Approved:
City Council on February 22, 2022
Motion: Ariston Julian/Eugene Costa Jr.

City of Guadalupe

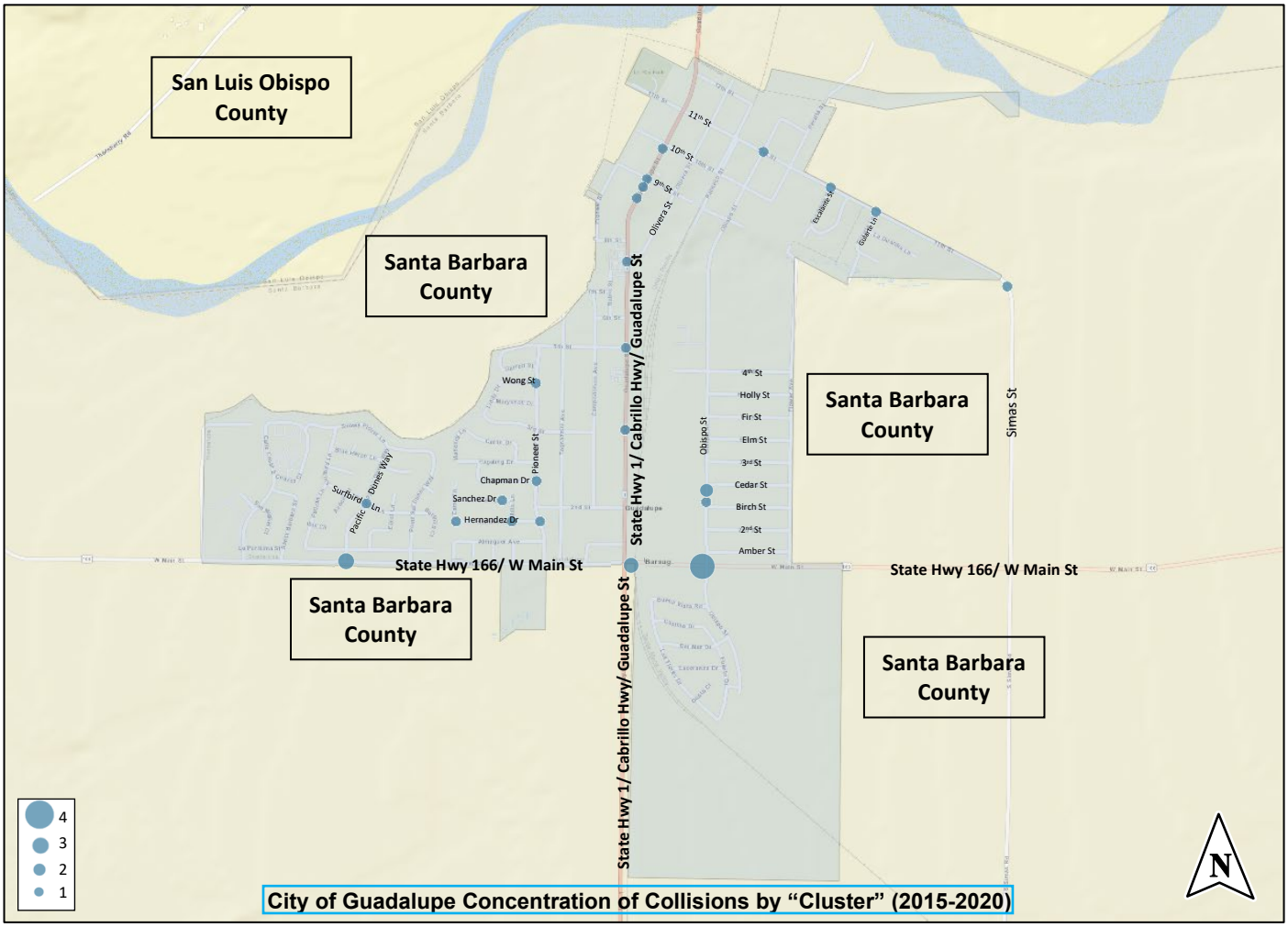
Final Local Roadway Safety Plan

Prepared for:

MINAGAR & ASSOCIATES, INC.

02/22/2022

FINAL
Local Roadway Safety Plan (LRSP) Project
for
City of Guadalupe



City of Guadalupe Concentration of Collisions by "Cluster" (2015-2020)

PREPARED FOR:

City of Guadalupe
Department of Public Works
918 Obispo Street
Guadalupe, CA 93434

PREPARED BY:

MINAGAR & ASSOCIATES, INC.
Traffic/Civil/Electrical Engineering – ITS – Transportation Planning – CEM
23282 Mill Creek Drive, Suite 120
Laguna Hills, CA 92653
Tel: (949)707-1199

29 Years of Excellence

February 22, 2022

ACKNOWLEDGEMENTS

CITY COUNCIL

Mayor: Ariston Julian

Mayor Pro Tem: Tony Ramirez

Council Member: Liliana Cardenas

Council Member: Gilbert Robles

Council Member: Eugene Costa Jr.

PARTNERS

City Departments: Public Works, Planning, Police & Fire

Caltrans District 5

Guadalupe Union School District

Santa Barbara County Association of Governments (SBCAG)

Guadalupe Business Association (GBA)

General Public of the City of Guadalupe

DJ Farms/Pasadera

CITY STAFF

City Administrator: Todd Bodem

Director of Public Works/City Engineer: Shannon Sweeney

Chief of Police: Michael Cash

Executive Summary

The objective of the City of Guadalupe Local Roadway Safety Plan (LRSP) is to establish a safe transportation environment that has safer roads, safer people, safer speeds, and safer vehicles. As part of this safety plan for the City of Guadalupe, Minagar & Associate's, Inc. identified, prioritized, and analyzed roadway safety improvements on the City of Guadalupe's intersections and roadway segments. This safety plan also provides the proposed countermeasures that address collision patterns for both intersections and roadway segments, to ultimately reduce collisions in the City's high collision locations.

From December 31, 2015 until December 31, 2020, there has been a total of 42 collisions that included 1 fatality and 47 injured victims. The most common types of collision were rear end, broadside, sideswipe, and vehicle/pedestrian. Primary Collision Factor (PCF) violations that caused the most collisions were Improper Turning, Driving or Bicycling Under the Influence of Alcohol or Drug, Automobile Right of Way, and Unsafe Speed. Victims were mostly drivers and passengers in addition to some pedestrians. There has been 5 collisions involved with pedestrians. The highest number of victims happened to be in the age range of 20 to 24 years old.

A Local Road Safety Plan is a major element to ameliorate transportation and traffic safety within a City. This LRSP was prepared and developed in compliance with the State and Federal guidelines for eligibility to apply for the funding of Highway Safety Improvement Program (HSIP). In addition to the provided countermeasures for collision patterns, this Safety Plan also provides the corresponding cost estimates and benefit to cost ratios, to support applications for the Highway Safety Improvement Program (HSIP).

Statement of Protection of Data From Discovery and Admissions

Per Section 148 of Title 23, United States Code [23 U.S.C. §148(h) (4)] REPORTS DISCOVERY AND ADMISSION INTO EVIDENCE OF CERTAIN REPORTS, SURVEYS, AND INFORMATION—Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section, shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data.

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List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials
B/C Ratio	Benefit-Cost Ratio
Caltrans	California Department of Transportation
City	City of Guadalupe
CMF	Crash Modification Factor
CRF	Crash Reduction Factor
DUI	Driving Under the Influence
FHWA	Federal Highway Administration
HSIP	Highway Safety Improvement Program
HSM	Highway Safety Manual
LRSM	Local Roadway Safety Manual (Version 1.5, April 2020)
LRSP	Local Roadway Safety Plan
MUTCD	Manual on Uniform Traffic Control Devices
PCF	Primary Collision Factor
SHSP	Strategic Highway Safety Plan
SWITRS	Statewide Integrated Traffic Records System
TIMS	Transportation Injury Mapping System
5Es	The 5Es of Traffic Safety: Education, Engineering, Enforcement, Emergency Medical Services, Emerging Technologies

1. Introduction

The City of Guadalupe is taking the initiative to improve the City's traffic safety by implementing a Local Roadway Safety Plan that aims to reduce traffic collisions by analyzing the factors that previously impacted prominent intersections and roadway segments in the City. This report documents the City of Guadalupe's work to assess and improve transportation safety conditions.

In this Safety Plan, a systemic approach was utilized to identify and analyze collision patterns that had impacted high collision intersections and roadway segments. For each high collision location, whether it was an intersection or a roadway segment, a table of number of collisions with the corresponding primary collision factor has been provided to understand the prominent collision factors. As part of the collision analysis, collision diagrams have been provided for high collision intersections and roadway segments in the City of Guadalupe.

Following the understanding and acknowledgement of collision patterns, countermeasures for each of the identified high collision intersections and roadway segments, were developed to potentially reduce traffic collisions in the future and ameliorate active transportation within the City. Furthermore, this Local Roadway Safety Plan includes collision data for high collision locations between December 31, 2015 and December 31, 2020, the analysis of collision data, and the proposed countermeasures for collision patterns. Depicted below in Figure 1 is the Local Road Safety Plan process provided by the Federal Highway Administration (FHWA).

Source: Federal Highway Administration

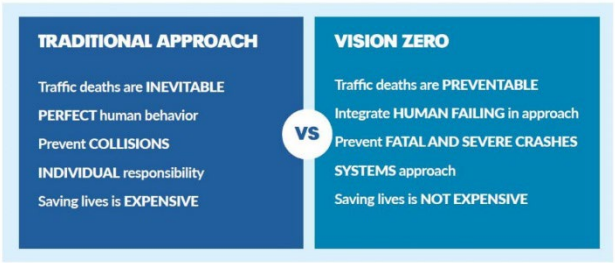
2. Vision and Goals

The objective of this plan is to strive towards a safer transportation environment by eliminating traffic fatalities and severe injuries while assuring efficient and equitable mobility for all road users. The City of Guadalupe plans to implement systemic countermeasures to target factors affecting citywide prominent intersections and roadways segments. This safety plan aims to reduce the risk of tragedies by taking a proactive, preventative approach that prioritizes traffic safety.

Vision Zero is an initiative approach to eliminate traffic fatalities and severe injuries. Road users will sometimes make mistakes however, the road system, traffic control devices, and traffic laws should be designed to minimize those unavoidable mistakes and reduce their probability to result in severe injuries or fatalities. Transportation and traffic engineers are expected to improve the general traffic environment by ameliorating existing traffic geometries and laws based on a good engineering judgement. However, the roadway users of the City of Guadalupe are still responsible for their mistakes and should follow all traffic laws.

Source: www.archive.kpcc.org

Vision Zero unifies diverse stakeholders who address the factors causing complexity when it comes to traffic safety. It recognizes that many factors contribute to safe mobility including roadway design, speeds, behaviors, technology, and enforced laws. As a result and as part of this safety plan, it sets goals to achieve zero fatalities and severe injuries.



Source: www.visionzeronetwrok.org

One of the City's visions is to collaborate with local agencies to promote a culture of continuous transportation safety improvement by coordinating with the Guadalupe Police Department, Santa Barbara Department of Public Health, and Guadalupe Union School District.

Source: U.S. Department of Transportation

The aforementioned Vision shall eliminate traffic fatalities and severe injuries by achieving the following goals:

- Obtain accurate collision databases. Systematically identify and prioritize the City's highest collision locations based on a 5-year collision history.
- Engage with the local community, stakeholders, and City management to better understand factors that are affecting the traffic safety within the City of Guadalupe.
- Analyze and implement countermeasures utilizing strategies across all traffic safety disciplines, engineering, enforcement, education, emergency medical services, and emerging technologies.
- Strive to reduce the City's primary contributing factors in traffic collisions by ensuring the automobile right of way, maintaining a safe speed, and clear traffic signals and signs.

3. Safety Partners

To promote and create a safe transportation environment, collaboration across agencies known as safety partners is a necessity. Safety partners are the agencies, departments, and organizations whose input and support are foundational to a successful Local Roadway Safety Plan.

The safety leadership team is primarily comprised of City Departments that have key roles in the development, implementation, and operation of safety projects, programs, and policies. The safety leadership team is ultimately responsible for developing, adopting, and implementing the safety plan and program. The stakeholder team is distinguished from the leadership team. It comprises partner agencies and organizations who collaborate with the City and contribute to and assist with developing and implementing the plan. These agencies and their roles in the plan's development and implementation are provided below:

3.1 Safety Leadership

I. City Council

The legislative body which is ultimately responsible for approving and adopting the final plan, setting safety policies, and approving budget and funding levels.

II. Public Works Department

Public Works is the lead City Department in developing and producing the Safety Plan and its periodic updates. The Public Works Department is responsible for assembling other City Departments and collaborating with Stakeholders. Public Works is responsible for capital project implementation. The City's Public Works staff may also lead or collaborate in education campaigns.

III. Guadalupe Police Department

The Police Department maintains collision records and is responsible for carrying out enforcement practices and activities. The City's Police Department may also lead or collaborate in education campaigns.

IV. Guadalupe Fire Department

The City's Fire Department serves in a support role in developing and producing the plan.

3.2 Stakeholders

I. Guadalupe Union School District

Collaboration with the Guadalupe Union School District to maintain and promote safety for all students within the City of Guadalupe.

II. Guadalupe Police Department

Roadways and functional areas of intersections require communication and collaboration. Collaboration with the Guadalupe Police Department over the course of the safety plan is needed to ensure that local safety goals and policies are met.

III. Santa Barbara County Association of Governments (SBCAG)

The Santa Barbara County Association of Governments is a regional planning agency comprised of Santa Barbara County and all eight incorporated cities within the county. SBCAG distributes local, state, and federal transportation funds and acts as a forum for addressing regional and multi-jurisdictional issues.

IV. Caltrans District 5

Caltrans District 5 has jurisdiction over State Highway 1 known as the Pacific Coast Highway and State Highway 166. Caltrans District 5 also has jurisdiction over many intersections and roadway segments in the City of Guadalupe. Caltrans provides feedback on developing this Local Roadway Safety Plan and its resulting program in context to regional planning and potential funding issuance.

V. Guadalupe Business Association

The Guadalupe Business Association coordinates engagement with City businesses. The Business Association provides feedback on recommended strategies and countermeasures to addressing traffic safety issues. Feedback from the Business community can provide valuable insight on the benefits and impacts of safety measures.

VI. General Public of the City of Guadalupe

The general public provides feedback and insight on recommended emphasis areas, high incident locations, collision factors, countermeasures, and implementation. Although collision records and statistics are foundational to this plan, public feedback is a critical supplement to that data. This feedback provides the safety plan with a holistic view of safety issues and a recommendation for what types of countermeasures are and are not desired by the community.

VII. DJ Farms/Pasadera

Pasadera, a new housing development in Guadalupe, is one of the most affordable projects on the Central Coast. The new housing community is located on the south side of the intersection of State Highway 166/ W Main St & Obispo St.

4. Process

This section describes the steps involved in preparing the safety plan, including a systemic approach that involves the analysis of collision data to identify high crash locations and prioritize countermeasures.

4.1 Systemic Approach

The systemic approach in preparing the safety plan comprises the following steps:

I. Develop Plan Goals and Objectives

Review the City's existing planning documents to ensure the LRSP visions and goals align with planning effort and that the potential 5Es: Engineering, Education, Enforcement, Emergency Medical Services, and Emerging Technologies are consistent with local traffic safety and policies.

II. Analyze Collision Data

Obtain the latest 5-year collision data and analyze the collision factors. Determine high-risk intersections and roadway segments and identify significant risk factors.

III. Determine Focus Areas and Identify Crash Reduction Measures

Identify emphasis areas and recommend feasible countermeasures at high-risk locations. Evaluate Crash Reduction Factor (CRF) and the effectiveness of each countermeasure.

IV. Prioritize countermeasures/projects

Conduct Benefit-Cost Ratio (BCR) analysis on all countermeasures and projects. Prioritize projects that are most beneficial to the City's roadway and intersection safety using BCR.

V. Prepare the Local Roadway Safety Plan

Prepare the LRSP that includes effective and efficient measures and implementation plan. Identify priority projects for state or federal programming, grant funding opportunities, and implementation.

4.2 Public Outreach

The purpose of public outreach is to acquire the community's concerns that are related to the safety of traffic. Such concerns include speeding, jay walking, traffic signs and signals, pedestrian and bicycle safety on collector roads, and arterial streets. Public outreach is an essential tool to identify and summarize high-risk locations and collision factors based on the community's concerns in addition to the collision analysis.

The target audience for the public outreach of this safety plan is the residents of the City of Guadalupe which include the following:

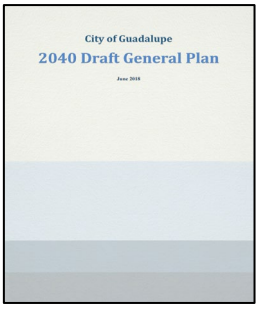
- **City Council**
- **Public Works**
- **Guadalupe Police Department**
- **Guadalupe Fire Department**
- **Guadalupe Union School District**
- **Santa Barbara County Association of Governments (SBCAG)**
- **Guadalupe Business Association (GBA)**
- **General Public of the City of Guadalupe**
- **DJ Farm/Pasadera Development**

5. Existing Efforts

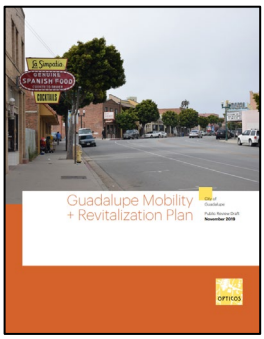
This section summarizes the findings from various planning documents for the City of Guadalupe. The purpose of reviewing existing planning efforts is to ensure the LRSP goals and objectives along with recommended improvements are aligned with recent planning efforts for transportation safety.

The City of Guadalupe has identified several goals, policies from the following documents:

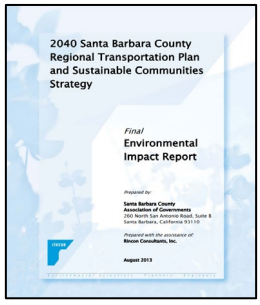
- **2040 Draft General Plan (2018)**
  This General Plan document represents the official adopted goals, objectives, policies, and programs for the City of Guadalupe. This general plan is critical to the planning and local policy decision making process for the development of the Local Roadway Safety Plan as it utilizes community engagement, policy development, and field research to shape the future development of the City.



- **Guadalupe Mobility + Revitalization Draft Plan (2019)**
  This plan intends to enhance connectivity and mobility options within the City of Guadalupe taking into account the specific regional setting of Guadalupe in relation to the ocean and dunes to the west and the City of Santa Maria to the east. The key objective of this plan is to identify needs, gaps, opportunities, and community values to help inform decision makers on what type of conceptual improvements could enhance mobility for pedestrian and cyclists by creating a complete streets environment and an overall better active transportation system.



- **2040 Santa Barbara County Regional Transportation Plan and Sustainable Communities Strategy Final Environmental Impact Report (2013)**
  This Environmental Impact Report (EIR) identifies and describes potential environmental impacts associated with implementation of the 2040 Regional Transportation Plan-Sustainable Communities Strategy (2040 RTP-SCS) proposed by the Santa Barbara County Association of Governments (SBCAG).



- **Guadalupe Bicycle and Pedestrian Master Plan (2014)**
  This plan performed a full assessment of the existing bicycle conditions and pedestrian network. It proposed improvements and support facilities and offered direction for education programs to increase public awareness and community support.

6. Data Analysis and Summary

This section summarizes the results of a citywide collision analysis for the time period between December 31, 2015 and December 31, 2020. The purpose of studying the collision patterns and trends is to identify the factors that caused collisions to occur within the study timeframe. The focus is to identify high crash locations in the City in order to target the factors that are affecting these prominent locations.

6.1 Overall Summary

According to the Statewide Integrated Traffic Records System (SWITRS) map on the University of California, Berkeley Transportation Injury Mapping System (TIMS), during the period of December 31, 2015 to December 31, 2020, there were 42 collisions in total. 1 victim was killed, and 47 victims were injured. There were 7 pedestrian collisions (16.7% of total), 14 state highway collisions (33%), and no bike or motorcycle collisions. A map that displays collisions by point as well as a map that displays collisions by cluster is shown in Figures 2 and 3.

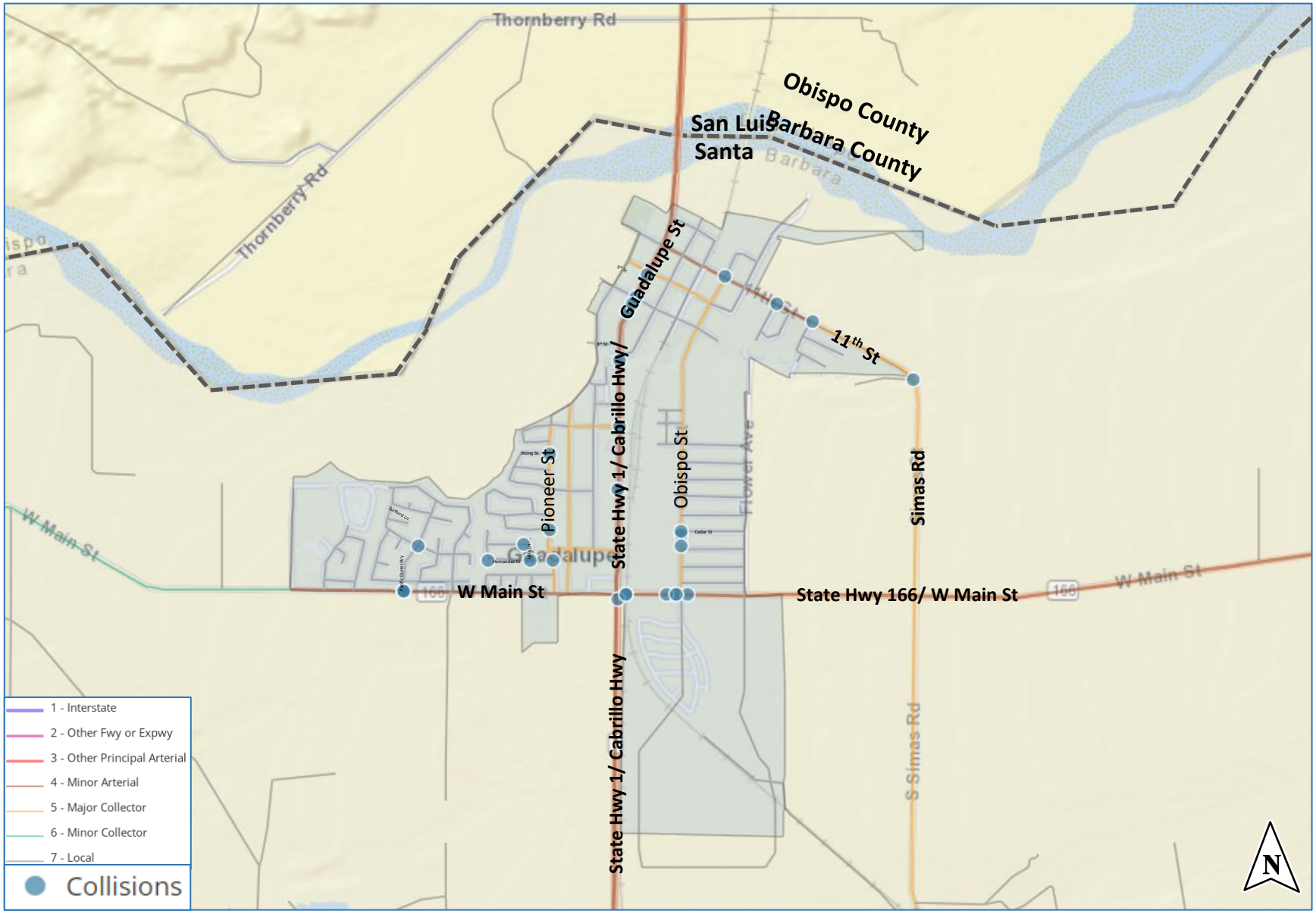


Figure 2: City of Guadalupe Display of Collisions by Point (December 31, 2015 - December 31, 2020)

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

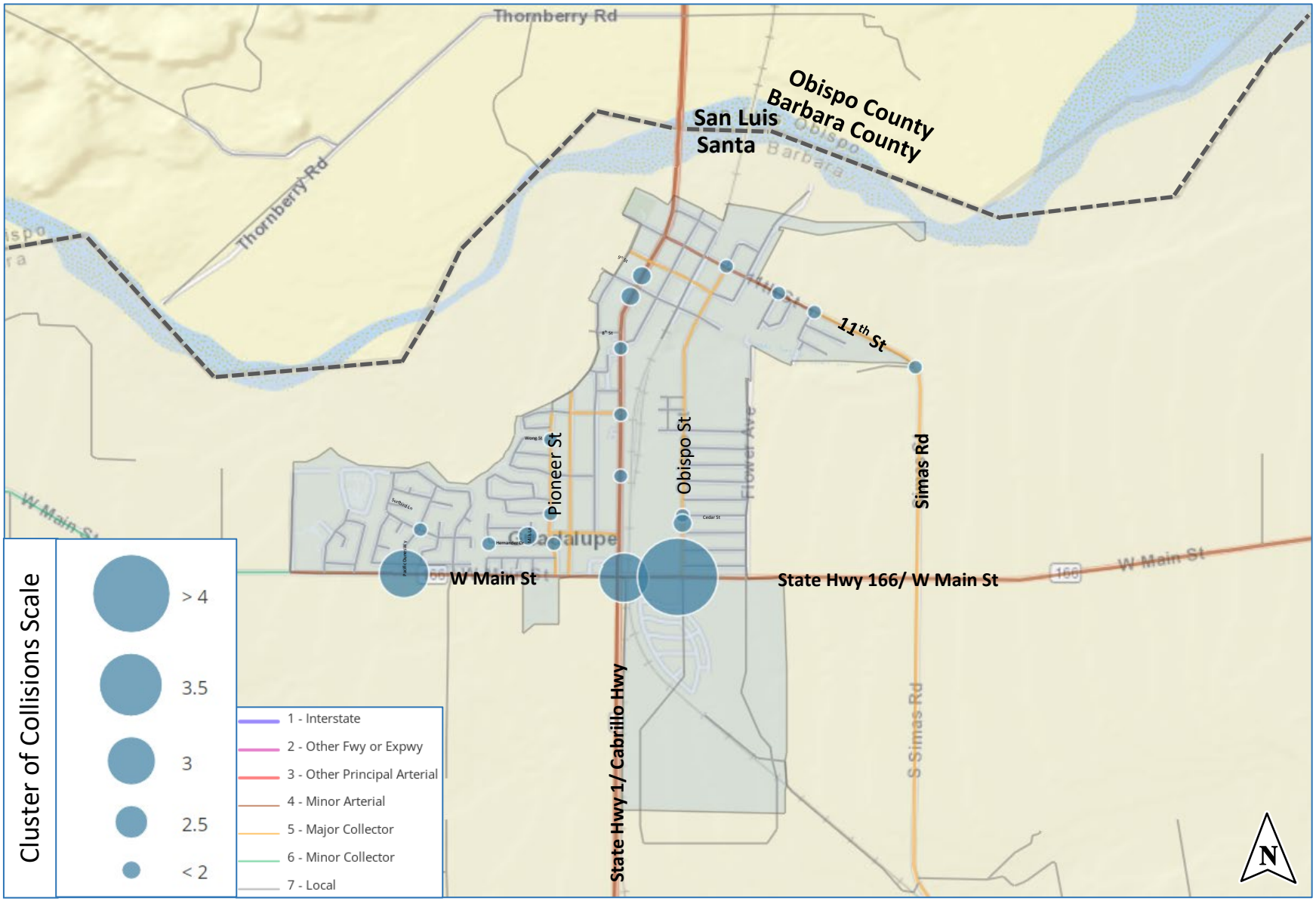
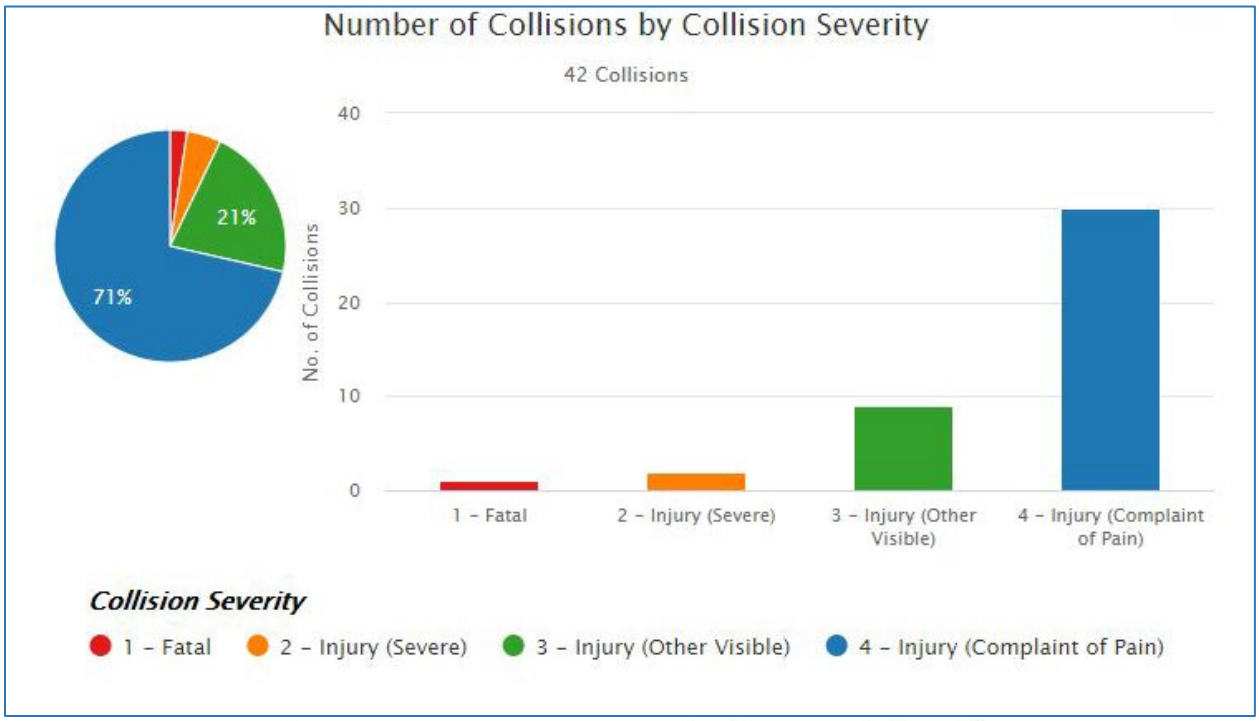


Figure 3: City of Guadalupe Display of Collisions by Cluster (December 31, 2015 - December 31, 2020)

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

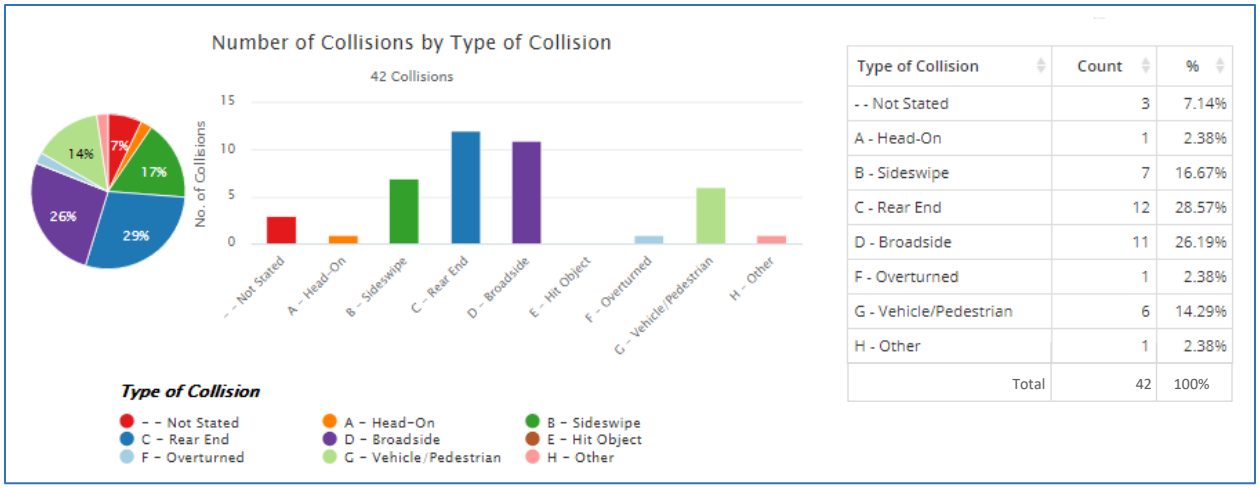


Collision Severity	Count	%
1 - Fatal	1	2.38%
2 - Injury (Severe)	2	4.76%
3 - Injury (Other Visible)	9	21.43%
4 - Injury (Complaint of Pain)	30	71.43%
Total	42	100%

Figure 4: City of Guadalupe Number of Collisions by Collision Severity

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

University of California, Berkeley Transportation Injury Mapping System (TIMS) generated several graphs to detail City of Guadalupe's collisions in the 5-year period. Figure 4 displays number of collisions by collision severity. From 2015 to 2020, there was 1 fatal collision, which was 2.38% of total collisions; 2 injury (severe) collisions, which was 4.76% of total collisions; 9 injury (other visible) collisions (21.43% of total collisions); and 30 injury (complaint of pain) collisions, which took the highest percentage of total collisions in the city (71.43%).



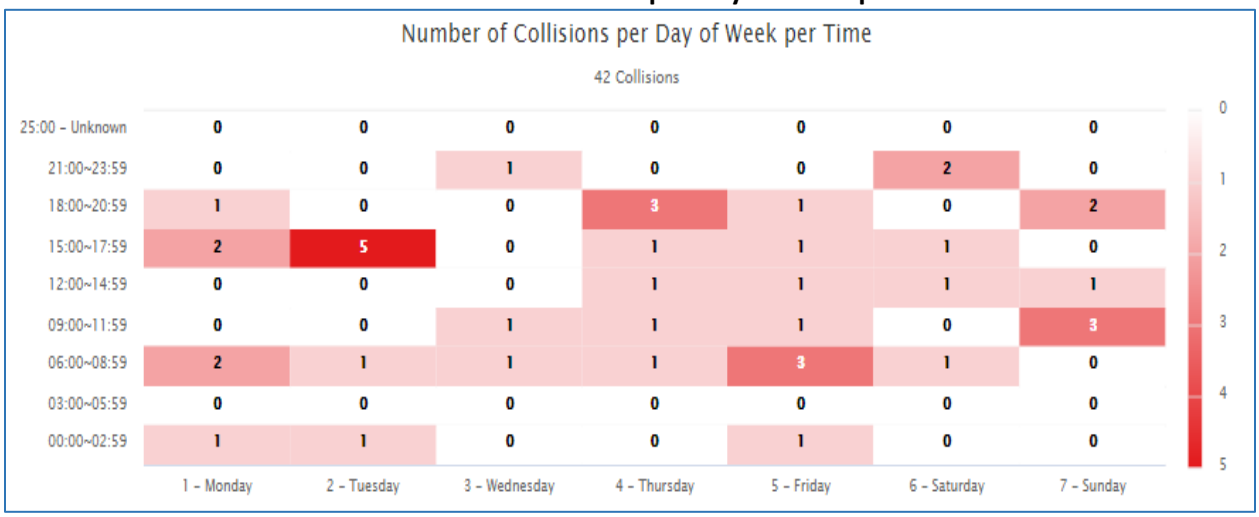
Type of Collision	Count	%
- - Not Stated	3	7.14%
A - Head-On	1	2.38%
B - Sideswipe	7	16.67%
C - Rear End	12	28.57%
D - Broadside	11	26.19%
F - Overturned	1	2.38%
G - Vehicle/Pedestrian	6	14.29%
H - Other	1	2.38%
Total	42	100%

Figure 5: Number of Collisions by Type of Collision

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

From 2015 to 2020, City of Guadalupe's types of collision were reported by University of California, Berkeley Transportation Injury Mapping System (TIMS). There were 12 rear end collisions during the selected period of time. This was the most common type of collision, which was 28.57% of total collisions in the City of Guadalupe. Broadside was the second common type, which was 26.19% of the total (11 collisions). There were 7 sideswipe collisions, making it the third common type of collision (16.67% of the total). Vehicle/pedestrian collisions took 14.29% of total collisions in the city. There were 3 collisions that were not stated (approximately 7.14% of the total). For head-on, overturned, and other types of collision, each category was approximately 2.38% of the total collisions in the City of Guadalupe.

Table 1: Number of Collisions per Day of Week per Time



Collisions in the City of Guadalupe were listed for different time periods for each day of the week. 2 collisions occurred on Mondays for each time period from 6:00 to 8:59 and from 15:00 to 17:59. 1 collision occurred for each time period from 0:00 to 2:59 and from 18:00 to 20:59.

Tuesdays from 15:00 to 17:59 was the time period that most collisions occurred in the City of Guadalupe. 5 collisions were recorded to happen during this 3-hour period. 1 collision occurred for each time period from 0:00 to 2:59 and from 6:00 to 8:59.

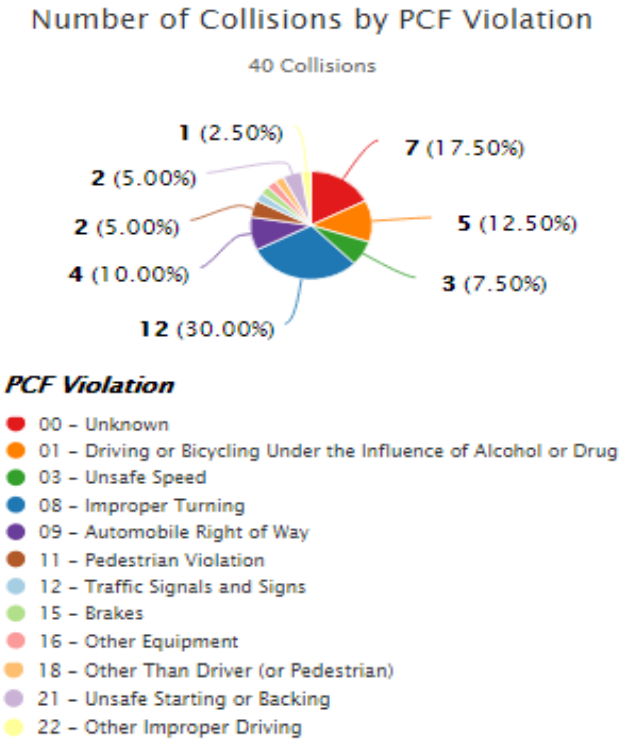
On Wednesdays, TIMS recorded 1 collision for each time period from 6:00 to 8:59, 0:00 to 11:59, and 21:00 to 23:59.

3 collisions occurred during the period from 18:00 to 20:59 on Thursdays. 1 collision occurred for each time period from 6:00 to 8:59, 9:00 to 11:59, 12:00 to 14:59, and 15:00 to 17:59.

There were 3 collisions from 6:00 to 8:59 on Fridays, and 1 collision for each time period from 0:00 to 2:59, 9:00 to 11:59, 12:00 to 14:59, 15:00 to 17:59, and 18:00 to 20:59.

On Saturdays, 2 collisions were recorded during the period from 21:00 to 23:59. 1 collision occurred for each time period from 6:00 to 8:89, 12:00 to 14:59, and 15:00 to 17:59.

3 collisions were recorded from 9:00 to 11:59 on Sundays. 2 collisions occurred from 18:00 to 20:59, and 1 collision occurred from 12:00 to 14:59.



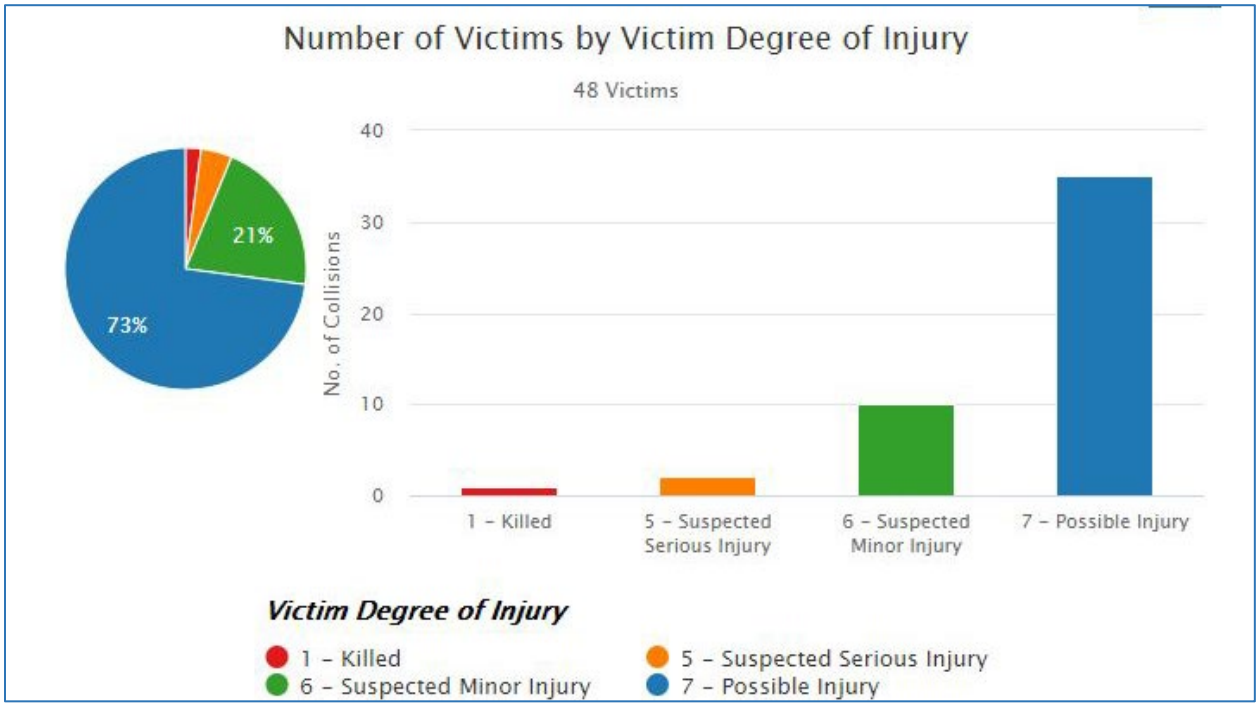
PCF Violation	Count	%
00 - Unknown	7	17.50%
01 - Driving or Bicycling Under the Influence of Alcohol or Drug	5	12.50%
03 - Unsafe Speed	3	7.50%
08 - Improper Turning	12	30.00%
09 - Automobile Right of Way	4	10.00%
11 - Pedestrian Violation	2	5.00%
12 - Traffic Signals and Signs	1	2.50%
15 - Brakes	1	2.50%
16 - Other Equipment	1	2.50%
18 - Other Than Driver (or Pedestrian)	1	2.50%
21 - Unsafe Starting or Backing	2	5.00%
22 - Other Improper Driving	1	2.50%
Total	40	100%

Figure 6: Number of Collisions by (PCF) Primary Collision Factor Violation

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

According to University of California, Berkeley Transportation Injury Mapping System (TIMS), the Primary Collision Factor (PCF) violation that caused the most collisions in the City of Guadalupe was improper turning, which resulted in 12 collisions (30% of total collisions). 7 collisions were reported with unknown PCF violation (17.5%). The third PCF violation in the ranking chart was driving or bicycling under the influence of alcohol or drug (DUI) with a total of 5 collisions (12.5%). Automobile right of way violation resulted in 4 collisions, or 10% of total collisions in the city. Unsafe speed caused 3 collisions, or 7.5% of the total. Pedestrian violation and unsafe starting or backing both resulted in 2 collisions (5%) each. Other PCF violations that caused 1 collision (2.5%) are traffic signals and signs, brakes, other equipment, other than driver (or pedestrian), and other improper turning.

6.2 Victim Summary

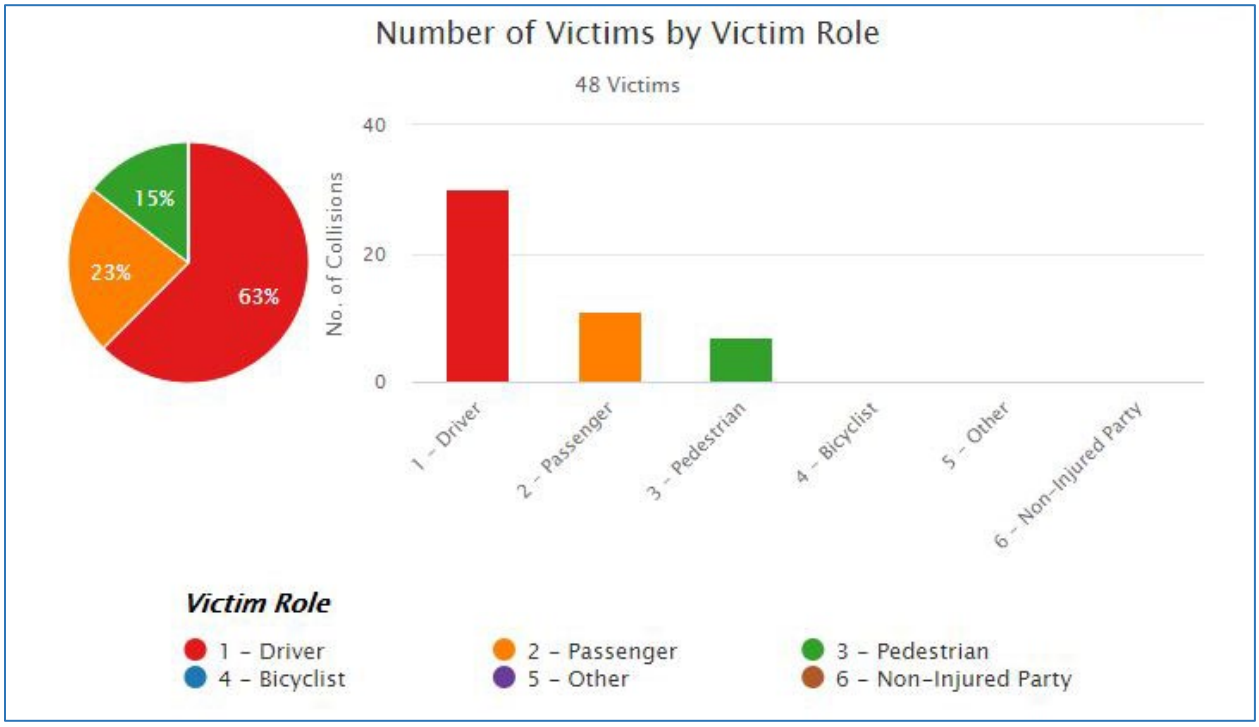


Victim Degree of Injury	Count	%
1 - Killed	1	2.08%
5 - Suspected Serious Injury	2	4.17%
6 - Suspected Minor Injury	10	20.83%
7 - Possible Injury	35	72.92%
Total	48	100%

Figure 7: Number of Victims by Victim Degree of Injury

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

There were 48 victims of traffic collisions in the City of Guadalupe from 2015 to 2020. 1 victim was killed (2.08%), 2 victims were reported with suspected serious injury (4.17%), 10 were reported with suspected minor injury (20.83%), and 35 victims were reported with possible injury (72.92%).

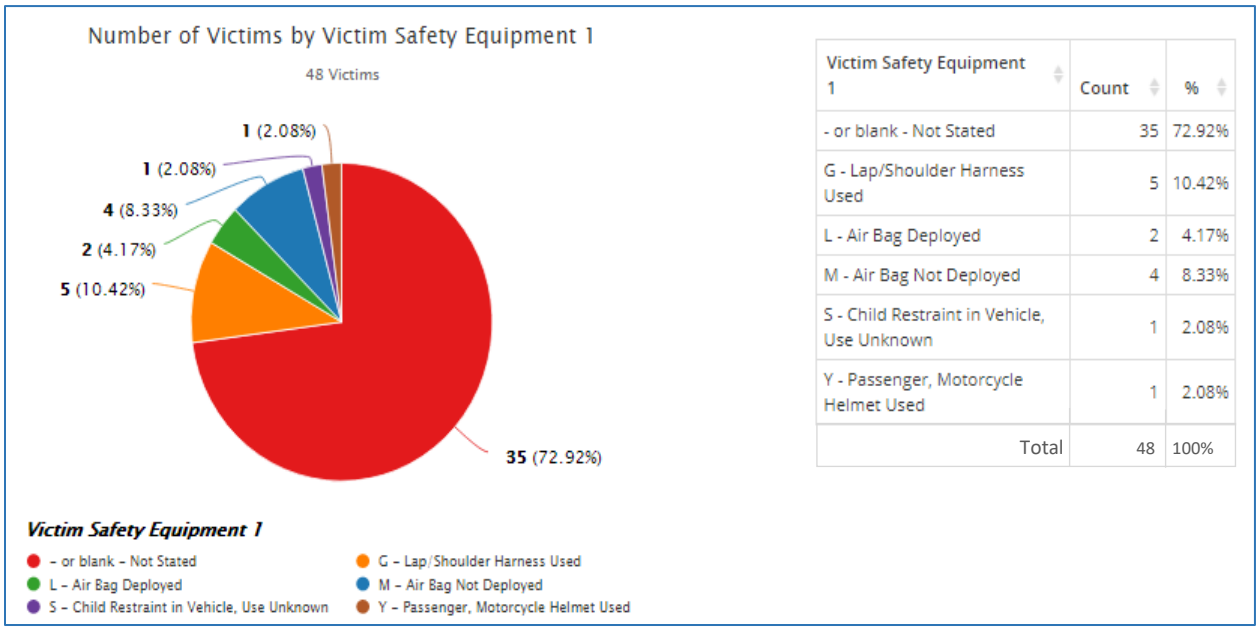


Victim Role	Count	%
1 - Driver	30	62.50%
2 - Passenger	11	22.92%
3 - Pedestrian	7	14.58%
Total	48	100%

Figure 8: Number of Victims by Victim Role

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

According to University of California, Berkeley Transportation Injury Mapping System (TIMS), of the collision victims, there were 30 drivers (62.50%), 11 passengers (22.92%), and 7 pedestrians (14.58%).



Victim Safety Equipment 1	Count	%
- or blank - Not Stated	35	72.92%
G - Lap/Shoulder Harness Used	5	10.42%
L - Air Bag Deployed	2	4.17%
M - Air Bag Not Deployed	4	8.33%
S - Child Restraint in Vehicle, Use Unknown	1	2.08%
Y - Passenger, Motorcycle Helmet Used	1	2.08%
Total	48	100%

Figure 9: Number of Victims by Victim Safety Equipment

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

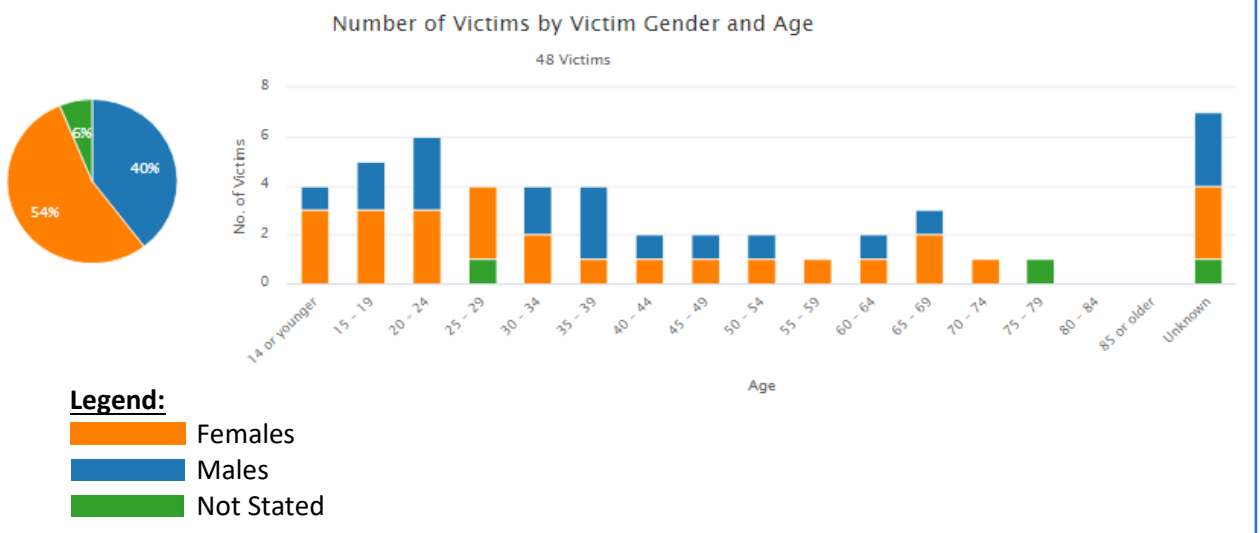
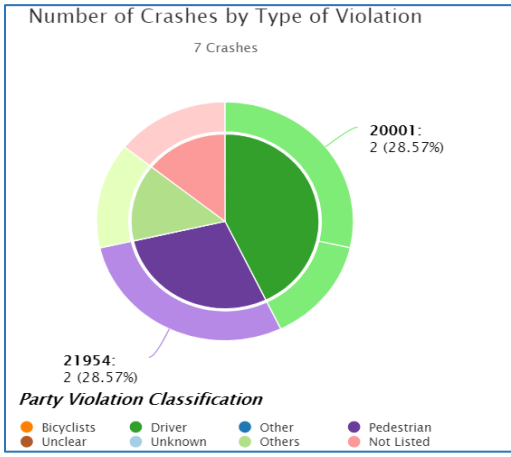


Figure 10: Number of Victims by Victim Gender and Age

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

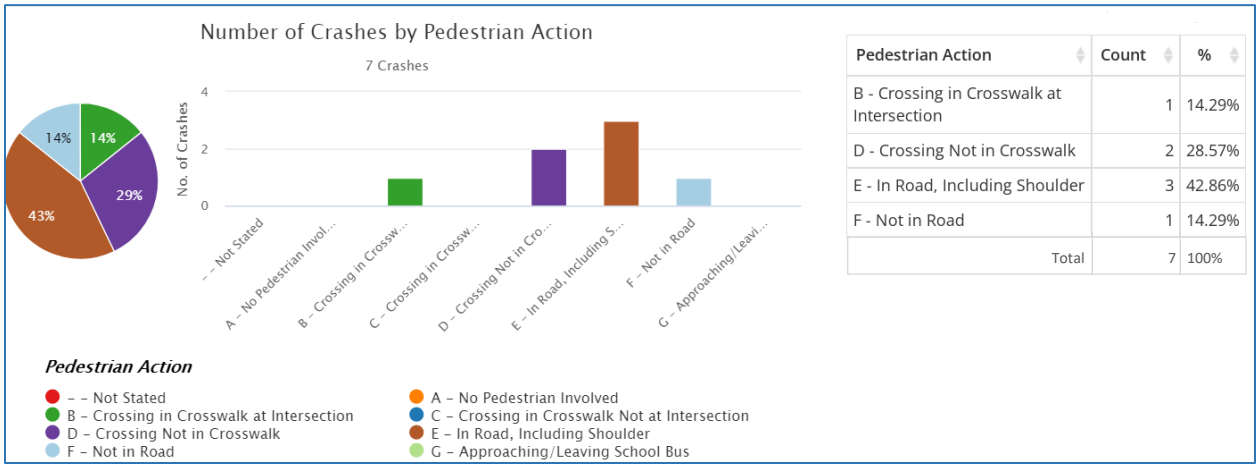
For the total of 48 victims during the 5-year period, 54% of them were females, 40% were males, and 6% were not stated. 7 victims were in the category of unknown age, 6 were from 20-24 years old, 5 were from 15-19 years old, 4 victims for each of the following categories: 14 years old and younger, 25-29, 30-34 and 35-39. From 65-69 years old, there were 3 victims. 2 victims were reported for each of the following categories: 40-44, 45-49, 50-54, and 60-64 years old. There was 1 victim for each of these following groups: 55-59, 70-74, and 75-79 years old.

6.3 Pedestrian Crash Summary



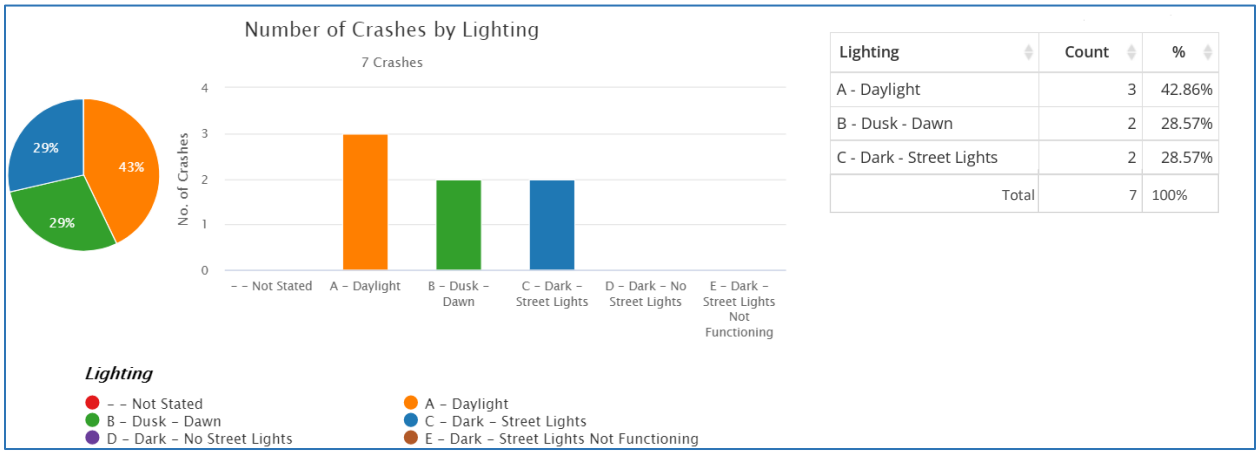
Party Violation Classification	Type of Violation	Description	Count	%
Driver	20001	Failure to stop in a collision resulting in injury or death (commonly known as hit-and-run)	2	28.57%
Pedestrian	21954	Pedestrian failure to yield right-of-way to vehicles when crossing outside of a marked or unmarked crosswalk	2	28.57%
Driver	22106	Unsafe starting or backing of a vehicle on a highway	1	14.29%
Others	Others	26710 (1)	1	14.29%
Not Listed	Not Listed	Violation code was not included in the crash	1	14.29%
		Total	7	100%

Figure 11: City of Guadalupe Number of Collisions by Type of Violation
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)



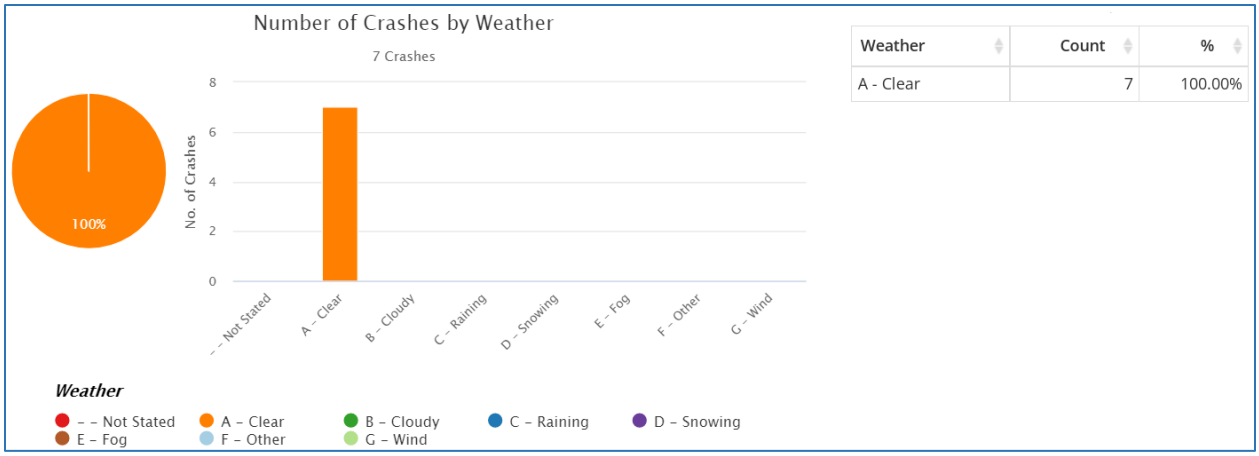
Pedestrian Action	Count	%
B - Crossing in Crosswalk at Intersection	1	14.29%
D - Crossing Not in Crosswalk	2	28.57%
E - In Road, Including Shoulder	3	42.86%
F - Not in Road	1	14.29%
Total	7	100%

Figure 12: City of Guadalupe Number of Collisions by Pedestrian Action
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)



Lighting	Count	%
A - Daylight	3	42.86%
B - Dusk - Dawn	2	28.57%
C - Dark - Street Lights	2	28.57%
Total	7	100%

Figure 13: City of Guadalupe Number of Collisions by Lighting
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)



Weather	Count	%
A - Clear	7	100.00%

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

6.4 Active Transportation Program (ATP) Summary Data & Maps

From 2015 to 2020 there has been 5 pedestrian collisions, 0 bicycle collisions, and 0 motorcycle collisions. Out of the 5 pedestrian collisions, 1 was identified as severe injury and 4 were identified as complaint of pain. The following figure displays the City's ATP heat map.

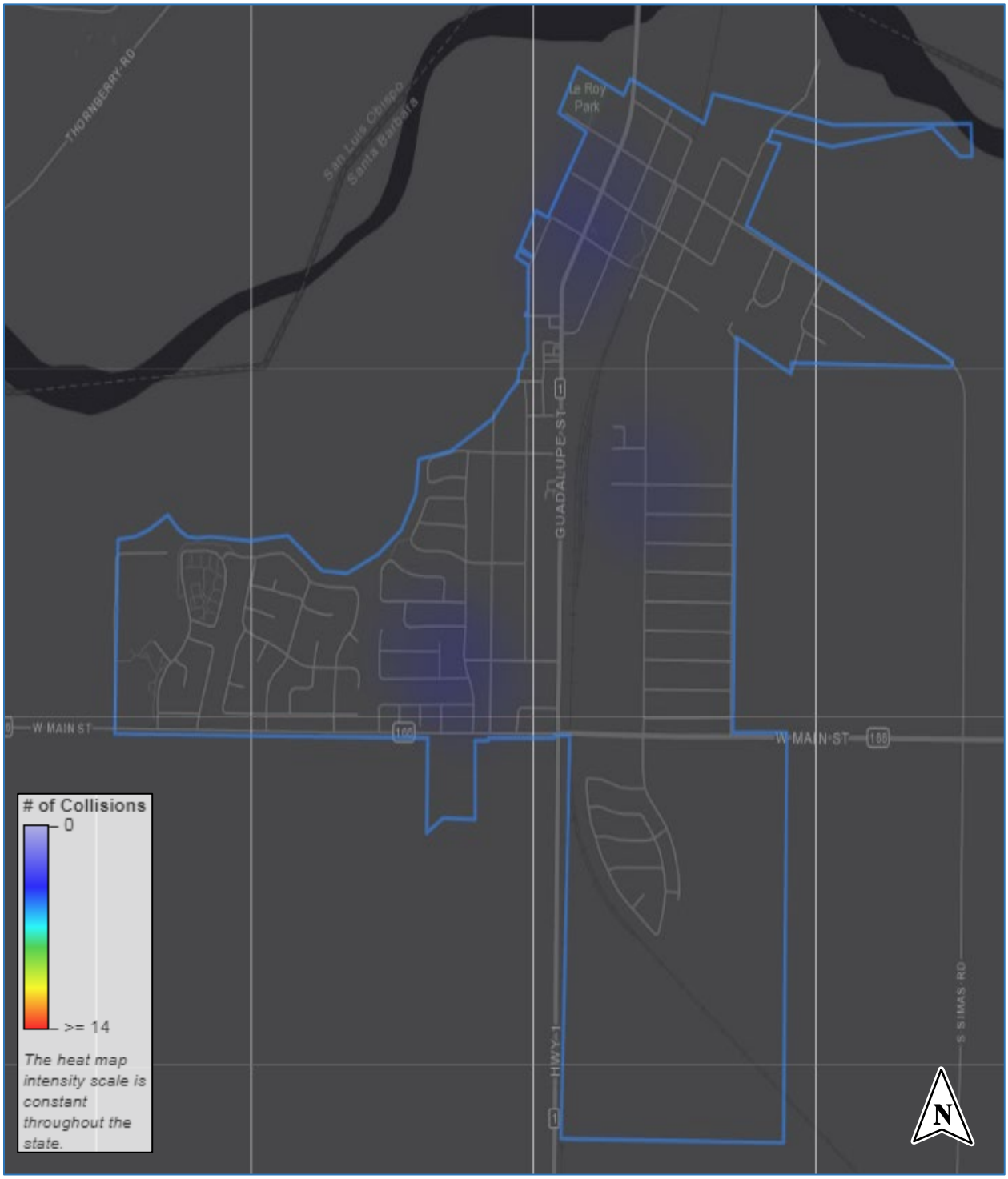


Figure 15: City of Guadalupe Active Transportation Program Heat Map
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

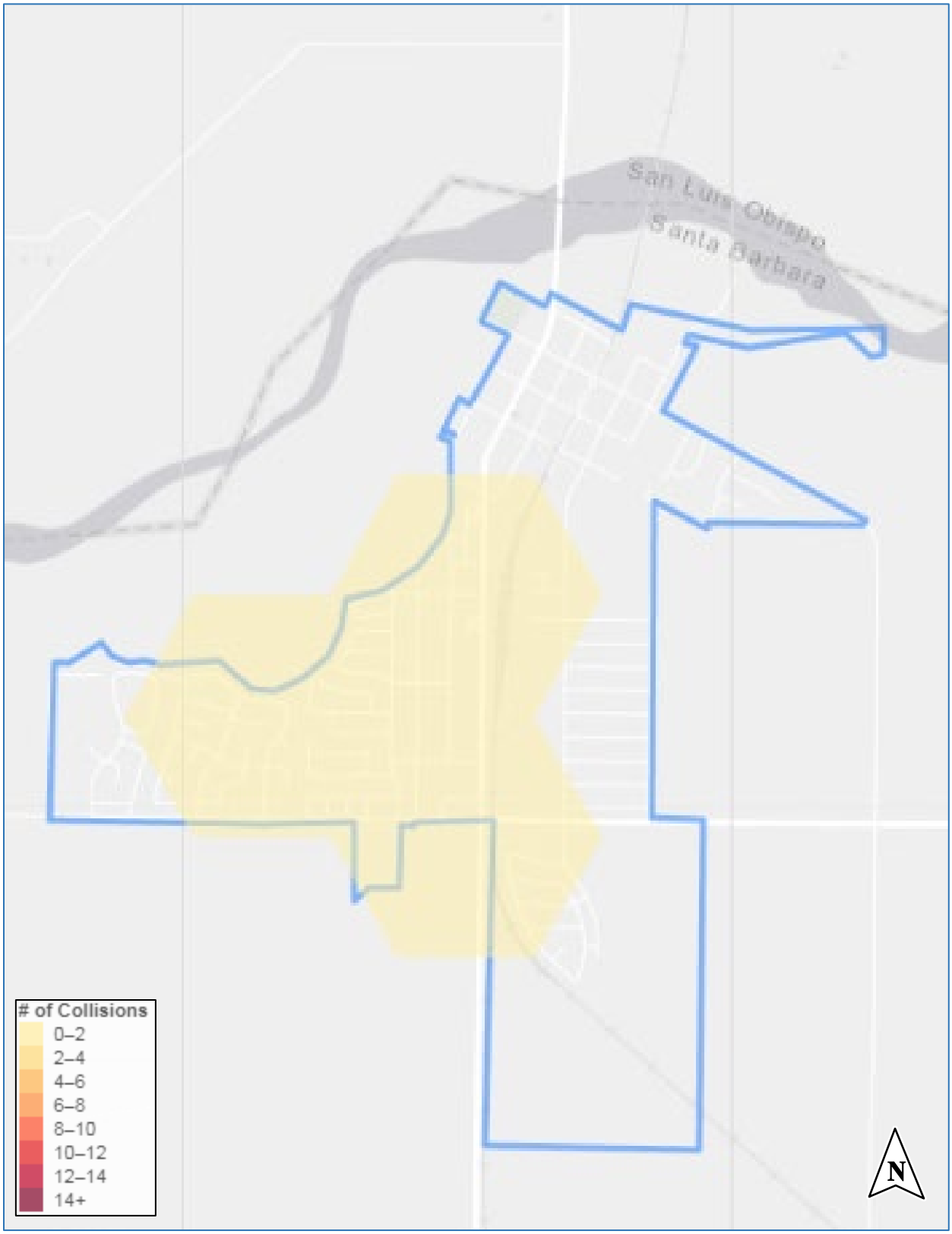


Figure 16: City of Guadalupe Active Transportation Program Hexagonal Grid Map

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

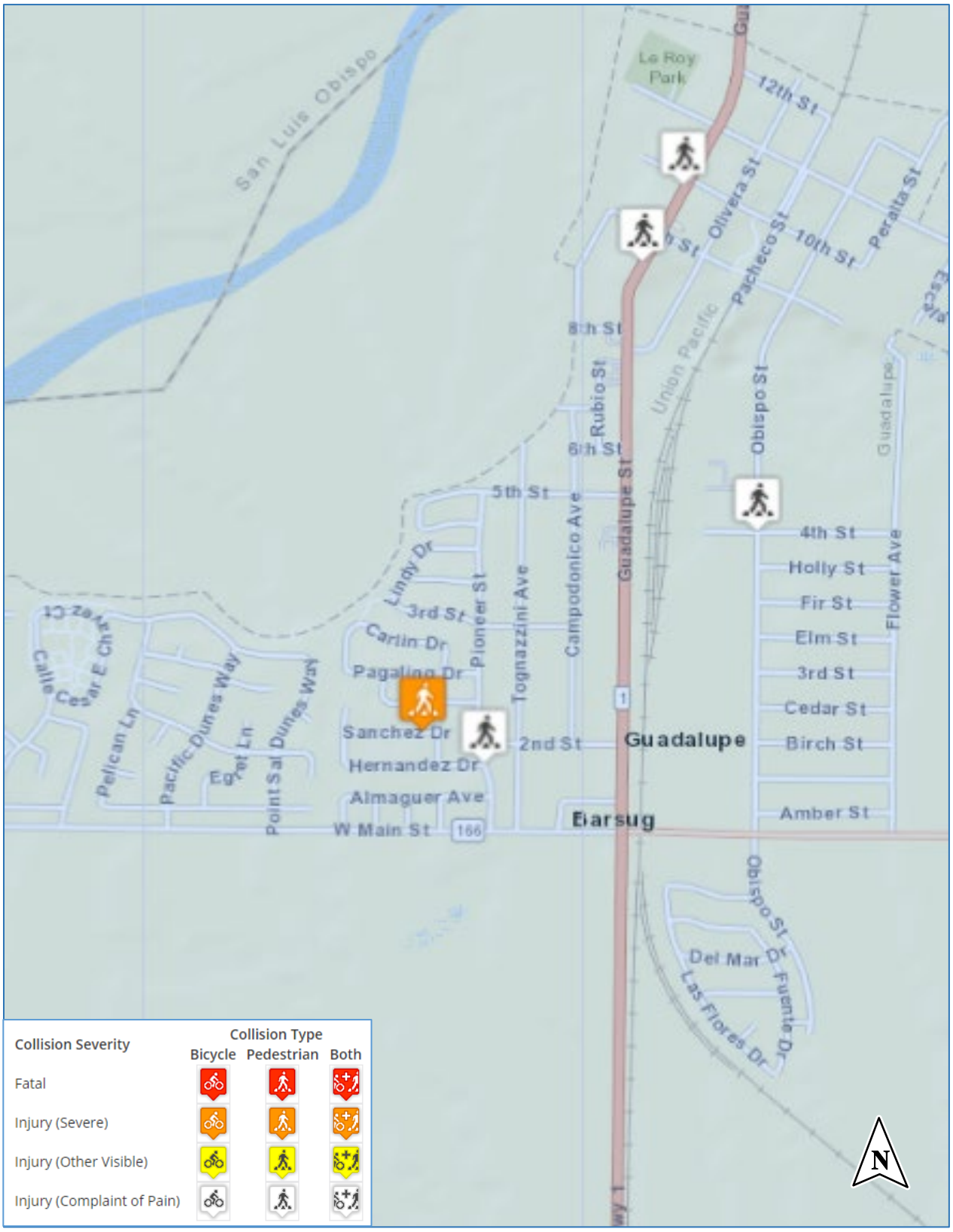
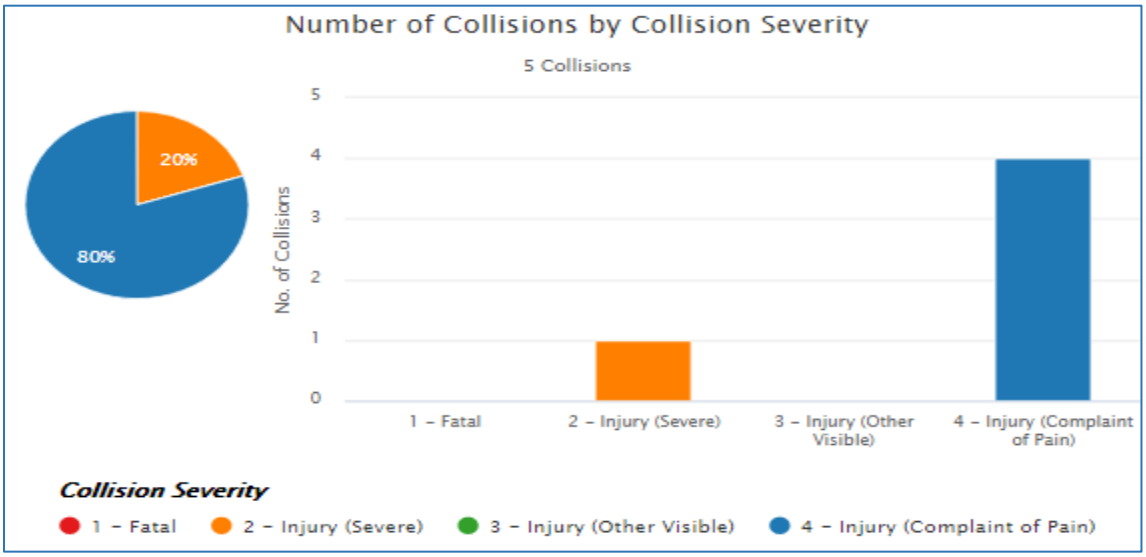


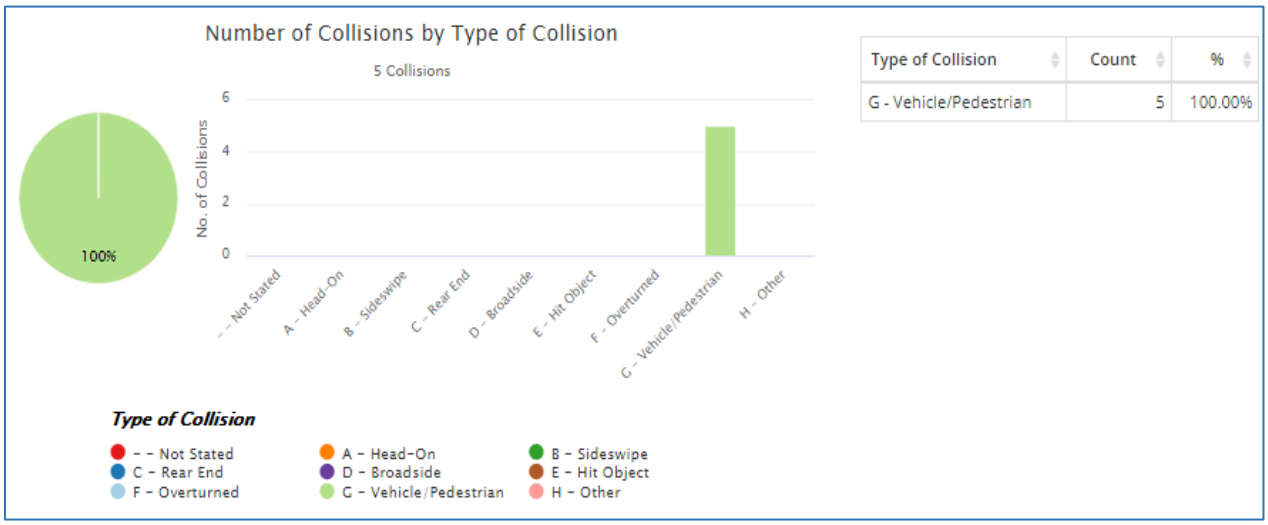
Figure 17: City of Guadalupe Active Transportation Program Specific Collision Map
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)



Collision Severity	Count	%
2 - Injury (Severe)	1	20.00%
4 - Injury (Complaint of Pain)	4	80.00%
Total	5	100%

Figure 18: City of Guadalupe Number of Collisions by Collision Severity
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

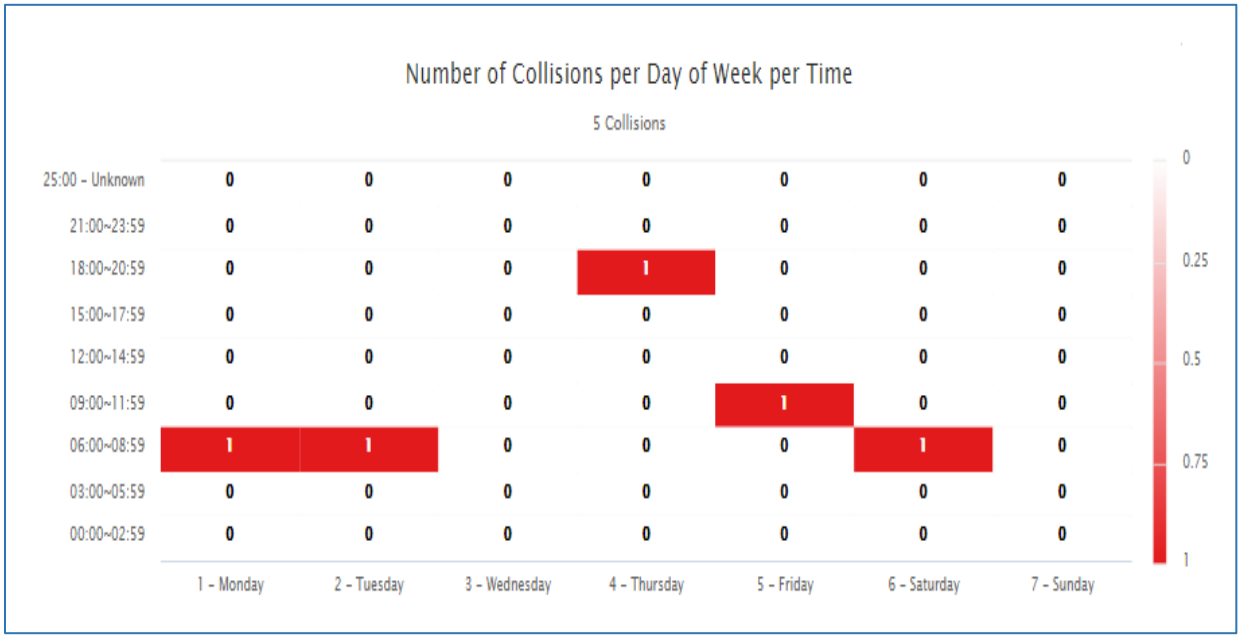
According to University of California, Berkeley Transportation Injury Mapping System (TIMS), from 2015 to 2020, there was 1 Injury (Severe) collision, which counted for 20 % of total 5 collisions and 4 collisions were identified as Injury (Complaint of Pain) which counted for 80 % of the total collisions.

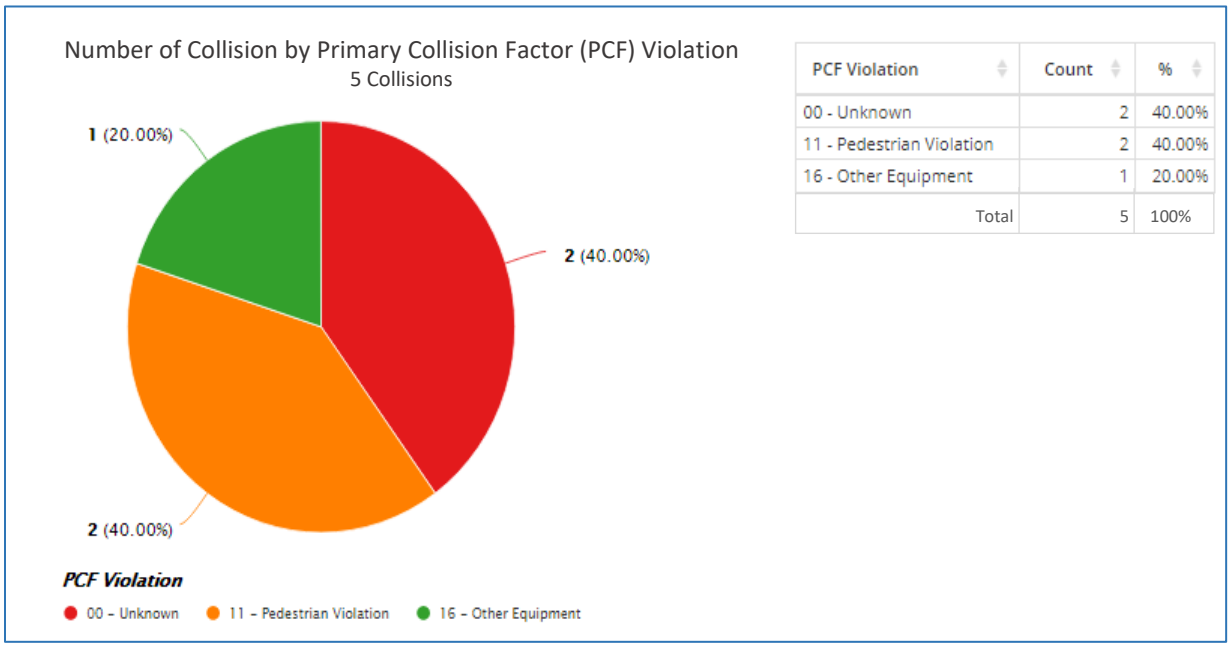


Type of Collision	Count	%
G - Vehicle/Pedestrian	5	100.00%

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

Table 2: City of Guadalupe ATP Number of Collisions per Day of Week per Time





PCF Violation	Count	%
00 - Unknown	2	40.00%
11 - Pedestrian Violation	2	40.00%
16 - Other Equipment	1	20.00%
Total	5	100%

Figure 20: City of Guadalupe Number of Collisions by PCF Violation
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

According to University of California, Berkeley Transportation Injury Mapping System (TIMS) From 2015 to 2020, out of the 5 collisions, 2 collisions had (00-Unknown) as a PCF Violation, 2 collisions had (11-Pedestrian Violation) as a PCF Violation, and 1 collision had (16-Other Equipment) as a PCF Violation.

7. Emphasis Areas

The project team identified four major emphasis areas for the City by utilizing the aforementioned analysis that included primary collision factors. The Strategic Highway Safety Plan (SHSP) addresses the "5 Es" of traffic safety: Engineering, Enforcement, Education, Emergency Response, and Emerging Technologies. Each emphasis area utilizes the 5 Es addressed by SHSP, the following emphasis areas are discussed and analyzed in this section.

1. High Collision Intersections
2. High Collision Roadway Segments
3. Rear End Collisions Due to Driving or Bicycling Under the Influence of Alcohol and Unsafe Speeds
4. Broadside Collisions Due to Improper Turning.

7.1 High Collision Intersections

The most prominent emphasis area is high collision intersections since most of the collisions in the City of Guadalupe occurred on intersections. Each intersection has its own unique geometry therefore, an analysis of each of the prominent eight (8) intersections in the City of Guadalupe was concluded to understand the factors leading to collisions.

Education

- Conduct public information and education campaign for safety laws regarding a safe approach to an intersection.
- Raise awareness of the necessity of abiding by the traffic safety laws.

Engineering

- Identify and rank high collision intersections within the City every two to three years. Consider information obtained from public input and feedback regarding unreported collisions to supplement crash data.
- Evaluate the primary factors leading to collisions at high collision roadway segments.
- Develop and implement countermeasures to tackle those factors.
- Assess and report collision patterns before and after implementation of countermeasures and adjust as necessary.
- Maintain roadway signing and striping.
- Consider improving night time lighting.

Enforcement

- Prioritize patrol patterns at high-risk intersections to monitor traffic law violations which include right of way violations, traffic signals and signs, unsafe speed, and DUI.
- When laws are enforced and awareness of abiding by traffic safety laws is raised, intersection collisions will reduce abundantly.

Emergency Medical Services

- Consider targeted training for responding to specific high collision intersections and immediate treatment of predominant injuries at those locations.

Emerging Technologies

- Develop new methods to integrate multisource transportation data for developing different measurements of traffic safety for road users and identify safety issues associated with emerging electrical and automated vehicles.

7.2 High Collision Roadway Segments

Applying safety improvements to high collision roadway segments is also a necessity. Each roadway segment has its own unique geometry therefore, an analysis of each of the prominent two (2) roadway segments in the City of Guadalupe was concluded to understand the factors leading to collisions that occurred.

Education

- Conduct public information and education campaign for safety laws regarding safe speed, improper turning, unsafe lane change, and driving on the wrong side of the road
- Raise awareness of the necessity of abiding by the traffic safety laws.

Source: Beverly Samperio, The Arrow

Engineering

- Identify and rank high collision roadway segments within the City every two to three years. Consider information obtained from public input and feedback regarding unreported collisions to supplement crash data.
- Evaluate the primary factors leading to collisions at high collision roadway segments.
- Develop and implement countermeasures to tackle those factors.
- Assess and report collision patterns before and after implementation of countermeasures and adjust as necessary.
- Maintain roadway signing and striping.
- Consider improving night time lighting.

Enforcement

- Prioritize patrol patterns at high collision roadway segments to monitor traffic law violations which include unsafe speed and improper turning.
- When laws are enforced and awareness of abiding by traffic safety laws is raised, roadway segment collisions will reduce abundantly.

Emergency Medical Services

- Consider targeted training for responding to specific high collision roadway segments and immediate treatment of predominant injuries at those locations.

Emerging Technologies

- Develop new methods to integrate multisource transportation data for developing different measurements of traffic safety for road users and identify safety issues associated with emerging electrical and automated vehicles.

7.3 Rear End Collisions Due to Driving or Bicycling Under the Influence of Alcohol or Drug and Unsafe Speed

Rear End collisions ranked the highest type of collisions with a total count of twelve (12) collisions. Fifty percent (50%) of rear end collisions occurred due to the primary collision factors, DUI and unsafe speed. Most rear end collisions occurred on intersections while some unsafe speed collisions occurred on roadway segments. Due to the sufficient correspondence between rear end collisions and unsafe speed and DUI collisions both were analyzed simultaneously.

Education

- Conduct public information and education campaign for safety laws regarding the undesired risks of drinking and driving and as well as maintaining a safe speed.
- Raise awareness of the necessity of not drinking while driving and maintaining a safe speed to avoid many undesired tragic events such as rear end collisions.

Source: www.quoteinspector.com

Engineering

- Identify locations where rear end collisions due to DUI and unsafe speed are occurring within the City every two to three years.
- Consider information obtained from public input and feedback regarding unreported collisions to supplement crash data.
- Develop and implement countermeasures to tackle rear end collisions due to unsafe speed.
- Assess and report collision patterns before and after implementation of countermeasures and adjust as necessary.

Enforcement

- Prioritize patrol patterns at DUI and high speed locations to monitor traffic law violations which include DUI not maintaining a safe speed while operating a vehicle.
- When laws are enforced and awareness of abiding by traffic safety laws and signs is raised, rear end collisions due to DUI and unsafe speed will reduce.

Emergency Medical Services

- Consider targeted training for responding to DUI and high speed locations and immediate treatment of predominant injuries at those locations.

Emerging Technologies

- Develop new methods to integrate multisource transportation data for developing different measurements of traffic safety for road users and identify safety issues associated with emerging electrical and automated vehicles.

7.4 Broadside Collisions Due to Improper Turning

Broadside collisions ranked the second highest type of collisions with a total count of eleven (11) collisions. Fifty-five percent (55%) of broadside collisions occurred due to the primary collision factor, improper turning. Most broadside and automobile right of way collisions occurred on intersections. Due to the sufficient correspondence between broadside and improper turning collisions both broadside and improper turning collisions were analyzed simultaneously.

Education

- Conduct public information and education campaign for safety laws regarding a proper turning by yielding to an automobile that has the right of way.
- Raise awareness of the necessity of abiding by the traffic safety laws to avoid broadside collisions that occur mostly due to improper turning by not give an automobile the right of way.

Engineering

- Identify locations where broadside collisions due to improper turning are occurring within the City every two to three years.
- Consider information obtained from public input and feedback regarding unreported collisions to supplement crash data.
- Develop and implement countermeasures to tackle broadside collisions due to improper turning.
- Assess and report collision patterns before and after implementation of countermeasures and adjust as necessary.
- Maintain roadway signing and striping.
- Consider improving night time lighting.

Enforcement

- Prioritize patrol patterns at high collision intersections where broadside collisions due to improper turning are occurring mostly to monitor traffic law violations which include the failure of stopping and waiting for a safe gap to approach the road.
- When laws are enforced and awareness of abiding by traffic safety laws and signs is raised, broadside collisions due to improper turning will reduce abundantly.

Emergency Medical Services

- Consider targeted training for responding to high collision intersections where broadside collisions due to improper turning are occurring mostly and immediate treatment of predominant injuries at those locations.

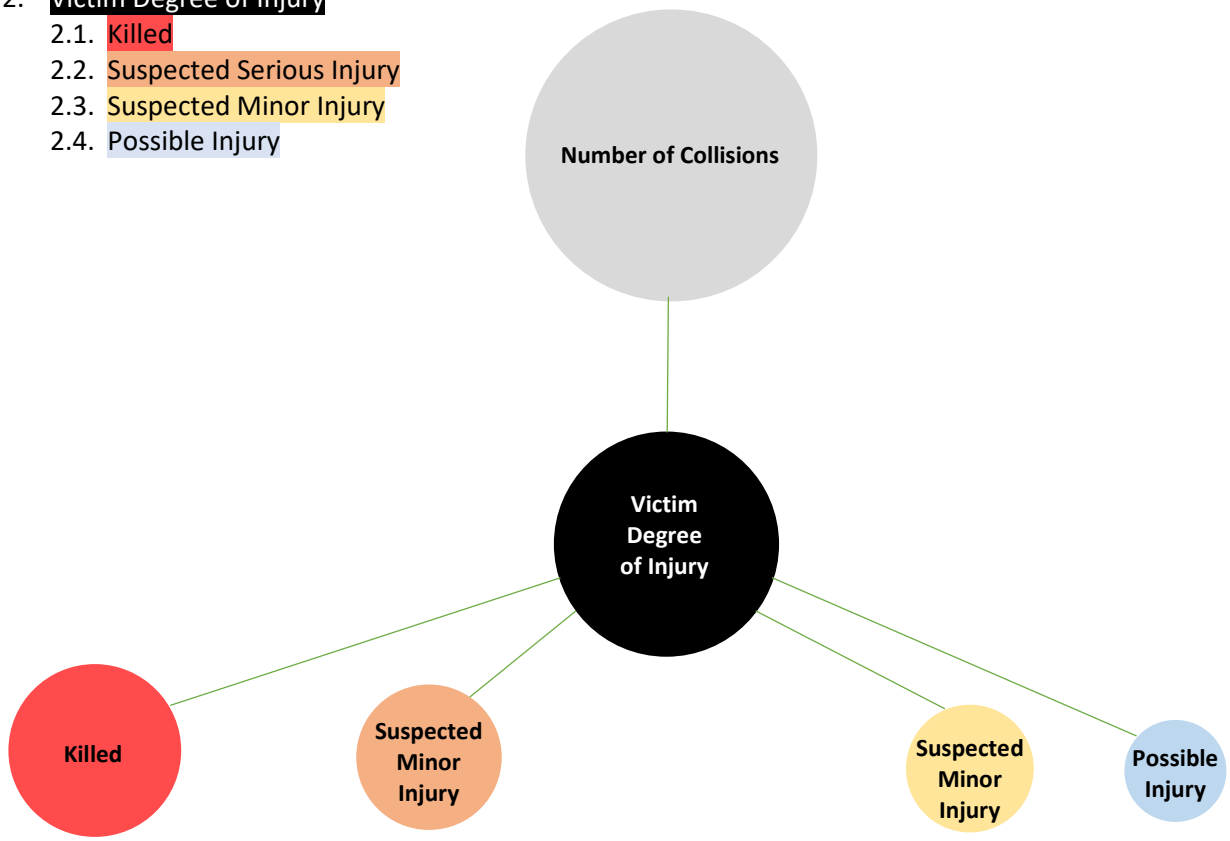
Emerging Technologies

- Develop new methods to integrate multisource transportation data for developing different measurements of traffic safety for road users and identify safety issues associated with emerging electrical and automated vehicles.

8. High Collision Locations Identification, Pattern Analysis, and Recommended Improvements

As part of the quantitative analysis, high collision intersections and roadway segments were identified and prioritized using the Crash Frequency methodology as described in the Local Roadway Safety Manual. Crash Frequency is defined as the number of crashes occurring within a determined study area. Minagar & Associates, Inc. took a further step and included the number of victims and their corresponding degree of injury for each intersection and roadway segment. As part of the qualitative analysis, Minagar & Associates, Inc. conducted a field assessment in the City of Guadalupe on October 20, 2021. The field visit mission, to study the characteristics and geometry of the existing roadway infrastructure, was accomplished successfully and conceptual plans were developed. For each of the identified high collision locations (intersections and roadway segments), prominent locations in the City were identified and ranked based on the following criteria:

1. Number of Collisions
2. Victim Degree of Injury
   - 2.1. Killed
   - 2.2. Suspected Serious Injury
   - 2.3. Suspected Minor Injury
   - 2.4. Possible Injury



Upon identifying and ranking prominent intersections and roadway segments, collisions were analyzed by identifying the Primary Collision Factor (PCF) that lead to the occurrence of each collision and the pattern. Upon completion of the analysis, recommendations were developed as safety mitigation measures to potentially mitigate similar collisions in the future. Countermeasures have been proposed in complaince with the California Manual on Uniform Traffic Control Devices.

It is important to utilize Crash Modification Factor (CMF) when identifying potential systemic safety improvements. The CMF method is found in Part D of the American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM). CMFs are defined as the ratio of

effectiveness of expected crashes with treatment in comparison to expected crashes without treatment. Furthermore, A CMF is a multiplicative factor used to determine the expected number of crashes after implementing the proposed countermeasures to ensure efficiency of utilizing and implementing the proposed countermeasures. Countermeasures with CMFs less than one are expected to reduce crashes. On the other hand, countermeasures with CMFs greater than one are expected to increase crashes. CMFs are calculated as follows:

$$CMF = \frac{\text{Expected Crashes WITH Treatment}}{\text{Expected Crashes WITHOUT Treatment}}$$

CMF < 1.0	Expected to reduce crashes
CMF = 1.0	Expected to have no impact on safety
CMF > 1.0	Expected to increase crashes

A Crash Reduction Factor (CRF) is similar and related to a CMF but stated in different terms. A CRF is defined as a percentage of crash reduction that might be expected after the implementation of a given countermeasure at a specific site. CRFs are calculated as follows:

$$CRF = (1 - CMF) \times 100$$

Appropriate CMFs shall be used with caution. CMFs should be selected from the HSM Part D, the LRSM, or from the FHWA CMF Clearinghouse website (http://www.cmfclearinghouse.org).

Table 3: City of Guadalupe Engineering Countermeasures Toolbox

LRSM No. [1]	Countermeasure Name	Crash Type			CMF [2]	CRF [3]	HSIP Funding Eligibility
		All	Night	Ped and Bike			
NS02	Convert to all-way STOP control	X			0.5	50%	100%
NS06	Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs	X			0.85	15%	100%
NS07	Upgrade intersection pavement marking	X			0.75	25%	100%
R22	Install/upgrade signs with new fluorescent sheeting (regulatory or warning)	X			0.85	15%	100%
R24	Install curve advance warning signs	X			0.75	25%	100%

[1] Local Roadway Safety Manual Countermeasure Identification Number

- NS: Non-Signalized Intersection
- R: Roadway Segment

[2] Crash Modification Factor
[3] Crash Reduction Factor

8.1 High Collision Intersections

High collision intersections are critical intersections that require the most analytical focus since it is anticipated that many collisions will occur within a high collision intersection based on its crash history. Table 4 displays the eight (8) most prominent intersections in terms of number of collisions in the City of Guadalupe. Table 5 displays the eight (8) prominent intersections with their ranking methodology.

Table 4: List of High Collision Intersections

Intersection Identification Number*	Intersection Ranking Number**	Intersection	Control	Number of Collisions***
1	1	State Hwy 166/W Main St & Obispo St	Non-Signalized	4
2	2	State Hwy 166/ W Main St & State Hwy 1/Cabrillo Hwy/Guadalupe St	Non-Signalized	3
3	3	W Main St & Pacific Dunes Wy	Non-Signalized	3
4	4	Obispo St & Cedar St	Non-Signalized	2
5	5	State Hwy 1/Cabrillo Hwy/Guadalupe St & 9th St	Non-Signalized	2
6	6	Pioneer St & Wong St	Non-Signalized	1
7	6	Pacific Dunes Wy & Surf Bird Ln	Non-Signalized	1
8	7	Hernandez Dr & Mills Ln	Non-Signalized	1

* Intersection Identification Number is merely an identification method utilized to avoid confusion with the Intersection Ranking Number.
** Intersection Ranking Number is based on the number of contiguous collisions in each intersection within a distance of 250 feet.
*** Total Number of Collisions during the 5-year period between December 31, 2015 and December 31, 2020.

Table 5: Intersection Number of Collisions and Ranking in the City of Guadalupe

Intersection Ranking Number*	Intersection	Number of Collisions**	Victim Degree of Injury			
			Killed	Suspected Serious Injury	Suspected Minor Injury	Possible Injury
1	State Hwy 166/W Main St & Obispo St	4	0	0	1	5
2	State Hwy 166/ W Main St & State Hwy 1/ Cabrillo Hwy/ Guadalupe St	3	1	0	0	2
3	W Main St & Pacific Dunes Wy	3	0	0	3	1
4	Obispo St & Cedar St	2	0	0	1	1
5	State Hwy 1/Cabrillo Hwy/Guadalupe St & 9th St	2	0	0	0	3
6	Pioneer St & Wong St	1	0	0	1	0
6	Pacific Dunes Wy & Surfbird Ln	1	0	0	1	0
7	Hernandez Dr & Mills Ln	1	0	0	0	2

* Intersection Ranking Number is based on the number of contiguous collisions in each intersection within a distance of 250 feet.
** Total Number of Collisions during the 5-year period between December 31, 2015 and December 31, 2020.

8.1.1 Intersection 1: State Hwy 166/ W Main St & Obispo St

Table 6: Intersection 1 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Automobile Right of Way
1		Improper Turning
1		Brakes
1		Other Improper Driving
Total	4	

Pattern: Driver is not giving the automobile the right of way.

High Collision Recommendations:

This is a two-way stop control intersection. Warrant assessments were conducted for this intersection and it has been concluded that this intersection is warranted for both multi-way stop control and traffic signal control. The Pasadera development is going to install a traffic signal control. However, until the permanent installation of a traffic signal control, it is recommended for this intersection to be converted to a multi-way stop control as an interim measure. The following list of recommendations includes the consideration of converting the existing two-way stop control to a multi-way stop control.

1. Remove existing pavement & traffic striping.
2. Install stop bar.
3. Install stop legend.
4. Install stop sign (R1-1).
5. Install stop ahead sign (W3-1).
6. Install Type II (R) through-right arrow pavement.
7. Install Type III (L) left arrow pavement.
8. Install double yellow traffic striping.
9. Install yellow marker.
10. Repaint intersection pavement marking.
11. Restripe intersection traffic striping.

8.1.2 Intersection 2: State Hwy 166/ W Main St & State Hwy 1/ Cabrillo Hwy/ Guadalupe St

Table 7: Intersection 2 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Traffic Signals and Signs
1		Unsafe Speed
1		Unknown
Total	3	

Pattern: Driver is not abiding by traffic signal and signs and is not maintaining a safe speed.

High Collision Recommendations:

This is a multi-way stop control intersection. A traffic signal warrant assessment has been conducted for this intersection and it has been concluded that this intersection is warranted for the installation of a traffic signal control. However, the following list of recommendations considers some interim measures to be developed until proceeding with the installation of a new traffic signal.

1. Install “Do Not Stop on Tracks” (R8-8) sign.
2. Install Grade Crossing and Intersection Advance Warning (W10-2 (R)) sign.
3. Install Grade Crossing and Intersection Advance Warning (W10-2 (L)) sign.
4. Repaint intersection pavement marking.
5. Restripe intersection traffic striping.

8.1.3 Intersection 3: W Main St & Pacific Dunes Wy

Table 8: Intersection 3 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
2		Improper Turning
1		Automobile Right of Way
Total	17	

Pattern: Pacific Dunes Way southbound drivers are not stopping as they approach the stop bar.

High Collision Recommendations:

1. Repaint intersection pavement marking.
2. Restripe intersection traffic striping.

8.1.4 Intersection 4: Obispo St & Cedar St

Table 9: Intersection 4 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Other Than Driver (or Pedestrian)
1		Driving or Bicycling Under the Influence of Alcohol or Drug
Total	2	

Pattern: A rear-end collision occurred as one driver was driving on Obispo St northbound and hit a parked vehicle.

High Collision Recommendations:

1. Repaint intersection pavement marking.
2. Restripe intersection traffic striping.
3. Install "Speed Limit 35" (R2-1).

8.1.5 Intersection 5: State Hwy 1/ Cabrillo Hwy/ Guadalupe St & 9th St

Table 10: Intersection 5 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Automobile Right of Way
1		Improper Turning
Total	2	

Pattern: A broadside collision occurred due to the driver not giving the automobile the right of way. Another broadside collision occurred as a result of improper turning.

High Collision Recommendations:

1. Repaint intersection pavement marking.
2. Restripe intersection traffic striping.
3. Convert to multi-way stop control based on 8-hour turning movement counts.

8.1.6 Intersection 6: Pioneer St & Wong St

Table 11: Intersection 6 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Improper Turning
Total	1	

Pattern: A broadside collision due to the driver that exited the house by making a left turn onto Wong St.

High Collision Recommendations:

1. Repaint intersection pavement marking.
2. Restripe intersection traffic striping.
3. Install R2-1 (25 MPH).

8.1.7 Intersection 7: Pacific Dunes Wy & Surfbird Ln

Table 12: Intersection 7 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Improper Turning
Total	1	

Pattern: A broadside collision due to the Pacific Dunes Wy northbound driver making a left turn onto Surfbird Ln and not yielding to the oncoming Pacific Dunes Wy southbound driver.

High Collision Recommendations:

1. Repaint intersection pavement marking.
2. Restripe intersection traffic striping.

8.1.8 Intersection 8: Hernandez Dr & Mills Ln

Table 13: Intersection 8 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Unknown
Total	1	

Pattern: A sideswipe collision due to a driver heading east on Hernandez Dr and colliding with a parked vehicle.

High Collision Recommendations:

1. Install R2-1 (25 MPH).

8.2 High Collision Roadway Segments

High collision roadway segments are critical segments that require focus since it is anticipated that collisions will occur within a high collision roadway segment based on its crash history. The following table displays the two (2) most prominent roadway segments in the City of Guadalupe. Table 15 displays the two (2) prominent roadway segments with their ranking methodology.

Table 14: List of High Collision Roadway Segments

Roadway Segment Identification Number*	Roadway Segment Ranking Number**	Roadway Segment***	Number of Collisions****
1	1	11th St to Simas Rd	1
2	2	State Hwy 1/ Cabrillo Hwy/ Guadalupe St from 8th St to 9th St	1

* Roadway Segment Identification Number is merely an identification method utilized to avoid confusion with the Roadway Segment Ranking Number.
** Roadway Segment Ranking Number is based on the number of collisions that occurred on a roadway segment.
*** The average length of a roadway segment in the City of Guadalupe is approximately 1000 ft.
**** Total Number of Collisions during the 5-year period between December 31, 2015 and December 31, 2020.

Table 15: Roadway Segment Number of Collisions and Ranking in the City of Guadalupe

Roadway Segment Ranking Number*	Roadway Segment	Number of Collisions**	Victim Degree of Injury			
			Killed	Suspected Serious Injury	Suspected Minor Injury	Possible Injury
1	11th St to Simas Rd	1	0	0	1	0
2	State Hwy 1/ Cabrillo Hwy/ Guadalupe St from 8th St to 9th St	1	0	0	0	1

* Roadway Segment Ranking Number is based on the number of collisions that occurred on a roadway segment.
** Total Number of Collisions during the 5-year period between December 31, 2015 and December 31, 2020.

8.2.1 Roadway Segment 1: 11th St to Simas Rd

Table 16: Roadway Segment 1 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Driving or Bicycling Under the Influence of Alcohol or Drug
Total	1	

Pattern: The driver was driving under the influence of alcohol or drug and ran off the road.

High Collision Recommendations:

1. Install W1-2 (R) & W13-1P.

8.2.2 Roadway Segment 2: State Hwy 1/ Cabrillo Hwy/ Guadalupe St from 8th St to 9th St

Table 17: Roadway Segment 2 Number of Collisions and Corresponding Primary Collision Factor

Number of Collisions		Primary Collision Factor
1		Pedestrian Violation
Total	1	

Pattern: This collision occurred as a result of a pedestrian crossing west onto the oncoming northbound and southbound traffic when there is no crosswalk.

High Collision Recommendations:

1. Install “No Pedestrian Crossing” (R9-3A) & “Use Crosswalk” (R9-3BP (R)).
2. Install “No Pedestrian Crossing” (R9-3A) & “Use Crosswalk” (R9-3BP (L)).
3. Restripe all roadway segment traffic striping.

9. Collision Diagrams, Preliminary Conceptual Plans for Recommended Improvements at High Collision Intersections and High Collision Roadway Segments, Cost Estimates, and Benefit Cost Ratios

At each of the aforementioned high collision intersections and roadway segments, the collision patterns have been evaluated and countermeasures to those patterns have been developed through a preliminary conceptual plan and the preliminary cost of those measures has been estimated. This section of this report summarize those results.

This Local Safety Plan is funded through a Highway Safety Improvement Program (HSIP) grant from the California Department of Transportation (Caltrans). HSIP grant funding is prioritized and awarded based on the grant funding's economic effectiveness, which is established by a benefit to cost ratio. Under the current HSIP call for projects, the minimum Benefit to Cost Ratio is 3.5. A summary of the benefit to cost ratios is provided in this section. Project cost estimates are calculated on a line item basis using the Caltrans Contract Cost Database. In some cases, recent construction bids and benefit values are calculated based on Caltrans established countermeasure values.

Depending on the City’s priorities, it is highly recommended that multiple projects as provided below are grouped into one HSIP application to maximize potential funding allocations.

9.1 High Collision Intersections

9.1.1 Intersection 1: State Hwy 166/ W Main St & Obispo St

Figure 21: Intersection 1 Collision Diagram (4 Collisions)

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

HIGH COLLISION RECOMMENDATIONS:

1. REMOVE EXISTING PAVEMENT & TRAFFIC STRIPING.
2. INSTALL STOP BAR.
3. INSTALL STOP LEGEND.
4. INSTALL STOP SIGN (R1-1).
5. INSTALL STOP AHEAD SIGN (W3-1).
6. INSTALL TYPE II (R) THROUGH-RIGHT ARROW PAVEMENT.
7. INSTALL TYPE III (L) LEFT ARROW PAVEMENT.
8. INSTALL DOUBLE YELLOW TRAFFIC STRIPING.
9. INSTALL YELLOW MARKER.
10. REPAINT INTERSECTION PAVEMENT MARKING.
11. RESTRIPE INTERSECTION TRAFFIC STRIPING.

EX. SIGN (W11-2) & (W16-7P)

EX. SIGN (R1-1)

EX. SIGN (W11-2) & (W16-7P)

EX. SIGN (R1-1)

STOP STOP STOP

STATE HWY 166/ W MAIN ST

OBISPO ST

EXISTING SIGNS

R1-1

W11-2

W16-7P

TRAFFIC SIGNS RECOMMENDATIONS:

R1-1

W3-1

N

W E

S

Photo Source: Minagar & Associates, Inc.
Footage captured with a 4K video resolution drone on Oct 20, 2021

Intersection 1

State Hwy 166/ W Main St & Obispo St

Recommended Improvements

MINAGAR & ASSOCIATES, INC.
ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING
23282 MILL CREEK DRIVE
SUITE 120
LAGUNA HILLS, CA 92653
TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/21/2021

9.1.1.1 Intersection 1 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 18: Intersection 1 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility		
						LRSM CM No. NS02 *	LRSM CM No. NS06 *	LRSM CM No. NS07 *
1	Install stop bar.	LF	42	$3.50	$147.00	100%	0%	0%
2	Install stop legend.	SQFT	88	$14.00	$1,232.00	100%	0%	0%
3	Install regulatory or warning signs.	EA	4	$575.00	$2,300.00	0%	100%	0%
4	Install arrow pavement.	SQFT	260	$14.00	$3,640.00	0%	0%	100%
5	Install double yellow traffic striping.	LF	241	$3.50	$843.50	0%	0%	100%
6	Install yellow marker.	EA	8	$5.00	$40.00	0%	0%	100%
7	Repaint intersection pavement marking.	SQFT	22	$14.00	$308.00	0%	0%	100%
8	Restripe intersection traffic striping.	LF	37	$3.50	$129.50	0%	0%	100%
				Weighted Average (%)	100%	16%	27%	57%
				Total ($)	$8,640.00			

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$1,728.00
Total Construction Cost (Including Contengencies):		$10,368.00

Total Cost & Benefit

The project's total cost is estimated at $10,368 which does not include the design and engineering costs. The estimated benefit of these improvements is $575,424 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 55.50.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 55.50, the proposed intersection improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$573,579
Travel Time	$1,699
Vehicle Operating Cost	$100
Emissions	$45
Total Benefits	**$575,424**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$10,368
Present Value Benefits ($ Dollars)	$575,424
Net Present Value ($ Dollars)	$565,056
Benefit / Cost Ratio	55.50

9.1.2 Intersection 2: State Hwy 166/ W Main St & State Hwy 1/ Cabrillo Hwy/ Guadalupe St

Figure 22: Intersection 2 Collision Diagram (3 Collisions)

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

HIGH COLLISION RECOMMENDATIONS:

1. INSTALL "DO NOT STOP ON TRACKS" (R8-8) SIGN.
2. INSTALL GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-2 (R)) SIGN.
3. INSTALL GRADE CROSSING AND INTERSECTION ADVANCE WARNING (W10-2 (L)) SIGN.
4. REPAINT INTERSECTION PAVEMENT MARKING.
5. RESTRIPE INTERSECTION TRAFFIC STRIPING.

STATE HWY 1/ CABRILLO HWY/ GUADALUPE ST

STATE HWY 166/ W MAIN ST

W MAIN ST

STATE HWY 1/ CABRILLO HWY

UNION PACIFIC RAILROAD

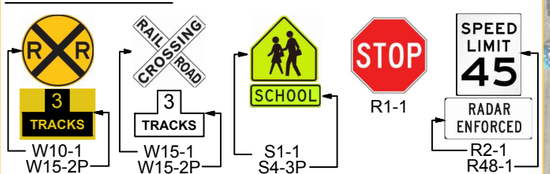
EX. SIGN (R1-1)

EX. SIGN W15-1 & W15-2P

EX. SIGN S1-1 & S4-3P

EX. SIGN W10-1 & W15-2P

EXISTING SIGNS:



TRAFFIC SIGNS RECOMMENDATIONS:

Photo Source: Minagar & Associates, Inc.
Footage captured with a 4K video resolution drone on Oct 20, 2021

N W E S

Intersection 2

State Hwy 166/ W Main St & State Hwy 1/ Cabrillo Hwy/ Guadalupe St

Recommended Improvements

MINAGAR & ASSOCIATES, INC.
ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING
23282 MILL CREEK DRIVE
SUITE 120
LAGUNA HILLS, CA 92653
TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/25/2021

9.1.2.1 Intersection 2 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 19: Intersection 2 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility	
						LRSM CM No. NS06 *	LRSM CM No. NS07 *
1	Install regulatory or warning signs.	EA	4	$575.00	$2,300.00	100%	0%
2	Repaint intersection pavement marking.	SQFT	390	$14.00	$5,460.00	0%	100%
3	Restripe intersection traffic striping.	LF	3086	$3.50	$10,801.00	0%	100%
				Weighted Average (%)	100%	12%	88%
				Total ($)	$18,561.00		

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$3,712.20
Total Construction Cost (Including Contengencies):		$22,274.00

Total Cost & Benefit

The project's total cost is estimated at $22,274 which does not include the design and engineering costs. The estimated benefit of these improvements is $13,083,670 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 587.40.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 587.40 the proposed intersection improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$13,079,897
Travel Time	$3,637
Vehicle Operating Cost	$125
Emissions	$11
Total Benefits	**$13,083,670**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$22,274
Present Value Benefits ($ Dollars)	$13,083,670
Net Present Value ($ Dollars)	$13,061,396
Benefit / Cost Ratio	587.40

9.1.3 Intersection 3: W Main St & Pacific Dunes Wy

Figure 23: Intersection 3 Collision Diagram (3 Collisions)

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

HIGH COLLISION RECOMMENDATIONS:

1. REPAINT INTERSECTION PAVEMENT MARKING.
2. RESTRIPE INTERSECTION TRAFFIC STRIPING.

EXISTING SIGN:

R1-1

N
W
E
S

Intersection 3

W Main St & Pacific Dunes Wy

Recommended Improvements

MINAGAR & ASSOCIATES, INC.

ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING

23282 MILL CREEK DRIVE

SUITE 120

LAGUNA HILLS, CA 92653

TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/25/2021

9.1.3.1 Intersection 3 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 20: Intersection 3 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility LRSM CM No. NS07 *
1	Repaint intersection pavement marking.	SQFT	67	$14.00	$938.00	100%
2	Restripe intersection traffic striping.	LF	219	$3.50	$766.50	100%
				Weighted Average (%)	100%	100%
				Total ($)	$1,704.50	

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$340.90
Total Construction Cost (Including Contengencies):		$2,046.00

Total Cost & Benefit

The project's total cost is estimated at $2,046 which does not include the design and engineering costs. The estimated benefit of these improvements is $280,278 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 136.99.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 136.99, the proposed intersection improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$279,548
Travel Time	$680
Vehicle Operating Cost	$40
Emissions	$11
Total Benefits	**$280,278**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$2,046
Present Value Benefits ($ Dollars)	$280,278
Net Present Value ($ Dollars)	$278,232
Benefit / Cost Ratio	136.99

9.1.4 Intersection 4: Obispo St & Cedar St

No sufficient collision inofrmation is recorded for this intersection therfore, TIMS does not provide a collision diagram for this intersection.

HIGH COLLISION RECOMMENDATIONS:

1. REPAINT INTERSECTION PAVEMENT MARKING.
2. RESTRIPE INTERSECTION TRAFFIC STRIPING.
3. INSTALL "SPEED LIMIT 35" (R2-1).

OBISPO ST

CEDAR ST

EX. SIGN (R1-1)

EXISTING SIGN:

R1-1

TRAFFIC SIGNS RECOMMENDATIONS:

R2-1

N

W E

S

Intersection 4

Obispo St & Cedar St

Recommended Improvements

MINAGAR & ASSOCIATES, INC.

ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING

23282 MILL CREEK DRIVE

SUITE 120

LAGUNA HILLS, CA 92653

TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/25/2021

9.1.4.1 Intersection 4 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 21: Intersection 4 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility	
						LRSM CM No. NS06 *	LRSM CM No. NS07 *
1	Install regulatory or warning signs.	EA	2	$575.00	$1,150.00	100%	0%
2	Repaint intersection pavement marking.	SQFT	15	$14.00	$210.00	0%	100%
3	Restripe intersection traffic striping.	LF	22	$3.50	$77.00	0%	100%
				Weighted Average (%)	100%	80%	20%
				Total ($)	$1,437.00		

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$287.40
Total Construction Cost (Including Contengencies):		$1,725.00

Total Cost & Benefit

The project's total cost is estimated at $1,725 which does not include the design and engineering costs. The estimated benefit of these improvements is $227,371 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 131.81.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 131.81, the proposed intersection improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$226,921
Travel Time	$425
Vehicle Operating Cost	$25
Emissions	$0
Total Benefits	**$227,371**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$1,725
Present Value Benefits ($ Dollars)	$227,371
Net Present Value ($ Dollars)	$225,646
Benefit / Cost Ratio	131.81

9.1.5 Intersection 5: State Hwy 1/ Cabrillo Hwy/ Guadalupe St & 9th St

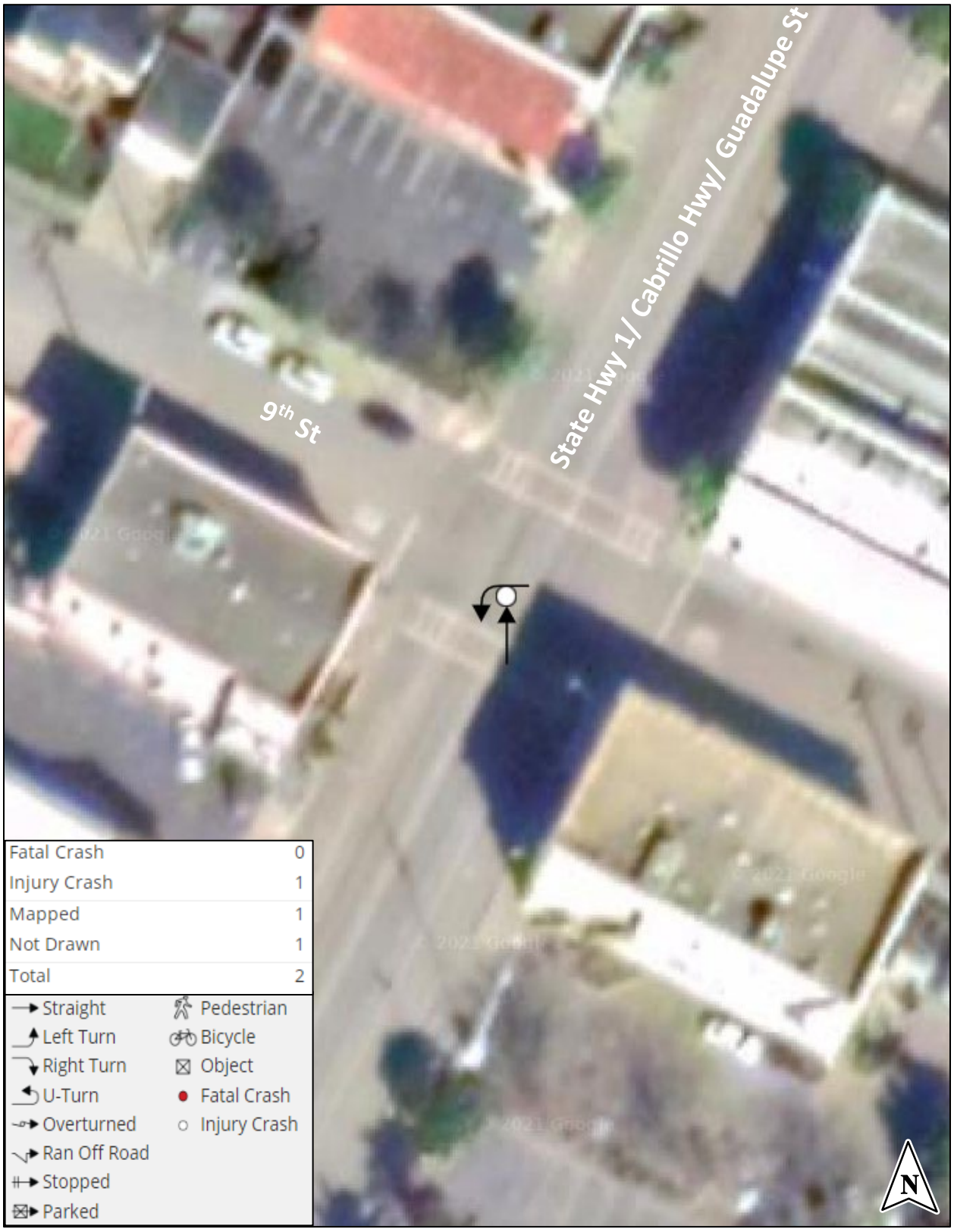


Figure 24: Intersection 5 Collision Diagram (2 Collisions)

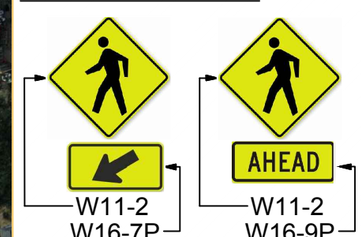
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

HIGH COLLISION RECOMMENDATIONS:

1. REPAINT INTERSECTION PAVEMENT MARKING.
2. RESTRIPE TRAFFIC STRIPING.
3. CONVERT TO MULTI-WAY STOP CONTROL BASED ON 8-HOUR TURNING MOVEMENT COUNTS.

EX. SIGN (R1-1)
EX. SIGN (W11-2) & (W16-7P)
EX. SIGN (W11-2) & (W16-9P)
EX. SIGN (R1-5)
EX. SIGN (W11-2) & (W16-7P)
EX. SIGN (R1-1)
STOP
STATE HWY 1/ CABRILLO HWY/ GUADALUPE ST
9TH ST

EXISTING SIGNS:



R1-5

R1-1

Photo Source: Minagar & Associates, Inc.
Footage captured with a 4K video resolution drone on Oct 20, 2021

Intersection 5
State Hwy 1/ Cabrillo Hwy/ Guadalupe St & 9th St
Recommended Improvements

MINAGAR & ASSOCIATES, INC.
ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING
23282 MILL CREEK DRIVE
SUITE 120
LAGUNA HILLS, CA 92653
TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 12/14/2021

9.1.5.1 Intersection 5 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 22: Intersection 5 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility LRSM CM No. NS07 *
1	Repaint intersection pavement marking.	SQFT	200	$14.00	$2,800.00	100%
2	Restripe intersection traffic striping.	LF	44	$3.50	$154.00	100%
				Weighted Average (%)	100%	100%
				Total ($)	$2,954.00	

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$590.80
Total Construction Cost (Including Contengencies):		$3,545.00

Total Cost & Benefit

The project's total cost is estimated at $3,545 which does not include the design and engineering costs. The estimated benefit of these improvements is $287,712 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 81.16.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 81.16 the proposed intersection improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$286,790
Travel Time	$849
Vehicle Operating Cost	$50
Emissions	$23
Total Benefits	**$287,712**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$3,545
Present Value Benefits ($ Dollars)	$287,712
Net Present Value ($ Dollars)	$284,167
Benefit / Cost Ratio	81.16

9.1.6 Intersection 6: Pioneer St & Wong St

Figure 25: Intersection 6 Collision Diagram (1 Collision)

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

HIGH COLLISION RECOMMENDATIONS:

1. REPAINT INTERSECTION PAVEMENT MARKING.
2. RESTRIPE INTERSECTION TRAFFIC STRIPING.
3. INSTALL "SPEED LIMIT 25" (R2-1).

PIONEER ST

WONG ST

EX. SIGN (R1-1)

EXISTING SIGN:

R1-1

TRAFFIC SIGNS RECOMMENDATIONS:

R2-1

N
W
E
S

Intersection 6

Pioneer St & Wong St

Recommended Improvements

MINAGAR & ASSOCIATES, INC.

ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING

23282 MILL CREEK DRIVE

SUITE 120

LAGUNA HILLS, CA 92653

TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/25/2021

9.1.6.1 Intersection 6 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 23: Intersection 6 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility	
						LRSM CM No. NS06 *	LRSM CM No. NS07 *
1	Install regulatory or warning signs.	EA	2	$575.00	$1,150.00	100%	0%
2	Repaint intersection pavement marking.	SQFT	22	$14.00	$308.00	0%	100%
3	Restripe intersection traffic striping.	LF	15	$3.50	$52.50	0%	100%
				Weighted Average (%)	100%	76%	24%
				Total ($)	$1,510.50		

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$302.10
Total Construction Cost (Including Contengencies):		$1,813.00

Total Cost & Benefit

The project's total cost is estimated at $1,813 which does not include the design and engineering costs. The estimated benefit of these improvements is $227,371 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 125.41.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 125.41 the proposed intersection improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$226,921
Travel Time	$425
Vehicle Operating Cost	$25
Emissions	$0
Total Benefits	**$227,371**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$1,813
Present Value Benefits ($ Dollars)	$227,371
Net Present Value ($ Dollars)	$225,558
Benefit / Cost Ratio	125.41

9.1.7 Intersection 7: Pacific Dunes Wy & Surfbird Ln

No sufficient collision inofrmation is recorded for this intersection therfore, TIMS does not provide a collision diagram for this intersection.

HIGH COLLISION RECOMMENDATIONS:

1. REPAINT INTERSECTION PAVEMENT MARKING.
2. RESTRIPE TRAFFIC STRIPING.

SURFBIRD LN

PACIFIC DUNES WAY

EX. SIGN (R1-1)

EX. SIGN (R1-1)

EXISTING SIGN:

R1-1

N

W

E

S

Intersection 7

Pacific Dunes Wy & Surfbird Ln

Recommended Improvements

MINAGAR & ASSOCIATES, INC.

ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING

23282 MILL CREEK DRIVE

SUITE 120

LAGUNA HILLS, CA 92653

TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/25/2021

9.1.7.1 Intersection 7 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 24: Intersection 7 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility LRSM CM No. NS07 *
1	Repaint intersection pavement marking.	SQFT	44	$14.00	$616.00	100%
2	Restripe intersection traffic striping.	LF	44	$3.50	$154.00	100%
				Weighted Average (%)	100%	100%
				Total ($)	$770.00	

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$154.00
Total Construction Cost (Including Contengencies):		$924.00

Total Cost & Benefit

The project's total cost is estimated at $924 which does not include the design and engineering costs. The estimated benefit of these improvements is $227,371 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 246.07

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 246.07 the proposed intersection improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$226,921
Travel Time	$425
Vehicle Operating Cost	$25
Emissions	$0
Total Benefits	**$227,371**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$924
Present Value Benefits ($ Dollars)	$227,371
Net Present Value ($ Dollars)	$226,447
Benefit / Cost Ratio	246.07

9.1.8 Intersection 8: Hernandez Dr & Mills Ln

Figure 26: Intersection 8 Collision Diagram (1 Collision)

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

HIGH COLLISION RECOMMENDATIONS:

1. REPAINT INTERSECTION PAVEMENT MARKING.
2. RESTRIPE TRAFFIC STRIPING.
3. INSTALL "SPEED LIMIT 25" (R2-1).

MILLS LN

EX. SIGN (R1-1)

HERNANDEZ DR

EXISTING SIGN:

R1-1

TRAFFIC SIGNS RECOMMENDATIONS:

R2-1

N
W
E
S

Intersection 8

Hernandez Dr & Mills Ln

Recommended Improvements

MINAGAR & ASSOCIATES, INC.

ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING

23282 MILL CREEK DRIVE

SUITE 120

LAGUNA HILLS, CA 92653

TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/25/2021

9.1.8.1 Intersection 8 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 25: Intersection 8 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility	
						LRSM CM No. NS06 *	LRSM CM No. NS07 *
1	Install regulatory or warning signs.	EA	2	$575.00	$1,150.00	100%	0%
2	Repaint intersection pavement marking.	SQFT	22	$14.00	$308.00	0%	100%
3	Restripe intersection traffic striping.	LF	13	$3.50	$45.50	0%	100%
				Weighted Average (%)	100%	76%	24%
				Total ($)	$1,503.50		

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$300.70
Total Construction Cost (Including Contengencies):		$1,805.00

Total Cost & Benefit

The project's total cost is estimated at $1,805 which does not include the design and engineering costs. The estimated benefit of these improvements is $143,856 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 79.70.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 79.70 the proposed intersection improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$143,395
Travel Time	$425
Vehicle Operating Cost	$25
Emissions	$11
Total Benefits	**$143,856**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$1,805
Present Value Benefits ($ Dollars)	$143,856
Net Present Value ($ Dollars)	$142,051
Benefit / Cost Ratio	79.70

9.2 High Collision Roadway Segments

9.2.1 Roadway Segment 1: 11th St to Simas Rd

Figure 27: Roadway Segment 1 Collision Diagram (1 Collision)
Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

HIGH COLLISION RECOMMENDATIONS:

1. INSTALL W1-2 (R) & W13-1P

EXISTING SIGN:

W1-2 (L)

W13-1P

TRAFFIC SIGNS RECOMMENDATIONS:

W1-2 (R)

W13-1P

LEGEND:

CITY BOARDER

Roadway Segment 1
11th St to Simas Rd
Recommended Improvements

MINAGAR & ASSOCIATES, INC.
ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING
23282 MILL CREEK DRIVE
SUITE 120
LAGUNA HILLS, CA 92653
TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/25/2021

9.2.1.1 Roadway Segment 1 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 26: Roadway Segment 1 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility LRSM CM No. NS06 *
1	Install regulatory or warning signs.	EA	2	$575.00	$1,150.00	100%
				Weighted Average (%)	100%	100%
				Total ($)	$1,150.00	

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$230.00
Total Construction Cost (Including Contengencies):		$1,380.00

Total Cost & Benefit

The project's total cost is estimated at $1,380 which does not include the design and engineering costs. The estimated benefit of these improvements is $136,423 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 98.86.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 98.86 the proposed roadway segment improvement project is eligible for HSIP funding and is considered a competitive HSIP project.

Itemized Benefits	
Safety	$136,153
Travel Time	$255
Vehicle Operating Cost	$15
Emissions	$0
Total Benefits	**$136,423**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$1,380
Present Value Benefits ($ Dollars)	$136,423
Net Present Value ($ Dollars)	$135,043
Benefit / Cost Ratio	98.86

9.2.2 Roadway Segment 2: State Hwy 1/ Cabrillo Hwy/ Guadalupe St from 8th St to 9th St

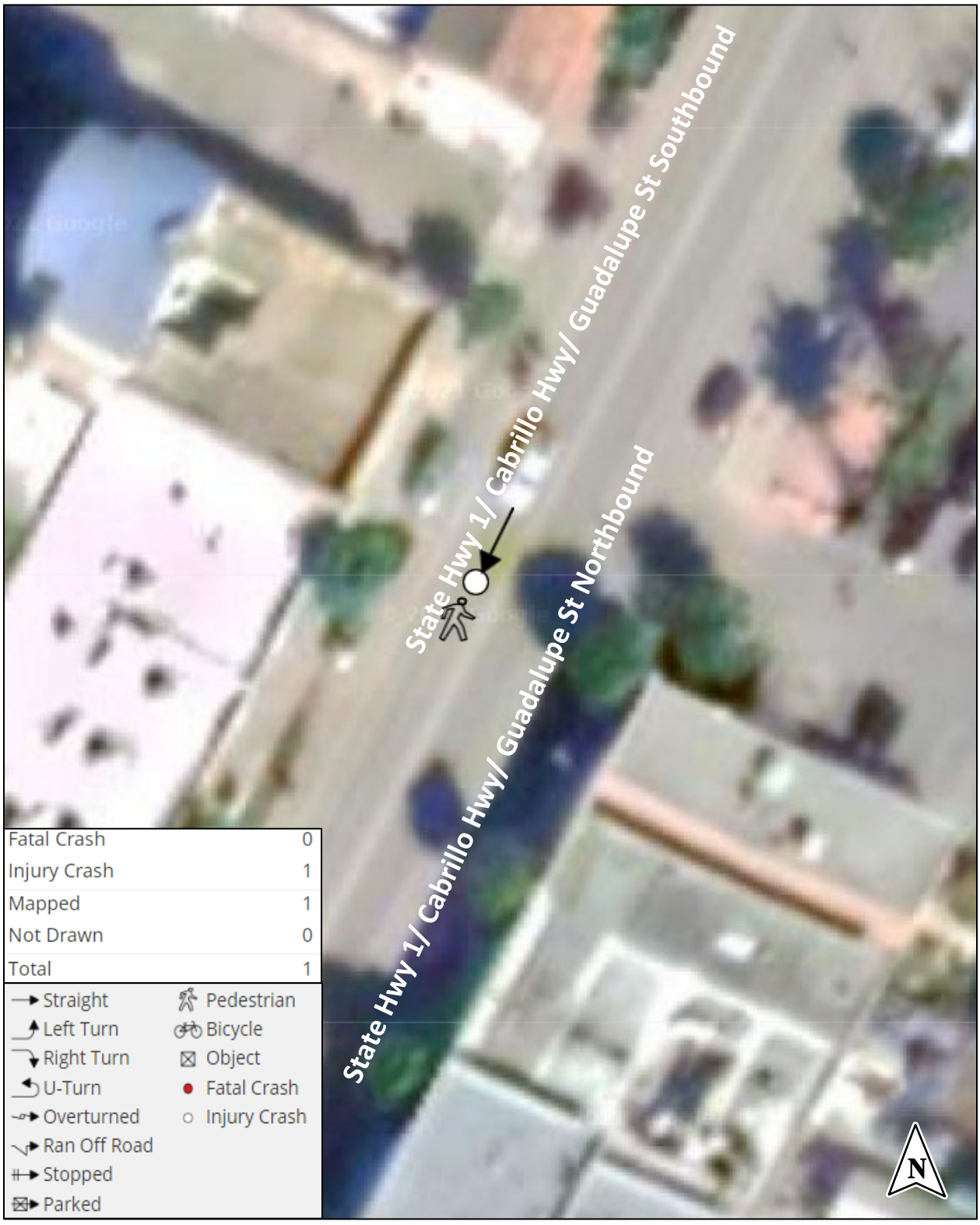


Figure 28: Roadway Segment 2 Collision Diagram (1 Collision)

Source: University of California, Berkeley Transportation Injury Mapping System (TIMS)

HIGH COLLISION RECOMMENDATIONS:

1. INSTALL "NO PEDESTRIAN CROSSING" (R9-3A) & "USE CROSSWALK" (R9-3BP (R)).
2. INSTALL "NO PEDESTRIAN CROSSING" (R9-3A) & "USE CROSSWALK" (R9-3BP (L)).
3. RESTRIPE TRAFFIC STRIPING BETWEEN THE "START" AND "END" LABELED POINTS

START

END

STATE HWY 1/ CABRILLO HWY/ GUADALUPE ST

8TH ST

9TH ST

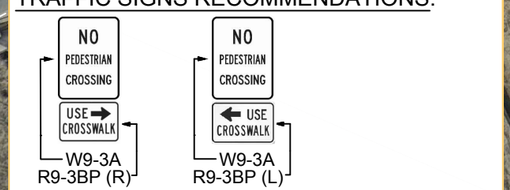
EX. SIGN (S1-1) & (S4-3P)

EX. SIGN (W11-2) & (W16-7P)

EX. SIGN (R1-5)

EX. SIGN (W11-2) & (W16-7P)

TRAFFIC SIGNS RECOMMENDATIONS:



EXISTING SIGNS:

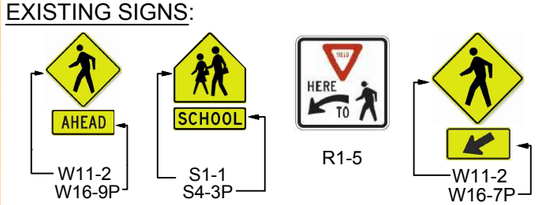


Photo Source: Minagar & Associates, Inc.
Footage captured with a 4K video resolution drone on Oct 20, 2021

Roadway Segment 2

State Hwy 1/ Cabrillo Hwy/ Guadalupe St from 8th St to 9th St

Recommended Improvements

ITS-TRAFFIC/CIVIL/ELECTRICAL/ ENGINEERING TRANSPORTATION PLANNING
23282 MILL CREEK DRIVE
SUITE 120
LAGUNA HILLS, CA 92653
TEL: (949) 707-1199

City of Guadalupe
Local Roadway Safety Plan
High Collision Locations

Date: 10/25/2021

9.2.2.1 Roadway Segment 2 Cost Estimate and Cost/Benefit Analysis

Construction Cost Estimate:

The following table represents the preliminary line-item cost for the proposed countermeasures. Line-item costs are derived from the Caltrans contract cost database for District 5.

Table 27: Roadway Segment 2 Cost Estimate

No.	Item Description	Unit	Quantity	Unit Cost	Total	HSIP Funding Eligibility	
						LRSM CM No. NS06 *	LRSM CM No. NS07 *
1	Install regulatory or warning signs.	EA	4	$575.00	$2,300.00	100%	0%
2	Restripe all roadway segment traffic striping	LF	4991	$3.50	$17,468.50	0%	100%
				Weighted Average (%)	100%	12%	88%
				Total ($)	$19,768.50		

* Non-Signalized Countermeasure Identification of Local Roadway Safety Manual (Version 1.5, April 2020)

Contingencies percentage of the aformentioned Total Construction Cost:	20%	$3,953.70
Total Construction Cost (Including Contengencies):		$23,723.00

Total Cost & Benefit

The project's total cost is estimated at $23,723 which does not include the design and engineering costs. The estimated benefit of these improvements is $143,856 based on the Highway Safety Benefit-Cost Analysis Model (Version 2.0). The resulting Benefit-Cost ratio is 6.06.

The current HSIP Cycle 10 program has a required minimum B/C ratio (BCR) of 3.5 for a BCR Application. With a B/C ratio of 6.06 the proposed roadway segment improvement project is eligible for HSIP funding.

Itemized Benefits	
Safety	$143,395
Travel Time	$425
Vehicle Operating Cost	$25
Emissions	$11
Total Benefits	**$143,856**

Summary of Total Cost & Benefit	
Present Value Costs ($ Dollars)	$23,723
Present Value Benefits ($ Dollars)	$143,856
Net Present Value ($ Dollars)	$120,133
Benefit / Cost Ratio	6.06

MINAGAR & ASSOCIATES, INC.

ITS - Traffic/Civil/Electrical Engineering - Transportation Planning - Homeland Security - CEM

2019	Winner of the Orange County Engineering Council's Outstanding Service Award
2016	Winner of the ASCE's Outstanding Civil Engineer in the Private Sector Award in the State of California
2016	Winner of the ASCE Los Angeles Section's Outstanding Civil Engineer in the Private Sector Award
2016	Winner of the ASCE Orange County Chapter's Outstanding Civil Engineer in the Private Sector Award
2016	Certificate of Recognition for Dedication to Support the ELTP Program by Los Angeles County MTA/Metro
2016	Winner of the Orange County Engineering Council's Outstanding Engineering Service Award
2015	Orange County Business Journal's 2015 Excellence in Entrepreneurship Award Nominee
2014	Orange County Business Journal's 2014 Excellence in Entrepreneurship Award Nominee
2012	Winner of Cal-EPA/California Air Resources Board's Cool California Climate Leader
2011	Award of Excellence in Service by Los Angeles County MTA/Metro in the County of Los Angeles
2011	Award of Excellence in Service by Los Angeles County MTA/Metro in the County of Los Angeles
2010	Award of Excellence in Service by Los Angeles County MTA/Metro in the County of Los Angeles
2009	Winner of the ASCE's Outstanding Private Sector Civil Engineering Project in Metropolitan Los Angeles
2009	Winner of the Caltrans' 2009 Excellence in Transportation Award in the State of California
2007	Winner of the ASCE's Outstanding Public/Private Sector Civil Engineering Project in Metropolitan Los Angeles
2005	Winner of the APWA's Best Traffic Congestion Mitigation Project of the Year in Southern California
2004	Top Nominee of Transportation Foundation's Highway Management Program in the State of California
2003	Winner of the PTI's Best Transportation Technology Solutions Award in the United States
2002	Winner of the ITS-CA's Best Return on Investment Project Award in the State of California
2000	Award of Excellence in Service by Los Angeles County MTA/Metro in the County of Los Angeles

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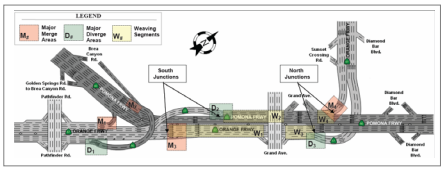

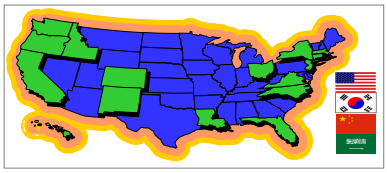

MINAGAR & ASSOCIATES, INC.

23282 Mill Creek Drive, Suite 120
Laguna Hills, CA 92653

Tel: (949)707-1199
Web: **www.minagarinc.com**

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