Lake Elsinore, California

Local Roadway Safety Plan for Railroad Canyon Road

Prepared for:
City of Lake Elsinore

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FEHR PEERS

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Introduction

The City of Lake Elsinore is committed to prioritizing safety and decreasing the number of traffic related deaths and serious injuries on Railroad Canyon Road. This Local Road Safety Plan (LRSP) proactively identifies and evaluates hot spots and systemic risk factors throughout the corridor and identifies proven countermeasures that can be implemented through roadway design changes, education, and enforcement. This plan applies a Safe System approach, an international best practice framework that provides the foundation for this LRSP, and it was developed in conjunction with key stakeholders. Preparation of this study also allows the City to be eligible for select State and Federal funding sources for improvements.

Local Road Safety Plan Background

A LRSP is a means for providing Lake Elsinore with an opportunity to address unique roadway safety needs while contributing to the success of the California Strategic Highway Safety Plan and statewide safety goals. The process of preparing an LRSP creates a framework to systemically identify and analyze safety problems and recommend safety improvements. The result is a prioritized list of improvements and actions that can demonstrate a defined need and contribute to the statewide plan. The LRSP offers a proactive approach to addressing safety needs and demonstrates Lake Elsinore's responsiveness to safety challenges.

This LRSP builds on the City's 2019 Systemic Safety Analysis Report Program (SSARP), which identified Railroad Canyon Road as a high-injury roadway segment, and prior safety improvements implemented along the corridor. This LRSP will provides the City and its major stakeholders with a blueprint for additional safety projects and will assist the City when it applies for future safety-related and more accessible funding. Cycle 11 of the Highway Safety Improvement Program (HSIP) in 2022 will require an LRSP for an agency to be eligible to apply for funds.

The Safe System Approach

Each day, people are killed and seriously injured on our roads. Crashes can irreversibly change the course of human lives, touching victims, their families and loved ones, and society as a whole. Through collective action on the part of all roadway system stakeholders - from system operators and vehicle manufacturers to law enforcement and everyday users - we can move to a Safe System approach that anticipates human mistakes, with the goal of eliminating fatal and serious injuries for all road users.

A Safe System acknowledges the vulnerability of the human body - in terms of the amount of kinetic energy transfer a body can withstand - when designing and operating a transportation network to

minimize serious consequences of crashes. According to the World Health Organization, the goal of a Safe System is to ensure that if crashes occur, they "do not result in serious human injury."[1]

The Safe System approach to road safety started internationally as part of the Vision Zero proclamation that no one should be killed or seriously injured on the road system.[2,3] It is founded on the principle that people make mistakes, and that the road system should be adapted to anticipate and accommodate human mistakes and the physiological and psychological limitations of humans.[4] Countries that have adopted the Safe System approach have had significant success reducing highway fatalities, with reductions in fatalities between 50 and 70 percent.[5]

The Institute of Transportation Engineers (ITE) and the Road to Zero Coalition's Safe Systems Explanation and Framework articulate that to anticipate human mistakes, a Safe System seeks to:

- Separate users in a physical space (e.g., sidewalks, dedicated bicycle facilities)
- Separate users in time (e.g., pedestrian scramble, dedicated turn phases)
- Alert users to potential hazards
- Accommodate human injury tolerance through interventions that reduce speed or impact force

Creating a Safe System means shifting a major share of the responsibility from road users to those who design the road transport system. "Individual road users have the responsibility to abide by laws and regulations"[1] and do so by exhibiting due care and proper behavior on the transportation system. While road users are responsible for their own behavior, this is a shared responsibility with those who design, operate, and maintain the transportation network: including the automotive industry, law enforcement, elected officials, and government bodies. In a Safe System, roadway system designers and operators take on the highest level of ethical responsibility.

Safety Partners – Riverside County Sherriff's Department

Sworn officers provide valuable input on trends they observe on the roads and are important partners in focusing enforcement resources on behaviors that are most closely associated with injuries and fatalities. Riverside County Sheriffs can also be an important partner in a multi-disciplinary approach to fatal and severe injury crash response, collision reporting, and education or engagement activities with the community.

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[1] World Health Organization (2011). Decade of Action for Road Safety 2011-2020. Retrieved from https://www.who.int/roadsafety/decade_of_action/plan/plan_en.pdf.
[2] Johansson, R. (2009). Vision Zero - Implementing a policy for traffic safety. Safety Science, 47, 826-831.
[3] Tingvall, C., & Haworth, N. (1999). An Ethical Approach to Safety and Mobility. Paper presented at the 6th ITE International Conference Road Safety and Traffic Enforcement. 6-7 September 1999, Melbourne, Australia.
[4] Belin, M.-Å., Tillgren, P., & Vedung, E. (2012). Vision Zero - a road safety policy innovation. International Journal of Injury Control and Safety Promotion, 19, 171-179.
[5] World Resources Institute (2018). Sustainable and Safe: A Vision and Guidance for Zero Road Deaths. Retrieved from https://www.wri.org/publication/sustainable-and-safe-vision-and-guidance-zero-road-deaths

Stakeholder meetings were held over the course of the project and included representatives from the Riverside County Sherriff's Department and City staff. Meeting topics included developing a shared vision for the plan, discussion of data analysis results, and stakeholder feedback on proposed projects.

Prior Efforts

In 2016, construction of the Westridge at Canyon Hills community began. A traffic signal was installed on Railroad Canyon Road at Tassel Way and enhancements were made to the existing traffic signal on Railroad Canyon Road at Westridge Way.

In 2019, the City of Lake Elsinore widened Railroad Canyon Road from two to three-lanes in each direction between Summerhill Drive and Tassel Way. Additionally, the roadway was repaved with high-friction pavement on Railroad Canyon Road near Church Road and chevron signs were installed at curves along the corridor. The City adopted the SSARP in 2019, which identified Railroad Canyon Road as a high-injury roadway segment.

In 2021, the City of Lake Elsinore installed a Speed Feedback Sign on Railroad Canyon Road westbound between Summerhill Drive and Church Road. Additionally, the existing streetlights were retrofitted with brighter LED lights.

Multi-agency high-visibility enforcement operations were recently conducted on the corridor through the partnership among the police departments of Menifee, Hemet, Murrieta, and the California Highway Patrol. The goal was to create traffic safety awareness among the motorists and residents in the region.

Lake Elsinore's Safety Vision Statement

Reduce fatalities and serious injuries on Railroad Canyon Road by making travel safer for all modes of transportation.

Collision Analysis

This analysis examines collision records acquired from the Statewide Integrated Traffic Records System (SWITRS) from 2015 through 2021. All figures related to the collision analysis are provided in **Appendix A**.

Collision Summary

From 2015 to 2021, there were 245 total collisions – 54% were property damage only collisions and 46% were injury collisions. 22 (or 9% of all collisions and 20% of injury collisions) included victims who were killed or severely injured (KSI). On average, three people are killed or severely injured each year on Railroad Canyon Road in Lake Elsinore due to traffic violence.

Collisions By Mode

Of the 245 total collisions, three (1%) involved pedestrians, three (1%) involved bicycles, eleven involved motorcycles (4%), and eleven involved trucks (4%). Pedestrians, bicycles, and motorcycles are disproportionality involved in 32% of all KSI collisions.

Collision Type

The four most common collision types on Railroad Canyon Road in Lake Elsinore are Rear End (33%), Hit Object (24%), Broadside (18%), and Sideswipe (16%). For KSI collisions, the most common collision types are Hit Object (45%), Broadside (18%) and Overturned (18%).

Primary Collision Factors

On Railroad Canyon Road in Lake Elsinore, the most common primary collision factors are Unsafe Speed (35%) and Improper Turning (32%), Traffic Signals and Signs (7%), and Driving Under the Influence (6%). For KSI collisions, the most common primary collision factors are Improper Turning (41%), Unsafe Speed (27%), and Driving Under the Influence (14%).

A driver under the influence of alcohol and/or drugs increases the likelihood of a collision resulting in a severe injury or a fatality. From 2015 to 2021, 6% of collisions involved a driver under the influence. The percentage increases to 14% for KSI collisions.

Time of Day

Studying the timing of collisions can provide context about the surrounding traffic and lighting conditions, which informs the selection of countermeasures. In Lake Elsinore, there is roadway lighting along the Railroad Canyon Road corridor.

The largest share of collisions occurred in the afternoon/evening between 12 PM and 6 PM (38%). Most KSI collisions occurred in the morning between 9 AM and 12 PM (14%) and in the evening between 3 PM

and 9 PM (55%). This pattern indicates that collisions along the corridor are more frequent during periods with higher traffic volume.

Hot Spot Analysis

The top intersections and roadway segments that account for a disproportionate share of collisions were identified as hot spots. A collision density map categorized by collision severity **Figure A-5** in **Appendix A**. Collisions were categorized as intersection collisions if they occurred within a 250-foot radius of an intersection; all other collisions were classified as a roadway segment collision. Hot spots were ranked by KSI collisions, as shown in **Table 1**.

Table 1: Hot Spot Analysis – Top Locations

	Location	KSI Collisions	Total Collisions	Collisions by Mode			
				Pedestrian	Bicycles	Motorcycle	Truck
1	Railroad Canyon Road between Summerhill Drive and Church Road	6	46	0	1	3	4
2	Railroad Canyon Road between Church Road and Tassel Way	6	22	1	0	2	2
3	Railroad Canyon Road & Church Road	3	18	0	0	1	0
4	Railroad Canyon Road & Summerhill Drive	2	74	0	1	2	4
5	Railroad Canyon Road & Westridge Way	1	17	1	1	1	0
6	Railroad Canyon Road between Westridge Way and Canyon Hills Road	1	17	0	0	0	0
7	Railroad Canyon Road between Canyon Hills Road and Canyon Lake	1	8	0	0	0	1
8	Railroad Canyon Road & Tassel Way	1	7	0	0	1	0
9	Railroad Canyon Road between Tassel Way and Westridge Way	1	2	0	0	0	0
10	Railroad Canyon Road & Canyon Hills Road	0	34	1	0	1	0

Source: Fehr & Peers.

Two hot spot locations were identified – 1) Railroad Canyon Road between Summerhill Drive and Church Road, and 2) Railroad Canyon Road between Church Road and Tassel Way. The collision summary for the two hot spots, as compared to collisions observed across the entire corridor, is presented in **Table 2**.

Table 2: Hot Spot Analysis - Collision Summary

Attribute	Entire Corridor		Hot Spot 1: Railroad Canyon Road between Summerhill Drive and Church Road		Hot Spot 2: Railroad Canyon Road between Church Road and Tassel Way	
	Total	KSI	Total	KSI	Total	KSI
Collision Type						
Rear End	80 (33%)	2 (9%)	11 (23%)	2 (33%)	4 (18%)	0 (0%)
Hit Object	58 (24%)	10 (43%)	18 (38%)	1 (17%)	13 (59%)	4 (67%)
Broadside	44 (18%)	4 (17%)	4 (9%)	1 (17%)	1 (5%)	1 (17%)
Sideswipe	38 (16%)	0 (0%)	5 (11%)	0 (0%)	3 (14%)	0 (0%)
Head-On	9 (4%)	0 (0%)	2 (4%)	0 (0%)	0 (0%)	0 (0%)
Overturned	8 (3%)	4 (17%)	5 (11%)	2 (33%)	0 (0%)	0 (0%)
Vehicle/Pedestrian	2 (1%)	1 (4%)	0 (0%)	0 (0%)	1 (5%)	1 (17%)
Other	6 (2%)	1 (4%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)
Primary Collision Factor						
Unsafe Speed	86 (29%)	6 (24%)	21 (42%)	3 (50%)	6 (24%)	1 (17%)
Improper Turning	78 (27%)	9 (36%)	17 (34%)	1 (17%)	11 (44%)	4 (67%)
Traffic Signals and Signs	18 (6%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Driving Under the Influence	15 (5%)	3 (12%)	4 (8%)	2 (33%)	2 (8%)	1 (17%)
Other	48 (14%)	3 (12%)	4 (8%)	0 (0%)	3 (12%)	0 (0%)
Time of Day						
Midnight - 3 AM	21 (7%)	2 (8%)	9 (18%)	0 (0%)	5 (20%)	2 (33%)
3 AM - 6 AM	11 (4%)	1 (4%)	3 (6%)	0 (0%)	3 (12%)	0 (0%)
6 AM - 9 AM	33 (11%)	1 (4%)	6 (12%)	1 (17%)	4 (16%)	0 (0%)
9 AM - Noon	35 (12%)	3 (12%)	6 (12%)	1 (17%)	2 (8%)	1 (17%)
Noon - 3 PM	48 (16%)	1 (4%)	8 (16%)	0 (0%)	2 (8%)	0 (0%)
3 PM - 6 PM	46 (16%)	7 (28%)	6 (12%)	2 (33%)	1 (4%)	0 (0%)
6 PM - 9 PM	29 (10%)	5 (20%)	4 (8%)	1 (17%)	3 (12%)	2 (33%)
9 PM - Midnight	22 (8%)	2 (8%)	4 (8%)	1 (17%)	2 (8%)	1 (17%)

Source: Fehr & Peers.

Hot Spot 1: Railroad Canyon Road between Summerhill Drive and Church Road

Railroad Canyon Road between Summerhill Drive and Church Road is a 0.8-mile windy roadway segment on rolling terrain with a grade upwards of 5%. The roadway typology contributes to the top two primary collision factors: 1) Unsafe Speed, and 2) Improper Turning.

Unsafe Speed was the most common primary collision factor, accounting for 42% of total collisions and 50% of KSI collisions (3 collisions). All three of the KSI collisions occurred during rainy or cloudy weather conditions on wet pavement, resulting in severe injuries. Two of three KSI collisions resulted in overturned vehicles and the other KSI collision was a Rear End. The 85th percentile speeds on the segment exceeds 50 miles per hour (mph) in the westbound (downhill) direction and 55 mph in the eastbound (uphill), as shown on **Figure A-3** in **Appendix A**.

The second most common primary collision factor was Improper Turning (i.e., failure to signal when lane changing), accounting for 36% of total collisions and 17% of KSI collisions (1 collision). The KSI collision was a Broadside collision that occurred approximately 500 feet west of Church Road, resulting in a severe injury.

Driving Under the Influence collisions are overrepresented in this segment when compared to the corridor average. Collisions with Driving Under the Influence as the primary collision factor accounted for 8% of total collisions as compared to 5% of total collisions on the corridor, and 33% of KSI collisions (2 collisions) as compared to 12% of KSI collisions on the corridor); both KSI collisions resulted in fatalities.

As mentioned previously, the City of Lake Elsinore recently installed a Speed Feedback Sign on Railroad Canyon Road between Summerhill Drive and Church Road in the westbound (downhill) direction.

Hot Spot 2: Railroad Canyon Road between Church Road and Tassel Way

Railroad Canyon Road between Church Road and Tassel Way is a 0.7-mile windy roadway segment on rolling terrain. Similar to Hot Spot 1, the top two primary collision factors are Unsafe Speed and Improper Turning.

Improper Turning was the most common primary collision factor, accounting for 44% of total collisions and 67% of KSI collisions (4 collisions). Three of the four KSI collisions occurred at night (6 PM – 6 AM). Of the three collisions that occurred at night, two were Hit Object collisions one of which resulted in a fatality, and the other was a hit-and-run Vehicle/Pedestrian collision that resulted in a severe injury. The other KSI collision was a Broadside collision that occurred during the morning around 10 AM, resulting in a fatality.

The second most common primary collision factor was Unsafe Speed, accounting for 24% of total collisions and 17% of KSI collisions (1 collision). The KSI collision was a Hit Object collision that resulted in a severe injury.

Similar to Hot Spot 1, Driving Under the Influence collisions are overrepresented in this segment when compared to the corridor average. Collisions with Driving Under the Influence as the primary collision factor accounted for 8% of total collisions as compared to 5% of total collisions on the corridor, and 17% of KSI collisions (1 collision) as compared to 12% of KSI collisions on the corridor. The KSI collision was a Hit Object collision that resulted in a fatality.

Corridor Trends

This analysis identified several collision trends and risk factors on Railroad Canyon Road in Lake Elsinore, including:

- The roadway typology is windy and hilly, contributing to the two most common primary collision factors, **Unsafe Speed** and **Improper Turning**. Combined, the two account for 67% of overall collisions and 68% of KSI collisions. The combination of high vehicular speeds on a roadway with frequent horizontal curves and elevation changes creates a less than ideal environment for lane-changing. Oftentimes the two are secondary collision factor when not listed as the primary collision factor.

- **Rear End** collisions are the most common collision type and typically occur during the day, when traffic volumes are highest. Unsafe Speed was listed as the primary collision factor for 74% of Rear End collisions and most Rear End collisions occurred near intersections. Given the high vehicular speeds on the corridor, longer clearance intervals (yellow and all-red times) may reduce hard-breaking at intersections, frequently associated with Rear End collisions.

- **Hit Object** collisions are the second most common collision type overall and the most common KSI collision type. Approximately one in six Hit Object collisions result in a severe injury or fatality; 50% of Hit Object type KSI collisions result in a fatality. Along Railroad Canyon Road between Summerhill Drive and Tassel Way, utility poles are located directly adjacent to the road, separated by only a curb.

- Roadway pavement friction plays a role in the severity of collisions, especially given the roadway typology. Collisions on **wet pavement** contributed to 9% of all collisions and 23% of KSI collisions. Lake Elsinore receives some kind of precipitation, on average, 33 days per year[6] or 9% of days in a year.

[6] Best Places (Accessed March 17, 2022). Climate in Lake Elsinore, California. Retrieved from https://www.bestplaces.net/climate/city/california/lake_elsinore.

Safety Strategies

The engineering and non-engineering (such as education and enforcement) countermeasure toolboxes, described below, provide ideas of potential safety strategies that could be considered along the Railroad Canyon Road corridor.

Engineering Countermeasures

Recommended engineering countermeasures along the Railroad Canyon Road corridor are presented on **Figure A-6** in **Appendix A**. The estimated cost, benefit, benefit/cost ratio (B/C ratio), and federal funding eligibility for each individual engineering countermeasure is listed in **Table 3**.

Since it is expected that the countermeasures will ultimately be grouped together for an HSIP application, the construction costs have been escalated to include fees associated with environmental costs, plans, specifications, and estimates (PS&E) costs, appraisals, acquisitions, and utility costs, and construction engineering costs. HSIP application B/C ratios may differ from what is presented in Table 3 depending on grant application requirements and how countermeasures are grouped together.

Most of the countermeasures are included in the 2020 Caltrans *Local Roadway Safety Manual* (LRSM) and can be advantageous for use in HSIP grant funding applications. The engineering countermeasure toolbox, provided in **Appendix B**, provides a more detailed description of each countermeasure, and provides a Caltrans-approved Crash Reduction Factor (CRF). The higher the CRF, the greater the expected reduction in collisions.

Table 3: Engineering Countermeasures

	Description	Cost[1]	Benefit[2]	B/C Ratio	Federal Funding Eligibility	Implementation
S02	Retroreflective borders on all signals	$40,000	$4,437,030	111	100%	Short-Term
S03	Extend yellow and all-red time	$30,000	$4,437,030	148	50%	Short-Term
R02	Relocate utility poles at Railroad Canyon Road & Church Road (7 total)	$330,000	$37,664,760	114	90%	Long-Term
R03	Median barriers along curved portions of the corridor	$470,000	$46,570,200	99	100%	Medium-Term
R04	Guardrails along the utility poles at Railroad Canyon Road & Church Road	$130,000	$26,903,400	207	100%	Medium-Term
R21	High-Friction Surface Treatment along entire corridor	$4,000,000	$51,227,220	13	100%	Medium-Term
R22	LED Chevron and curve ahead along curved portions of the corridor	$230,000	$8,071,020	35	100%	Short-Term
R27-A	Additional pavement reflectors along curved portions of the corridor	$2,000	$13,971,060	6,986	100%	Short-Term
R27-B	Retroreflective paint on the median curb along entire corridor	$280,000	$13,971,060	50	100%	Short-Term
R29	Solid lane striping to discourage lane-charging along curved portions of the corridor	$80,000	$41,913,180	524	100%	Short-Term
-	Right-turn pocket at Railroad Canyon Road & Church Road[3]	$2,000,000	-	-	-	Long-Term
-	Restripe the corridor with 6" pavement lane markings along entire corridor	$40,000	-	-	-	Long-Term
-	Speed feedback sign for eastbound drivers east of Summerhill Drive	$50,000	-	-	-	Short-Term

Notes:

1. Construction Costs are escalated to include 10% for Environmental costs, 15% for PS&E costs, 10% for Appraisals, Acquisitions, and Utility costs, and 10% for Construction Engineering costs.
2. Countermeasure benefits calculated following 2020 LRSM guidance using 5 years of observed collisions from 2017-2021.
3. This is a high-level cost estimate. Cost may vary significantly based on right-of-way, retaining walls, grading, and utility relocation.

Source: Fehr & Peers.

Non-Engineering Countermeasures

Recommended non-engineering countermeasures are derived from the 2020 National Highway Traffic Safety Administration (NHTSA) Countermeasures That Work, Tenth Edition. The non-engineering countermeasure toolbox, provided in **Appendix C**, categories specific countermeasures by collision factor and identifies the effectiveness and implementation time of each.

Education

Traffic safety education plays an important role in shaping and shifting behavior. Education on traffic safety requires a collaborative process among many stakeholders to achieve the goal of increased safety. Targeted education can be directed at vulnerable populations, with the help of local partners, and at certain behaviors of drivers, pedestrian, and bicyclists to deter specific collision types.

Public Education Media Campaign

A public education media campaign focused on discouraging drinking and driving and/or speeding, along with encouraging increased awareness of pedestrians and bicyclists at night and appropriate crosswalk behaviors can help promote behavior change. Messages about safe and responsible driving, moving over for EMS vehicles, awareness of bicyclists and pedestrians, and increasing visibility at night can help promote behaviors that prevent fatal and severe collisions. As an example, collaborating with local radio stations can help spread the message to drivers.

Lake Elsinore can develop targeted outreach education campaigns that focus on the common violations that lead to fatalities and severe injuries on Railroad Canyon Road. Based on common crash types over the past seven years in Lake Elsinore, education and outreach campaigns may include the programs listed here.

- Education campaign around driving under the influence (i.e., Safe Ride Home), as 20% of KSI crashes involved drugs or alcohol.
- Education campaign that emphasizes that speeding is deadly because unsafe speeding caused 33% of crashes and 20% of KSI crashes.

Enforcement

Enforcement reduces negative behaviors such as speeding or disobeying traffic signals. Deterrence policies focus on raising the actual and perceived risk of detection of negative behaviors.

High Visibility Enforcement

High visibility enforcement is a multifaceted approach that involves garnering public attention to traffic safety laws through highly visibly patrols such as checkpoints, saturation patrols, or message boards. The goal of high visibility enforcement is to promote voluntary compliance with traffic laws. High visibility enforcement can target specific traffic violations for a short period of time to encourage drivers to stop

engaging in a traffic violation. For example, speeding can be targeted in an area so that the public is aware that speed limits are enforced in the area.

Another high visibility enforcement strategy is publicized sobriety checkpoints which are used to deter impaired driving on national holidays or weekends where more people are likely to drink and drive.

Speed Limit Setting

The California Zero Traffic Fatalities Task Force conducted a year-long study to assess the existing speed limit setting methodology in California. The Task Force found that the existing methodology, which sets speed limits as the 85th percentile of speed and traffic surveys, is not flexible enough to meet the needs of many areas and recommends the development of a new context-sensitive approach that sets speed limits to prioritize safety for all users. Lower maximum speed limits reduce crashes and fatalities. While lower posted speeds can help reduce crashes, they are more effective at encouraging driving at desired speeds when implemented through comprehensive efforts including installation of road safety improvements or enforcement.

Under California Assembly Bill (AB) 43 local jurisdictions may begin using more flexible methodology in setting speed limits on June 30, 2024.

Implementation and Evaluation

Implementation

To successfully implement programs and projects, partnerships, funding, and coordination need to be proactively managed. Successful implementation requires sustained and coordinated support from key stakeholders, elected officials, and City staff.

While the primary purpose of this study is to prepare the City of Lake Elsinore to submit successful HSIP applications, safety projects can be funded through a wide range of additional sources at the regional, state, and federal levels. HSIP funds are largely awarded based on a benefit/cost analysis using a set of Caltrans-approved countermeasures with documented collision reduction factors and historic collision data. While many safety projects will perform well in the HSIP process, others may be successfully funded through other sources that consider additional factors, such as the Active Transportation Program (ATP). The sources in this chapter may be used to fund a broad scope of projects targeting air quality and sustainability, affordable housing, and transportation. Successful projects often entail creative solutions that address impact areas beyond transportation safety alone.

Local and Regional Sources

Riverside County Transportation Commission (RCTC) Transportation Development Act (TDA) Article 3 Bicycle and Pedestrian Facilities Program (SB 821)

Each year, 2% of the Local Transportation Fund (LTF) revenue is made available for bicycle and pedestrian facility projects under TDA Article 3, also known as SB 821. Eligible projects include sidewalks, access ramps, bicycle facilities, and bicycle plan development. A Call for Projects is issued biennially in February, and funds are allocated each June. The next funding opportunity is February 2023.

RCTC Measure A

Riverside County's first half-cent sales tax for transportation improvements through 2039.

Southern California Association of Governments (SCAG) Sustainable Communities Program

Provides direct technical assistance to SCAG member jurisdictions to complete planning and policy efforts that enable implementation of the regional Sustainable Communities Strategy (SCS). Grants are available in four categories: Civic Engagement, Equity & Environmental Justice; Smart Cities & Mobility Innovations; Housing & Sustainable Development; Active Transportation & Safety. The next funding opportunity for Active Transportation & Safety projects is expected to be Fall/Winter 2022 as the previous cycle closed December 2021.

SCAG Community Streets Mini-Grant Program

Competitive community grant program that funds safety projects. Awards are made up to $10,000. Projects aim to build street-level community resiliency and increase the safety of people most harmed by traffic injuries and fatalities. $277,000 was awarded to 31 projects in 2021. The next funding opportunity is Winter 2022.

State Sources

Highway Safety Improvement Program (HSIP)

HSIP is a core federal-aid program to States for the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. California's Local HSIP focuses on infrastructure projects with nationally recognized crash reduction factors (CRFs). This is the primary grant funding source to support roadway projects identified through the LRSP. Cycle 11 application materials are expected in Spring or Summer 2022.

California Strategic Growth Council (SGC) Transformative Climate Communities (TCC) Program

The Transformative Climate Communities (TCC) Program empowers the communities most impacted by pollution to choose their own goals, strategies, and projects to reduce greenhouse gas emissions and local air pollution. Round 4 applications are due June 10, 2022.

California SGC Affordable Housing and Sustainable Communities (AHSC) Program

The AHSC Program makes it easier for Californians to drive less by making sure housing, jobs, and key destinations are accessible by walking, biking, and transit. Round 7 is expected to open in 2023 as the previous cycle closed June 2021.

California Office of Traffic Safety (OTS) Grant Programs

OTS administers traffic safety grants in the following areas: Alcohol Impaired Driving, Distracted Driving, Drug-Impaired Driving, Emergency Medical Services, Motorcycle Safety, Occupant Protection, Pedestrian and Bicycle Safety, Police Traffic Services, Public Relations, Advertising, and Roadway Safety and Traffic Records. The next funding opportunity is expected to be Winter 2022 as the previous cycle closed January 31, 2022.

Active Transportation Program (ATP)

ATP is a statewide competitive grant application process with the goal of encouraging increased use of active modes of transportation. The ATP consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program with a focus to make California a national leader in active transportation. The ATP administered by the Division of Local Assistance, Office of State Programs. Cycle 6 applications are due June 15, 2022.

Caltrans Sustainable Communities Grants

To encourage local and regional planning that furthers state goals, including, but not limited to, the goals and best practices cited in the Regional Transportation Plan Guidelines adopted by the California Transportation Commission. The next funding opportunity is expected to be Fall 2022 as the previous cycle closed October 2021.

California Natural Resources Agency Urban Greening Program

This program supports projects that "use natural systems or systems that mimic natural systems to achieve multiple benefits." Eligible projects include "Non-motorized urban trails that provide safe routes for travel between residences, workplaces, commercial centers, and schools." The current funding cycle closes on March 28, 2022.

State Bill 1 (SB1) Local Streets and Roads Program (LSRP)

SB 1 dedicated approximately $1.5 billion per year in new formula revenues apportioned by the State Controller to cities and counties for basic road maintenance, rehabilitation, and critical safety projects on the local streets and roads system. The next funding opportunity is expected to be Summer/Fall 2022.

SB1 Local Partnership Program (LPP)

The purpose of this program is to provide local and regional transportation agencies that have passed sales tax measures, developer fees, or other imposed transportation fees with a continuous appropriation of $200 million annually from the Road Maintenance and Rehabilitation Account to fund road maintenance and rehabilitation, sound walls, and active transportation projects. There is also a competitive grant portion of this project. The next funding opportunity is expected to be Spring 2022.

Federal Sources

RAISE Grants (formerly BUILD and TIGER)

The Rebuilding American Infrastructure with Sustainability and Equity, or RAISE Discretionary Grant program, provides a unique opportunity for the DOT to invest in road, rail, transit, and port projects that promise to achieve national objectives. The program selection criteria this cycle encompass safety, environmental sustainability, quality of life, economic competitiveness, state of good repair, innovation, and partnerships with a broad range of stakeholders. The first round of RAISE grants awarded $417m to bicycle and pedestrian projects, and $30m for planning grants (eligible for the first time). The next funding opportunity is closing April 14, 2022.

Safe Streets for All Grants

The recent federal infrastructure bill established the new Safe Streets for All program to provide $5 billion in grant funding to develop and implement Vision Zero safety plans. Current legislation emphasizes funding of planning efforts, but the focus on implementation funding is expected to increase over the next few years. The next funding opportunity is to be determined.

Evaluation

The evaluation phase allows the City to understand how it is doing against the goal of eliminating fatal and serious injury collisions. Recommendations include how and when to update this plan and related public communications.

Update Plan Regularly

Scheduling an update every two to four years could assist with organizing and directing evaluation efforts. As conditions within the City could change, it will be necessary to update the LRSP in the future. Completion plan updates should correspond with Caltrans HSIP calls-for-projects. Calls-for-projects are typically released in spring or early summer of even years (i.e., 2020, 2022, etc.) and are due in the fall of the same year.

Presentation of Evaluation

Presenting to local leaders and the public on LRSP performance is a great way to highlight efforts conducted by the City. Opportunities for engaging with the public could include:

- Create online dashboard showcasing safety metrics and recent projects.
- Release an annual publicly available "safety report card".
- Market benefits of safety investments—how is funding being used and what are resulting safety outcomes?

Performance Metrics

Tracking performance metrics can be used to benchmark the City's efforts over time. Examples of performance metrics include:

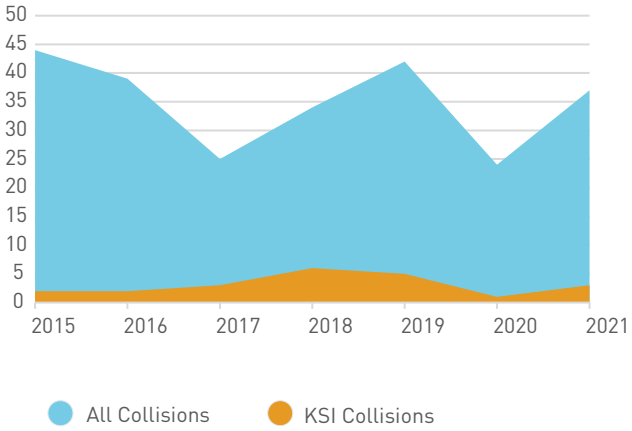
- Number of Countermeasures Implemented
    - Engineering countermeasures
    - Education, engagement, and enforcement campaigns or programs
- Collisions
    - Total KSI collisions or percent of collisions resulting in KSI
    - Total pedestrian and bicycle collisions or percentage of pedestrian and bicycle collisions resulting in KSI
    - Total collisions within each emphasis area or the percentage of collisions in each emphasis area resulting in KSI
- Speed Limit Compliance
    - 85^{th} percentile speeds
    - Number of unsafe speed violations

Appendix A – Figures

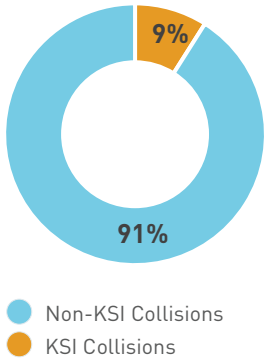
Collision Landscape

Data Source: Statewide Integrated Traffic Records System (SWITRS), 2015-2021
Note: The collision summary include Property Damage Only (PDO) collisions
2020 and 2021 collision data are provisional and are subject to change

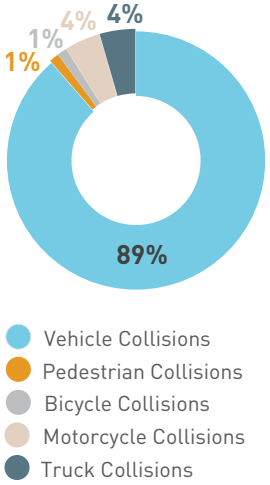
Collisions by Year



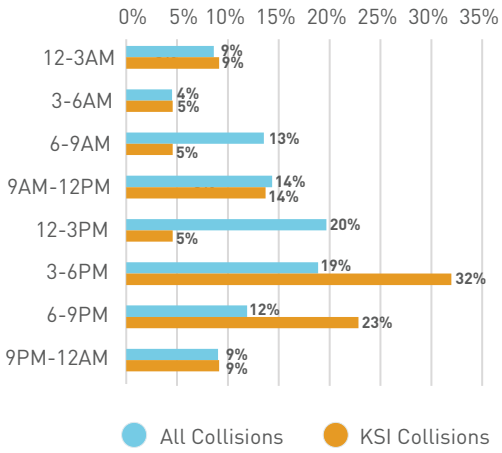
Collisions by Severity



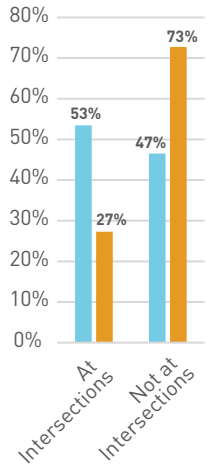
Collisions by Mode



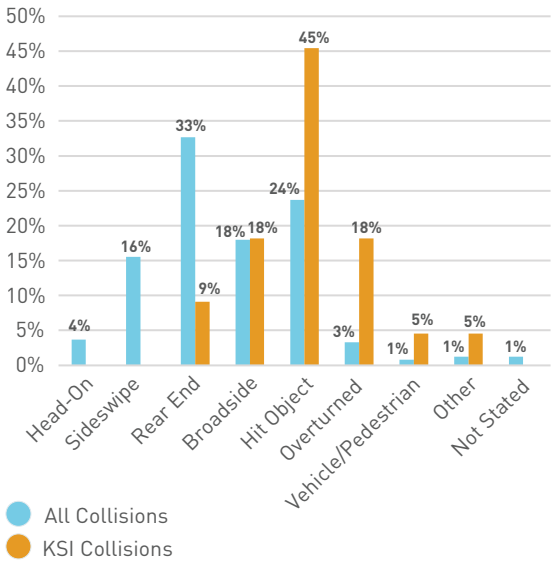
Collisions by Time of Day



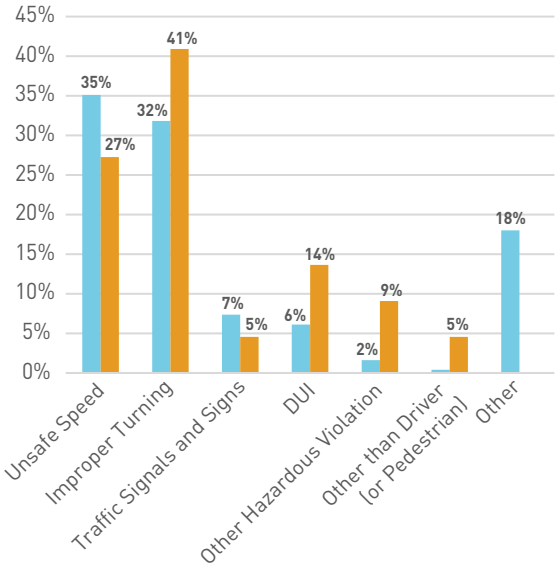
Collision Locations



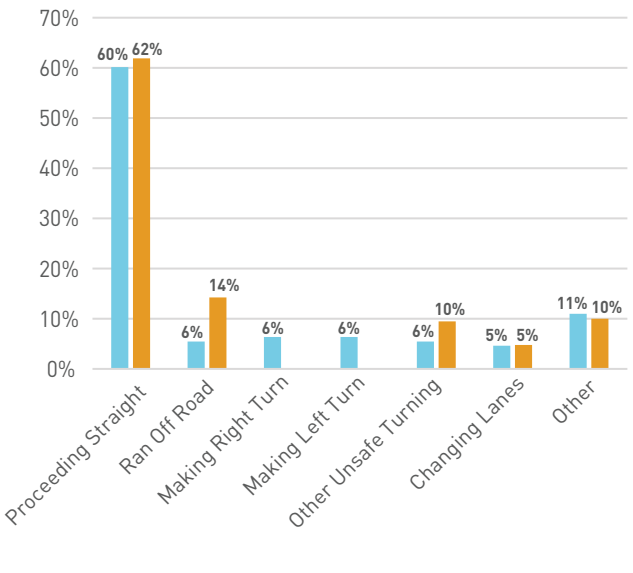
Collisions by Type



Primary Collision Factors



Actions before Collisions for Parties At-Fault



DUI Collisions

6% of All Collisions
14% of KSI Collisions involved Driving Under Influence

Figure A-2

Context

Signalized Intersection

Signal Ahead Sign

Signal Ahead Sign with Flashing Beacon

Curve Ahead Sign

Chevron Sign

Direction of Travel

Speed Limit

Speed Feedback Radar Sign

Class II Bike Lane

Crosswalk

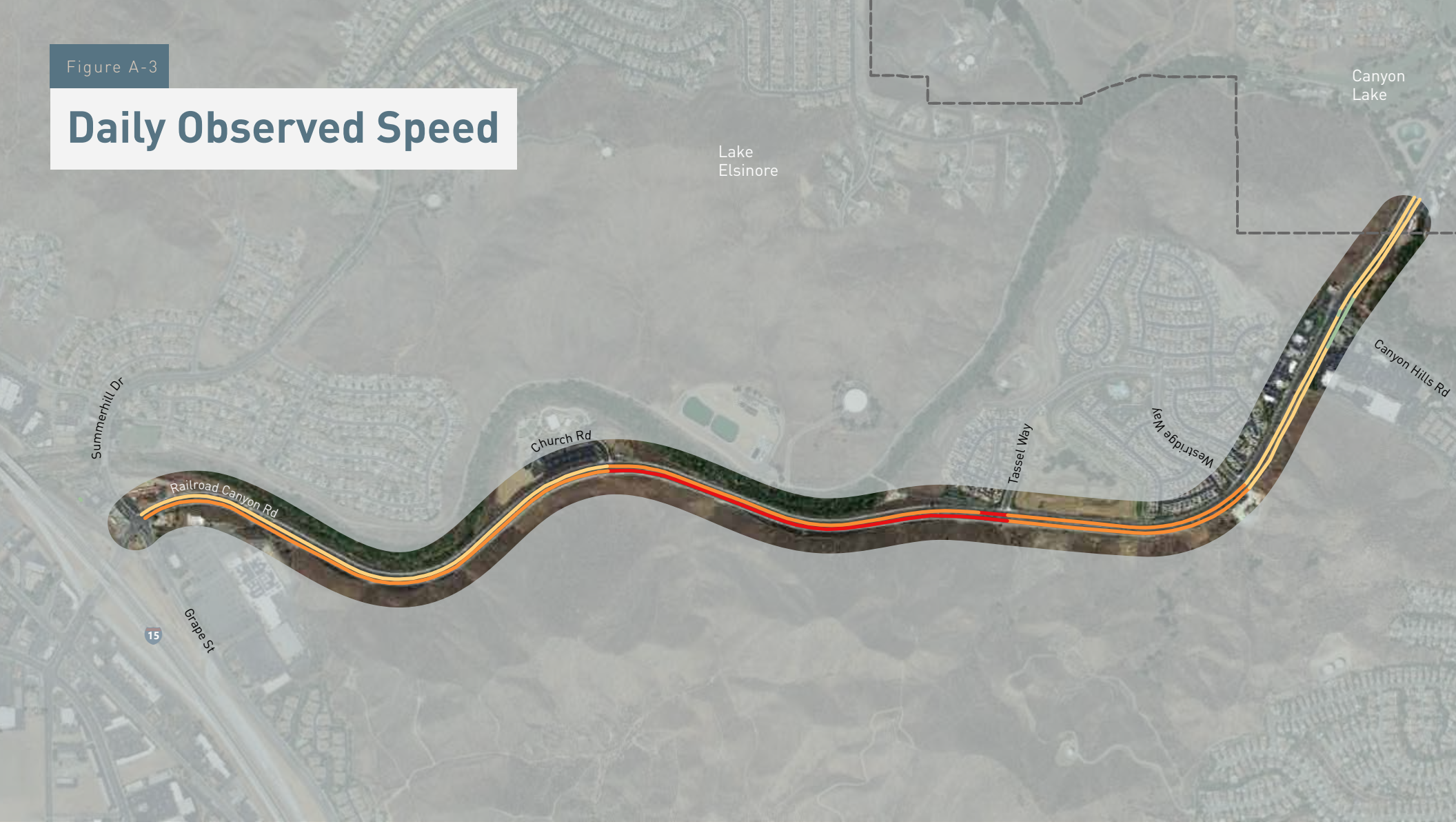
City Boundary

0 0.5 Miles

Data Source: Statewide Integrated Traffic Records System (SWITRS), 2015-2021

Figure A-3

Daily Observed Speed



85th Percentile Observed Speed

- > 60 mph
- 55 to 60 mph
- 50 to 55 mph
- < 45 mph
- City Boundary

0 0.5 Miles

Data Source: WeJo, October 2019

Figure A-4

Top Collision Locations

XX Intersection Collisions

XX Segment Collisions

City Boundary

0 0.5 Miles

Data Source: Statewide Integrated Traffic Records System (SWITRS), 2015-2021

Figure A-5

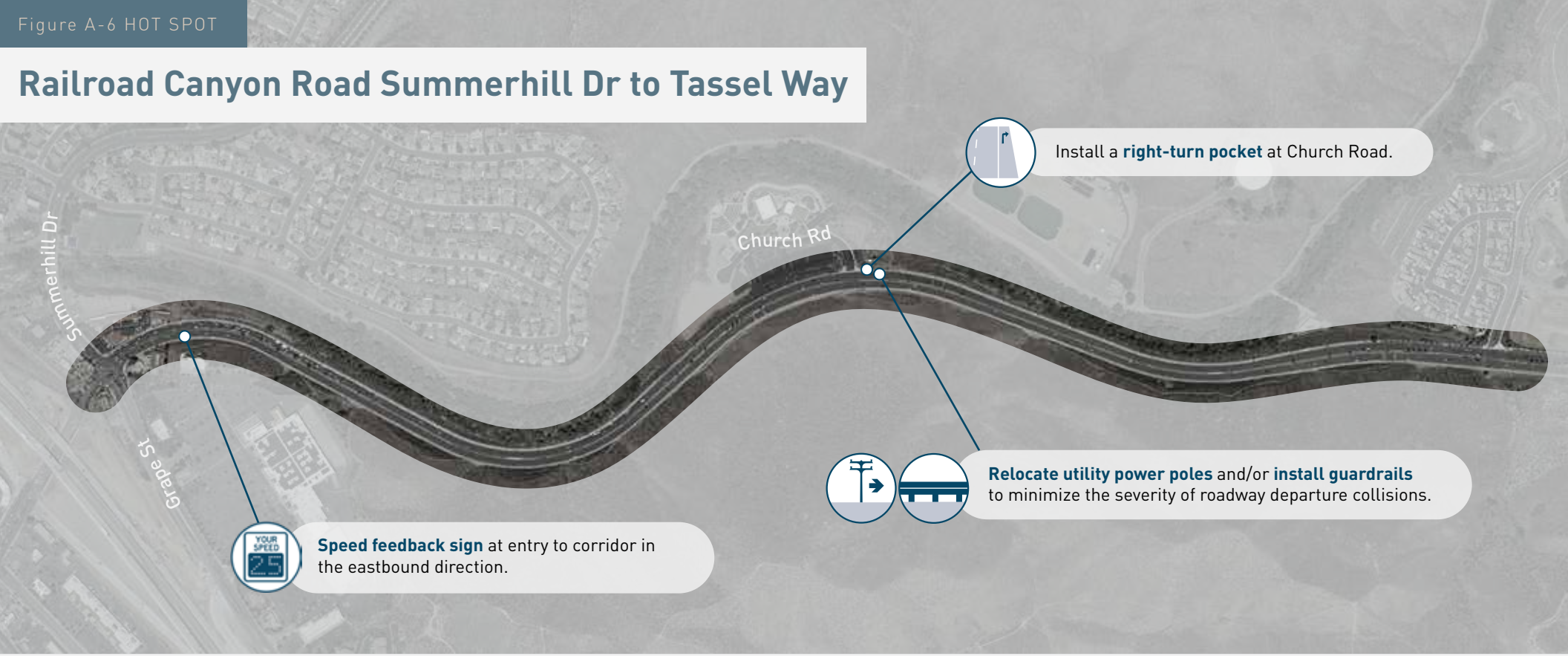
Collision Severity

- Fatal Injury Collisions (8)
- Severe Injury Collisions (14)
- Other Injury Collisions (90)
- Property Damage Only Collisions (133)
- City Boundary

Data Source: Statewide Integrated Traffic Records System (SWITRS), 2015-2021

Figure A-6 HOT SPOT

Railroad Canyon Road Summerhill Dr to Tassel Way



CORRIDOR-WIDE

Median barriers to help mitigate severity of lane departure collisions, particularly along curved roadway segments.

Solid lane striping to discourage lane-changing maneuvers along curved roadway segments.

Six-inch pavement markings to improve lane visibility.

Retroreflective paint on the median curb improve nighttime curve delineation.

High friction pavement expanded to the entire segment.

Lengthen clearance intervals at traffic signals by **extending yellow and all-red times.**

Retroreflective borders on signal backplates to improve nighttime visibility.

Increase frequency of raised pavement markers along curves to improve nighttime curve delineation.

LED lights along the perimeter of key signs such as chevrons at curves for better visibility.

Appendix B – Engineering Countermeasure Toolbox

Table B-1: Engineering Countermeasure Toolbox

Countermeasure		Description	Crash Reduction Factor	Federal Funding Eligibility	Applicable Locations
Intersections Countermeasures					
S02	Retroreflective Borders on Signals	Providing better visibility of intersection signals aids the driver's perception of the upcoming intersection.	15%	100%	Entire Corridor
S03	Extend Yellow and All Red Time	Extending yellow and all red time increases the time allotted for the yellow and red lights during a signal phase.	15%	50%	Entire Corridor
Roadway Countermeasures					
R02	Relocate Fixed Object outside of Clear Recovery Zone	While this strategy does not prevent the vehicle leaving the roadway, it does provide a mechanism to reduce the severity of a resulting crash. Removing or moving fixed objects, flatting slopes, or providing recovery areas reduces the likelihood of a crash.	35%	90%	Near Church Road
R03	Median Barrier	his strategy is designed to prevent head-on collisions by providing a barrier between opposing lanes of traffic. The variety of median barriers available makes it easier to choose a site-specific solution.	25%	100%	Entire Corridor (Along Curves)
R04	Guardrails	Guardrail redirects a vehicle away from embankment slopes or fixed objects and dissipates the energy of an errant vehicle.	25%	100%	Near Church Road
R21	Improve Pavement Friction	High Friction Surface Treatments (HFST) improve the skid resistance at locations with high frequencies of wet-road crashes and/or failure to stop crashes.	55%	100%	Entire Corridor
R22	Install/Upgrade Sign Visibility	This strategy primarily addresses crashes caused by lack of driver awareness (or compliance) to roadway signing. It is intended to get the drivers attention and give them a visual warning.	15%	100%	Entire Corridor (Along Curves)
R27	Install Delineators, Reflectors, and/or Object Markers	Delineators, reflectors, and/or object markers are intended to warn drivers of an approaching curve or fixed object that cannot easily be removed. They are intended to provide tacking information and guidance to the drivers.	15%	100%	Entire Corridor
R29	No-Passing Line	Adding solid lane striping discourages lane-changing maneuvers along curved roadway segments.	45%	100%	Entire Corridor (Along Curves)

Countermeasure		Description	Crash Reduction Factor	Federal Funding Eligibility	Applicable Locations
-	Install Right-turn Lane	Right-turn lanes remove slow vehicles that are decelerating to turn right from the through-traffic stream, thus reducing the potential for rear-end collisions.	N/A	N/A	Church Road
-	Six-Inch-Wide Pavement Markings	Wider pavement markings improve visibility of lane delineation.	N/A	N/A	Entire Corridor
-	Speed Feedback Sign	A speed feedback sign notifies drivers of their current speed, usually followed by a reminder of the posted speed limit.	N/A	N/A	East of Summerhill Drive

Appendix C – Non-Engineering Countermeasure Toolbox

Table C-1: Non-Engineering Countermeasure Toolbox

Countermeasure	Description	Effectiveness (Out of 5★)
DUI Countermeasures		
Publicized Sobriety Checkpoints	The Riverside County Sheriff's Department should continue their use of high visibility enforcement for DUIs. Deterrence policies focus on raising the actual and perceived risk of detection of driving under the influence. These policies should be highly visible to increase awareness of the risks of driving under the influence. Publicized sobriety checkpoints, saturation patrol, and other forms of high visibility enforcement are effective for safety outcomes. Many agencies focus on high visibility enforcement during holidays.	★★★★★ Short-Term
High-Visibility Saturation Patrols		★★★★ Short-Term
Partner with Business on Hot Spot Corridors	Conduct targeted education to businesses along the hot spot corridors. Educational materials could include pamphlets, stickers, window displays, etc. This effort could include materials on how businesses can help drivers be more aware of their surroundings. For drinking establishments or restaurants, this could also include information to reduce driving under the influence (e.g., safe ride home number, local taxi number, etc.).	★★★ Medium-Term
Safe Ride Home	Develop partnerships between adjacent cities, Riverside County, the Riverside County Sheriff's Department, transportation network company (TNC) operators (i.e., Uber, Lyft), and local businesses to offer promotional codes for free or discounted rides home from establishments or events in Riverside County to reduce the potential for DUI, drowsy driving, or distracted driving. This program may be focused on particular holidays or applied more broadly to weekend nights.	★★★ Long-Term
Speeding and Speed Management Countermeasures		
Safe Speeds Education Campaign	Launch a safety education campaign to target safe speeds. This could include yard signs, ads at bus stops and bus exteriors, radio ads, and newspaper ads. The SCAG Go Human campaign and the OTS Go Safety California campaign both have free resources for local agencies to use in implementing public awareness campaigns.	★★★ Medium-Term
High Visibility Enforcement	The Riverside County Sheriff's Department should continue their use of high visibility enforcement to deter speeding and aggressive driving. The objective is to convince the public that speeding and aggressive driving actions are likely to be detected and that offenders will be arrested and punished.	★★ Medium-Term

Countermeasure	Description	Effectiveness (Out of 5★)
Speed Limit Modification	Utilize California Assembly Bill (AB) 43 methodology to lower speed limits on additional corridors. AB 43 features the following five major components, focused on providing local jurisdictions more flexibility in setting speed limits, especially regarding vulnerable road users: • Engineering & Traffic Survey (E&TS) - option to extend enforceable time period • Post E&TS - agency can elect to retain current or immediately prior speed limit • Speed Limit Reduction - reduction of additional 5 mph based on several factors, including designation of local "Safety Corridors" • Prima Facie Speed Limits - options for 15 and 25 mph in certain zones Business Activity Districts - option for 20 or 25 mph	★★★★★ Long-Term

Notes:

1. Effectiveness (Out of 5 ★)
   ★★★★★ = Determined to be effective by several high-quality evaluations with consistent results
   ★★★★ = Demonstrative to be effective in certain situations
   ★★★ = Likely to be effective based on balance of evidence from high-quality evaluations or other sources
   ★★ = Effectiveness still undetermined; different methods of implementing this countermeasure produces different results
   ★ = Limited or no high-quality evaluation evidence
2. Short-Term = 3 months or less, Medium-Term = 3 months to 1 year, Long-Term = More than 1 year