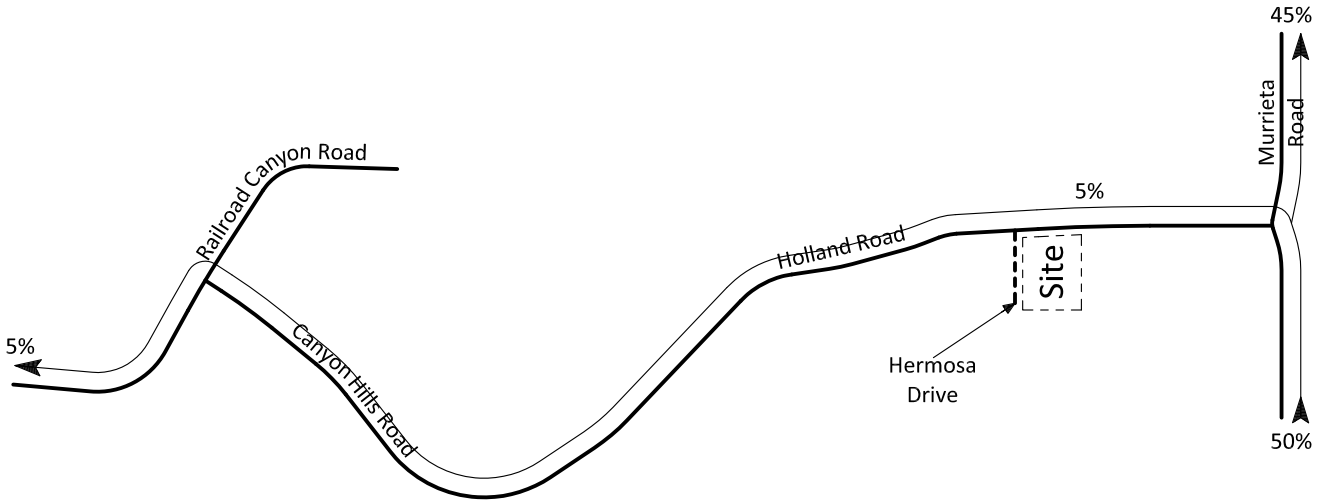
NTS

5590c/20

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 21
Other Development Trip Distribution - Traffic Analysis Zone 5



5

Legend

10% = Percent To/From Project

N

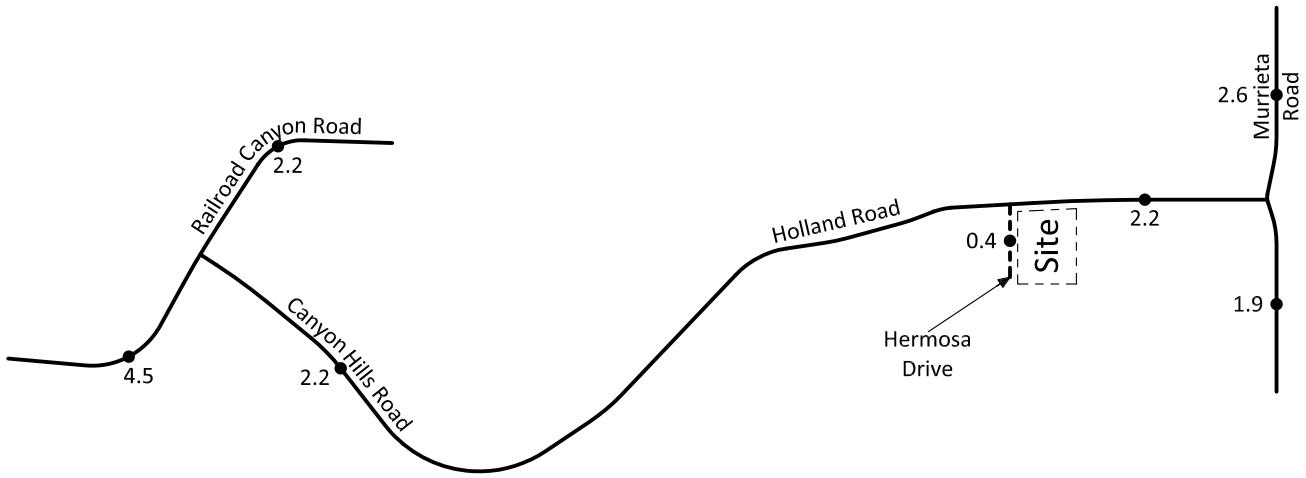
NTS

5590c/21

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 22
Other Development Average Daily Traffic Volumes



Legend

1.9 = Vehicles Per Day (1,000's)

N

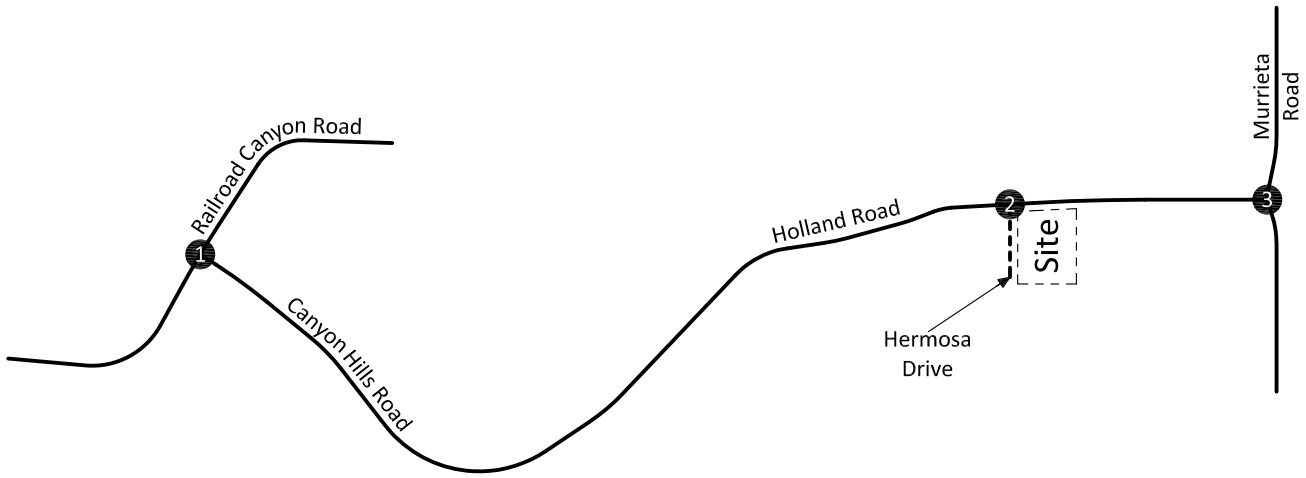
NTS

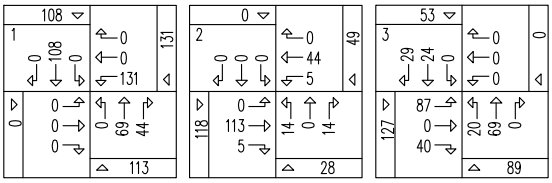
5590c/22

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 23
Other Development
Morning Peak Hour Intersection Turning Movement Volumes





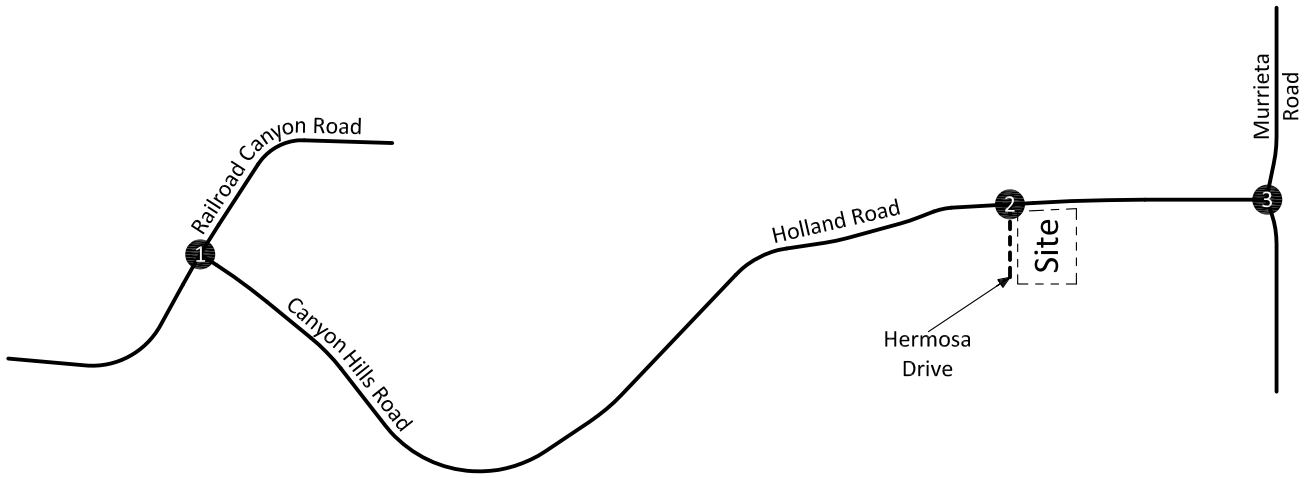
N

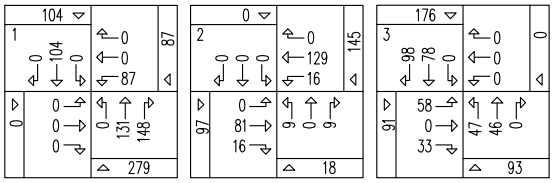
NTS

5590c/23

Intersection reference numbers are in upper left corner of turning movement boxes.

Figure 24
Other Development
Evening Peak Hour Intersection Turning Movement Volumes



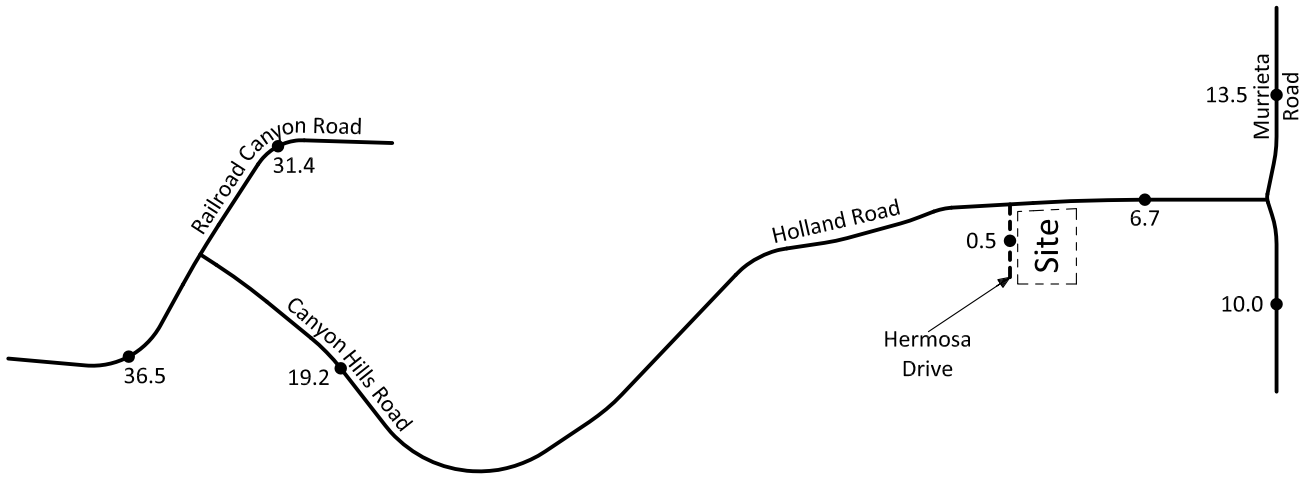


NTS

5590c/24

Intersection reference numbers are in upper left corner of turning movement boxes.

Figure 25
Opening Year (2016) Without Project Average Daily Traffic Volumes



Legend

10.0 = Vehicles Per Day (1,000's)

N

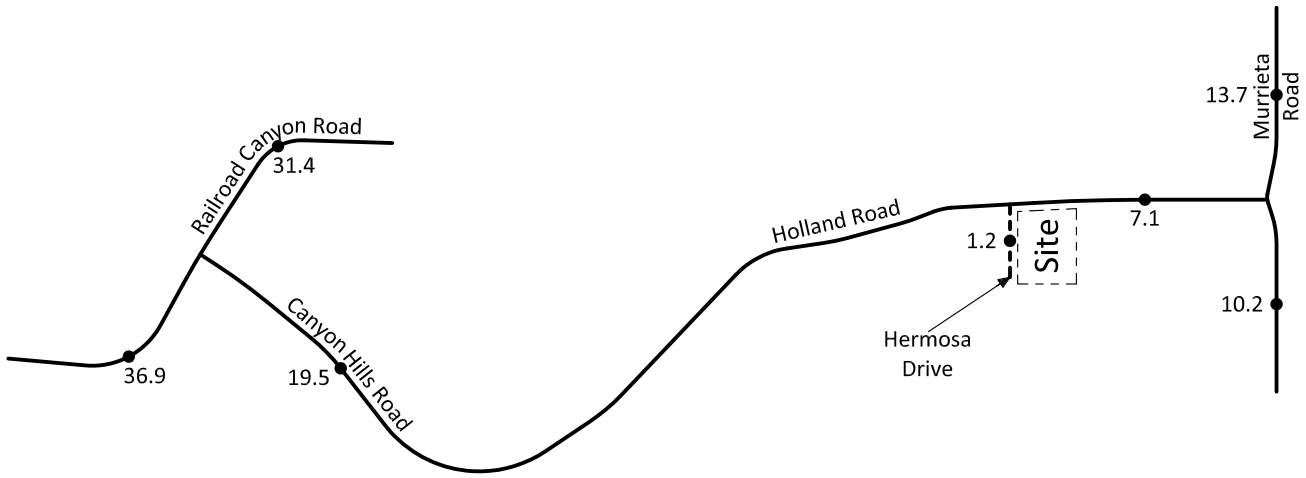
NTS

5590c/25

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 26
Opening Year (2016) With Project Average Daily Traffic Volumes



Legend

10.2 = Vehicles Per Day (1,000's)

N

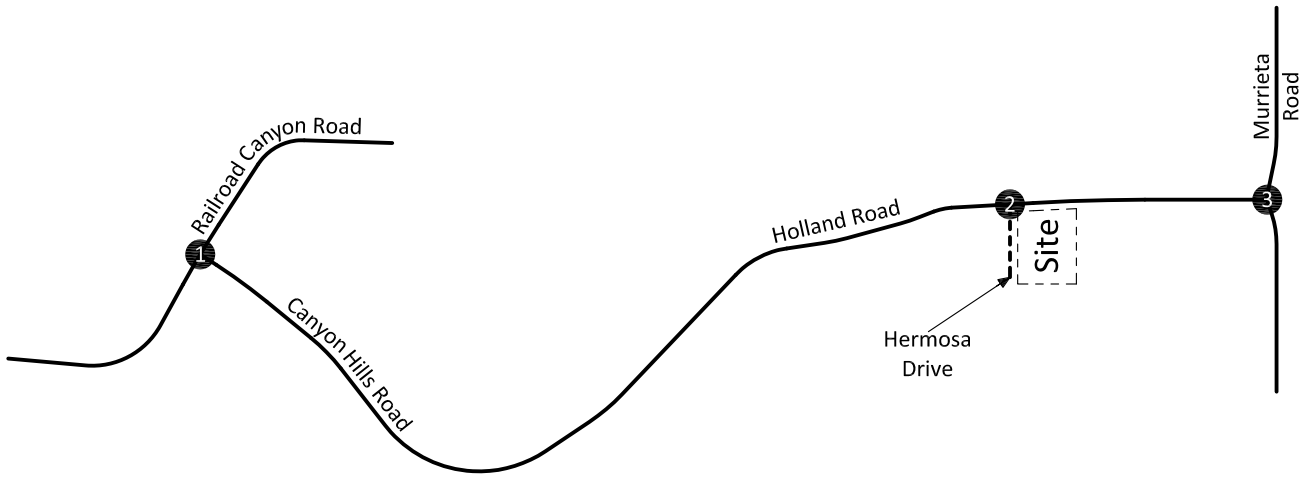
NTS

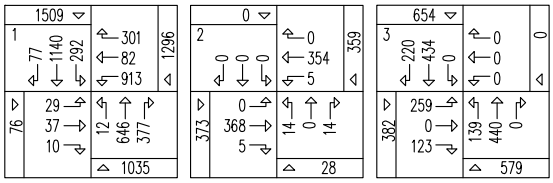
5590c/26

Kunzman Associates, Inc.

Over 35 Years of Excellent Service

Figure 27
Opening Year (2016) Without Project
Morning Peak Hour Intersection Turning Movement Volumes





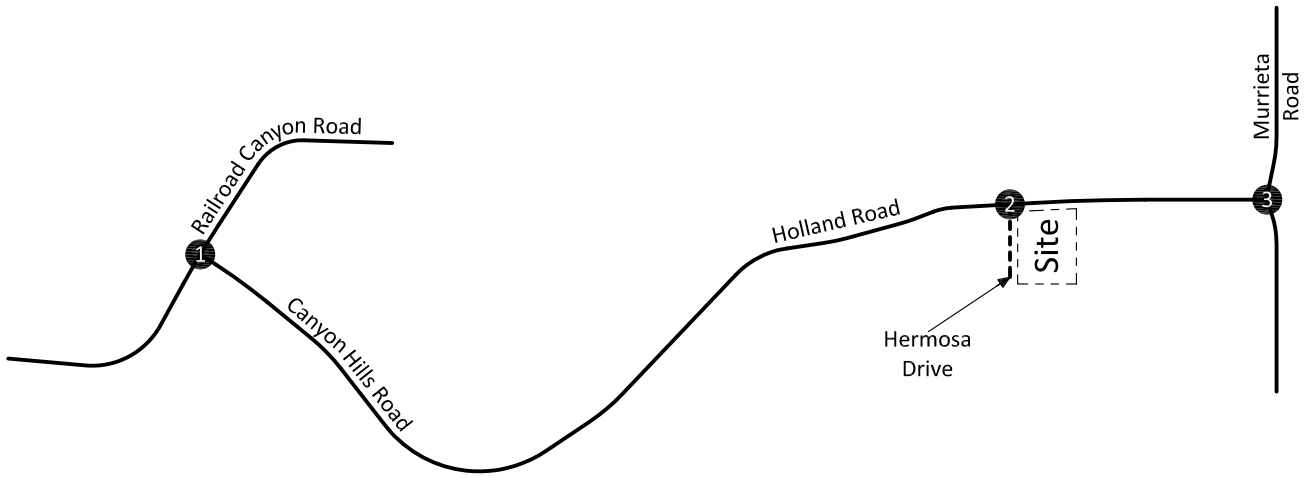
N
NTS

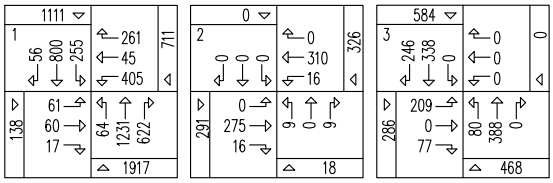
5590c/27

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 28
Opening Year (2016) Without Project
Evening Peak Hour Intersection Turning Movement Volumes





N

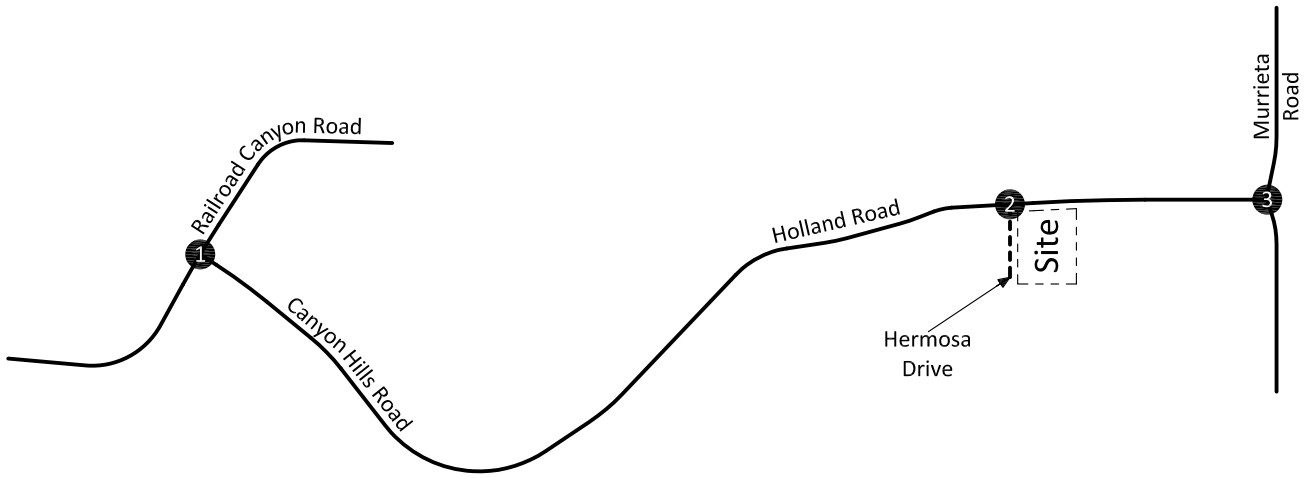
NTS

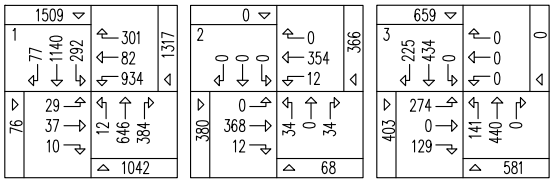
5590c/28

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 29
Opening Year (2016) With Project
Morning Peak Hour Intersection Turning Movement Volumes





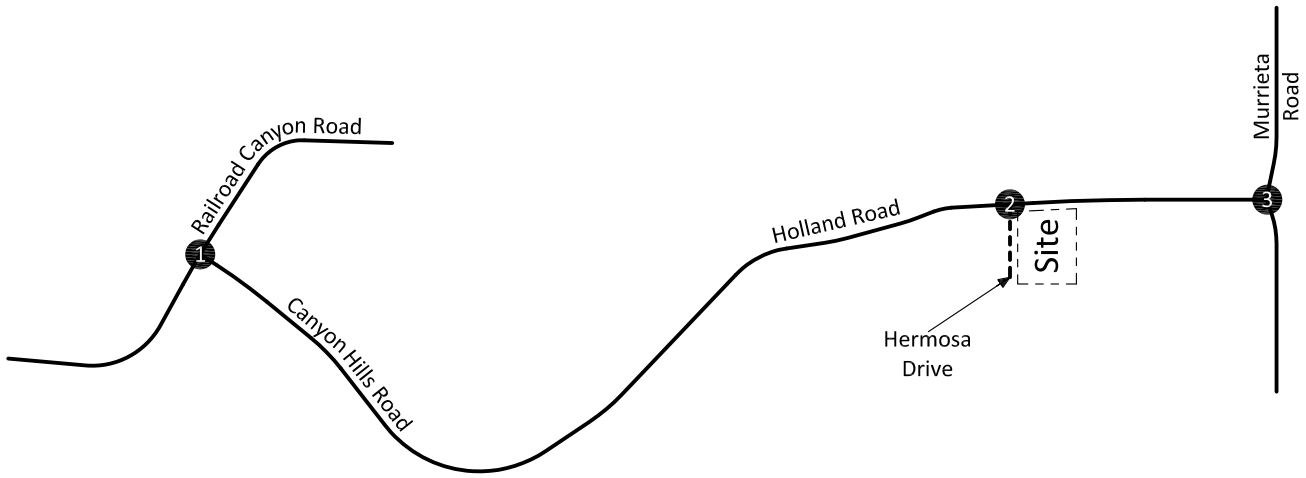
NTS

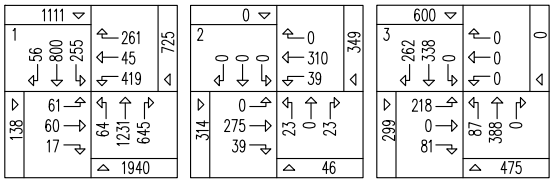
5590c/29

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 30
Opening Year (2016) With Project
Evening Peak Hour Intersection Turning Movement Volumes





N

NTS

5590c/30

Intersection reference numbers are in upper left corner of turning movement boxes.

VIII. Recommendations

A. Site Access

The proposed project will have access to Holland Road via Hermosa Drive, Elina Road and Obaria Way through the adjacent project of Canyon Hills Planning Area 32. Hermosa Drive, Elina Road and Obaria Way are proposed roadways to be utilized by Canyon Hills Planning Area 32 project and are currently under construction.

B. Roadway Improvements

1. On- Site

On-site improvements and improvements adjacent to the site will be required in conjunction with the proposed development to ensure adequate circulation within the project itself (see Figure 31).

Construct Holland Road from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

Construct Corson Avenue from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary, or pay cash in lieu for improvements as approved by the City Engineer.

Sight distance at project accesses should be reviewed with respect to California Department of Transportation/City of Lake Elsinore standards in conjunction with the preparation of final grading, landscaping, and street improvement plans. The final grading, landscaping, and street improvement plans shall demonstrate that sight distance standards are met. Such plans must be reviewed by the City and approved as consistent with this measure prior to issue of grading permits.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

2. Off-Site

The project does not contribute enough trips to the adjacent street to require it to be upgraded from the proposed local street classification. As shown on Figure 26, the average daily traffic volumes on Hermosa Drive with the project and other development contributions (see Figure 19) is 1,190 vehicles per day. This in below the 1,600 vehicle per day threshold for a local street classification.

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

The project should participate in the phased construction of the off-site intersection improvements and traffic signalization through payment of established City of Lake Elsinore fees, participation in the Western Riverside Transportation Uniform Mitigation Fees program, assessment district, community facilities district financing and/or appropriate fair share financing agreement, and construction of off-site facilities under appropriate fee credit agreements.

C. Construction Traffic

Project construction would generate trips from construction worker travel, the arrival and departure of trucks delivering construction materials, and the removal of debris generated by on-site demolition activities The site will be importing fill material from the adjacent Planning Areas of 32, 28A, and 28B. A portion of the grading of these four sections will be concurrent to balance the fill from one section to another. As these sections are adjoining the need to utilize the roadway is minimized. The grading is anticipated to be approximately two to three months in duration.

Compared to the project trip generation, construction of the proposed project is expected to generate significantly less trips. The traffic impacts of construction activity will be minor and temporary. To further lessen the impact of construction traffic, any temporary traffic controls used around the construction area should implement suitable measures (per the Southern California Chapter of the American Public Works Association, Work Area Traffic Control Handbook, 12th Edition, 2012, the California Department of Transportation Manual of Uniform Traffic Control Devices 2009 California Supplement, dated January 13, 2012) and City / County Standards to assure continued traffic flow along these roadway segments and construction activities should adhere to applicable local ordinances.

Table 7

Project Fair Share Intersection Traffic Contribution

Intersection	Jurisdiction	Improvement	Peak Hour	Existing Traffic	Year 2016 With Project Traffic	Project Traffic	Total New Traffic	Project % of New Traffic
Murrieta Road (NS) at:								
Holland Road (EW) - #3	Menifee	Traffic Signal[1]	Morning	1,294	1,797	27	503	N/A[2]
			Evening	976	1,569	36	593	N/A

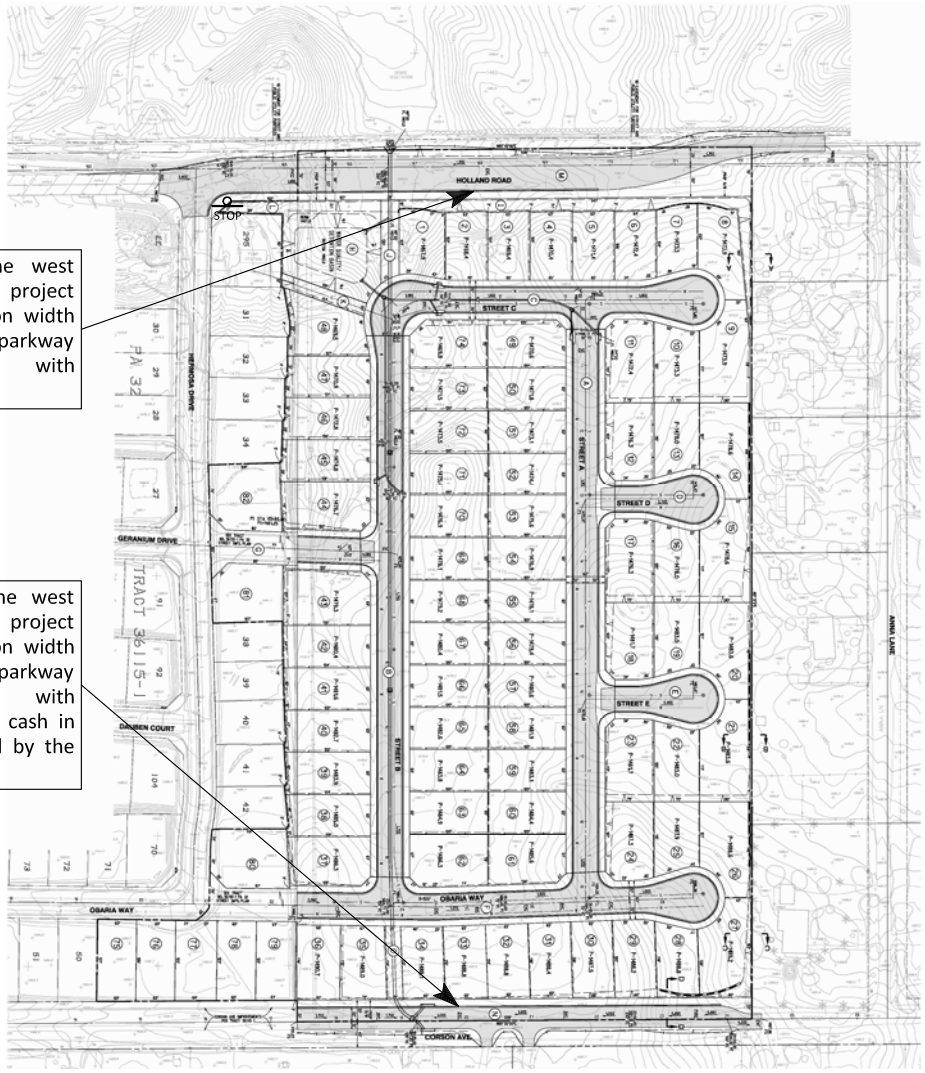
[1] Traffic signal appears to currently be warranted for this intersection for existing traffic conditions (see Appendix E).

[2] N/A = Not Applicable. It should be noted that this intersection does not meet the 50 peak hour trip criteria.

Figure 31
Circulation Recommendations

Construct Holland Road from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

Construct Corson Avenue from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary, or pay cash in lieu for improvements as approved by the City Engineer.



Legend

STOP = Stop Sign

Sight distance at project accesses should be reviewed with respect to California Department of Transportation/City of Lake Elsinore standards in conjunction with the preparation of final grading, landscaping, and street improvement plans. The final grading, landscaping, and street improvement plans shall demonstrate that sight distance standards are met. Such plans must be reviewed by the City and approved as consistent with this measure prior to issue of grading permits.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

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

The project should participate in the phased construction of the off-site intersection improvements and traffic signalization through payment of established City of Lake Elsinore fees, participation in the Western Riverside Transportation Uniform Mitigation Fees program, assessment district, community facilities district financing and/or appropriate fair share financing agreement, and construction of off-site facilities under appropriate fee credit agreements.

N

NTS

5590c/31

Appendices

Appendix A – Glossary of Transportation Terms

Appendix B – City of Lake Elsinore Scoping Agreement

Appendix C – Traffic Count Worksheets

Appendix D – Explanation and Calculation of Intersection Delay

Appendix E – Traffic Signal Warrant Worksheet

APPENDIX A

Glossary of Transportation Terms

GLOSSARY OF TRANSPORTATION TERMS

COMMON ABBREVIATIONS

AC:	Acres
ADT:	Average Daily Traffic
Caltrans:	California Department of Transportation
DU:	Dwelling Unit
ICU:	Intersection Capacity Utilization
LOS:	Level of Service
TSF:	Thousand Square Feet
V/C:	Volume/Capacity
VMT:	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The total volume during a year divided by the number of days in a year. Usually only weekdays are included.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A constriction along a travelway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CYCLE LENGTH: The time period in seconds required for one complete signal cycle.

CUL-DE-SAC STREET: A local street open at one end only, and with special provisions for turning around.

DAILY CAPACITY: The daily volume of traffic that will result in a volume during the peak hour equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

ORIGIN-DESTINATION SURVEY: A survey to determine the point of origin and the point of destination for a given vehicle trip.

PASSENGER CAR EQUIVALENTS (PCE): One car is one Passenger Car Equivalent. A truck is equal to 2 or 3 Passenger Car Equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher Passenger Car Equivalent than empty trucks.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through a signalized intersection.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home are two trips, not one.

TRIP-END: One end of a trip at either the origin or destination; i.e. each trip has two trip-ends. A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

City of Lake Elsinore Scoping Agreement

SCOPING AGREEMENT FOR TRAFFIC IMPACT ANALYSIS

Project Name: **Canyon Hills PA 32B**
Project Address: **South of Holland Road and east of Hermosa Drive**
Project Description: **74 Single-Family Detached Residential Dwelling Units**

	Consultant	Developer
Name:	**KUNZMAN ASSOCIATES, INC.**	**PARDEE HOMES**
Address:	**1111 Town & Country Road, Suite 34**	**35050 Canyon Hills Road**
	Orange, CA 92868	**Lake Elsinore, CA 92532**
Telephone:	**(714) 973-8383**	**(951) 246-2218**

A. Trip Generation Source: **Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012**

	Current Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM				14	41	55
PM				47	27	74
Daily						704

Internal Trip Allowance Yes [No] (% Trip Discount)
Pass-By Trip Allowance Yes [No] (%Trip Discount)

B. Trip Geographic Distribution: N 35 % S 15 % E 0 % W 50 %

C. Background Traffic

Project Build-out Year 2015 Annual Ambient Growth Rate: 2 %
Phase Year(s) _____
Other area projects to be analyzed: **Please provide, thank you!**

Model/Forecast methodology _____

D. Study intersections:

1. Canyon Hills Road (NS) at Railroad Canyon Road (EW)
3. Hermosa Drive (NS) at Holland Road (EW)
5. Murrieta Road (NS) at Holland Road (EW)

E. Specific issues to be addressed:

Analyze Hermosa Drive roadway sizing
Review internal residential streets.

Recommended by:

Carl Ballard, Principal Associate — **January 30, 2014**
Consultant's Representative — Date

Revised on _____

Approved Scoping Agreement:

City of Lake Elsinore — 2/6/14
#5590 — Date

Table 1

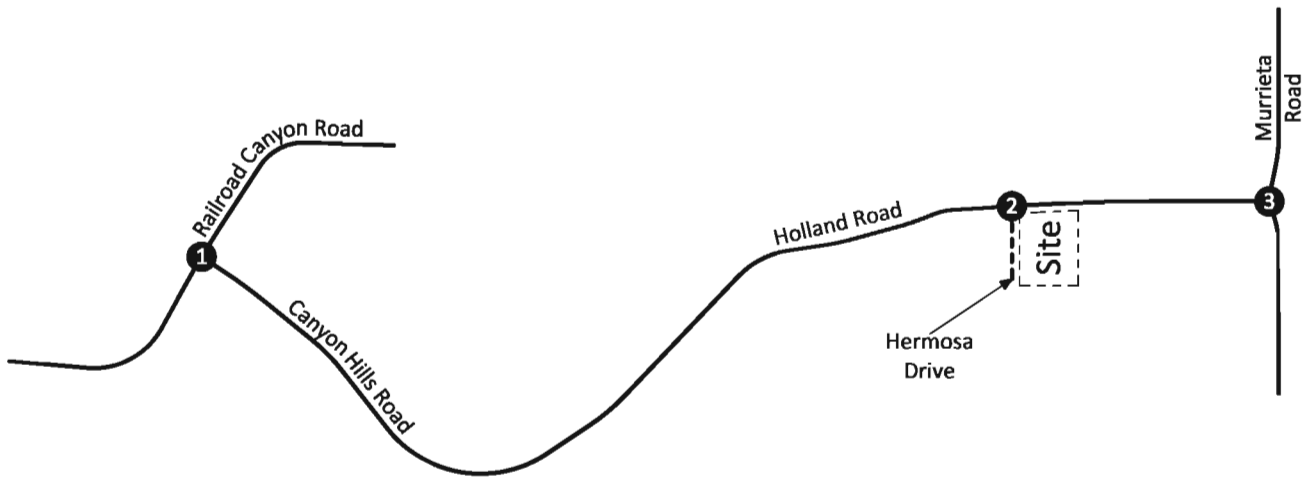
Project Trip Generation[1]

Land Use	Quantity	Units[2]	Peak Hour						Daily
			Morning			Evening			
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rates									
Single-Family Detached Residential		DU	0.19	0.56	0.75	0.63	0.37	1.00	9.52
Trips Generated									
Single-Family Detached Residential	74	DU	14	41	55	47	27	74	704

[1] Source: Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012, Land Use Category 210.

[1] DU = Dwelling Units

Figure 1
Project Location Map



Legend

1 = Intersection Reference Number

N

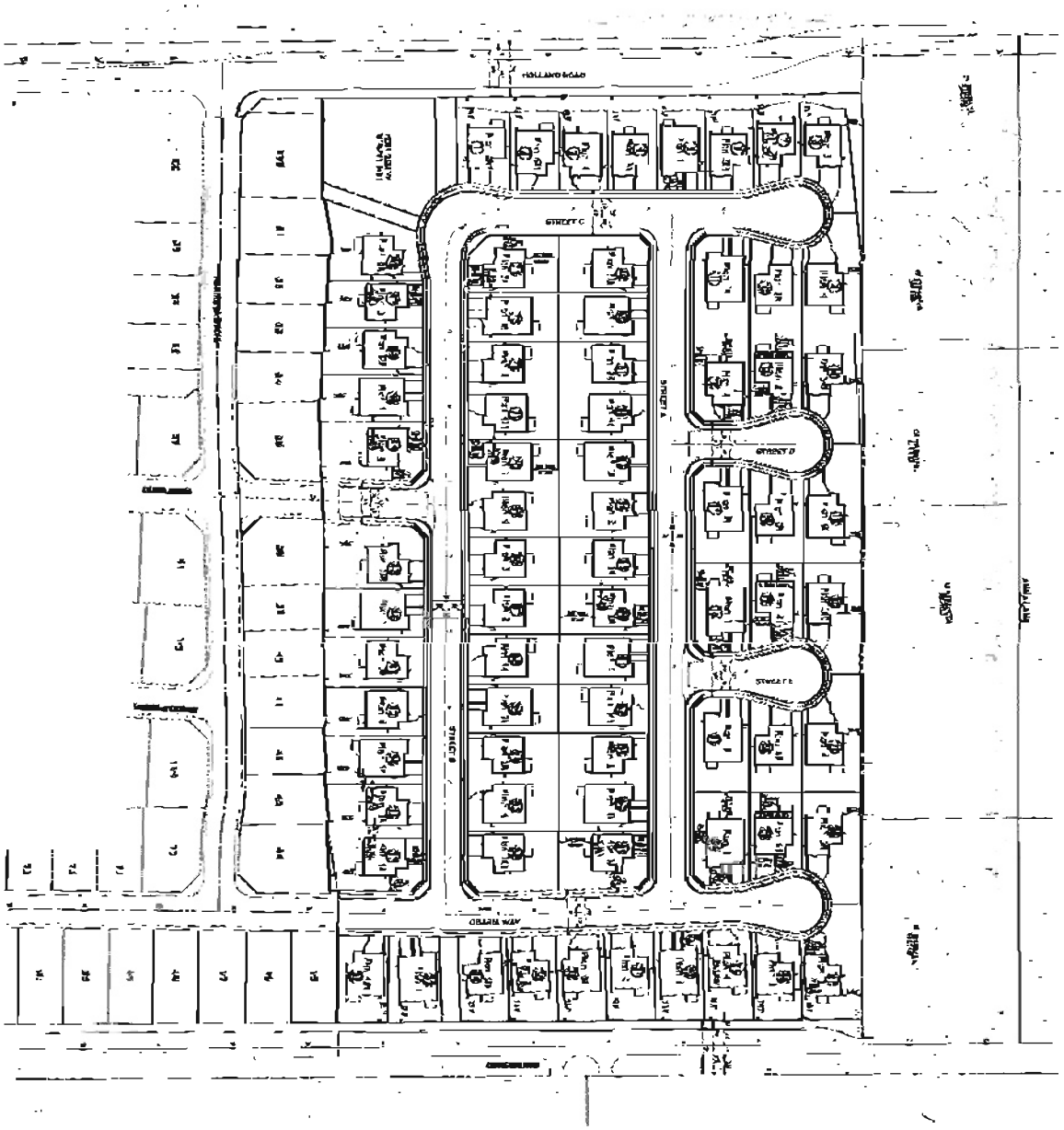
NTS

5590/1

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

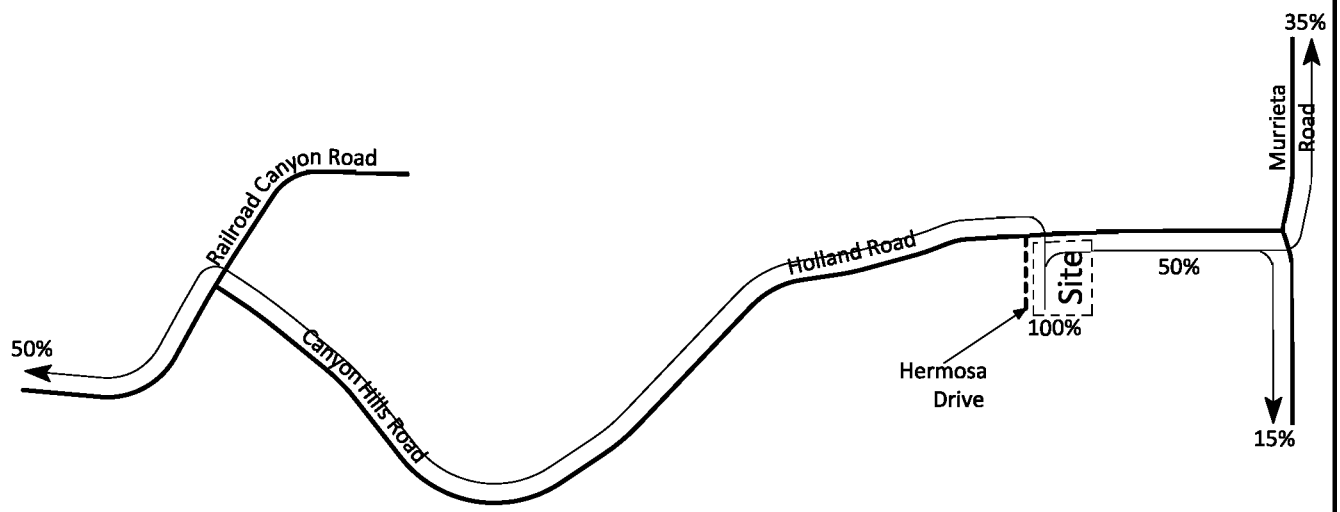
Figure 2
Site Plan



NTS

5590/2

Figure 3
Project Trip Distribution



Legend

10% = Percent To/From Project

N

NTS

5590/3

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

APPENDIX C

Traffic Count Worksheets

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 951 249 3226 pacific@aimtd.com

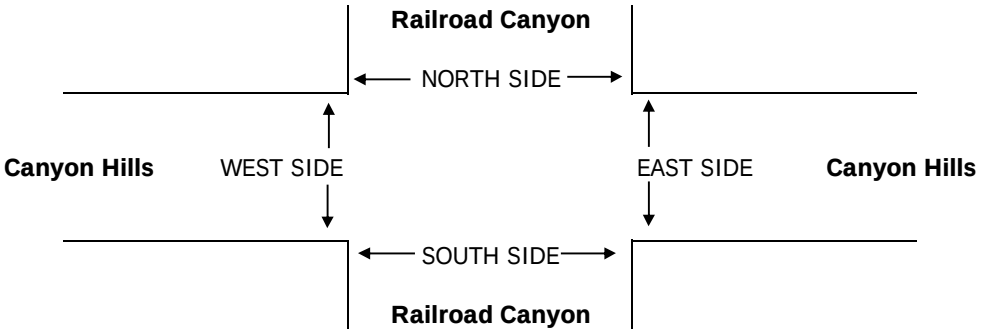
DATE:				
Tue, Feb 11, 14	LOCATION:	Lake Elsinore	PROJECT #:	SC0304
	NORTH & SOUTH:	Railroad Canyon	LOCATION #:	1
	EAST & WEST:	Canyon Hills	CONTROL:	SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

N
W
E
S

		NORTHBOUND Railroad Canyon			SOUTHBOUND Railroad Canyon			EASTBOUND Canyon Hills			WESTBOUND Canyon Hills			
	LANES:	NL 1	NT 3	NR 1	SL 1	ST 3	SR 1	EL 1	ET 1	ER 0	WL 1.5	WT 1	WR 0.5	TOTAL
AM	7:00 AM	5	69	85	48	211	22	2	7	3	147	9	31	639
	7:15 AM	2	94	109	103	225	16	3	10	1	228	25	37	853
	7:30 AM	3	138	113	87	306	23	5	5	5	219	25	103	1,032
	7:45 AM	4	147	53	60	252	23	10	12	1	168	17	98	845
	8:00 AM	3	176	45	31	209	12	10	9	3	137	12	51	698
	8:15 AM	2	122	45	38	269	12	2	6	2	85	13	33	629
	8:30 AM	3	133	36	23	259	16	5	1	1	80	11	38	606
	8:45 AM	4	163	32	26	215	16	5	6	3	110	9	34	623
	VOLUMES	26	1,042	518	416	1,946	140	42	56	19	1,174	121	425	5,947
	APPROACH %	2%	66%	33%	17%	78%	6%	36%	48%	16%	68%	7%	25%	
	APP/DEPART	1,589	/	1,528	2,521	/	3,142	117	/	990	1,720	/	287	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	12	555	320	281	992	74	28	36	10	752	79	289	3,428
	APPROACH %	1%	63%	36%	21%	74%	5%	38%	49%	14%	67%	7%	26%	
	PEAK HR FACTOR		0.873			0.809			0.804			0.807		0.830
	APP/DEPART	887	/	872	1,347	/	1,754	74	/	637	1,120	/	165	0
PM	4:00 PM	9	249	90	48	136	9	8	10	2	92	10	67	730
	4:15 PM	11	271	101	54	156	11	10	9	0	75	11	66	775
	4:30 PM	4	272	90	57	148	14	13	7	0	83	14	60	762
	4:45 PM	7	264	92	53	172	12	11	14	4	77	12	64	782
	5:00 PM	19	264	89	70	185	16	10	13	4	74	9	54	807
	5:15 PM	22	250	107	57	165	10	23	12	1	72	11	61	791
	5:30 PM	8	274	124	52	154	11	10	17	4	80	11	68	813
	5:45 PM	13	270	136	66	165	17	16	16	7	80	12	68	866
	VOLUMES	93	2,114	829	457	1,281	100	101	98	22	633	90	508	6,370
	APPROACH %	3%	70%	27%	25%	70%	5%	46%	44%	10%	51%	7%	41%	
	APP/DEPART	3,041	/	2,761	1,876	/	1,941	221	/	1,385	1,232	/	283	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	62	1,058	456	245	669	54	59	58	16	306	43	251	3,277
	APPROACH %	4%	67%	29%	25%	69%	6%	44%	44%	12%	51%	7%	42%	
	PEAK HR FACTOR		0.940			0.893			0.853			0.938		0.946
	APP/DEPART	1,576	/	1,368	968	/	991	133	/	759	600	/	159	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 951 249 3226 pacific@aimtd.com

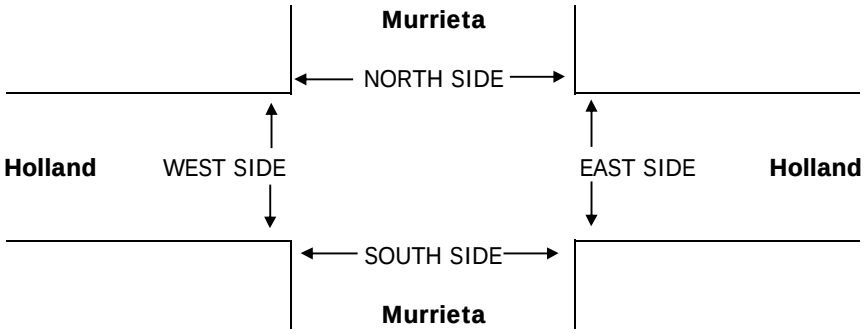
DATE:				
Tue, Feb 11, 14	LOCATION:	Lake Elsinore	PROJECT #:	SC0304
	NORTH & SOUTH:	Murrieta	LOCATION #:	2
	EAST & WEST:	Holland	CONTROL:	Stop 1-way E

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W
E ►
S ▼

		NORTHBOUND Murrieta			SOUTHBOUND Murrieta			EASTBOUND Holland			WESTBOUND Holland			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	1	X	X	1	0	0	X	0	X	X	X	
AM	7:00 AM	20	65	0	0	61	46	36	0	21	0	0	0	249
	7:15 AM	54	88	0	0	96	87	23	0	14	0	0	0	362
	7:30 AM	31	105	0	1	111	40	43	0	25	0	0	0	356
	7:45 AM	24	92	0	0	86	32	49	0	26	0	0	0	309
	8:00 AM	5	72	0	0	101	25	50	0	15	0	0	0	268
	8:15 AM	18	88	0	0	126	18	24	0	20	0	0	0	294
	8:30 AM	22	101	0	0	69	16	27	0	21	0	0	0	256
	8:45 AM	8	58	0	0	27	20	20	0	7	0	0	0	140
	VOLUMES	182	669	0	1	677	284	272	0	149	0	0	0	2,234
	APPROACH %	21%	79%	0%	0%	70%	30%	65%	0%	35%	0%	0%	0%	
	APP/DEPART	851	/	941	962	/	826	421	/	1	0	/	466	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	114	357	0	1	394	184	165	0	80	0	0	0	1,295
	APPROACH %	24%	76%	0%	0%	68%	32%	67%	0%	33%	0%	0%	0%	
	PEAK HR FACTOR		0.829			0.791			0.817			0.000		0.894
	APP/DEPART	471	/	522	579	/	474	245	/	1	0	/	298	0
PM	4:00 PM	10	80	0	0	56	30	29	0	9	0	0	0	214
	4:15 PM	6	83	0	0	55	35	34	0	13	0	0	0	226
	4:30 PM	9	89	0	0	49	38	28	0	6	0	0	0	219
	4:45 PM	10	81	0	0	59	37	39	0	11	0	0	0	237
	5:00 PM	8	77	0	0	64	35	42	0	11	0	0	0	237
	5:15 PM	9	86	0	0	68	33	33	1	9	0	0	0	239
	5:30 PM	5	85	0	0	59	37	31	0	11	0	0	0	228
	5:45 PM	9	85	0	0	43	37	32	0	12	0	0	0	218
	VOLUMES	66	666	0	0	453	282	268	1	82	0	0	0	1,818
	APPROACH %	9%	91%	0%	0%	62%	38%	76%	0%	23%	0%	0%	0%	
	APP/DEPART	732	/	934	735	/	535	351	/	1	0	/	348	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	32	329	0	0	250	142	145	1	42	0	0	0	941
	APPROACH %	9%	91%	0%	0%	64%	36%	77%	1%	22%	0%	0%	0%	
	PEAK HR FACTOR		0.950			0.970			0.887			0.000		0.984
	APP/DEPART	361	/	474	392	/	292	188	/	1	0	/	174	0



APPENDIX D

Explanation and Calculation of Intersection Delay

EXPLANATION AND CALCULATION OF INTERSECTION LEVEL OF SERVICE USING DELAY METHODOLOGY

The levels of service at the unsignalized and signalized intersections are calculated using the delay methodology in the Highway Capacity Manual. This methodology views an intersection as consisting of several lane groups. A lane group is a set of lanes serving a movement. If there are two northbound left turn lanes, then the lane group serving the northbound left turn movement has two lanes. Similarly, there may be three lanes in the lane group serving the northbound through movement, one lane in the lane group serving the northbound right turn movement, and so forth. It is also possible for one lane to serve two lane groups. A shared lane might result in there being 1.5 lanes in the northbound left turn lane group and 2.5 lanes in the northbound through lane group.

For each lane group, there is a capacity. That capacity is calculated by multiplying the number of lanes in the lane group times a theoretical maximum lane capacity per lane times 12 adjustment factors.

Each of the 12 adjustment factors has a value of approximately 1.00. A value less than 1.00 is generally assigned when a less than desirable condition occurs.

The 12 adjustment factors are as follows:

1. Peak hour factor (to account for peaking within the peak hour)
2. Lane utilization factor (to account for not all lanes loading equally)
3. Lane width
4. Percent of heavy trucks
5. Approach grade
6. Parking
7. Bus stops at intersections
8. Area type (CBD or other)
9. Right turns
10. Left turns

11. Pedestrian activity

12. Signal progression

The maximum theoretical lane capacity and the 12 adjustment factors for it are all unknowns for which approximate estimates have been recommended in the Highway Capacity Manual. For the most part, the recommended values are not based on statistical analysis but rather on educated estimates. However, it is possible to use the delay method and get reasonable results as will be discussed below.

Once the lane group volume is known and the lane group capacity is known, a volume to capacity ratio can be calculated for the lane group.

With a volume to capacity ratio calculated, average delay per vehicle in a lane group can be estimated. The average delay per vehicle in a lane group is calculated using a complex formula provided by the Highway Capacity Manual, which can be simplified and described as follows:

Delay per vehicle in a lane group is a function of the following:

1. Cycle length

2. Amount of red time faced by a lane group

3. Amount of yellow time for that lane group

4. The volume to capacity ratio of the lane group

The average delay per vehicle for each lane group is calculated, and eventually an overall average delay for all vehicles entering the intersection is calculated. This average delay per vehicle is then used to judge Level of Service. The Level of Services are defined in the table that follows this discussion.

Experience has shown that when a maximum lane capacity of 1,900 vehicles per hour is used (as recommended in the Highway Capacity Manual), little or no yellow time penalty is used, and none of the 12 penalty factors are applied, calculated delay is realistic. The delay calculation for instance assumes that yellow time is totally unused. Yet experience shows that most of the yellow time is used.

An idiosyncrasy of the delay methodology is that it is possible to add traffic to an intersection and reduce the average total delay per vehicle. If the average total delay is 30 seconds per vehicle for all vehicles traveling through an intersection, and traffic is

added to a movement that has an average total delay of 15 seconds per vehicle, then the overall average total delay is reduced.

The delay calculation for a lane group is based on a concept that the delay is a function of the amount of unused capacity available. As the volume approaches capacity and there is no more unused capacity available, then the delay rapidly increases. Delay is not proportional to volume, but rather increases rapidly as the unused capacity approaches zero.

Because delay is not linearly related to volumes, the delay does not reflect how close an intersection is to overloading. If an intersection is operating at Level of Service C and has an average total delay of 2 seconds per vehicle, you know very little as to what percent the traffic can increase before Level of Service E is reached.

LEVEL OF SERVICE DESCRIPTION[1]

Level of Service	Description	Average Total Delay Per Vehicle (Seconds)	
		Signalized	Unsignalized
A	Level of Service A occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	0 to 10.00	0 to 10.00
B	Level of Service B generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average total delay.	10.01 to 20.00	10.01 to 15.00
C	Level of Service C generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	20.01 to 35.00	15.01 to 25.00
D	Level of Service D generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.01 to 55.00	25.01 to 35.00
E	Level of Service E is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.	55.01 to 80.00	35.01 to 50.00
F	Level of Service F is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	80.01 and up	50.01 and up

[1] Source: Highway Capacity Manual Special Report 209, Transportation Research Board, National Research Council, Washington, D.C., 2000.

Existing

Canyon Hills Residential PA-32B
Existing
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Railroad Canyon Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 75 Critical Vol./Cap.(X): 0.658
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 28.2
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Lanes:	1 0 3 0 1			1 0 3 0 1			1 0 0 1 0			1 1 0 1 0		
Volume Module:												
Base Vol:	12	555	320	281	992	74	28	36	10	752	79	289
Growth 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
Initial Bse:	12	555	320	281	992	74	28	36	10	752	79	289
User 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
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	14	668	385	338	1195	89	34	43	12	906	95	348
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	14	668	385	338	1195	89	34	43	12	906	95	348
PCE 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
MLF 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
FinalVolume:	14	668	385	338	1195	89	34	43	12	906	95	348
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.78	0.22	2.00	0.21	0.79
Final Sat.:	1900	5187	1900	1900	5187	1900	1900	1487	413	3610	387	1418
Capacity Analysis Module:												
Vol/Sat:	0.01	0.13	0.20	0.18	0.23	0.05	0.02	0.03	0.03	0.25	0.25	0.25
Crit Moves:	****				****			****		****		
Green/Cycle:	0.09	0.16	0.47	0.22	0.29	0.29	0.09	0.09	0.09	0.31	0.31	0.31
Volume/Cap:	0.08	0.81	0.43	0.81	0.80	0.16	0.19	0.31	0.31	0.80	0.78	0.78
Delay/Veh:	31.3	36.3	13.4	38.7	28.0	20.1	31.9	32.8	32.8	26.5	25.9	25.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.3	36.3	13.4	38.7	28.0	20.1	31.9	32.8	32.8	26.5	25.9	25.9
LOS by Move:	C	D	B	D	C	C	C	C	C	C	C	C
HCM2kAvgQ:	0	8	6	10	12	2	1	2	2	12	12	12

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Railroad Canyon Road (NS) at Canyon Hills Road(EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.736
Loss Time (sec):	16 (Y+R=4.0 sec)	Average Delay (sec/veh):	23.3
Optimal Cycle: OPTIMIZED		Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Lanes:	1 0	3 0	1	1 0	3 0	1	1 0	0 1	0	1 1	0 1	0
Volume Module:												
Base Vol:	62	1058	456	245	669	54	59	58	16	306	43	251
Growth 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
Initial Bse:	62	1058	456	245	669	54	59	58	16	306	43	251
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	66	1118	482	259	707	57	62	61	17	323	45	265
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	66	1118	482	259	707	57	62	61	17	323	45	265
PCE 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
MLF 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
FinalVolume:	66	1118	482	259	707	57	62	61	17	323	45	265
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.78	0.22	1.75	0.25	1.00
Final Sat.:	1900	5187	1900	1900	5187	1900	1900	1489	411	3165	445	1805
Capacity Analysis Module:												
Vol/Sat:	0.03	0.22	0.25	0.14	0.14	0.03	0.03	0.04	0.04	0.10	0.10	0.15
Crit Moves:		****		****				****				****
Green/Cycle:	0.20	0.27	0.45	0.17	0.23	0.23	0.12	0.12	0.12	0.18	0.18	0.18
Volume/Cap:	0.17	0.81	0.57	0.81	0.58	0.13	0.28	0.35	0.35	0.56	0.56	0.81
Delay/Veh:	20.1	24.3	13.1	38.2	21.1	18.3	24.9	25.4	25.4	23.0	23.0	29.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	20.1	24.3	13.1	38.2	21.1	18.3	24.9	25.4	25.4	23.0	23.0	29.8
LOS by Move:	C	C	B	D	C	B	C	C	C	C	C	C
HCM2kAvgQ:	1	10	7	7	5	1	1	2	2	4	4	8

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Average Delay (sec/veh): 30.2 Worst Case Level Of Service: F[155.1]

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	114	357		0		0	394		184		165		0		80		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	114	357		0		0	394		184		165		0		80		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	0.89	0.89		0.89		0.89	0.89		0.89		0.89		0.89		0.89		0.89		0.89	
PHF Volume:	127	399		0		0	441		206		185		0		89		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	127	399		0		0	441		206		185		0		89		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4		6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5		4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	646	xxxx	xxxxx	xxxx	xxxx	xxxxx					1198		1198		543	xxxx	xxxx	xxxxx		
Potent Cap.:	949	xxxx	xxxxx	xxxx	xxxx	xxxxx					207		187		543	xxxx	xxxx	xxxxx		
Move Cap.:	949	xxxx	xxxxx	xxxx	xxxx	xxxxx					184		160		543	xxxx	xxxx	xxxxx		
Volume/Cap:	0.13	xxxx	xxxx	xxxx	xxxx	xxxx					1.00		0.00		0.16	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx											
Control Del:	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx											
LOS by Move:	A	*	*	*	*	*	*	*	*											
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	235	xxxxx											
SharedQueue:	0.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.9	xxxxx											
Shrd ConDel:	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	155	xxxxx											
Shared LOS:	A	*	*	*	*	*	*	F	*											
ApproachDel:	xxxxxx			xxxxxx			155.1						xxxxxx							
ApproachLOS:	*			*			F						*							

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: C[19.8]

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	32	329		0		0	250		142		145		0		42	0		0		0
Growth 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
Initial Bse:	32	329		0		0	250		142		145		0		42	0		0		0
User 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
PHF Adj:	0.98	0.98		0.98		0.98	0.98		0.98		0.98		0.98		0.98	0.98		0.98		0.98
PHF Volume:	33	334		0		0	254		144		147		0		43	0		0		0
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	33	334		0		0	254		144		147		0		43	0		0		0
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4		6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5		4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	398	xxxx	xxxxx	xxxx	xxxx	xxxxx					725		725		326	xxxx	xxxx	xxxxx		
Potent Cap.:	1171	xxxx	xxxxx	xxxx	xxxx	xxxxx					395		354		720	xxxx	xxxx	xxxxx		
Move Cap.:	1171	xxxx	xxxxx	xxxx	xxxx	xxxxx					386		344		720	xxxx	xxxx	xxxxx		
Volume/Cap:	0.03	xxxx	xxxx	xxxx	xxxx	xxxx					0.38		0.00		0.06	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx											
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx											
LOS by Move:	A	*	*	*	*	*	*	*	*											
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	431	xxxxx											
SharedQueue:	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.2	xxxxx											
Shrd ConDel:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	19.8	xxxxx											
Shared LOS:	A	*	*	*	*	*	*	C	*											
ApproachDel:	xxxxxx			xxxxxx			19.8				xxxxxx									
ApproachLOS:	*			*			C				*									

Note: Queue reported is the number of cars per lane.

Existing Plus Project

Canyon Hills Residential PA-32B
Existing Plus Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Railroad Canyon Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 75 Critical Vol./Cap.(X): 0.667
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 28.6
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Lanes:	1 0	3 0	1	1 0	3 0	1	1 0	0 1	0	1 1	0 1	0
Volume Module:												
Base Vol:	12	555	320	281	992	74	28	36	10	752	79	289
Growth 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
Initial Bse:	12	555	320	281	992	74	28	36	10	752	79	289
Added Vol:	0	0	7	0	0	0	0	0	0	21	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	12	555	327	281	992	74	28	36	10	773	79	289
User 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
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	14	668	394	338	1195	89	34	43	12	931	95	348
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	14	668	394	338	1195	89	34	43	12	931	95	348
PCE 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
MLF 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
FinalVolume:	14	668	394	338	1195	89	34	43	12	931	95	348
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.78	0.22	2.00	0.21	0.79
Final Sat.:	1900	5187	1900	1900	5187	1900	1900	1487	413	3610	387	1418
Capacity Analysis Module:												
Vol/Sat:	0.01	0.13	0.21	0.18	0.23	0.05	0.02	0.03	0.03	0.26	0.25	0.25
Crit Moves:	****				****			****		****		
Green/Cycle:	0.09	0.16	0.47	0.22	0.28	0.28	0.09	0.09	0.09	0.32	0.32	0.32
Volume/Cap:	0.08	0.82	0.44	0.82	0.81	0.17	0.19	0.31	0.31	0.81	0.77	0.77
Delay/Veh:	31.3	36.9	13.4	39.7	28.6	20.4	31.9	32.8	32.8	26.7	25.4	25.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.3	36.9	13.4	39.7	28.6	20.4	31.9	32.8	32.8	26.7	25.4	25.4
LOS by Move:	C	D	B	D	C	C	C	C	C	C	C	C
HCM2kAvgQ:	0	8	6	10	12	2	1	2	2	13	12	12

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

****

Intersection #1 Railroad Canyon Road (NS) at Canyon Hills Road(EW)

****

Cycle (sec): 60 Critical Vol./Cap.(X): 0.736
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 23.3
Optimal Cycle: OPTIMIZED Level Of Service: C

****

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	-	R	L	- T	-	R	L	- T	-	R	L	- T	-	R
Control:	Protected				Protected				Split Phase				Split Phase			
Rights:	Ovl				Include				Include				Include			
Min. Green:	7	7	7		7	7	7		7	7	7		7	7	7	
Lanes:	1 0	3 0	1		1 0	3 0	1		1 0	0 1	0		1 1	0 1	0	
Volume Module:																
Base Vol:	62	1058	456		245	669	54		59	58	16		306	43	251	
Growth 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	
Initial Bse:	62	1058	456		245	669	54		59	58	16		306	43	251	
Added Vol:	0	0	24		0	0	0		0	0	0		14	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	62	1058	480		245	669	54		59	58	16		320	43	251	
User 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	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	66	1118	507		259	707	57		62	61	17		338	45	265	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	66	1118	507		259	707	57		62	61	17		338	45	265	
PCE 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	
MLF 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	
FinalVolume:	66	1118	507		259	707	57		62	61	17		338	45	265	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	1.00	0.91	1.00		1.00	0.91	1.00		1.00	1.00	1.00		0.95	0.95	0.95	
Lanes:	1.00	3.00	1.00		1.00	3.00	1.00		1.00	0.78	0.22		1.76	0.24	1.00	
Final Sat.:	1900	5187	1900		1900	5187	1900		1900	1489	411		3182	428	1805	
Capacity Analysis Module:																
Vol/Sat:	0.03	0.22	0.27		0.14	0.14	0.03		0.03	0.04	0.04		0.11	0.11	0.15	
Crit Moves:		****			****					****					****	
Green/Cycle:	0.20	0.27	0.45		0.17	0.23	0.23		0.12	0.12	0.12		0.18	0.18	0.18	
Volume/Cap:	0.17	0.81	0.60		0.81	0.58	0.13		0.28	0.35	0.35		0.59	0.59	0.81	
Delay/Veh:	20.1	24.3	13.6		38.2	21.1	18.3		24.9	25.4	25.4		23.3	23.3	29.7	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	20.1	24.3	13.6		38.2	21.1	18.3		24.9	25.4	25.4		23.3	23.3	29.7	
LOS by Move:	C	C	B		D	C	B		C	C	C		C	C	C	
HCM2kAvgQ:	1	10	8		7	5	1		1	2	2		4	4	8	

****

Note: Queue reported is the number of cars per lane.

****

Canyon Hills Residential PA-32B
Existing Plus Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Hermosa Drive (NS) at Canyon Hills Road(EW)

****

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[11.4]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0 0 1			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	245	0	0	298	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	245	0	0	298	0
Added Vol:	21	0	21	0	0	0	0	0	7	7	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	0	21	0	0	0	0	245	7	7	298	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	22	0	22	0	0	0	0	258	7	7	314	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	22	0	22	0	0	0	0	258	7	7	314	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	590	xxxx	262	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	265	xxxx	xxxxx
Potent Cap.:	474	xxxx	782	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1310	xxxx	xxxxx
Move Cap.:	471	xxxx	782	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1310	xxxx	xxxxx
Volume/Cap:	0.05	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	0.1	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	13.0	xxxx	9.7	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	B	*	A	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:	11.4			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Canyon Hills Residential PA-32B
Existing Plus Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Hermosa Drive (NS) at Canyon Hills Road(EW)

****

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[10.5]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0 0 1			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	188	0	0	174	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	188	0	0	174	0
Added Vol:	14	0	14	0	0	0	0	0	24	24	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	14	0	14	0	0	0	0	188	24	24	174	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	15	0	15	0	0	0	0	198	25	25	183	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	15	0	15	0	0	0	0	198	25	25	183	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	444	xxxx	211	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	223	xxxx	xxxxx
Potent Cap.:	575	xxxx	835	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1358	xxxx	xxxxx
Move Cap.:	567	xxxx	835	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1358	xxxx	xxxxx
Volume/Cap:	0.03	xxxx	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	0.1	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	11.5	xxxx	9.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	B	*	A	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:	10.5			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Canyon Hills Residential PA-32B
Existing Plus Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Average Delay (sec/veh): 40.3 Worst Case Level Of Service: F[196.8]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	-	R	L	- T	-	R	L	- T	-	R	L	- T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	0 1	0	0	0	0	0	0 1	0	0	0 1!	0	0	0	0	0	0 0
Volume Module:																
Base Vol:	114	357	0	0	394	184	165	0	80	0	0	0				
Growth 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				
Initial Bse:	114	357	0	0	394	184	165	0	80	0	0	0				
Added Vol:	2	0	0	0	0	5	14	0	6	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	116	357	0	0	394	189	179	0	86	0	0	0				
User 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				
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89				
PHF Volume:	130	399	0	0	441	211	200	0	96	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	130	399	0	0	441	211	200	0	96	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	652	xxxx	xxxxx	xxxx	xxxx	xxxxx	1205	1205	546	xxxx	xxxx	xxxxx				
Potent Cap.:	944	xxxx	xxxxx	xxxx	xxxx	xxxxx	205	185	541	xxxx	xxxx	xxxxx				
Move Cap.:	944	xxxx	xxxxx	xxxx	xxxx	xxxxx	182	158	541	xxxx	xxxx	xxxxx				
Volume/Cap:	0.14	xxxx	xxxx	xxxx	xxxx	xxxx	1.10	0.00	0.18	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	232	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	0.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	15.3	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	197	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	A	*	*	*	*	*	*	F	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			196.8			xxxxxx						
ApproachLOS:	*			*			F			*						

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Project
Morning Peak Hour With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 60 Critical Vol./Cap.(X): 0.833
Loss Time (sec): 12 (Y+R=4.0 sec) Average Delay (sec/veh): 23.9
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	-	R	L	- T	-	R	L	- T	-	R	L	- T	-	R
Control:	Protected				Protected				Permitted				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	7	7	7		7	7	7		7	7	7		0	0	0	
Lanes:	0 1	0 0	0		0 0	1 0	1		0 0	1! 0	0		0 0	0 0	0	
Volume Module:																
Base Vol:	114	357	0	0	394	184	165	0	80	0	0	0				
Growth 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				
Initial Bse:	114	357	0	0	394	184	165	0	80	0	0	0				
Added Vol:	2	0	0	0	0	5	14	0	6	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	116	357	0	0	394	189	179	0	86	0	0	0				
User 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				
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89				
PHF Volume:	130	399	0	0	441	211	200	0	96	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	130	399	0	0	441	211	200	0	96	0	0	0				
PCE 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				
MLF 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				
FinalVolume:	130	399	0	0	441	211	200	0	96	0	0	0				
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Lanes:	0.25	0.75	0.00	0.00	1.00	1.00	0.68	0.00	0.32	0.00	0.00	0.00				
Final Sat.:	466	1434	0	0	1900	1900	1283	0	617	0	0	0				
Capacity Analysis Module:																
Vol/Sat:	0.28	0.28	0.00	0.00	0.23	0.11	0.16	0.00	0.16	0.00	0.00	0.00				
Crit Moves:	****				****		****									
Green/Cycle:	0.33	0.61	0.00	0.00	0.28	0.28	0.19	0.00	0.19	0.00	0.00	0.00				
Volume/Cap:	0.83	0.45	0.00	0.00	0.83	0.40	0.83	0.00	0.83	0.00	0.00	0.00				
Delay/Veh:	27.6	6.5	0.0	0.0	31.2	18.1	38.8	0.0	38.8	0.0	0.0	0.0				
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
AdjDel/Veh:	27.6	6.5	0.0	0.0	31.2	18.1	38.8	0.0	38.8	0.0	0.0	0.0				
LOS by Move:	C	A	A	A	C	B	D	A	D	A	A	A				
HCM2kAvgQ:	12	6	0	0	11	4	8	0	8	0	0	0				

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0215 (c) 2008 Dowling Assoc. Licensed to KUNZMAN ASSOC, ORANGE CA

Canyon Hills Residential PA-32B
Existing Plus Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Average Delay (sec/veh): 4.7 Worst Case Level Of Service: C[21.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0	0 0		0 0 0	1 0		0 0 1!	0 0		0 0 0	0 0	
Volume Module:												
Base Vol:	32	329	0	0	250	142	145	0	42	0	0	0
Growth 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
Initial Bse:	32	329	0	0	250	142	145	0	42	0	0	0
Added Vol:	7	0	0	0	0	16	9	0	4	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	39	329	0	0	250	158	154	0	46	0	0	0
User 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
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	40	334	0	0	254	161	156	0	47	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	40	334	0	0	254	161	156	0	47	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	415	xxxx	xxxxx	xxxx	xxxx	xxxxx	748	748	334	xxxx	xxxx	xxxxx
Potent Cap.:	1155	xxxx	xxxxx	xxxx	xxxx	xxxxx	383	343	712	xxxx	xxxx	xxxxx
Move Cap.:	1155	xxxx	xxxxx	xxxx	xxxx	xxxxx	373	331	712	xxxx	xxxx	xxxxx
Volume/Cap:	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.42	0.00	0.07	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	419	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.6	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	21.4	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	C	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			21.4			xxxxxx		
ApproachLOS:	*			*			C			*		

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Project
Evening Peak Hour With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

****

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

****

Cycle (sec): 60 Critical Vol./Cap.(X): 0.375
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 9.0
Optimal Cycle: OPTIMIZED Level Of Service: A

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0 0	0	0 0	0 1	0	0 0	1! 0	0	0 0	0 0	0
Volume Module:												
Base Vol:	32	329	0	0	250	142	145	0	42	0	0	0
Growth 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
Initial Bse:	32	329	0	0	250	142	145	0	42	0	0	0
Added Vol:	7	0	0	0	0	16	9	0	4	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	39	329	0	0	250	158	154	0	46	0	0	0
User 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
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	40	334	0	0	254	161	156	0	47	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	40	334	0	0	254	161	156	0	47	0	0	0
PCE 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
MLF 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
FinalVolume:	40	334	0	0	254	161	156	0	47	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.11	0.89	0.00	0.00	0.61	0.39	0.77	0.00	0.23	0.00	0.00	0.00
Final Sat.:	201	1699	0	0	1164	736	1463	0	437	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.00	0.00	0.22	0.22	0.11	0.00	0.11	0.00	0.00	0.00
Crit Moves:					****		****					
Green/Cycle:	0.58	0.58	0.00	0.00	0.58	0.58	0.29	0.00	0.29	0.00	0.00	0.00
Volume/Cap:	0.34	0.34	0.00	0.00	0.38	0.38	0.38	0.00	0.38	0.00	0.00	0.00
Delay/Veh:	6.7	6.7	0.0	0.0	6.9	6.9	17.6	0.0	17.6	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	6.7	6.7	0.0	0.0	6.9	6.9	17.6	0.0	17.6	0.0	0.0	0.0
LOS by Move:	A	A	A	A	A	A	B	A	B	A	A	A
HCM2kAvgQ:	4	4	0	0	4	4	3	0	3	0	0	0

****

Note: Queue reported is the number of cars per lane.

****

Opening Year (2016) Without Project

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Railroad Canyon Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.798
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 34.6
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Lanes:	1 0	3 0	1	1 0	3 0	1	1 0	0 1	0	1 1	0 1	0
Volume Module:												
Base Vol:	12	555	320	281	992	74	28	36	10	752	79	289
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	12	577	333	292	1032	77	29	37	10	782	82	301
Added Vol:	0	69	44	0	108	0	0	0	0	131	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	12	646	377	292	1140	77	29	37	10	913	82	301
User 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
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	15	778	454	352	1372	93	35	45	13	1100	99	362
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	778	454	352	1372	93	35	45	13	1100	99	362
PCE 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
MLF 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
FinalVolume:	15	778	454	352	1372	93	35	45	13	1100	99	362
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.78	0.22	2.00	0.21	0.79
Final Sat.:	1900	5187	1900	1900	5187	1900	1900	1487	413	3610	387	1418
Capacity Analysis Module:												
Vol/Sat:	0.01	0.15	0.24	0.19	0.26	0.05	0.02	0.03	0.03	0.30	0.26	0.26
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.18	0.55	0.22	0.32	0.32	0.07	0.07	0.07	0.37	0.37	0.37
Volume/Cap:	0.09	0.83	0.44	0.83	0.83	0.15	0.26	0.43	0.43	0.83	0.70	0.70
Delay/Veh:	42.5	45.9	13.8	50.1	35.2	24.5	45.1	46.9	46.9	32.1	27.9	27.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	42.5	45.9	13.8	50.1	35.2	24.5	45.1	46.9	46.9	32.1	27.9	27.9
LOS by Move:	D	D	B	D	D	C	D	D	D	C	C	C
HCM2kAvgQ:	0	11	8	13	17	2	1	2	2	19	14	14

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Railroad Canyon Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 70 Critical Vol./Cap.(X): 0.763
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 25.0
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Lanes:	1 0	3 0	1	1 0	3 0	1	1 0	0 1	0	1 1	0 1	0
Volume Module:												
Base Vol:	62	1058	456	245	669	54	59	58	16	306	43	251
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	64	1100	474	255	696	56	61	60	17	318	45	261
Added Vol:	0	131	148	0	104	0	0	0	0	87	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	1231	622	255	800	56	61	60	17	405	45	261
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	68	1302	658	269	845	59	65	64	18	428	47	276
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	1302	658	269	845	59	65	64	18	428	47	276
PCE 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
MLF 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
FinalVolume:	68	1302	658	269	845	59	65	64	18	428	47	276
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.78	0.22	1.80	0.20	1.00
Final Sat.:	1900	5187	1900	1900	5187	1900	1900	1489	411	3251	359	1805
Capacity Analysis Module:												
Vol/Sat:	0.04	0.25	0.35	0.14	0.16	0.03	0.03	0.04	0.04	0.13	0.13	0.15
Crit Moves:		****		****				****				****
Green/Cycle:	0.18	0.31	0.50	0.17	0.30	0.30	0.10	0.10	0.10	0.19	0.19	0.19
Volume/Cap:	0.20	0.81	0.70	0.81	0.54	0.10	0.34	0.43	0.43	0.70	0.70	0.81
Delay/Veh:	24.5	25.6	15.8	41.9	20.9	17.8	30.4	31.2	31.2	28.7	28.7	32.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.5	25.6	15.8	41.9	20.9	17.8	30.4	31.2	31.2	28.7	28.7	32.8
LOS by Move:	C	C	B	D	C	B	C	C	C	C	C	C
HCM2kAvgQ:	1	12	12	8	6	1	2	2	2	7	7	9

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Hermosa Drive (NS) at Canyon Hills Road(EW)

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[12.9]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0 0 1			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	245	0	0	298	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	0	0	0	0	0	0	0	255	0	0	310	0
Added Vol:	14	0	14	0	0	0	0	113	5	5	44	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	14	0	14	0	0	0	0	368	5	5	354	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	15	0	15	0	0	0	0	387	5	5	373	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	15	0	15	0	0	0	0	387	5	5	373	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	773	xxxx	390	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	392	xxxx	xxxxx
Potent Cap.:	370	xxxx	663	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1177	xxxx	xxxxx
Move Cap.:	369	xxxx	663	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1177	xxxx	xxxxx
Volume/Cap:	0.04	xxxx	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	0.1	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	15.2	xxxx	10.6	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx
LOS by Move:	C	*	B	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:	12.9			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Hermosa Drive (NS) at Canyon Hills Road(EW)

****

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[11.7]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0	0	1	0 0 0	0	0	0 0 0	1	0	0 1 0	0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	187	0	0	174	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	0	0	0	0	0	0	0	194	0	0	181	0
Added Vol:	9	0	9	0	0	0	0	81	16	16	129	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	0	9	0	0	0	0	275	16	16	310	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	9	0	9	0	0	0	0	290	17	17	326	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	9	0	9	0	0	0	0	290	17	17	326	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	658	xxxx	298	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	307	xxxx	xxxxx
Potent Cap.:	432	xxxx	746	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1265	xxxx	xxxxx
Move Cap.:	428	xxxx	746	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1265	xxxx	xxxxx
Volume/Cap:	0.02	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	0.0	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	13.6	xxxx	9.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx
LOS by Move:	B	*	A	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:		11.7		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		B			*			*			*	

****

Note: Queue reported is the number of cars per lane.

****

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Average Delay (sec/veh): 172.3 Worst Case Level Of Service: F[724.9]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	-	R	L	- T	-	R	L	- T	-	R	L	- T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	0 1	0	0	0	0 0	0	1	0	0 0	1!	0	0	0 0	0	0	0
Volume Module:																
Base Vol:	114	357		0	0	394		184	165		0	80	0		0	0
Growth Adj:	1.04	1.04		1.04	1.04	1.04		1.04	1.04		1.04	1.04	1.04		1.04	1.04
Initial Bse:	119	371		0	0	410		191	172		0	83	0		0	0
Added Vol:	20	69		0	0	24		29	87		0	40	0		0	0
PasserByVol:	0	0		0	0	0		0	0		0	0	0		0	0
Initial Fut:	139	440		0	0	434		220	259		0	123	0		0	0
User 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
PHF Adj:	0.89	0.89		0.89	0.89	0.89		0.89	0.89		0.89	0.89	0.89		0.89	0.89
PHF Volume:	155	492		0	0	485		246	289		0	138	0		0	0
Reduct Vol:	0	0		0	0	0		0	0		0	0	0		0	0
FinalVolume:	155	492		0	0	485		246	289		0	138	0		0	0
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx	
Capacity Module:																
Cnflict Vol:	731	xxxx	xxxxx	xxxx	xxxx	xxxxx			1410	1410		608	xxxx	xxxx	xxxxx	
Potent Cap.:	882	xxxx	xxxxx	xxxx	xxxx	xxxxx			154	140		499	xxxx	xxxx	xxxxx	
Move Cap.:	882	xxxx	xxxxx	xxxx	xxxx	xxxxx			131	113		499	xxxx	xxxx	xxxxx	
Volume/Cap:	0.18	xxxx	xxxx	xxxx	xxxx	xxxx			2.20	0.00		0.28	xxxx	xxxx	xxxx	
Level Of Service Module:																
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	
Control Del:	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
LOS by Move:	A	*	*	*	*	*			*	*	*		*	*	*	
Movement:	LT -	LTR -	RT	LT -	LTR -	RT			LT -	LTR -	RT		LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			xxxx	172	xxxxx		xxxx	xxxx	xxxxx	
SharedQueue:	0.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	36.3	xxxxx		xxxxx	xxxx	xxxxx	
Shrd ConDel:	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx			xxxxx	725	xxxxx		xxxxx	xxxx	xxxxx	
Shared LOS:	A	*	*	*	*	*			*	F	*		*	*	*	
ApproachDel:	xxxxxx			xxxxxx					724.9				xxxxxx			
ApproachLOS:	*			*					F				*			

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative
Morning Peak Hour With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 60 Critical Vol./Cap.(X): 0.703
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 13.8
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	0	0	0
Lanes:	0 1	0 0	0	0 0	0 1	0	0 0	1! 0	0	0 0	0 0	0
Volume Module:												
Base Vol:	114	357	0	0	394	184	165	0	80	0	0	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	119	371	0	0	410	191	172	0	83	0	0	0
Added Vol:	20	69	0	0	24	29	87	0	40	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	139	440	0	0	434	220	259	0	123	0	0	0
User 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
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	155	492	0	0	485	246	289	0	138	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	155	492	0	0	485	246	289	0	138	0	0	0
PCE 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
MLF 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
FinalVolume:	155	492	0	0	485	246	289	0	138	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.24	0.76	0.00	0.00	0.66	0.34	0.68	0.00	0.32	0.00	0.00	0.00
Final Sat.:	455	1445	0	0	1260	640	1287	0	613	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.34	0.34	0.00	0.00	0.38	0.38	0.22	0.00	0.22	0.00	0.00	0.00
Crit Moves:					****		****					
Green/Cycle:	0.55	0.55	0.00	0.00	0.55	0.55	0.32	0.00	0.32	0.00	0.00	0.00
Volume/Cap:	0.62	0.62	0.00	0.00	0.70	0.70	0.70	0.00	0.70	0.00	0.00	0.00
Delay/Veh:	10.5	10.5	0.0	0.0	12.2	12.2	21.7	0.0	21.7	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.5	10.5	0.0	0.0	12.2	12.2	21.7	0.0	21.7	0.0	0.0	0.0
LOS by Move:	B	B	A	A	B	B	C	A	C	A	A	A
HCM2kAvgQ:	9	9	0	0	11	11	8	0	8	0	0	0

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Average Delay (sec/veh): 19.9 Worst Case Level Of Service: F[90.7]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	0 1	0	0	0	0 0	0	1	0	0 0	1!	0	0	0 0	0	0	0
Volume Module:																
Base Vol:	32	329	0	0	250	142	145	0	42	0	0	0				
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04				
Initial Bse:	33	342	0	0	260	148	151	0	44	0	0	0				
Added Vol:	47	46	0	0	78	98	58	0	33	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	80	388	0	0	338	246	209	0	77	0	0	0				
User 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				
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98				
PHF Volume:	82	394	0	0	343	250	212	0	78	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	82	394	0	0	343	250	212	0	78	0	0	0				
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	593	xxxx	xxxxx	xxxx	xxxx	xxxxx	1026	1026	468	xxxx	xxxx	xxxxx				
Potent Cap.:	993	xxxx	xxxxx	xxxx	xxxx	xxxxx	262	237	599	xxxx	xxxx	xxxxx				
Move Cap.:	993	xxxx	xxxxx	xxxx	xxxx	xxxxx	245	216	599	xxxx	xxxx	xxxxx				
Volume/Cap:	0.08	xxxx	xxxx	xxxx	xxxx	xxxx	0.87	0.00	0.13	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*				
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	291	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.3	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	9.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	90.7	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	A	*	*	*	*	*	*	F	*	*	*	*				
ApproachDel:	xxxxxx			xxxxxx			90.7			xxxxxx						
ApproachLOS:	*			*			F			*						

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative
Evening Peak Hour With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 60 Critical Vol./Cap.(X): 0.536
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 10.2
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Prot+Permit			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	0	0	0
Lanes:	0 1	0 0	0	0 0	0 1	0	0 0	1! 0	0	0 0	0 0	0
Volume Module:												
Base Vol:	32	329	0	0	250	142	145	0	42	0	0	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	33	342	0	0	260	148	151	0	44	0	0	0
Added Vol:	47	46	0	0	78	98	58	0	33	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	388	0	0	338	246	209	0	77	0	0	0
User 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
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	82	394	0	0	343	250	212	0	78	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	394	0	0	343	250	212	0	78	0	0	0
PCE 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
MLF 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
FinalVolume:	82	394	0	0	343	250	212	0	78	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.17	0.83	0.00	0.00	0.58	0.42	0.73	0.00	0.27	0.00	0.00	0.00
Final Sat.:	326	1574	0	0	1100	800	1390	0	510	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.25	0.25	0.00	0.00	0.31	0.31	0.00	0.00	0.15	0.00	0.00	0.00
Crit Moves:					****		****			****		
Green/Cycle:	0.58	0.58	0.00	0.00	0.58	0.58	0.28	0.00	0.28	0.00	0.00	0.00
Volume/Cap:	0.43	0.43	0.00	0.00	0.54	0.54	0.54	0.00	0.54	0.00	0.00	0.00
Delay/Veh:	7.3	7.3	0.0	0.0	8.1	8.1	19.2	0.0	19.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.3	7.3	0.0	0.0	8.1	8.1	19.2	0.0	19.2	0.0	0.0	0.0
LOS by Move:	A	A	A	A	A	A	B	A	B	A	A	A
HCM2kAvgQ:	5	5	0	0	7	7	5	0	5	0	0	0

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0215 (c) 2008 Dowling Assoc. Licensed to KUNZMAN ASSOC, ORANGE CA

Opening Year (2016) With Project

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative Plus Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

****

Intersection #1 Railroad Canyon Road (NS) at Canyon Hills Road(EW)

****

Cycle (sec): 100 Critical Vol./Cap.(X): 0.806
Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 35.0
Optimal Cycle: OPTIMIZED Level Of Service: C

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Lanes:	1 0 3 0 1			1 0 3 0 1			1 0 0 1 0			1 1 0 1 0		
Volume Module:												
Base Vol:	12	555	320	281	992	74	28	36	10	752	79	289
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	12	577	333	292	1032	77	29	37	10	782	82	301
Added Vol:	0	69	51	0	108	0	0	0	0	152	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	12	646	384	292	1140	77	29	37	10	934	82	301
User 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
PHF Adj:	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
PHF Volume:	15	778	462	352	1372	93	35	45	13	1125	99	362
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	778	462	352	1372	93	35	45	13	1125	99	362
PCE 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
MLF 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
FinalVolume:	15	778	462	352	1372	93	35	45	13	1125	99	362
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.78	0.22	2.00	0.21	0.79
Final Sat.:	1900	5187	1900	1900	5187	1900	1900	1487	413	3610	387	1418
Capacity Analysis Module:												
Vol/Sat:	0.01	0.15	0.24	0.19	0.26	0.05	0.02	0.03	0.03	0.31	0.26	0.26
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.18	0.55	0.22	0.32	0.32	0.07	0.07	0.07	0.37	0.37	0.37
Volume/Cap:	0.09	0.84	0.44	0.84	0.84	0.15	0.26	0.43	0.43	0.84	0.69	0.69
Delay/Veh:	42.6	46.6	13.7	51.3	35.9	24.7	45.1	46.9	46.9	32.3	27.5	27.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	42.6	46.6	13.7	51.3	35.9	24.7	45.1	46.9	46.9	32.3	27.5	27.5
LOS by Move:	D	D	B	D	D	C	D	D	D	C	C	C
HCM2kAvgQ:	0	11	8	13	17	2	1	2	2	19	13	13

****

Note: Queue reported is the number of cars per lane.

****

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative Plus Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Railroad Canyon Road (NS) at Canyon Hills Road(EW)

Cycle (sec):	70	Critical Vol./Cap.(X):	0.763
Loss Time (sec):	16 (Y+R=4.0 sec)	Average Delay (sec/veh):	25.2
Optimal Cycle: OPTIMIZED		Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ovl			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Lanes:	1 0	3 0	1	1 0	3 0	1	1 0	0 1	0	1 1	0 1	0
Volume Module:												
Base Vol:	62	1058	456	245	669	54	59	58	16	306	43	251
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	64	1100	474	255	696	56	61	60	17	318	45	261
Added Vol:	0	131	171	0	104	0	0	0	0	101	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	64	1231	645	255	800	56	61	60	17	419	45	261
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	68	1302	682	269	845	59	65	64	18	443	47	276
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	1302	682	269	845	59	65	64	18	443	47	276
PCE 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
MLF 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
FinalVolume:	68	1302	682	269	845	59	65	64	18	443	47	276
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.78	0.22	1.81	0.19	1.00
Final Sat.:	1900	5187	1900	1900	5187	1900	1900	1489	411	3262	348	1805
Capacity Analysis Module:												
Vol/Sat:	0.04	0.25	0.36	0.14	0.16	0.03	0.03	0.04	0.04	0.14	0.14	0.15
Crit Moves:		****		****				****				****
Green/Cycle:	0.18	0.31	0.50	0.17	0.30	0.30	0.10	0.10	0.10	0.19	0.19	0.19
Volume/Cap:	0.20	0.81	0.72	0.81	0.54	0.10	0.34	0.43	0.43	0.72	0.72	0.81
Delay/Veh:	24.5	25.6	16.6	41.9	20.9	17.8	30.4	31.2	31.2	29.2	29.2	32.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.5	25.6	16.6	41.9	20.9	17.8	30.4	31.2	31.2	29.2	29.2	32.7
LOS by Move:	C	C	B	D	C	B	C	C	C	C	C	C
HCM2kAvgQ:	1	12	13	8	6	1	2	2	2	7	7	9

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0215 (c) 2008 Dowling Assoc. Licensed to KUNZMAN ASSOC, ORANGE CA

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative Plus Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Hermosa Drive (NS) at Canyon Hills Road(EW)

****

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: B[13.5]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0 0 1			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	245	0	0	298	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	0	0	0	0	0	0	0	255	0	0	310	0
Added Vol:	34	0	34	0	0	0	0	113	12	12	44	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	34	0	34	0	0	0	0	368	12	12	354	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	36	0	36	0	0	0	0	387	13	13	373	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	36	0	36	0	0	0	0	387	13	13	373	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	791	xxxx	393	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	400	xxxx	xxxxx
Potent Cap.:	361	xxxx	660	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1170	xxxx	xxxxx
Move Cap.:	358	xxxx	660	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1170	xxxx	xxxxx
Volume/Cap:	0.10	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	0.2	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	16.2	xxxx	10.8	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx
LOS by Move:	C	*	B	*	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.1	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:	13.5			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative Plus Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Hermosa Drive (NS) at Canyon Hills Road(EW)

****

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: B[12.5]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 0 0 1			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	187	0	0	174	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	0	0	0	0	0	0	0	194	0	0	181	0
Added Vol:	23	0	23	0	0	0	0	81	39	39	129	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	23	0	23	0	0	0	0	275	39	39	310	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	24	0	24	0	0	0	0	290	41	41	326	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	24	0	24	0	0	0	0	290	41	41	326	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	719	xxxx	311	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	331	xxxx	xxxxx
Potent Cap.:	398	xxxx	734	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1240	xxxx	xxxxx
Move Cap.:	388	xxxx	734	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1240	xxxx	xxxxx
Volume/Cap:	0.06	xxxx	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.03	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	0.1	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	14.9	xxxx	10.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
LOS by Move:	B	*	B	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	A	*	*
ApproachDel:	12.5			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative Plus Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Average Delay (sec/veh): 197.8 Worst Case Level Of Service: F[803.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 1 0 0 0			0 0 0 1 0			0 0 1! 0 0			0 0 0 0 0		
Volume Module:												
Base Vol:	114	357	0	0	394	184	165	0	80	0	0	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	119	371	0	0	410	191	172	0	83	0	0	0
Added Vol:	22	69	0	0	24	34	102	0	46	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	141	440	0	0	434	225	274	0	129	0	0	0
User 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
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	157	492	0	0	485	252	306	0	144	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	157	492	0	0	485	252	306	0	144	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	737	xxxx	xxxxx	xxxx	xxxx	xxxxx	1418	1418	611	xxxx	xxxx	xxxxx
Potent Cap.:	878	xxxx	xxxxx	xxxx	xxxx	xxxxx	152	138	497	xxxx	xxxx	xxxxx
Move Cap.:	878	xxxx	xxxxx	xxxx	xxxx	xxxxx	129	111	497	xxxx	xxxx	xxxxx
Volume/Cap:	0.18	xxxx	xxxx	xxxx	xxxx	xxxx	2.36	0.00	0.29	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	10.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	170	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	39.4	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	10.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	803	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			803.1			xxxxxx		
ApproachLOS:	*			*			F			*		

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative Plus Project
Morning Peak Hour With Improvments

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 60 Critical Vol./Cap.(X): 0.721
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 14.5
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T	- R		L - T	- R		L - T	- R		L - T	- R	
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7 7	7		7 7	7		7 7	7		0 0	0	
Lanes:	0 1 0	0	0	0 0	1	0	0 0	1!	0	0 0	0	0
Volume Module:												
Base Vol:	114 357	0	0	394	184		165	0	80	0	0	0
Growth Adj:	1.04 1.04	1.04	1.04	1.04	1.04		1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	119 371	0	0	410	191		172	0	83	0	0	0
Added Vol:	22 69	0	0	24	34		102	0	46	0	0	0
PasserByVol:	0 0	0	0	0	0		0	0	0	0	0	0
Initial Fut:	141 440	0	0	434	225		274	0	129	0	0	0
User 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
PHF Adj:	0.89 0.89	0.89	0.89	0.89	0.89		0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	157 492	0	0	485	252		306	0	144	0	0	0
Reduct Vol:	0 0	0	0	0	0		0	0	0	0	0	0
Reduced Vol:	157 492	0	0	485	252		306	0	144	0	0	0
PCE 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
MLF 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
FinalVolume:	157 492	0	0	485	252		306	0	144	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900 1900	1900	1900	1900	1900		1900	1900	1900	1900	1900	1900
Adjustment:	1.00 1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.24 0.76	0.00	0.00	0.66	0.34		0.68	0.00	0.32	0.00	0.00	0.00
Final Sat.:	460 1440	0	0	1250	650		1291	0	609	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.34 0.34	0.00	0.00	0.39	0.39		0.24	0.00	0.24	0.00	0.00	0.00
Crit Moves:				****			****					
Green/Cycle:	0.54 0.54	0.00	0.00	0.54	0.54		0.33	0.00	0.33	0.00	0.00	0.00
Volume/Cap:	0.64 0.64	0.00	0.00	0.72	0.72		0.72	0.00	0.72	0.00	0.00	0.00
Delay/Veh:	11.1 11.1	0.0	0.0	13.0	13.0		21.8	0.0	21.8	0.0	0.0	0.0
User DelAdj:	1.00 1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.1 11.1	0.0	0.0	13.0	13.0		21.8	0.0	21.8	0.0	0.0	0.0
LOS by Move:	B B	A	A	B	B		C	A	C	A	A	A
HCM2kAvgQ:	9 9	0	0	12	12		9	0	9	0	0	0

Note: Queue reported is the number of cars per lane.

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative Plus Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

****

Average Delay (sec/veh): 25.6 Worst Case Level Of Service: F[115.4]

****

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Uncontrolled						Uncontrolled						Stop Sign						Stop Sign					
Rights:	Include						Include						Include						Include					
Lanes:	0	1	0	0	0		0	0	0	1	0		0	0	1!	0	0		0	0	0	0	0	
Volume Module:																								
Base Vol:	32	329		0		0	250		142				145		0		42		0		0		0	
Growth Adj:	1.04	1.04		1.04		1.04	1.04		1.04				1.04		1.04		1.04		1.04		1.04		1.04	
Initial Bse:	33	342		0		0	260		148				151		0		44		0		0		0	
Added Vol:	54	46		0		0	78		114				67		0		37		0		0		0	
PasserByVol:	0	0		0		0	0		0				0		0		0		0		0		0	
Initial Fut:	87	388		0		0	338		262				218		0		81		0		0		0	
User 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	
PHF Adj:	0.98	0.98		0.98		0.98	0.98		0.98				0.98		0.98		0.98		0.98		0.98		0.98	
PHF Volume:	89	394		0		0	343		266				221		0		82		0		0		0	
Reduct Vol:	0	0		0		0	0		0				0		0		0		0		0		0	
FinalVolume:	89	394		0		0	343		266				221		0		82		0		0		0	
Critical Gap Module:																								
Critical Gp:	4.1	xxxx		xxxxx		xxxxx	xxxx		xxxxx				6.4		6.5		6.2		xxxxx		xxxx		xxxxx	
FollowUpTim:	2.2	xxxx		xxxxx		xxxxx	xxxx		xxxxx				3.5		4.0		3.3		xxxxx		xxxx		xxxxx	
Capacity Module:																								
Cnflict Vol:	609	xxxx		xxxxx		xxxx	xxxx		xxxxx				1048		1048		476		xxxx		xxxx		xxxxx	
Potent Cap.:	979	xxxx		xxxxx		xxxx	xxxx		xxxxx				255		230		593		xxxx		xxxx		xxxxx	
Move Cap.:	979	xxxx		xxxxx		xxxx	xxxx		xxxxx				236		208		593		xxxx		xxxx		xxxxx	
Volume/Cap:	0.09	xxxx		xxxx		xxxx	xxxx		xxxx				0.94		0.00		0.14		xxxx		xxxx		xxxx	
Level Of Service Module:																								
2Way95thQ:	0.3	xxxx		xxxxx		xxxx	xxxx		xxxxx				xxxx		xxxx		xxxxx		xxxx		xxxx		xxxxx	
Control Del:	9.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx				xxxxx		xxxx		xxxxx		xxxxx		xxxx		xxxxx	
LOS by Move:	A	*		*		*	*		*				*		*		*		*		*		*	
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx				xxxx		282		xxxxx		xxxx		xxxx		xxxxx	
SharedQueue:	0.3	xxxx		xxxxx		xxxxx	xxxx		xxxxx				xxxxx		12.1		xxxxx		xxxxx		xxxx		xxxxx	
Shrd ConDel:	9.0	xxxx		xxxxx		xxxxx	xxxx		xxxxx				xxxxx		115		xxxxx		xxxxx		xxxx		xxxxx	
Shared LOS:	A	*		*		*	*		*				*		F		*		*		*		*	
ApproachDel:	xxxxxx						xxxxxx						115.4						xxxxxx					
ApproachLOS:	*						*						F						*					

****

Note: Queue reported is the number of cars per lane.

****

Canyon Hills Residential PA-32B
Existing Plus Ambient Growth Plus Cumulative Plus Project
Evening Peak Hour With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Murrieta Road (NS) at Canyon Hills Road(EW)

Cycle (sec): 60 Critical Vol./Cap.(X): 0.554
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 10.5
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	0	0	0
Lanes:	0 1	0 0	0	0 0	0 1	0	0 0	1! 0	0	0 0	0 0	0
Volume Module:												
Base Vol:	32	329	0	0	250	142	145	0	42	0	0	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	33	342	0	0	260	148	151	0	44	0	0	0
Added Vol:	54	46	0	0	78	114	67	0	37	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	388	0	0	338	262	218	0	81	0	0	0
User 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
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	89	394	0	0	343	266	221	0	82	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	89	394	0	0	343	266	221	0	82	0	0	0
PCE 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
MLF 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
FinalVolume:	89	394	0	0	343	266	221	0	82	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.18	0.82	0.00	0.00	0.56	0.44	0.73	0.00	0.27	0.00	0.00	0.00
Final Sat.:	349	1551	0	0	1071	829	1386	0	514	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.25	0.25	0.00	0.00	0.32	0.32	0.16	0.00	0.16	0.00	0.00	0.00
Crit Moves:					****		****					
Green/Cycle:	0.58	0.58	0.00	0.00	0.58	0.58	0.29	0.00	0.29	0.00	0.00	0.00
Volume/Cap:	0.44	0.44	0.00	0.00	0.55	0.55	0.55	0.00	0.55	0.00	0.00	0.00
Delay/Veh:	7.4	7.4	0.0	0.0	8.5	8.5	19.3	0.0	19.3	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.4	7.4	0.0	0.0	8.5	8.5	19.3	0.0	19.3	0.0	0.0	0.0
LOS by Move:	A	A	A	A	A	A	B	A	B	A	A	A
HCM2kAvgQ:	5	5	0	0	8	8	5	0	5	0	0	0

Note: Queue reported is the number of cars per lane.

APPENDIX E

Traffic Signal Warrant Worksheet

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing

Major Street Name = **Murrieta Road**

Total of Both Approaches (VPH) = **753**

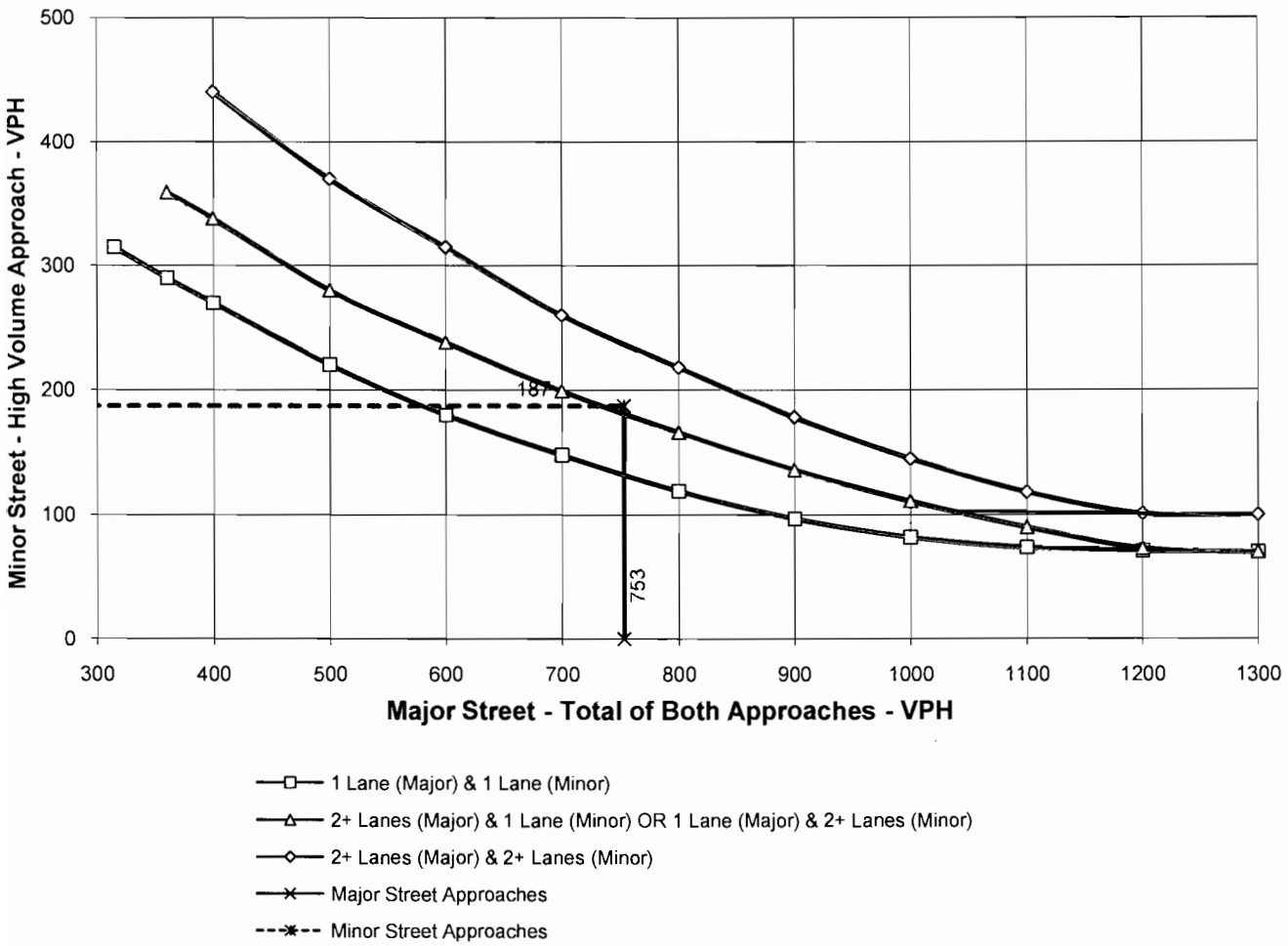
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Holland Road**

High Volume Approach (VPH) = **187**

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 APPROACHING WITH ONE LANE.

Kunzman Associates, Inc.

OVER 35 YEARS OF EXCELLENT SERVICE

1111 Town & Country Road, Suite 34
Orange, California 92868
(714) 973-8383

www.traffic-engineer.com