Southeast Arizona Transportation Safety Plan

Sierra Vista Metropolitan Planning Organization and
Southeastern Arizona Governments Organization

NOVEMBER 2024

Statutory Notice

23 U.S.C. § 409: US Code - Section 409: Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds 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 mentioned or addressed in such reports, surveys, schedules, lists, or data.

The Southeast Arizona Transportation Safety Plan was supported by grant funding from the Federal Highway Administration (U.S. Dept. of Transportation) and the Arizona Department of Transportation. The contents of this report reflect the view and opinions of Southeastern Arizona Governments Organization and the Sierra Vista Metropolitan Planning Organization who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily state or reflect the official views or policies of the U.S. Dept. of Transportation, the Arizona Dept. of Transportation, or any other State or Federal agency. This report does not constitute a standard, specification, or regulation.

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List of Acronyms

A	Severe Injury Crash
ACIS	Arizona Crash information System
ADOT	Arizona Department of Transportation
AZ SMART	Arizona State Match Advantage for Rural Transportation
B	Suspected Minor Injury Crash
BIA	Bureau of Indian Affairs
BIL	Bipartisan Infrastructure Law
C	Possible Injury Crash
CCR	Critical Crash Rate
CEJST	Climate and Economic Justice Screening Tool
CMAQ	Congestion Mitigation/Air Quality
CMF	Crash Modification Factor
EA	Emphasis Area
EPDO	Equivalent Property Damage Only
ETC	Equitable Transportation Community
FARS	Fatality Accident Reporting System
FHWA	Federal Highway Administration
GFA	Geographic Focus Area
HSIP	Highway Safety Improvement Program
HSM	Highway Safety Manual
HSP	Highway Safety Program
HURF	Highway User Revenue Fund
IIJA	Infrastructure Investment and Jobs Act
K	Fatal Crash
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century
MUTCD	Manual on Uniform Traffic Control Devices
NHPP	National Highway Performance Program
NHTSA	National Highway Traffic Safety Administration
NRSS	National Roadway Safety Strategy
O	No Injury/Property Damage Only Crash
PMT	Project Management Team
PSC	Proven Safety Countermeasures
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
SEAGO	Southeastern Arizona Governments Organization
SEAZ TSP	Southeast Arizona Transportation Safety Plan
SHSP	Strategic Highway Safety Plan
SP&R	Statewide Planning and Research
SS4A	Safe Streets and Roads for All
STB	State Transportation Board
STBG	Surface Transportation Block Grant Program
STP	Surface Transportation Program
STIP	Statewide Transportation Improvement Program
SVMPO	Sierra Vista Metropolitan Planning Organization
TA	Transportation Alternatives Set-Aside
TAC	Technical Advisory Committee
TIFIA	Transportation Infrastructure Finance and Innovation Act
TraCS	Traffic and Criminal Software
TTP	Tribal Transportation Program
USDOT	United State Department of Transportation
VRU	Vulnerable Road User
VRUSA	Vulnerable Road User Safety Assessment

Acknowledgements

Safety Partners

Cochise County

City of Bisbee
City of Benson
City of Douglas
City of Tombstone
City of Willcox

Graham County
Town of Pima
City of Safford
Town of Thatcher

Greenlee County
Town of Clifton
Town of Duncan

Santa Cruz County
City of Nogales
Town of Patagonia

Sierra Vista Metropolitan Planning Organization
Town of Huachuca City
City of Sierra Vista

San Carlos Apache Tribe

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1. Introduction

The Southeast Arizona Governments Organization (SEAGO) and Sierra Vista Metropolitan Planning Organization (SVMPO) cooperatively prepared the **Southeast Arizona Transportation Safety Plan** (SEAZ TSP). The planning area includes all four counties in the SEAGO and SVMPO regions: Cochise County, Graham County, Greenlee County, and Santa Cruz County, each incorporated jurisdiction within them, and the San Carlos Apache Tribe.

The SEAZ TSP includes a safety analysis informed by engagement with the public and stakeholders, considers equity, reviews current safety-focused practices, identifies specific locations that should be considered for safety improvements, and recommends strategies and projects.

What is a Transportation Safety Plan?

The SEAZ TSP is an update to the SEAGO/SVMPO Strategic Highway Safety Plan (SHSP), completed in 2018. The SEAZ TSP was updated to reflect the following objectives:

- Analyzed the most recent five years of crash data (2018-2022) in the SEAGO/SVMPO planning areas.
- Reviewed projects identified in the 2018 Plan in the context of updated crash analysis.
- Identified safety emphasis areas that coordinate with Arizona's SHSP.
- Established goals and performance metrics to measure progress towards reducing serious injuries and facilities in the region.
- Recommended strategies and projects to reduce serious injuries and fatalities.
- Engaged the public and stakeholders to highlight safety needs in the region and build momentum to implement Plan recommendations.

Highway Safety Improvement Program

The SEAZ TSP was funded through Arizona Department of Transportation (ADOT) Highway Safety Improvement Program (HSIP). The purpose of the Arizona HSIP is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads in Arizona.[1]

As explained in the Arizona HSIP Manual, dated November 2023, the HSIP codified as Section 148 of Title 23, United States Code (23 U.S.C. 148) remains as one of the core federal-aid programs in the federal surface transportation act, "Moving Ahead for Progress in the 21st Century" (MAP-21), which was signed into law on July 6, 2012.

[1] ADOT. *Arizona Highway Safety Improvement Program Manual*. Transportation Systems Management & Operations Group, Traffic Safety Section. November 2023. https://azdot.gov/sites/default/files/2023-12/2023-HSIP-Manual.pdf

This SEAZ TSP identifies infrastructure improvements that, upon implementation, will reduce the frequency of fatalities and serious injuries. A highway safety improvement project means strategies, activities, and infrastructure projects on a public road that are consistent with a state's SHSP. Infrastructure-related improvements are eligible for HSIP funds, identified based on crash experience, crash potential, and crash rate or other safety data-supported means.

The Infrastructure Investment and Jobs Act (IIJA) (Public Law 117-58, also known as the "Bipartisan Infrastructure Law" [BIL]), signed into law on November 15, 2021, and amended 23 U.S.C.148. Section 11111, Highway Safety Improvement Program, added paragraph (11), SPECIFIED SAFETY PROJECT, allows for non-infrastructure projects to promote public awareness regarding highway safety matters, facilitates enforcement of traffic safety laws, and provides infrastructure and infrastructure related equipment to support emergency services among other projects.

Safe Streets and Roads for All Grant Program

The BIL, signed into law on November 15, 2021, established the Safe Street for All (SS4A) discretionary program to fund improvements and strategies to prevent roadway fatalities and serious injuries of all users of highways, streets, and roadways: pedestrians, bicyclists, public transportation users, motorists, personal conveyance and micro-mobility users, and commercial vehicle operators.

The program includes $5 billion in appropriated federal funds over five years, 2022-2026. The SS4A programs provides Federal funds for two types of grants:

- **Planning and Demonstration Grants** to prepare SS4A Action Plans to develop a holistic, well-defined strategy to prevent roadway fatalities and serious injuries in a locality, Tribe, or region.
- **Implementation Grants** to fund implementation of projects and strategies identified in an Action Plan to address a roadway safety problem. Projects and strategies may be related to infrastructure, behavior, or operational activities. Applicants must have a qualifying Action Plan that meets the eligibility requirements to apply for an Implementation Grant. In addition, applicant agencies must have ownership and/or maintenance responsibilities over a roadway network, safety responsibilities that affect roadways, or an agreement from the agency that has ownership and/or maintenance responsibilities for the roadway within the applicant's jurisdiction.

This SEAZ TSP includes the required elements that allow local jurisdictions to apply for Implementation Grants from the SS4A discretionary grant program. Required Action Plan elements are shown in **Figure 1**.

Figure 1. SS4A Action Plan Components

The Action Plan components are described below.

Leadership Commitment and Goal Setting. Requires an official public commitment by a governing body to a goal of zero roadway serious injuries and fatalities.

Planning Structure. Defines a task force charged with oversight of the development and implementation of the Action Plan.

Safety Analysis. Reviews historical and existing safety conditions that provide a baseline for serious injury and fatal crashes.

Engagement and Collaboration. Conducts significant engagement with stakeholders and the public, allowing for community representation and feedback to be incorporated into the Action Plan.

Equity Considerations. Ensures underserved communities are identified and preferred in proposed projects and strategies.

Policy and Process Changes. Assesses existing policies, plans, guidelines, and standards to identify areas of improvement in transportation safety planning.

Strategy and Project Selections. Identifies projects and strategies, based on data and public engagement, which will address existing safety issues.

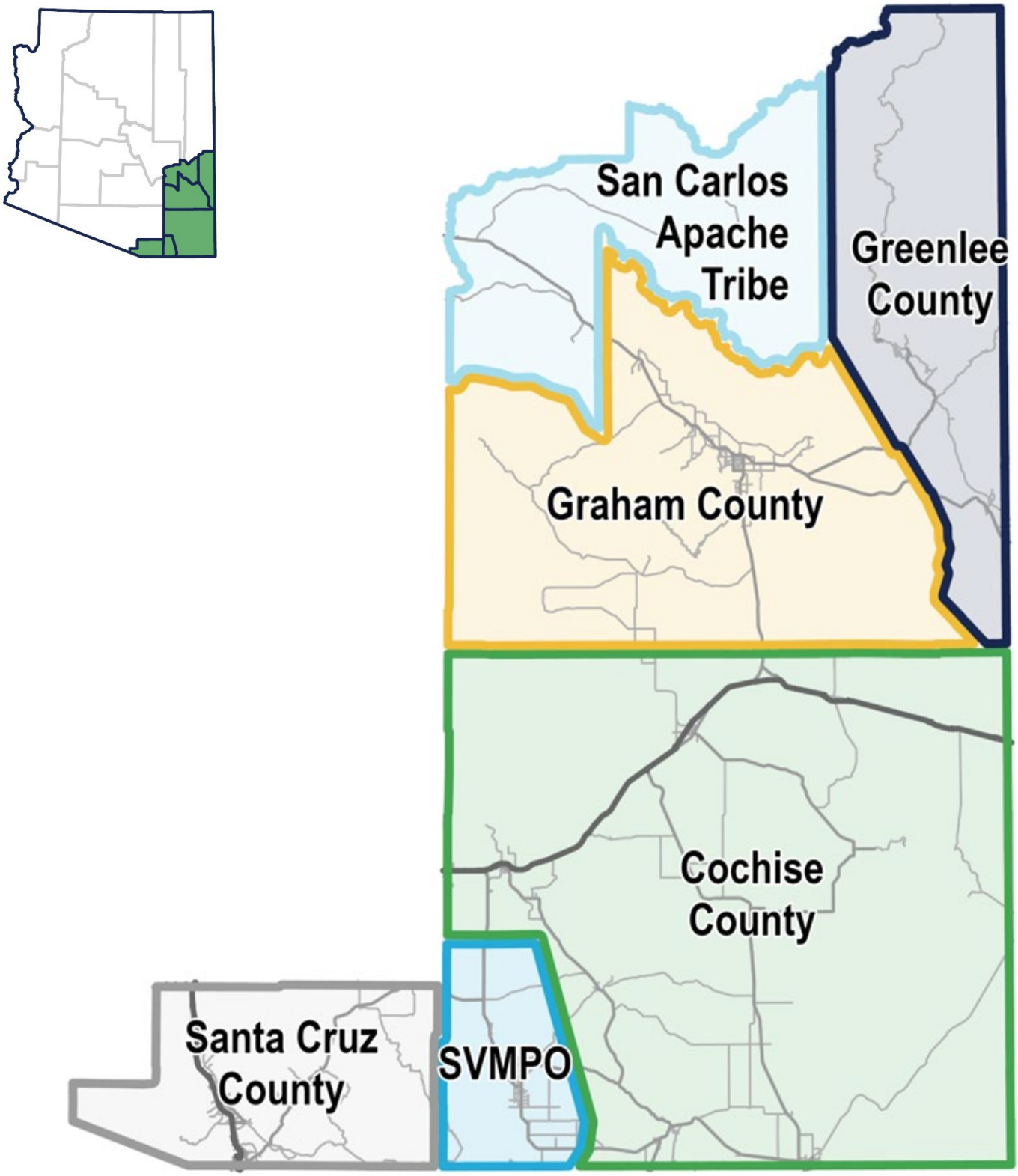
Progress and Transparency. Measures progress towards the Plan's goals, including review of updated data and presentation of results to the public.

Study Area

Figure 2 shows the study area, comprised of the SEAGO and SVMPO jurisdictions. The study area includes four Arizona counties: Cochise County, Graham County, Greenlee County, and Santa Cruz County, as well as the San Carlos Apache Tribe. Major communities in the study area include the City of Bisbee, City of Willcox, City of Safford, Town of Duncan, Town of Clifton, City of Nogales, and City of Sierra Vista.

The study area was divided into six Geographic Focus Areas (GFAs) to enable the analysis to drill down to the highest priority safety issues within a specific area of the study area. The six GFAs are: Santa Cruz County, Cochise County, Graham County, Greenlee County, SVMPO, and San Carlos Apache Tribal area.

Figure 2. Study Area



2. Safe System Approach

Introduction to the Safe System Approach

SEAZ TSP recommendations are consistent with the Safe System Approach. The Safe System Approach was adopted by USDOT as the guiding paradigm to address roadway safety and mitigate the risk inherent in our complex transportation system.[2]

The Safe System Approach focuses on human mistakes and human vulnerability to design a system with redundancies in place to protect everyone. A Safe System Approach includes the principles summarized in **Figure 3**.

Figure 3. Safe System Approach

Source: USDOT, https://www.transportation.gov/NRSS/SafeSystem

Death and Serious Injuries are Unacceptable A Safe System Approach prioritizes the elimination of crashes that result in death and serious injuries.	**Responsibility is Shared** All stakeholders—including government at all levels, industry, non-profit/advocacy, researchers, and the public—are vital to preventing fatalities and serious injuries on our roadways.
Humans Make Mistakes People will inevitably make mistakes and decisions that can lead or contribute to crashes, but the transportation system can be designed and operated to mitigate the outcomes of human mistakes and avoid death and serious injuries when a crash occurs.	**Humans are Vulnerable** Human bodies have physical limits for tolerating crash forces before death or serious injury occurs; therefore, it is critical to design and operate a transportation system that is human-centric and recognizes physical human vulnerabilities.
Safety is Proactive Proactive tools should be used to identify and address safety issues in the transportation system, rather than waiting for crashes to occur and reacting afterwards.	**Redundancy is Crucial** Reducing risks requires that all parts of the transportation system be strengthened, so if one part fails, the other parts still protect people.

[2] U.S. Department of Transportation (USDOT). *What Is a Safe System Approach?* National Roadway Safety Strategy (NRSS). October 13, 2022. https://www.transportation.gov/NRSS/SafeSystem

Safe System Elements

The Safe System elements are complementary components that work with the Safe System principles towards the Safe System Approach's vision. The Safe System elements include:

Figure 4. Safe System Elements

Safe Road Users	Encourage safe driving, walking, and cycling behavior by those who are using the roadway network and create conditions that prioritize their ability to reach their destination unharmed.
Safe Vehicles	Promote the availability of vehicles with safety features to aid in crash prevention and minimize the impact when a crash occurs.
Safe Speeds	Promote safe travel speed on all roadway environments by implementing context-appropriate roadway design, speed-limit setting, enforcement, and education.
Safe Roads	Design roadway infrastructure to mitigate human mistakes, account for injury tolerances, encourage safe behavior, and facilitate safe travel by all.
Post-Crash Care	Enhance survivability of crashes through fast access to emergency medical services, creating a safe work environment for first responders, and preventing secondary crashes through traffic incident management practices.

Safe System Approach Paradigm Shift

A Safe System Approach requires moving away from traditional safety paradigms, as summarized in **Table 1**.[3]

Table 1. Safe System Approach Paradigm

TRADITIONAL APPROACH TO SAFETY	SAFE SYSTEM APPROACH PARADIGM
Prevent Crashes	**Prevent death and serious injury.** The Safe System Approach seeks to prevent death and serious injuries.
Improve Human Behavior	**Design for human mistakes/limitations.** In addition to trying to improve human behavior, the Safe System Approach designs for human mistakes and limitations.
Control Speeding	**Reduce system kinetic energy.** While the traditional safety approach focuses on controlling speeding, the Safe System Approach includes speed and other strategies to reduce system kinetic energy.
Individuals are Responsible	**Share responsibility.** Rather than asserting that only individual roadway users are responsible, the Safe System Approach aims to share responsibility among system users, managers, and others.
React Based on Crash History	**Proactively identify and address risks.** Instead of reacting based on crash history, the Safe System Approach proactively identifies and addresses risks.

Safe System Approach Strategies

USDOT has advanced an initiative of Proven Safety Countermeasures[4] to assist agencies to reduce traffic-related fatalities and serious injuries. Proven Safety Countermeasures are designed for all road users and all types of roads—from rural to urban, high-volume freeways to less traveled local roads, signalized crossings to horizontal curves, and everything in between.

Proven Safety Countermeasures are organized into five topics:

- Speed management
- Intersections
- Roadway departures
- Pedestrian/bicyclists
- Crosscutting

[3] Federal Highway Administration (FHWA). *The Safe System Approach Presentation*. FHWA Highway Safety Programs. July 330, 2024. https://highways.dot.gov/safety/zero-deaths/safe-system-approach-presentation-0

[4] USDOT. *Safer Roads*. National Roadway Safety Strategy (NRSS). October 14, 2022. https://www.transportation.gov/NRSS/SaferRoads

USDOT encourages transportation agencies to consider widespread implementation of these countermeasures to reduce fatalities and serious injuries on our roadways. Proven Safety Countermeasures are listed in **Table 2**.

Table 2. Example Proven Safety Countermeasures

SPEED MANAGEMENT

- Appropriate Speed Limits for All Road Users
- Speed Safety Cameras
- Variable Speed Limit

INTERSECTIONS

- Backplates with Retroreflective Borders
- Corridor Access Management
- Yellow Change Intervals
- Dedicated Left- and Right-Turn Lanes at Intersections
- Reduced Left-Turn Conflict Intersections
- Roundabouts
- Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections

ROADWAY DEPARTURES

- Enhanced Delineation for Horizontal Curves
- Longitudinal Rumble Strips and Stripes on Two-Lane Roads
- Median Barriers
- Roadside Design Improvements at Curves
- Safety Edge
- Wider Edge Lines

PEDESTRIANS/BICYCLISTS

- Bicycle Lanes
- Crosswalk Visibility Enhancements
- Leading Pedestrian Interval
- Medians and Pedestrian Refuge Islands in Urban and Suburban Areas
- Pedestrian Hybrid Beacon
- Rectangular Rapid Flashing Beacons (RRFB)
- Road Diets (Roadway Configuration)
- Walkways

CROSSCUTTING

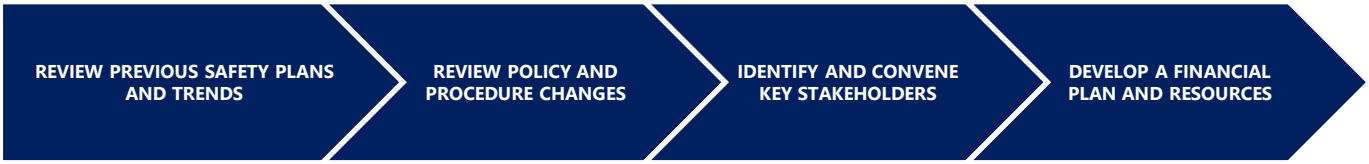
- Lighting
- Local Road Safety Plans
- Pavement Friction Management
- Road Safety Audit

3. Stakeholder Engagement

Plan Development Process

The SEAZ TSP was prepared following the process illustrated in **Figure 5**.

Figure 5. SEAZ TSP Tasks



Stakeholder Engagement

To create a complete and effective SEAZ TSP, a partner planning team, comprised of agency stakeholders who have perspectives, insights, wants, and needs for transportation safety in the region, provided oversight and review of study findings and recommendations.

Geographic Focus Area Workshops

Two rounds of partner planning team workshops, referred to as GFA Workshops, were conducted to solicit feedback from stakeholders. These workshops provided insight on issues facing the affected residents within SVMPO and SEAGO's member agencies from those that provide public services.

GFA Workshop #1 – Present Data Analysis and Discuss Strategies

GFA Workshop #1 provided input from stakeholders within each GFA. Attendees discussed findings from the System Performance Trends Analysis and Network Screening Analysis. A workshop was held in each GFA.

At each workshop, segments and intersections identified in the screening analysis were reviewed using large maps to understand if identified locations were consistent with their experience. Stakeholders were asked to mark up any additional locations with significant safety concerns. Stakeholder input from the GFA Workshop was considered during the project development process. GFA Workshop #1 details and agencies represented are summarized in **Table 3.**

Table 3. Attendees for GFA Workshop #1

GEOGRAPHIC FOCUS AREA	AGENCY/JURISDICTION REPRESENTED
Cochise County 02/07/2024 Schieffelin Hall	• ADOT • City of Bisbee • City of Benson • Cochise County • City of Douglas • City of Willcox

GEOGRAPHIC FOCUS AREA	AGENCY/JURISDICTION REPRESENTED
Graham County 02/06/2024 Safford City Government Building	• ADOT • Graham County • Town of Pima • City of Safford • Town of Thatcher
Greenlee County 02/07/2024 Duncan Town Hall	• ADOT • Town of Clifton • Town of Duncan • Greenlee County
Santa Cruz County 02/08/2024 Nogales City Hall	• ADOT • City of Nogales • Town of Patagonia • Santa Cruz County
SVMPO 02/08/2024 Sierra Vista Public Works	• ADOT • Cochise County • Town of Huachuca City • City of Sierra Vista

In addition, the team met with the **Arizona Department of Transportation** Southeast District, and Southcentral District to discuss safety analysis findings as they related to the state highway system.

GFA Workshop #2 - Emphasis Areas, Strategies, and Performance Measures

The second round of GFA workshops were conducted to present identified improvement projects. Stakeholders reviewed proposed projects for their respective GFA and discussed feedback on the proposed safety projects. The workshops also reviewed policies and best practices identified in the plan and provided an update on public engagement. The GFA Workshop #2 details and agencies represented are shown in **Table 4.**

Table 4. Attendees for GFA Workshop #2

GEOGRAPHIC FOCUS AREA	AGENCY/JURISDICTION REPRESENTED
Cochise County 08/14/2024 Sierra Vista Public Works	• City of Bisbee • Cochise County • City of Douglas
Graham County 08/13/2024 Safford City Government Building	• ADOT • Graham County • City of Safford • Town of Thatcher
Greenlee County 08/14/2024 Duncan Town Hall	• Town of Duncan • Greenlee County
Santa Cruz County	• ADOT • City of Nogales

GEOGRAPHIC FOCUS AREA	AGENCY/JURISDICTION REPRESENTED
08/15/2024 Nogales City Hall	• Santa Cruz County
SVMPO 08/15/2024 Sierra Vista Public Works	• Cochise County • Town of Huachuca City • City of Sierra Vista

Public Engagement

Soliciting insight from the public provides an understanding of individuals' unique experiences which helps to better inform the prioritization of identified safety improvement projects.

Opportunities for the public to provide input on the SEAZ TSP were focused on virtual engagement with a project website, interactive map, and community survey. The project website[5] provided the public with project information, study area maps, an interactive map and community survey, event details, and a set of frequently asked questions. The website went live in November 2023, and as of October 16, 2024, there were a total of 1,511 unique site visits. September 2024 had the highest number of activities with 1,263 visitors, when the website was actively advertised. Website data shows that 982 site visitors used Facebook links to access the website in response to localized advertising.

Figure 6. Example Flyer Distributed at Local Activity Centers

Advertising

The virtual engagement was advertised in a variety of ways including:

- Press releases to local print and other media outlets resulting in media coverage, including a full-page story in the Sierra Vista Herald on September 15, 2024.
- Social media content was posted by member agencies.
- Targeted social media ads throughout the various GFA areas and into the northern portion of Mexico near Nogales.
- Separate English and Spanish campaigns were conducted with an estimated total reach of 31,788 social media accounts.
- Email blasts through technical advisory committee (TAC) or stakeholder group networks.
- Facebook posts included both paid and unpaid ads to direct viewers to survey links.
- Flyers and table tents posted at local activity centers.

[5] *Southeast Arizona Transportation Safety Plan*. https://www.seazsafetyplan.org/

- Website information, with links, were provided by the consultant team, SEAGO and the SVMPO.
- Distribution of flyers and postcards, with QR codes to survey and website information, was made throughout both the SEAGO and SVMPO region to emergency service providers, schools, businesses, libraries, and County, City and Town offices.

SEAGO and SVMPO member agencies aided in the plan's engagement effort by advertising public engagement opportunities within their communities. Accommodations to engage traditionally underrepresented populations, including Title VI groups were considered, including providing engagement material translation, and targeted advertisements in areas where engagement has historically been limited.

Interactive Map

An interactive map[6] embedded into the website highlighted where potential safety-focused improvement locations were. The mapping tools allowed respondents to comment on:

POTENTIAL SAFETY-FOCUSED IMPROVEMENT LOCATION

BICYCLE SAFETY ISSUE

PEDESTRIAN SAFETY ISSUE

VEHICLE SAFETY ISSUE

OTHER

The interactive map went live beginning in June 2024. As of September 30, 2024, 224 unique comments were inputted on this map. A full listing of the comments is shown in **Appendix G**.

Survey

Along with the interactive map, an associated survey[7] allowed respondents to provide feedback on what they think about safety on the region's roadways. Respondents were asked what portion of the study area they primarily drive in, their suggested top safety improvement, top three safety concerns, and potential safety messages that would most benefit their community.

The survey was created in June 2024, and as of September 30, 2024, 261 unique responses had been submitted. On average, it took respondents three minutes to fully complete the survey, and 76% of the people that viewed the survey completed it.

Below is a short summary of the comments provided by respondents in questions that included comment boxes.

1. **Traffic and Parking Issues**:
    a. Traffic around all high schools is chaotic, with parents parking in fire lanes and making sporadic U-turns

[6] https://app.publiccoordinate.com/#/projects/SEAZsafetyplan/map.
[7] https://www.surveymonkey.com/r/2RYXKTM.

   b. Crosswalks are often ignored by drivers

2. **Road Conditions**:
   a. Many roads are in poor condition, filled with potholes and in need of repair
   b. Highways (80, 90) and intersections (Fry Blvd, Highway 90 and 92) are mentioned as particularly in need of repaving

3. **Driving Behavior**:
   a. Speeding, intoxicated driving, and reckless driving are common issues
   b. Elderly drivers and those making illegal U-turns contribute to the problem

4. **Visibility and Safety**:
   a. Obstructed views at intersections due to curbing, signs, and vegetation
   b. Aggressive passing on highways
   c. Lack of cable barriers on I-10

5. **Law Enforcement and Policy**:
   a. Inconsistent enforcement of traffic laws
   b. High-speed chases by the sheriff's department
   c. Need for mandatory driving tests for elderly drivers and better enforcement of no U-turn policies

6. **Infrastructure and Maintenance**:
   a. Need for better road maintenance, including filling potholes and addressing overgrown brush
   b. Requests for additional stoplights and red-light cameras to improve safety.

The full listing of responses and associated comments is shown in **Appendix G**.

4. Regional Safety Performance

This chapter provides an overview of the safety analysis conducted for the SEAZ TSP to meet the requirements for an SS4A eligible Action Plan as part of the self-certification process. These requirements include:

- **Analysis of existing conditions and historical trends to baseline the level of crashes involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region.**
- **Analysis of the locations where there are crashes, the severity, and contributing factors and crash types.**
- **Analysis of systemic and specific safety needs, as needed (e.g., high-risk road features, specific safety needs of relevant road users, etc.)**
- **A geospatial identification (geographic or locational data using maps) of higher risk locations.**

Safety Data Gap Analysis

Historical crash data for the study area was obtained from ADOT for the five-year period, 2018-2022. The data was reviewed to confirm completeness prior to evaluating and preparing safety assessments for each GFA. The review identified data reporting gaps by City of Bisbee and San Carlos Apache Tribe. Bisbee subsequently provided supplemental data for the safety performance analysis. **Figure 7** shows the number of crashes in each GFA by reporting agency.

Figure 7. Crashes by Reporting Agency

Cochise County	Graham County	Greenlee County	Santa Cruz County	SVMPO	SCAT
• DPS: 2,209 • Bisbee: 523 • Douglas: 377 • Benson: 298 • Willcox: 101 • Cochise County: 42 • Tombstone: 29	• Safford: 705 • DPS: 529 • Thatcher: 303 • Grahm County: 164 • Pima: 16 • SCAT: 2	• DPS: 284 • Clifton: 92 • Greenlee County: 46	• DPS: 1,083 • Nogales: 515 • Santa Cruz County: 393	• Sierra Vista: 2,366 • DPS: 453 • Huachuca City: 22 • Cochise County: 15 • Tombstone: 1	• DPS: 28 • SCAT: 7

Safety Performance Analysis Methodology

The safety performance analysis was informed by four individual sub-analyses, shown in **Figure 8**, that each identified safety needs in the SVMPO and SEAGO region. The "SHSP Emphasis Areas (EAs)" comparison identified general crash trends and patterns in the region. The other three sub-analyses identified specific segments or intersections with a safety need. If a segment was identified by a safety sub-analysis, it was given a "point," as explained in **Table 5**. Segments that cumulatively received three (3) points were included in the composite safety network. Each analysis is explained in the following sections.

Figure 8. SEAZ TSP Safety Analysis Methodology

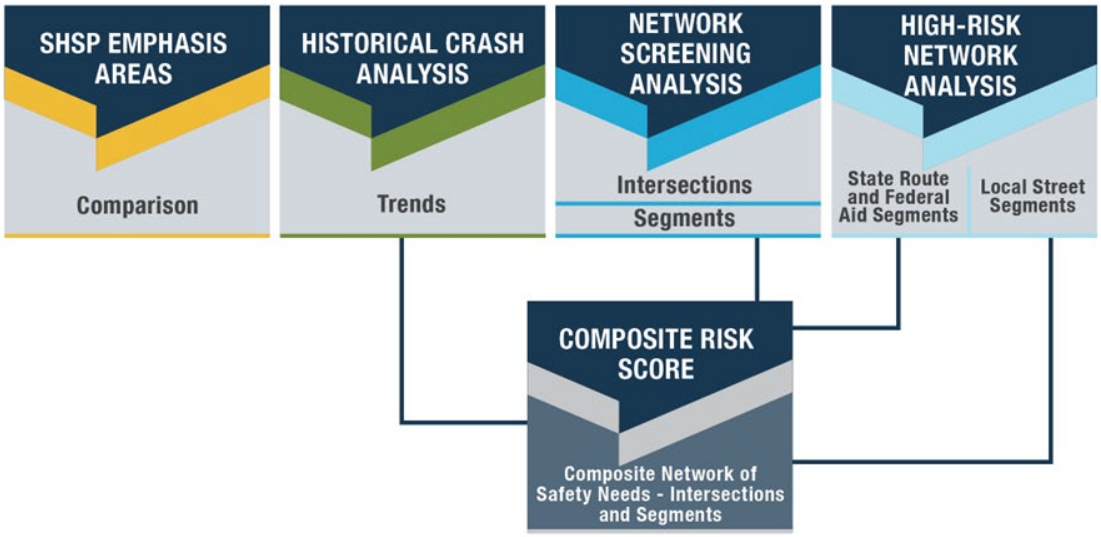


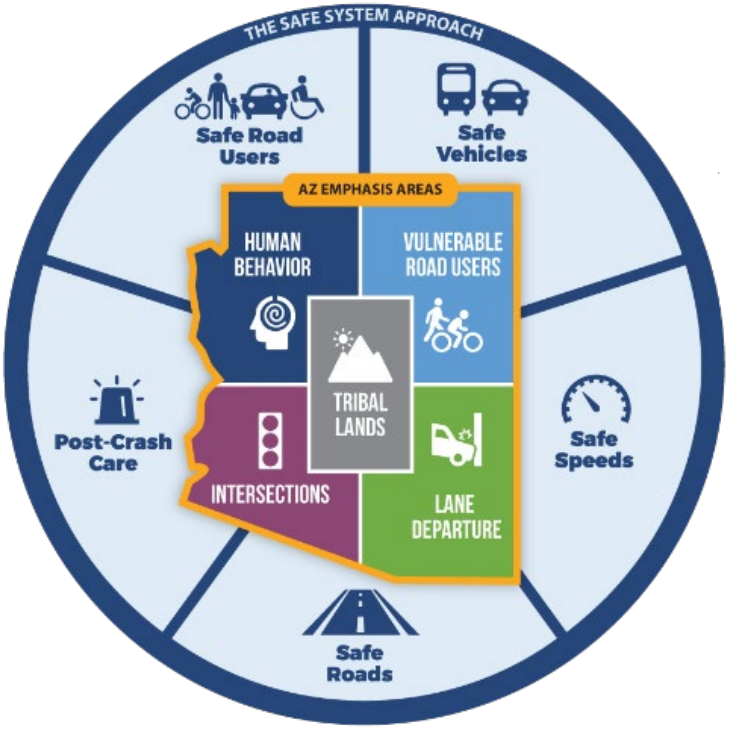
Table 5. Composite Network

SAFETY SUB ANALYSIS	COMPOSITE RISK SCORE		
	RISK SCORE ELEMENT	CRITERIA	POINTS
Historical Crash Analysis	Five-Year Crash Totals (Segment)	≥ 3 Crashes	1
Network Screening Analysis	Critical Crash Rate (CCR) Differential (Segments or Intersections)	> 0	1
Sun Cloud Identified-Locations	Potential for Crash Reduction (LOS)	LOS I, LOS II, LOS III	1
		Total Possible Composite Score	**3**

SHSP Emphasis Area Comparison

The Arizona SHSP integrates the Safe System Approach into strategies developed for each Emphasis Area, ensuring this priority is considered in all aspects of the SHSP.

The Emphasis Area structure is shown below**.** Safety improvement strategies are categorized by Emphasis Area and subcategorized by the Safe System elements.



The SHSP Emphasis Area Analysis compares the number of fatal and serious injuries in each GFA by the six 2024 Arizona SHSP Emphasis Areas. Arizona SHSP Emphasis Areas are:

Table 6 shows region-wide fatal and serious injury crashes in the SEAZ TSP study area by each SHSP Emphasis Area. These Emphasis areas are not mutually exclusive; some crashes may fall in multiple Emphasis Areas, and some may not fall within any Emphasis Areas. Behavior-related crashes account for the highest frequency of serious injury and fatal crashes in the region, contributing to 49% of all fatal and serious injury crashes in the SEAGO/SVMPO region. SHSP comparisons for each GFA are shown in **Appendices A** through **F**.

Table 6. Regional Fatal and Serious Injury Crashes by SHSP Emphasis Area

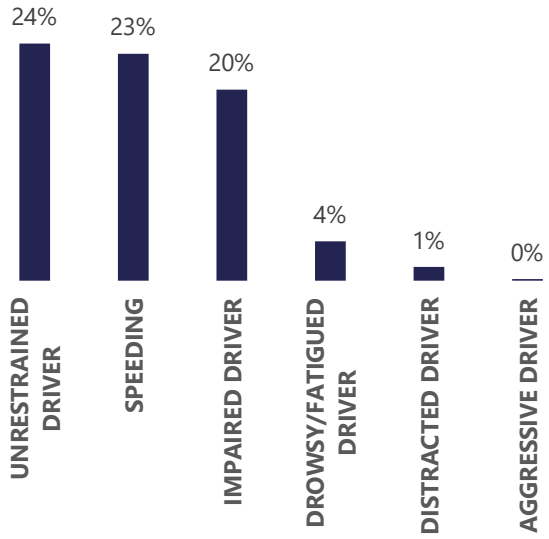
ARIZONA SHSP EMPHASIS AREA	FATAL AND SERIOUS INJURY CRASHES	RANK
Human Behavior	271 (49%)	1
Intersections	102 (18%)	2
Lane Departure	70 (13%)	3
Vulnerable Road Users (VRU)	57 (10%)	4

Traffic Safety Snapshots by Emphasis Area

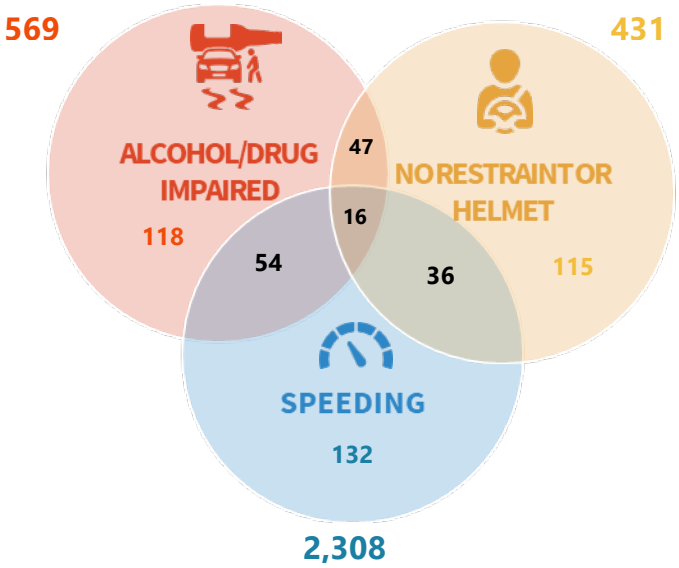
Crash snapshots for each Emphasis Area are shown below. All graphics show fatalities and serious injuries within the SEAZ TSP study area combined unless otherwise noted.

Human Behavior

Fatalities and Serious injuries by behavior:



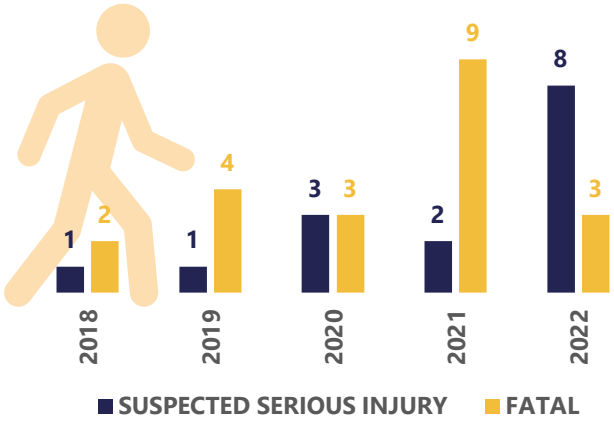
FATALITIES AND SERIOUS INJURIES BY HUMAN BEHAVIOR INDICATOR:



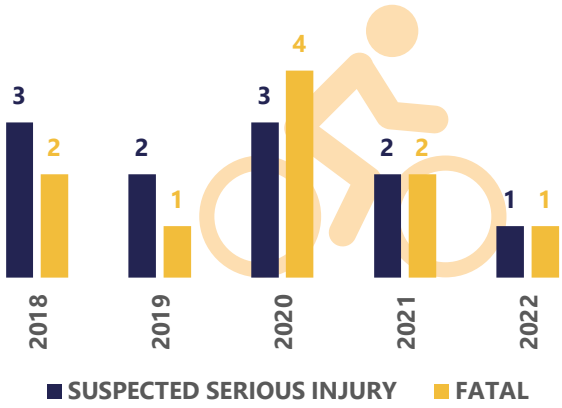
Most fatalities occurred when vehicle occupants did not use a seat belt, or motorcyclists did not wear a helmet. in many cases, impairment and/or speeding were also factors.

Vulnerable Road Users

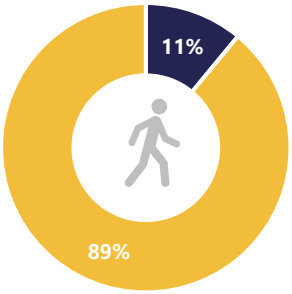
Pedestrian Serious Injuries and Fatalities by Year:

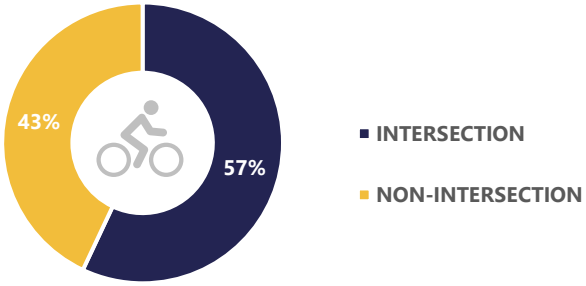


Bicyclist Serious Injuries and Fatalities by year:



Where:





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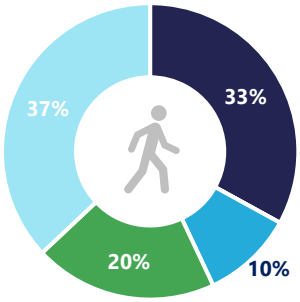
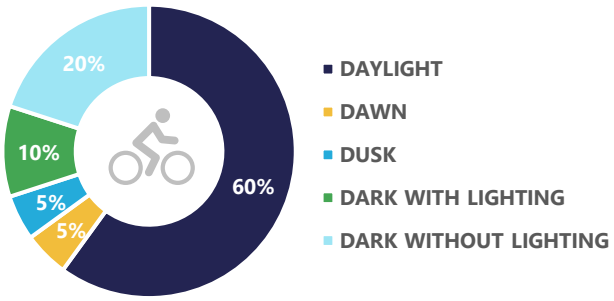
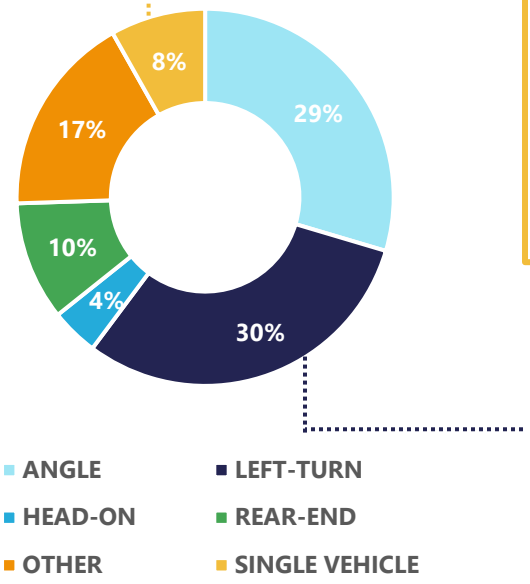




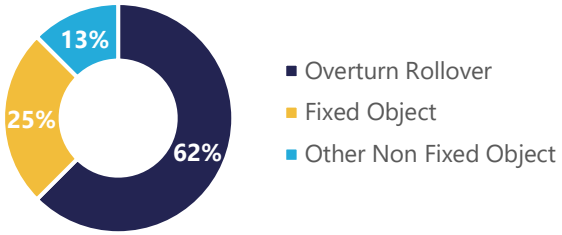
Pedestrian fatalities and serious injuries have generally increased over the last 5 years, with serious injuries nearly doubling. Most fatal and serious injury crashes that involve pedestrians occur when crossing mid-block (non-intersection) at night while those that involve bicyclists most commonly occur when crossing during the day.

Intersections

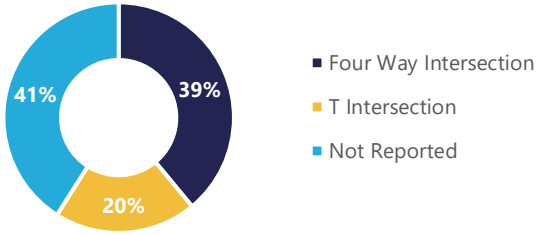
INTERSECTION CRASH TYPE



SINGLE VEHICLE FIRST HARMFUL EVENT

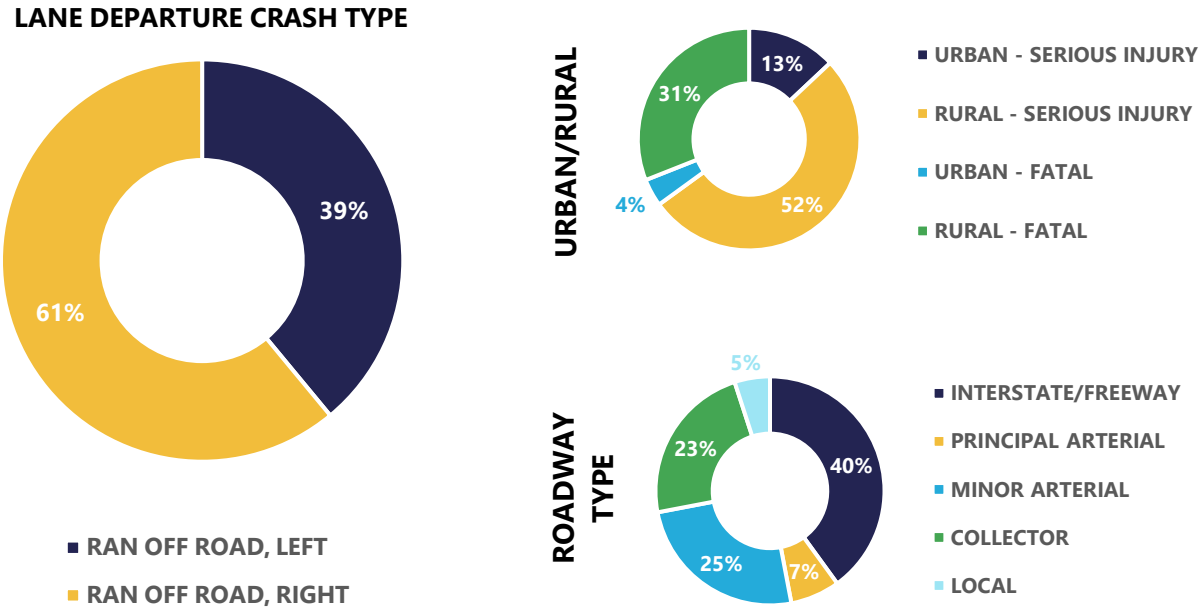


LEFT-TURN CRASH LOCATIONS



Most intersection-related fatalities and serious injuries occurred in an angle or left-turn crash, overturn or rollover crashes were the most common amongst single vehicle crashes.

Lane Departure



Most lane departure-related fatal and serious injury crashes occurred when a driver ran off the road to the right on a roadway that is not a freeway.

Historical Crash Trends

Safety trends in the region, and within each GFA, were reviewed for the period between 2018 and 2022. The analysis reviews crashes by year, severity, density, collision manner, VRU involvement, and functional classification. Results are summarized by GFA in **Appendices B** through **F.**

In the region, crashes reached a peak in 2021, at 2,449 crashes. Fatal and severe injury crashes have continued to increase, peaking in 2022 with 43 fatalities. Single-vehicle crashes are most prevalent in the region, which are often attributable to excessive speed.

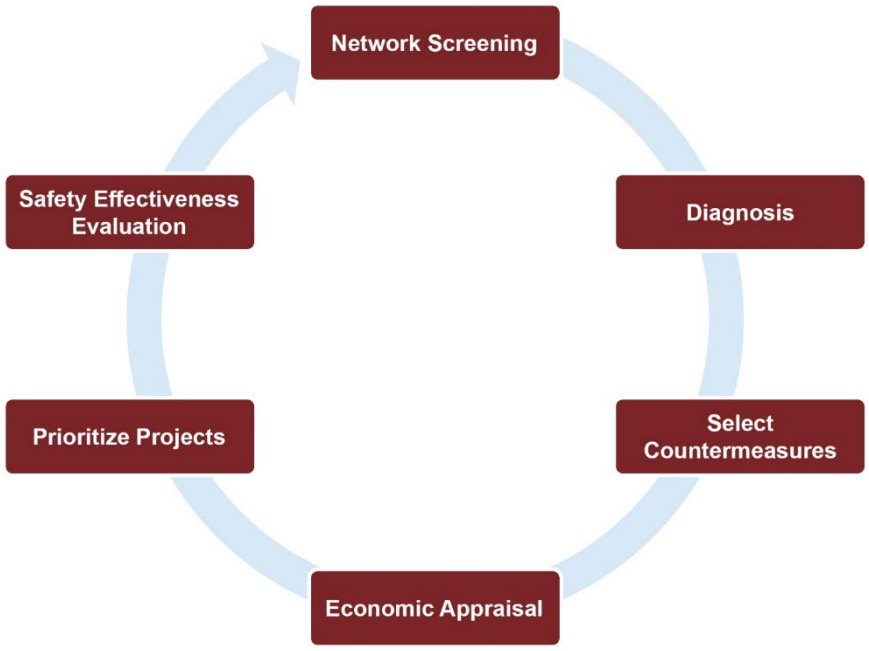
Notable crash trends in GFAs include:

- Cochise County accounts for 42% of the region's fatal crashes.
- SVMPO has the second highest frequency of crashes in 2022, behind Cochise County.
- Greenlee County had zero crashes involving VRUs.
- San Carlos Apache Tribe does not consistently report crash data to ADOT.

Network Screening Analysis

The Highway Safety Manual (HSM), Volume 1 Part B, Roadway Safety Management outlines the process for agencies to review the crash frequency and severity on existing roadway networks. The basic structure of the Roadway Safety Management Process is illustrated in **Figure** 9. Network screening is the first step of the Roadway Safety Management Process.

Figure 9. Roadway Safety Management Process



The network screening processes identifies and ranks locations from most likely to least likely to identify locations that would benefit from a reduction in crash frequency with the implementation of a particular countermeasure(s). Locations identified as most likely to benefit from a reduction in crash frequency should be studied in more detail to identify crash patterns, contributing factors, and appropriate countermeasures. The network screening analysis applied in the SEAZ TSP is based on HSM Volume 1, Part B, Chapter 4. Intersections and roadway segments were analyzed using the following crash metrics:

- Critical Crash Rate (CCR)
- Probability of Specific Crash Types Exceeding Threshold Proportion
- Equivalent Property Damage Only (EPDO)

Network screening steps included the following:

1. Establish sub-populations of roadway segments and intersections with similar characteristics. Segments were grouped by their roadway functional classification (Principal Arterial, Minor Arterial, Major Collector, Minor Collector, and Local) within the three roadway ownership groupings of State Route, Federal Aid Route, and Local Street. Intersections were grouped by their control type (signalized and unsignalized).
2. Calculate individual crash rates for each sub-population. Each GFA was analyzed independently to calculate sub-population crash rates unique to specific GFAs.

3. Identify location with more crashes than expected by comparing to the sub-population level crash rates. This is known as the Critical Crash Rate analysis.
4. Determine typical crash patterns in the identified locations where unusual numbers of specific crash types are occurring. This is known as the Probability of Specific Crash Types Exceeding Threshold Proportion Analysis.

Critical Crash Rate Analysis

Reviewing the number of crashes at a location informs an understanding of the cost to society incurred at a location. However, it does not provide a complete indication of the level of risk for those who use that intersection or roadway segment.

The CCR method is used to statistically review locations and identify areas with higher risk compared to similar locations. It helps analyze patterns that may indicate systemic issues that can be addressed at specific locations and proactively at other similar locations to prevent new safety challenges. The CCR compares the observed crash rate to the expected crash rate based on factors such as facility type and traffic volume. A threshold is established at the 95% confidence level to identify locations with higher crash rates that are unlikely to be random. This threshold is calculated based on traffic volume and the crash profile of similar facilities, following equations specified in HSM Chapter 4.

A CCR differential is determined for each intersection and roadway segment within each GFA by calculating the difference of the expected CCR to the location-specific CCR. A positive CCR differential indicates a location with higher-than-expected crash rates or a location with a potential for safety improvement. The results of this analysis are summarized by identifying the 10 highest CCR differentials for each of the following population groups:

- **Intersections:** Signalized intersections/Unsignalized intersections
- **Segments:** State Routes, Federal Aid Routes, Local Streets

The top 10 segments and intersections are summarized below and all segments and intersections with a positive CCR is included in **Appendices B** through **F**.

Cochise County Top Segments and Intersections

Top locations are mapped in **Figure 10. Table 7** shows the 10 segments with the highest CCR differential for state routes and non-state routes in Cochise County. **Table 8** shows the 10 intersections with the highest CCR differential for signalized and unsignalized intersections in Cochise County.

Figure 10. Cochise County Top Segments and Intersections

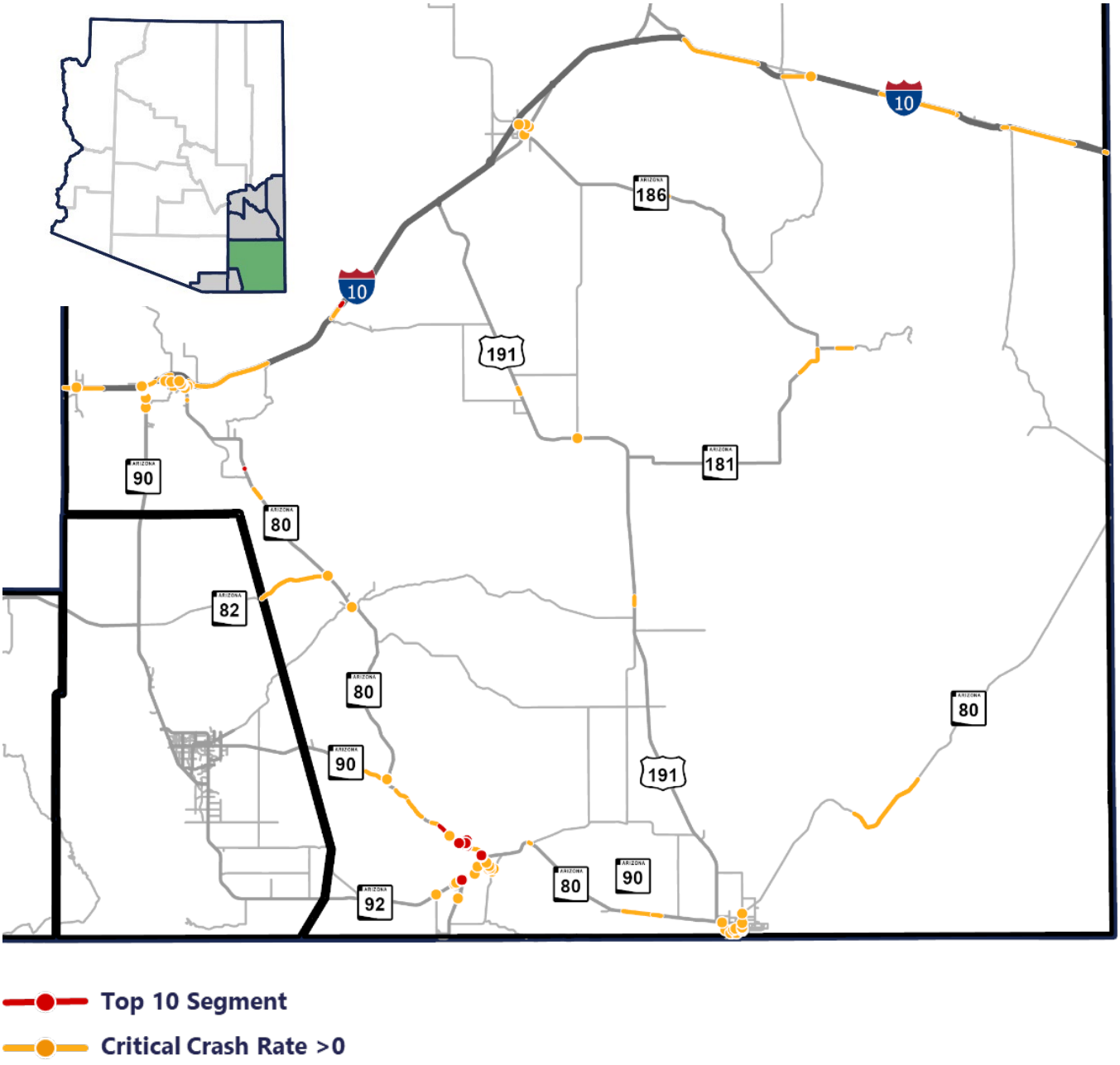


Table 7. Cochise County Top 10 Segments by Type

ROADWAY	EXTENTS	FUNCTIONAL CLASSIFICATION	LOCATION
STATE ROUTE			
I-10 Ramp	Westbound Texas Canyon Rest Area	Interstate	Unincorporated
SR 80	2nd Ave to 3rd Ave	Minor Arterial	Unincorporated
SR 80	Old Divide Rd (south) to Old Divide Rd (north)	Principal Arterial	Unincorporated
SR 80	Grant St to Maley St	Minor Arterial	Willcox
SR 181	Bonita Creek Rd to Hudson Ranch Rd	Minor Arterial	Unincorporated
SR 181	Hacienda Trail to Rocky Rd	Minor Arterial	Unincorporated
I-10 Eastbound	Dragoon Rd to EB Dragoon On-Ramp	Interstate	Unincorporated
SR 80	Country Club Rd to Hamilton Ln	Minor Arterial	Benson
SR 80	Curtis Flats Rd to MP 305.7	Minor Arterial	Unincorporated
SR 80	Gila St to San Pedro St	Minor Arterial	Benson
NON-STATE ROUTE			
1st Street	US 191 to J Ave	Major Collector	Douglas
9th Street	D Ave to alleyway east of D Ave	Minor Collector	Douglas
Old Douglas Road	SR 80 to Lone St	Major Collector	Bisbee
10th Street	G Ave to driveway east of G Ave	Major Collector	Douglas
10th Street	F Ave to driveway east of F Ave	Major Collector	Douglas
Tombstone Canyon	Quality Hill Rd to Curve St	Major Collector	Bisbee
5th Street	Ocotillo St to High St	Major Collector	Benson
5th Street	Chiricahua Rd to US 191	Major Collector	Douglas
10th Street	B Ave to A Ave	Major Collector	Douglas

Table 8. Cochise County Top 10 Intersections by Type

INTERSECTION	LOCATION
SIGNALIZED INTERSECTION	
Naco Highway/SR 92	Bisbee
Haskell Ave/Maley St	Willcox
SR 90/I-10 WB Ramp	Cochise County
SR 90/Village Loop Rd	Cochise County
SR 90/I-10 EB Ramp	Cochise County
UNSIGNALIZED INTERSECTION	
O'Hara Ave/Quarry Canyon Rd	Bisbee
Brewery Ave/Naco Rd	Bisbee
Brewery Ave/Review Aly	Bisbee
Youngblood Hill Ave/Ok St	Bisbee
Naco Hwy/Naco Rd	Bisbee
Main St/SR 80	Cochise County
Subway St/Sowles Ave	Bisbee
Brewery Ave/Howell Ave	Bisbee
SR 80 WB/Erie St	Bisbee
Shearer Ave/Howell Ave	Bisbee

Graham County Top Segments and Intersections

Top locations are mapped in

Figure 11**. Table 9** shows the 10 segments with the highest CCR differential for state routes and non-state routes in Graham County. **Table 10** shows the 10 intersections with the highest CCR differential for signalized and unsignalized intersections in Graham County.

Figure 11. Graham County Top Segments and Intersection

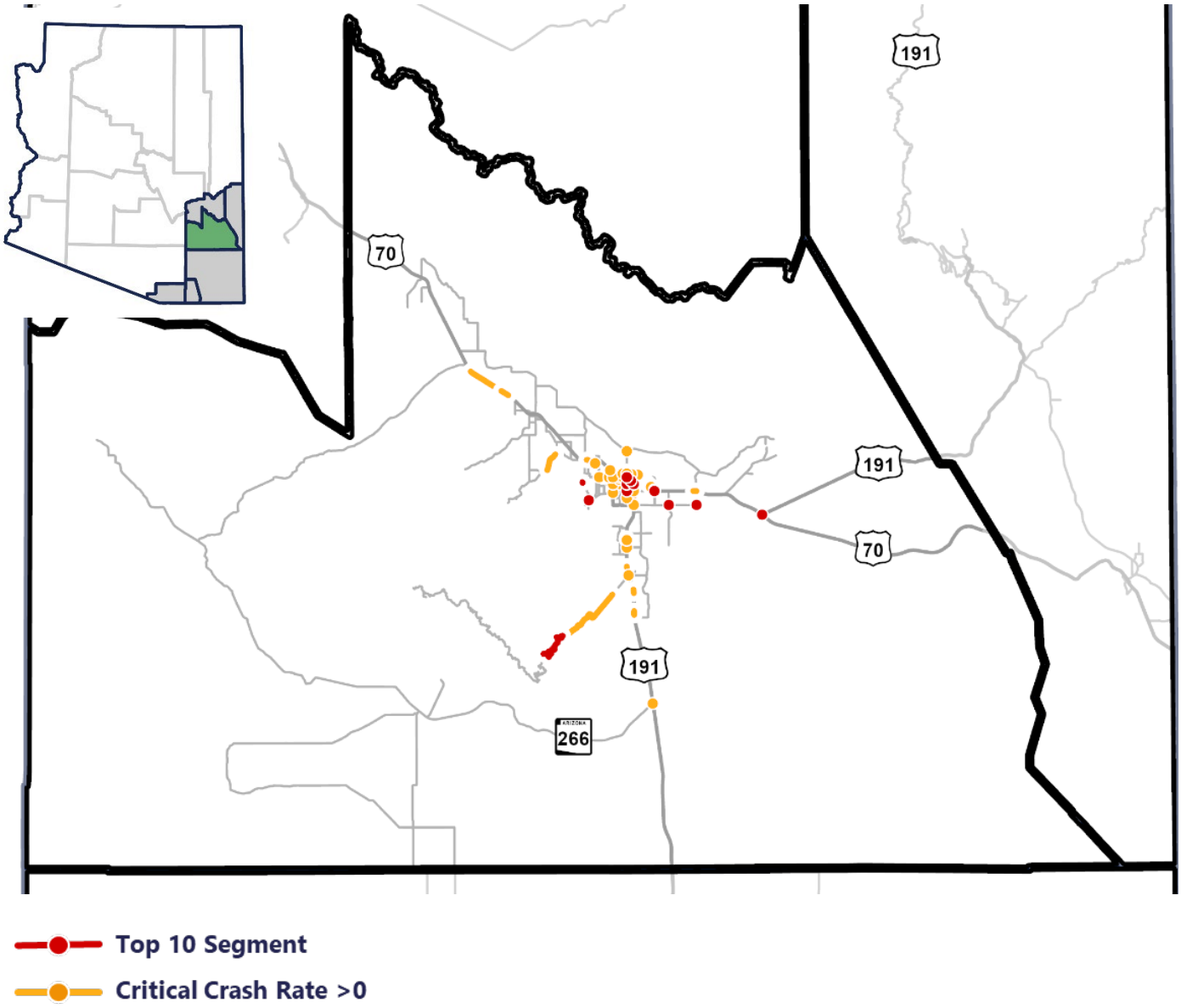


Table 9. Graham County Top 10 Segments by Type

ROADWAY	EXTENTS	FUNCTIONAL CLASSIFICATION	LOCATION
STATE ROUTE			
SR 366	Cochise County Line (MP 120.8) to MP 125.5	Major Collector	Unincorporated
US 191	24th Pl to Trinity Acres	Minor Arterial	Safford
US 191	8th St to 9th St	Minor Arterial	Safford
SR 366	Noon Creek Picnic Area to Boulder Ln	Major Collector	Unincorporated
US 70	20th Ave to Safeway Plaza Driveway	Minor Arterial	Safford
US 191	Main St to 5th St	Minor Arterial	Safford
US 191	Concho St to driveway north of Concho St	Minor Arterial	Unincorporated
US 70	Copper Canyon Dr to Safford E MHP	Minor Arterial	Unincorporated
US 70	8th Ave to Stadium Ave	Minor Arterial	Thatcher
US 191	Castle Rd to Evans Ln	Minor Arterial	Unincorporated
NON-STATE ROUTE			
8th Avenue	Court St to Main St	Major Collector	Safford
6th Avenue	7th St to Main St	Local Roadway	Safford
8th Avenue	3rd St to 4th St	Major Collector	Safford
Main Street	7th Ave to 6th Ave	Minor Collector	Safford
Reay Lane	12th St to Kayci Ln	Major Collector	Thatcher
8th Avenue	8th St to 7th St	Major Collector	Safford
20th Avenue	8th St to Walmart Plaza south entrance	Minor Arterial	Thatcher
8th Avenue	US 70 to 4th St	Major Collector	Safford
20th Avenue	Walmart plaza south to north entrance	Minor Arterial	Thatcher
Layton Road	Grandma's Dr to Cemetery Rd	Major Collector	Unincorporated

Table 10. Graham County Top 10 Intersections by Type

INTERSECTION	LOCATION
SIGNALIZED INTERSECTION	
US 191/Discovery Park Blvd	Safford
8th Ave/US 70	Safford
20th Ave/8th St	Safford
US 70/US 191	Graham County
UNSIGNALIZED INTERSECTION	
Solomon Rd/Bowie Ave	Graham County
Montierth Ln/Lone Star Rd	Graham County
8th Ave/8th St	Safford
8th Ave/20th St	Safford
Central Ave/11th St	Safford
8th Ave/Relation St	Safford
US 191/Relation St	Safford
Hoopes Ave/Golf Course Rd	Thatcher
Barney Ln/Solomon Rd	Graham County

Greenlee County Top Segments and Intersections

Top locations are mapped in **Figure 12. Table 11** shows the 10 segments with the highest CCR differential for state routes and non-state routes in Greenlee County. **Table 12** shows the 10 intersections with the highest CCR differential for signalized and unsignalized intersections in Greenlee County.

Figure 12. Greenlee County Top Segments and Intersections

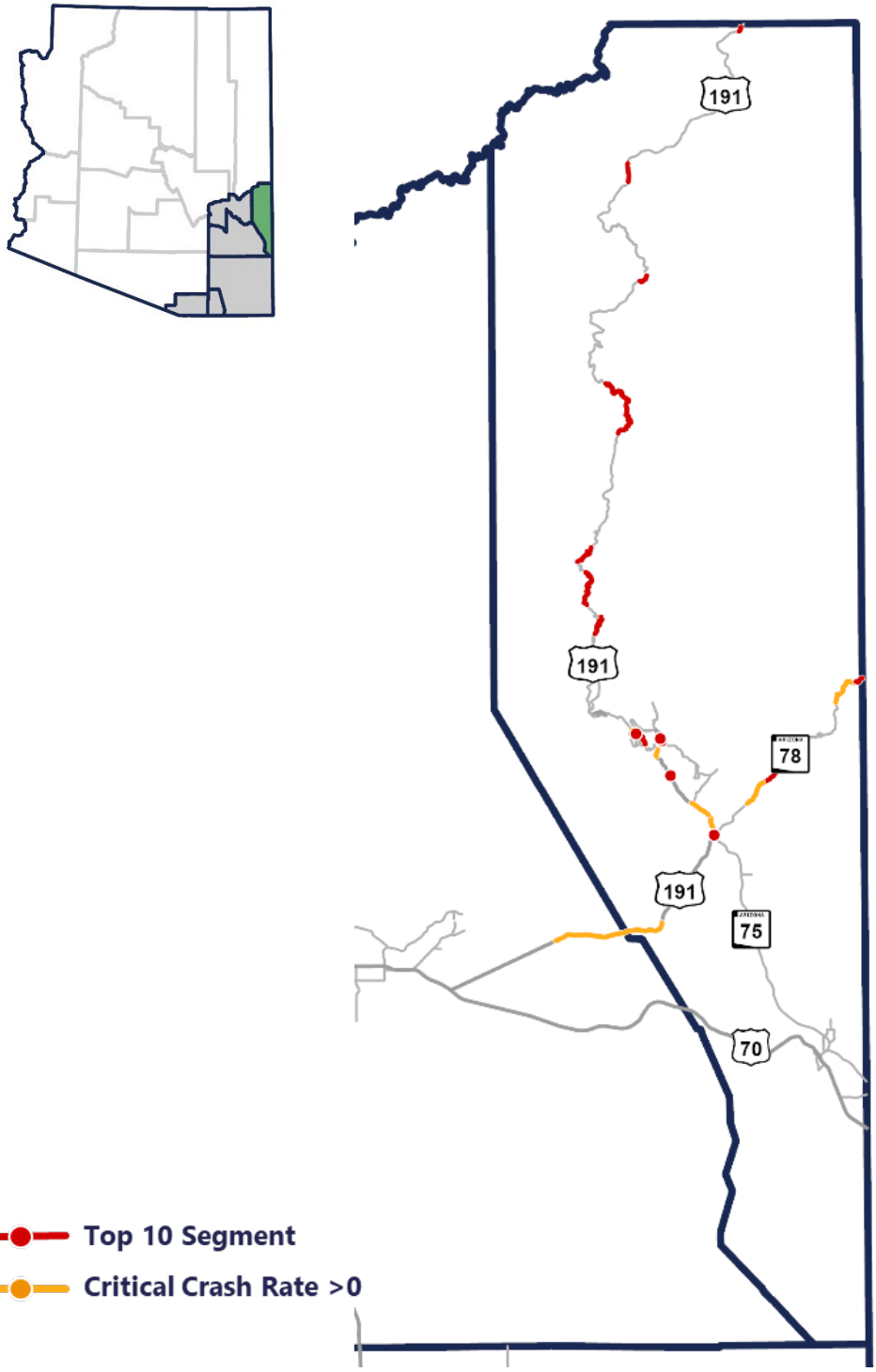


Table 11. Greenlee County Top 10 Segments by Type

ROADWAY	EXTENTS	FUNCTIONAL CLASSIFICATION	LOCATION
STATE ROUTE			
US 191	FR 514 to ADOT driveway	Major Collector	Unincorporated
US 191	MP 246.9 to MP 247.4	Major Collector	Unincorporated
SR 78	New Mexico State Line to MP 174	Major Collector	Unincorporated
US 191	MP 178.5 to 182.5	Major Collector	Unincorporated
US 191	Pine Flat Rd to Bearpen Creek	Major Collector	Unincorporated
US 191	MP 174.5 to 177.5	Major Collector	Unincorporated
US 191	MP 217.2 to MP 217.8	Major Collector	Unincorporated
SR 78	Cold Creek Ranch Rd to Downing Trail	Major Collector	Unincorporated
US 191	MP 229.5 to MP 231.2	Major Collector	Unincorporated
US 191	Cold Creek to Guthrie Rd	Minor Arterial	Unincorporated
NON-STATE ROUTE			
Copper Verde Lane	Cemetery Rd to Kiko St	Minor Collector	Clifton

Table 12. Greenlee County Top 10 Intersections by Type

INTERSECTION	LOCATION
UNSIGNALIZED INTERSECTION	
US 191/SR 75	Greenlee County
US 191/Table Top Rd	Clifton
US 191/2nd St	Clifton
US 191/Mountain View Rd	Clifton
US 191/South St	Clifton

Santa Cruz County Top Segments and Intersections

Top locations are mapped in **Figure 13**.

Table 13 shows the 10 segments with the highest CCR differential for state routes and non-state routes in Santa Cruz County.

Table 14 shows the 10 intersections with the highest CCR differential for signalized and unsignalized intersections in Santa Cruz County.

Figure 13. Santa Cruz County Top Segments and Intersections

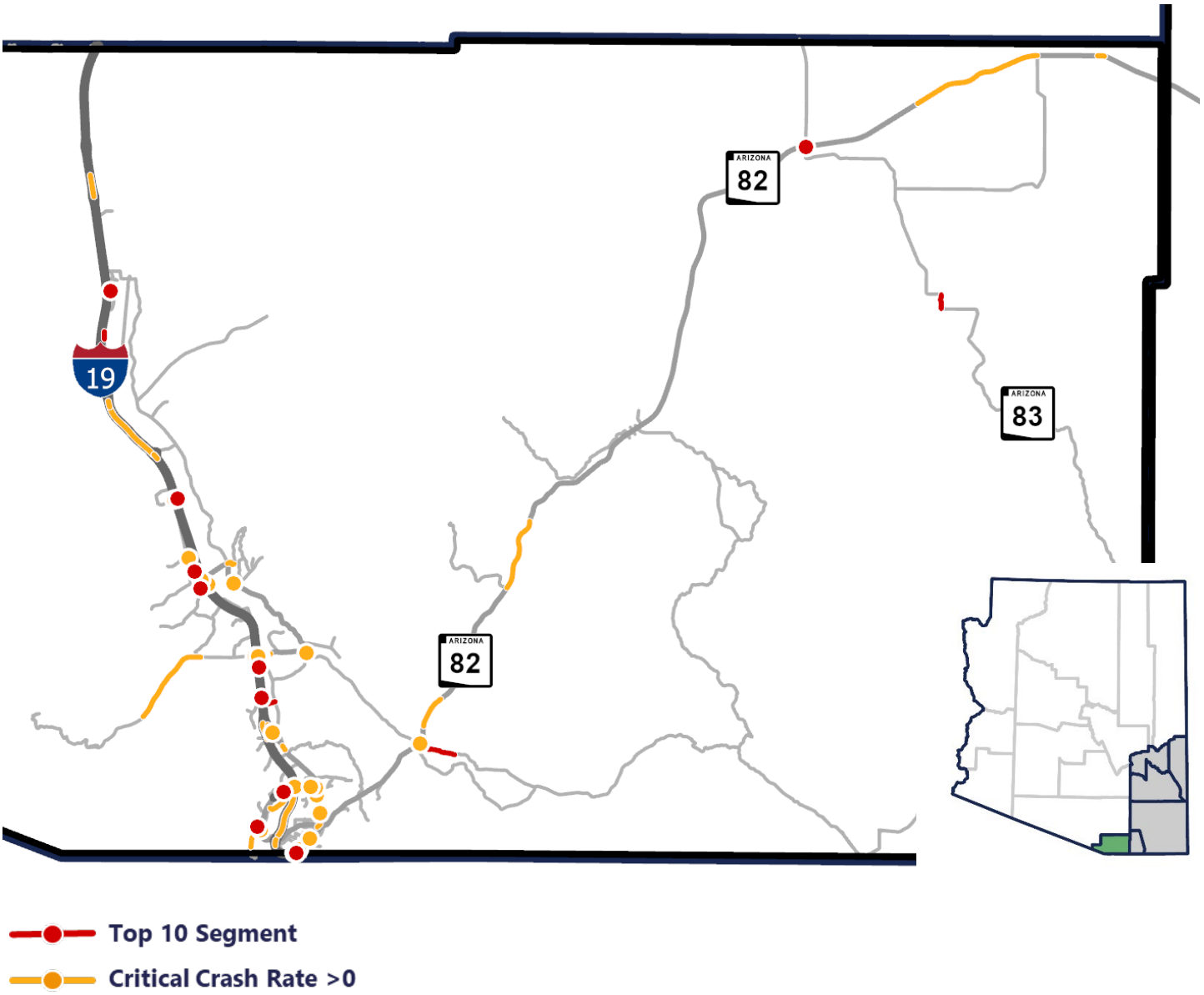


Table 13. Santa Cruz County Top 10 Segments by Type

ROADWAY	EXTENTS	FUNCTIONAL CLASSIFICATION	LOCATION
STATE ROUTE			
Frontage Road	Old Bailey Xing to Apache Ln	Major Collector	Unincorporated
I-19 Ramp	Rio Rico Dr SB Off-Ramp	Interstate	Unincorporated
SR 83	MP 22.5 to MP 23.1	Major Collector	Unincorporated
SR 83	Membrillo Ln to Whisper Ln	Major Collector	Unincorporated
SR 82	Nogales Airport to Jarillas Tank turnoff	Minor Arterial	Unincorporated
Grand Avenue	White Park Drive to Horne Ford driveway	Principal Arterial	Nogales
SR 189	I-19 to Harbor Freight driveway	Principal Arterial	Nogales
SR 189	Harbor Freight driveway to Congress Dr	Principal Arterial	Nogales
Grand Avenue	Old Tucson Rd to Paseo Verde Dr	Principal Arterial	Nogales
I-19	Chavez Siding Access to El Burro Ln	Interstate	Unincorporated
NON-STATE ROUTE			
Crawford Street	West St to I-19	Local Roadway	Nogales
Duquesne Road	Patagonia Hwy to Buena Vista Ranch	Minor Collector	Unincorporated
Bravo Lane	Old Tucson Rd to dead end	Local Roadway	Unincorporated
Frank Reed Road	Shell Rd to Apache Blvd	Major Collector	Nogales
Rio Rico Drive	Pendleton Dr to Willow Dr	Minor Collector	Unincorporated
Industrial Park Dr	Industrial Park Ave to Manor Dr	Major Collector	Nogales
Ruby Road	Frontage Rd to Chaleco Ct	Minor Arterial	Unincorporated

Table 14. Santa Cruz County Top 10 Intersections by Type

INTERSECTION	LOCATION
SIGNALIZED INTERSECTION	
Frontage Rd/Ruby Rd	Rio Rico
I-19 NB Ramps/Rio Rico Rd	Rio Rico
Mastick Way/SR 189	Nogales
I-19 NB Ramps/SR 289	Rio Rico
Frontage Rd/Ruby Rd	Rio Rico
UNSIGNALIZED INTERSECTION	
Crawford St/Terrace Ave	Nogales
SR 83/SR 82	Santa Cruz County
Frontage Rd/Calle Barrio De Tubac	Tubac
Frank Reed Rd/Shell Rd	Nogales
Frontage Rd/Via Estrella Vis	Rio Rico
I-19 NB Ramps/Peck Canyon Rd	Rio Rico
Frontage Rd/Old Tucson Rd	Santa Cruz County
SR 189/Target Range Rd	Nogales
Frontage Rd/Boulevard del Rey David	Santa Cruz County
Camino Caralampi/Yavapai Dr	Rio Rico

SVMPO Top Segments and Intersections

Top locations are mapped in **Figure 14.**

Figure 14. SVMPO Top Segments and Intersections

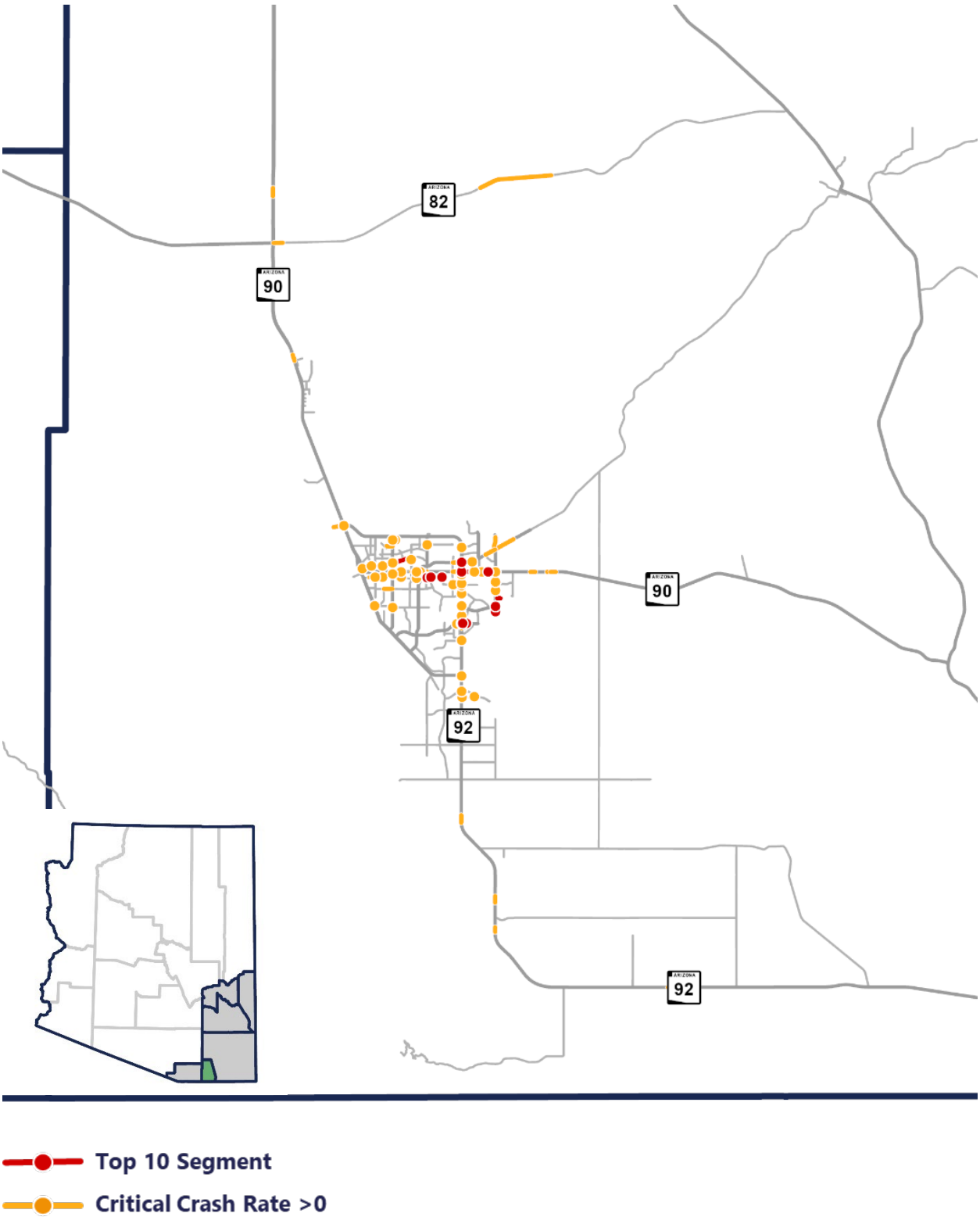


Table 15 shows the 10 segments with the highest CCR differential for state routes and non-state routes in SVMPO. **Table 16** shows the 10 intersections with the highest CCR differential for signalized and unsignalized intersections in SVMPO.

Table 15. SVMPO Top 10 Segments by Type

ROADWAY	EXTENTS	FUNCTIONAL CLASSIFICATION	LOCATION
STATE ROUTE			
SR 92	Snyder Blvd to Quality Inn driveway	Principal Arterial	Sierra Vista
SR 92	Canyon De Flores to AmeriGas driveway	Minor Arterial	Sierra Vista
SR 92	Fry Blvd to Harbor Freight driveway	Principal Arterial	Sierra Vista
SR 90	MP 321.2 to Queens Way	Principal Arterial	Sierra Vista
SR 92	Foothills Dr to Desert Gold Plaza driveway	Principal Arterial	Unincorporated
SR 92	Hazen Rd to Chevron driveway	Principal Arterial	Sierra Vista
SR 82	MP 51.8 to High Desert Cir	Major Collector	Unincorporated
SR 92	Hunter Canyon Rd to Baumkirchner Rd	Minor Arterial	Unincorporated
SR 90	MLK Jr. Pkwy to Fry Blvd	Principal Arterial	Sierra Vista
SR 92	Dead Bear Draw to Emory Oak Ridge	Minor Arterial	Unincorporated
NON-STATE ROUTE			
Ave Escuela	Blackbird Dr to Cardinal Pl	Minor Collector	Sierra Vista
Calle Granada	Monte Vista Ave to San Jacinto Dr	Minor Collector	Sierra Vista
Coronado Drive	Wilcox Dr to Fry Blvd	Minor Arterial	Sierra Vista
Carmelita Drive	7th St to Lenzner Ave	Minor Collector	Sierra Vista
Canyon De Flores	SR 92 to Resort Dr	Major Collector	Sierra Vista
7th Street	Bartow Dr to Fry Blvd	Minor Arterial	Sierra Vista
Charleston Road	SR 90 to Tree Top Ave	Minor Arterial	Sierra Vista
MLK Jr. Parkway	Avenida Escuela to SR 90	Minor Arterial	Sierra Vista
Fry Boulevard	Bel Aire Pl to Coronado Dr	Minor Arterial	Sierra Vista
Giulio Cesare Ave	Charleston Rd to Buena School Blvd	Major Collector	Sierra Vista

Table 16. SVMPO Top 10 Intersections by Type

INTERSECTION	LOCATION
SIGNALIZED INTERSECTION	
SR 90/Martin Luther King Jr Pkwy	Sierra Vista
SR 90/Fry Blvd	Sierra Vista
SR 90/Hatfield St	Cochise County
Coronado Dr/Fry Blvd	Sierra Vista
SR 92/Buffalo Soldier Trail	Sierra Vista
Avienda Del Sol/SR 90	Sierra Vista
SR 92/Foothills Dr	Cochise County
SR 92/Canyon De Flores	Sierra Vista
SR 92/Avienda Cochise	Sierra Vista
UNSIGNALIZED INTERSECTION	
Frontage Rd/Avenida Cochise	Sierra Vista
Calle Portal/Wilcox Dr	Sierra Vista
Paseo San Luis/Paseo De La Luna	Sierra Vista

INTERSECTION	LOCATION
Avenida Del Sol/Calle Cumbre	Sierra Vista
Moorman Ave/Wilcox Dr	Sierra Vista
Rainbow Way/SR 90	Sierra Vista
El Camino Real/Wilcox Dr	Sierra Vista
Avenida Del Sol/Snyder Blvd	Sierra Vista
Calle Pequeno/Avenida Cochise	Sierra Vista
Leon Way/Ocotillo Dr	Sierra Vista

Probability of Specific Crash Types Exceeding Threshold Proportion

The HSM provides a method to prioritize locations based on the probability that the proportion of a specific crash type or injury level exceeds a threshold proportion. This analysis helps identify locations where certain crash attributes are overrepresented and should be further analyzed.

For each GFA, the following crash attributes were analyzed for the 10 locations identified from the CCR analysis:

- Crash Severity – Fatal, Suspected Serious Injury, Suspected Minor Injury, Possible Injury, and Property Damage Only
- Manner of Collision – Single Vehicle, Angle, Left Turn, U-Tur, Rear End, Head On, Sideswipe, Rear to Side, Rear to Rear, and Other/Unknown
- VRU – Pedestrian, Bicycle, and Motorcycle

Results are shown for each GFA in **Appendix B.**

Equivalent Property Damage Only (EPDO)

The EPDO method assigns weighting factors to crashes based on crash severity level to develop a property-damage-only score. In this analysis, the injury crash costs were calculated for each location (based on 2022 ADOT crash costs). This value is divided by the cost of a property-damage-only crash, to calculate the equivalent number of property-damage-only crashes at each site. This value allows all locations to be compared based on injury crash costs. The EPDO analysis was performed for the ten locations identified in the CCR analysis. Results are shown for each GFA in **Appendix B.**

Roadway Characteristic Risk Analysis

The Arizona Sun Cloud portal includes a data set that identifies segments and intersections with a safety need based on risk factors. These data sets are the Junction Safety 2021 and Segments Safety 2021. Sun Cloud data is only available for the Cochise County, Santa Cruz County, and SVMPO GFAs. Top locations identified within each GFA and their compliance with the SEAZ TSP safety analysis are shown in **Table 17** and **Table 18** for segments and intersections, respectively. Majority of identified safety intersections were also identified in the TSP's safety analysis.

Table 17. Top Arizona Sun Cloud Roadway Segment Locations

ROADWAY	LIMITS	CITY/TOWN	OVERLAY WITH SEAZ TSP SAFETY ANALYSIS?
COCHISE COUNTY			
Fort Grant Road	Co Line Rd to Dry Tumbleweed Ln	Cochise County	**No**
I-10 Ramp	I-10 to 4th St	Benson	**No**
A Avenue	15th St to 10th St	Douglas	**No**
4th Street	I-10 Ramp to Ocotillo Rd	Benson	**Yes**
Fort Grant Road	Virginia Ave to Rex Allen Dr	Willcox	**No**
SR 90	Village Loop to Nueva Jenella Rd	Benson	**No**
SANTA CRUZ			
Mariposa Road	Frank Reed Rd to I-19	Nogales	**No**
Mastick Way	Via Rosamorada to S 189	Nogales	**No**
I-19 Frontage Road	I-19 to Cochise Dr	Santa Cruz County	**Yes**
SR 83	Sunrise Ln to Vaughn Loop Rd	Santa Cruz County	**Yes**
Frank Reed Road	Mariposa Ranch Rd to Mariposa Rd	Nogales	**Yes**
SVMPO			
Fry Boulevard	Coronado Dr to El Camino Real	Sierra Vista	**Yes**
SR 90	SR 92 to Avenida del Sol	Sierra Vista	**Yes**
Buffalo Soldier Trail	S 90 to Kayetan Dr	Sierra Vista	**No**
SR 92	Busby Dr to SR 90	Sierra Vista	**Yes**

Table 18. Top Arizona Sun Cloud Intersections Locations

ROADWAY INTERSECTION	CITY/TOWN	OVERLAY WITH SEAZ TSP SAFETY ANALYSIS?
COCHISE COUNTY		
SR 90/Village Loop	Benson	**Yes**
Haskell Ave/Maley St	Willcox	**Yes**
Maley St/Railroad Ave	Willcox	**No**
5th St/F Ave	Douglas	**Yes**
Santa Cruz County		
Grand Ave/Elm St	Nogales	**No**
Calle Barrio de Tubac/I-19 Frontage Rd	Tubac	**Yes**
Target Range Rd/Industrial Park Ave	Nogales	**No**
Blvd del Rey David/I-19 Frontage Rd	Santa Cruz County	**Yes**
Ruby Rd/I-19 Frontage Rd	Rio Rico	**No**
SVMPO		
SR 90/MLK Pkwy	Sierra Vista	**Yes**
SR 92/Canyon de Flores	Sierra Vista	**Yes**
SR 90//Industry Drive	Sierra Vista	**Yes**
Avenida Cochise/Calle Pequeno	Sierra Vista	**Yes**
Wilcox Dr/Garden Ave	Sierra Vista	**No**
SR 92/Snyder Blvd	Sierra Vista	**Yes**

5.Equity Considerations

An equity lens to safety planning informs understanding of how traffic risks and impacts are distributed amongst the entire community. An equity review helps to understand if there are disparate risks and burdens based on race, income, and other socio-economic factors.

Federally Defined Equity Areas

Several tools are available at the federal level to inform understanding of equity considerations These tools include USDOT Equitable Transportation Community (ETC) Disadvantaged Areas dataset, and the Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEJST).

USDOT Equitable Transportation Community

The ETC data uses census data to highlight communities experiencing transportation insecurity and transportation disadvantages, and how transportation insecurity impacts marginalized communities. It highlights disparities in access to transportation resources and informs decision-making for more equitable outcomes. USDOT defines transportation insecurity as when "people are unable to get to where they need to go to meet the needs of their daily life regularly, reliably, and safely."[8] This dataset is part of the Justice40 Initiative, Executive Order 14008[9], and uses census tract data from the 2020 Census to help determine the community burden that results from underinvestment in transportation. The indicators that are used to create the index in the dataset include the following:

- Transportation Insecurity
- Environmental Burden
- Social Vulnerability
- Health Vulnerability
- Climate and Disaster Risk Burden

Council on Environmental Quality's Climate and Economic Justice

Similarly, the CEJST dataset uses 2020 Census data to identify disadvantaged communities. Disadvantaged communities are within the boundaries of Federally Recognized Tribal Lands or meet at least one category of burden:

- Climate Change
- Energy
- Health
- Housing
- Legacy Pollution
- Transportation
- Water and Wastewater
- Workforce Development

A community is designated as disadvantaged if they are in census tracts at or above the 65th percentile for low-income and at or above the 90th percentile for any of the categories listed above. The CEJST uses data related to carbon emissions, economic indicators, demographic

[8] *USDOT Equitable Transportation Community (ETC) Explorer*. September 6, 2023. https://experience.arcgis.com/experience/0920984aa80a4362b8778d779b090723/page/Understanding-the-Data/

[9] *Executive Order 14008*. January 27, 2021: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/

information, and environmental justice metrics. The tool provides an analysis of how climate policies might affect different communities, considering their economic status and vulnerability. The aim is to ensure that climate actions are equitable and do not disproportionately burden marginalized populations while addressing environmental challenges. The tool's purpose is to guide policy decisions by considering the equitable distribution of benefits and burdens across different communities.

Locally Defined Equity Priority Index

To identify equity priority communities within the SEAGO region, a locally-defined equity priority index was developed. The locally-defined index provides insight on not only whether transportation-disadvantaged people are present in a place, but also the degree to which they are experiencing transportation challenges.

Methodology

The locally-defined equity index ("index") of transportation disadvantaged populations was calculated for each tract, formulated by aggregating the populations within the specified categories and then dividing by the tract's total population. People fitting into multiple categories (for instance, people with a disability who are also over the age of 65) are counted multiple times. The higher the index number, the more disadvantaged the population is with respect to transportation. The formula used to develop the segmented transportation disadvantaged population scores is defined as follows:

$$Index = ((Eld + Yth + NH + LEP + Pov + (HH * Veh) + Dis) + (Crwd * HH))/Pop$$

Where the variables represent:

Eld: Number of residents over 65 years of age

Yth: Number of residents under 18 years of age

NH: Number of non-white or Hispanic residents

LEP: Number of residents with limited English proficiency

Pov: Number of residents below 200% of the poverty threshold

HH: Average household size

Veh: Number of households without vehicle access

DIS: Number of residents with a disability

Crwd: Number of crowded households

Pop: Total population of the Census tract

These factors were evaluated for each census tract and normalized by total population, to create an index score for each census tract in the SEAGO region. The index reveals the scale of the disadvantage experienced by people in critical census tracts. The index was then overlaid with areas of known or anticipated safety risks. This analysis identified corridors where safety enhancements are needed and where communities are most disadvantaged in terms of transportation. The worst-scoring sections of state, federal-aid, and local roads on the Composite Network were identified for each community within the SEAGO and SVMPO study area. This approach helps cities recognize roadway sections that best meet equity-based criteria for competitive federal SS4A implementation grants. As recommendations were developed for corridors and intersections, planners and engineers considered how various safety countermeasures would uniquely impact transportation-disadvantaged communities.

Results and Observations

The equity analysis results are shown in **Figure 15** to **Figure 20**, where darker-colored census tracts indicate High transportation disadvantages.

Figure 15 provides a glimpse of the SEAGO and the SVMPO area. Much of the San Carlos Apache Tribe area in Graham County is highlighted on the map compared to its neighbors. Cochise County, shown in **Figure 16**, has two concentrations of High transportation disadvantaged areas. One is in the northeast corner and the other around the City of Douglas and City of Bisbee. The northeast corner falls within the ETC disadvantaged area and the area to the south fall within the CJEST disadvantaged area.

Graham County, shown in **Figure 17**, has the majority of its northern half under High transportation disadvantaged rating. The area is also within both the ETC and CEJST areas. This northern portion of the county is the San Carlos Apache, is the worst rated area within the study area.

Greenlee County is nearly entirely rated as a Medium transportation disadvantage and CJEST area. The only area that is ranked Low is west of the Town of Clifton. Everywhere south of SR 78 and SR 191 is also within an ETC area. These areas can be seen in **Figure 18**.

Santa Cruz County has the southwestern portion that is ranked High transportation disadvantaged. The majority of the ranked area does not fall within either of the ETC or the CEJST areas, with exception of the City of Nogales. Nogales falls within the High ranked transportation disadvantaged area but also within both the ETC and CEJST areas, as seen in **Figure 19**.

The SVMPO region, **Figure 20**, similar to Greenlee County, has no High ranked areas and is dominated primarily by Medium ranked transportation disadvantaged areas. The areas that fall with the ETC and CEJST are outside of the City of Sierra Vista and mostly to the northeast of SR 90.

Role in Evaluating Projects

The locally defined equity index was overlaid with the Composite Network to understand which corridors would benefit people that are experiencing the most challenges regarding their daily transportation needs. Areas with equitable need were considered during the project development process. Projects in high-equity priority areas are in communities where transportation challenges are felt most deeply, and which offer the most benefit to communities experiencing transportation disadvantages.

Figure 15. SEAGO & SVMPO Equity Index

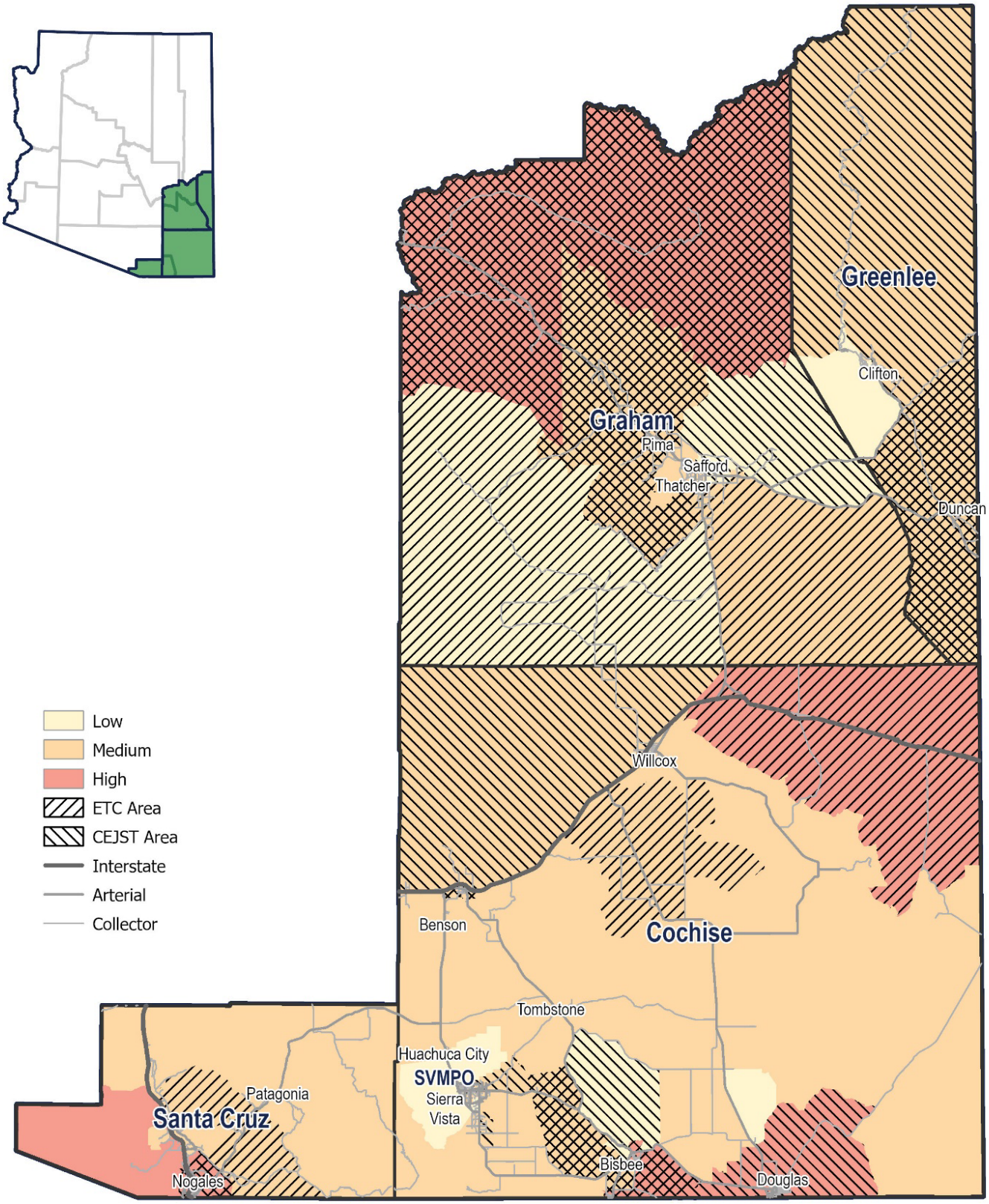


Figure 16. Cochise County Equity Index

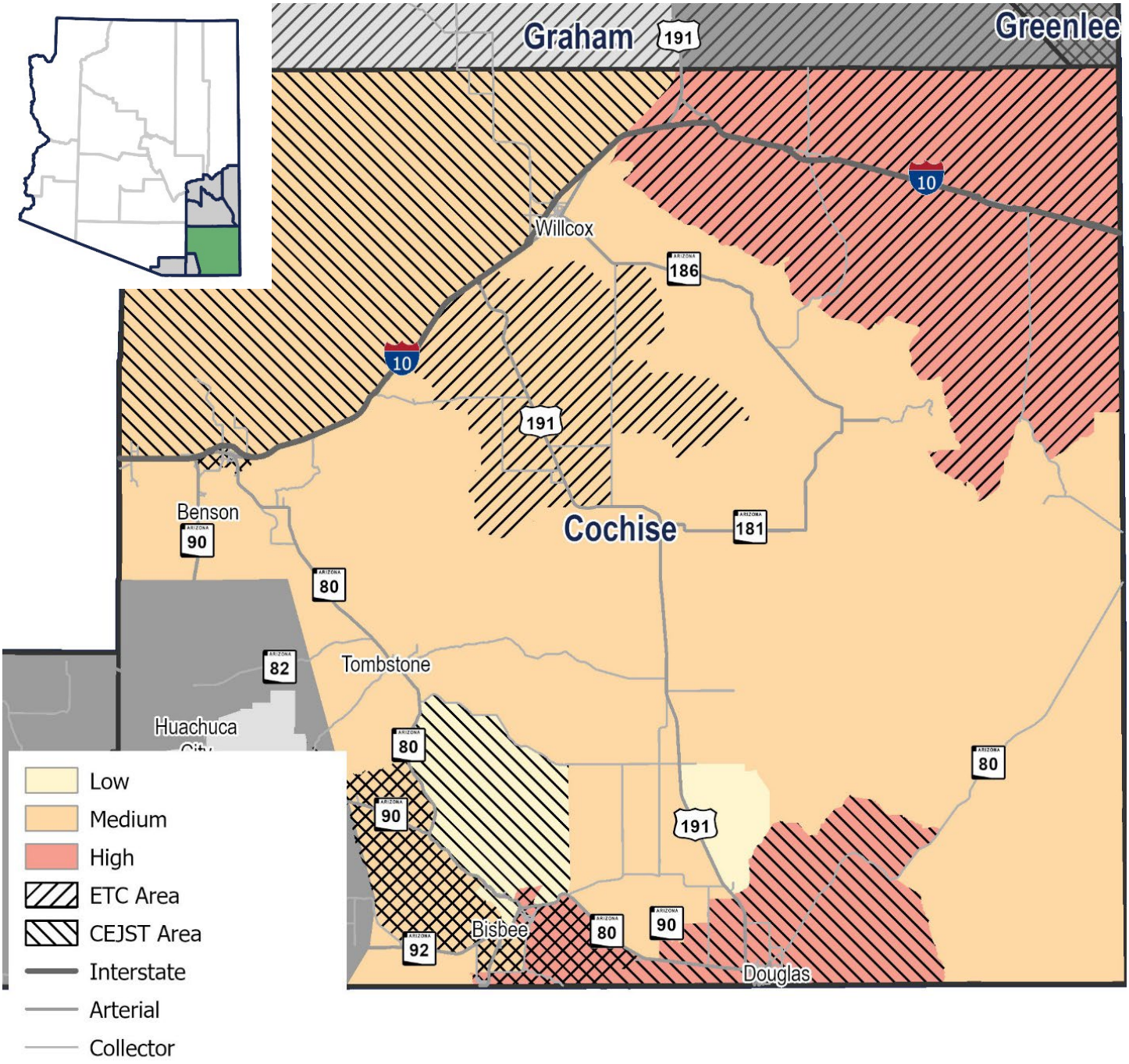


Figure 17. Graham County Equity Index

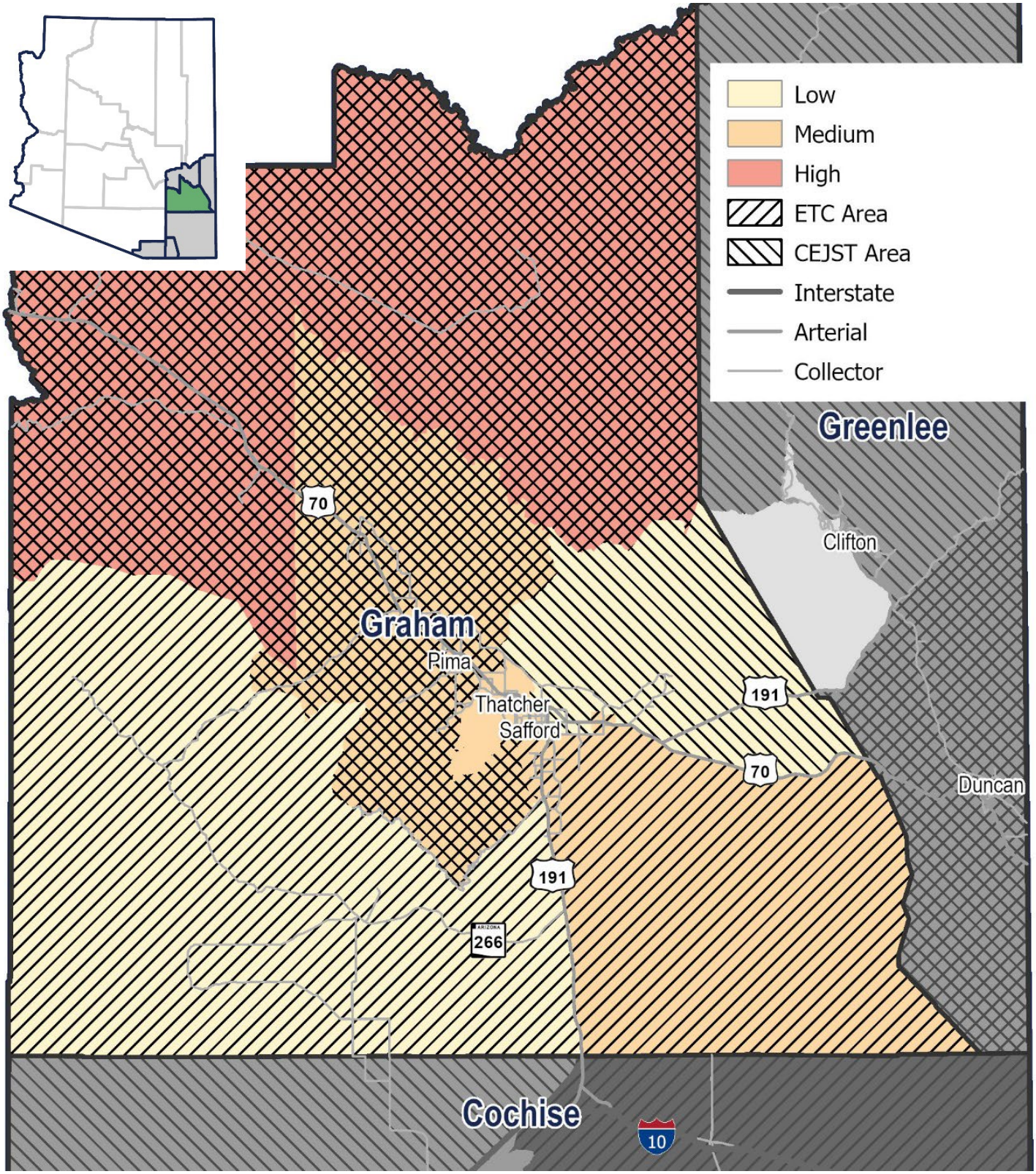


Figure 18. Greenlee County Equity Index

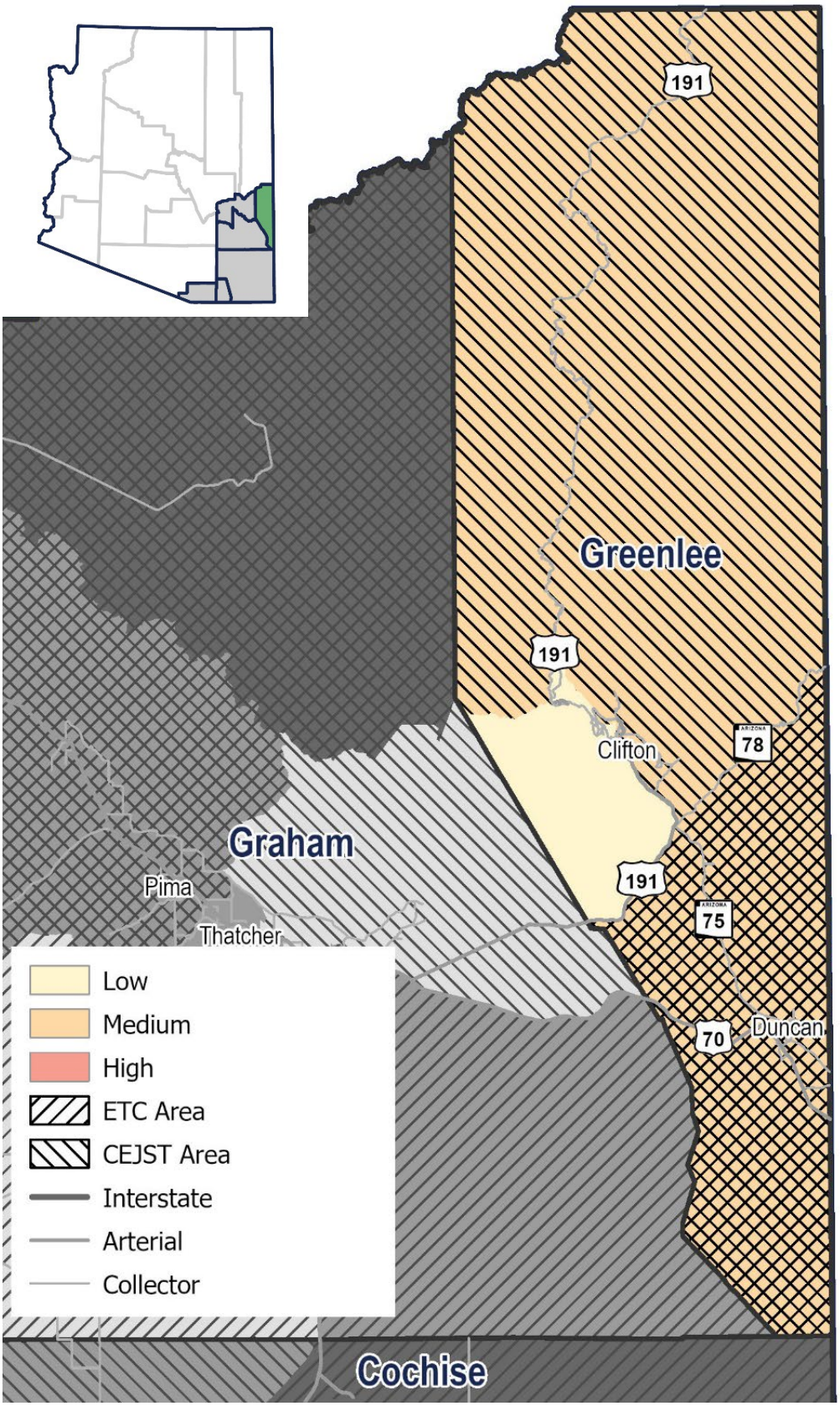


Figure 19. Santa Cruz County Equity Index

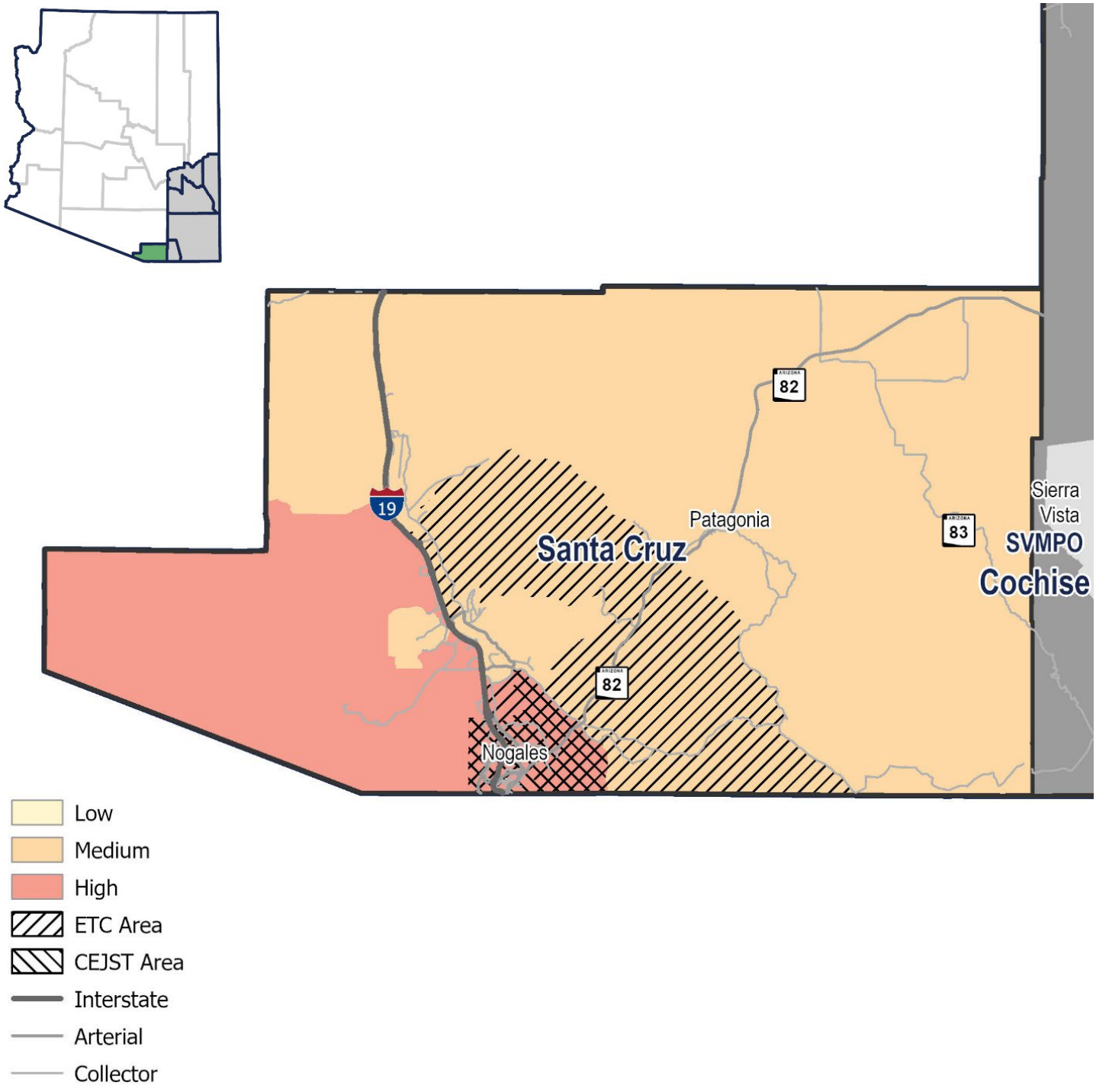
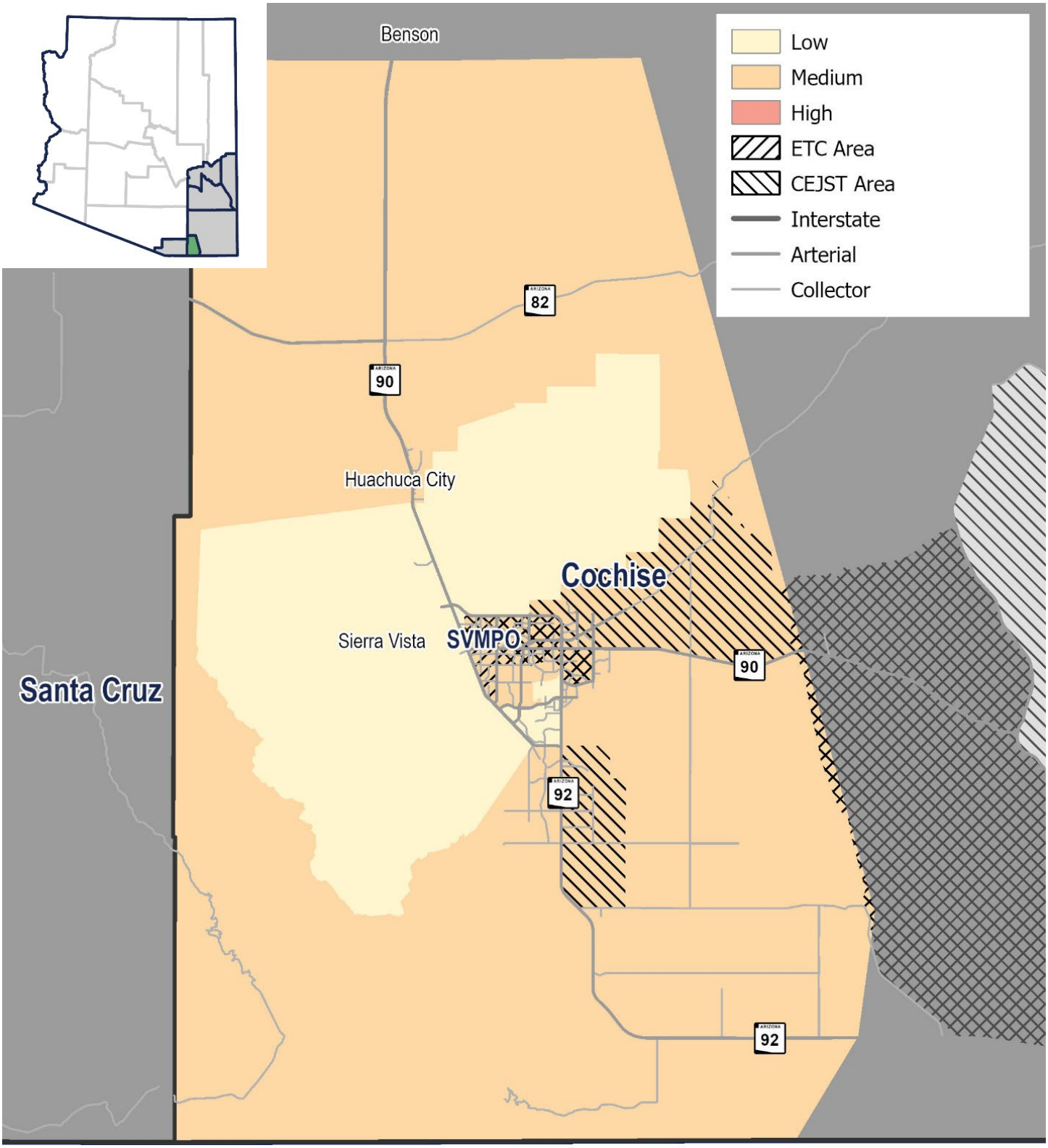


Figure 20. SVMPO Equity Index



6. Strategies and Solutions

Safety Toolbox by Safe System Elements

The SEAZ TSP recommends projects and strategies that could be implemented to address specific safety needs and reduce frequency of fatalities and serious injuries. The recommended safety measures encompass Proven Safety Countermeasures aimed at protecting all road users.

Safety Countermeasures Toolbox

To assist communities in the SVMPO and SEAGO region to identify and implement effective countermeasures, recommended strategies are summarized in a Countermeasure Toolbox (**Appendix A**). Countermeasures were identified from Federal Highway Administration's (FHWA) Proven Safety Countermeasures, CMF Clearinghouse, and the National Highway Traffic Safety Administration's (NHTSA) Countermeasure That Work.

The SEAZ TSP recommends that agencies utilize the Countermeasure Toolbox to select effective strategies that address safety needs. The strategies are organized by segment-focused countermeasures, intersection-related countermeasures, and non-engineering countermeasures. As available and applicable, the following information is provided for each countermeasure identified in the Countermeasure Toolbox:

- Emphasis Area/Crash Problem
- Safety Countermeasure
- Countermeasure Source
- Crash Modification Factor (CMF) Value
- Unit Cost
- Application Guidance
- Urban/Rural
- Signalized/Unsignalized

Countermeasure Effectiveness

The Countermeasure Toolbox includes information about the effectiveness of each of the countermeasures, measured by CMFs. CMFs provide an indication of the change in anticipated number of crashes after implementing a countermeasure or safety treatment at a specific site.

A CMF is a multiplicative factor that can be applied to the number of crashes at a specific site to compute the number of anticipated crashes remaining after a countermeasure is implemented. A CMF should be regarded as a high-level indicator of the effectiveness of a countermeasure. The estimate is a useful guide, but it remains necessary to apply engineering judgment and to consider site specific environmental, traffic conditions, geometric, and operational conditions. Actual effectiveness will vary from site to site.[10] The Countermeasure Toolbox includes the cost of the countermeasure and the CMF to assist in determining "cost effectiveness."

Safety Priorities and Improvement Projects

The Composite Network identifies segments and intersections with a need for safety improvement in the region. To illustrate potential safety improvement projects, Projects were prepared for segments and intersections identified in the Composite Network. Projects demonstrate the type and relative cost of projects that could be implemented to improve safety in the region. Up to 12 Projects were identified for each GFA. Information sheets were prepared for each Project, and include:

- Location Description
- SHSP Emphasis Areas
- Equity Priority
- Map
- Segment Information
- Safety Analysis Results
- Key Intersections
- Project Description
- Proven Safety Countermeasures
- Opinion of Probable Costs

Project Information Sheet Overview

Figure 21 and **Figure** 22 provide an orientation of the Project Information Sheets. Countermeasures were selected from the Countermeasures Toolbox (**Appendix A**). As jurisdictions desire to move toward project implementation, additional detailed analysis is required to confirm the strategies recommended in the Information Sheets. Informed by additional analysis, it is expected that jurisdictions will modify the suggested improvements or quantities based on local knowledge.

Project Information Sheets were not prepared for every location identified as a safety need in the regional safety performance analysis. Jurisdictions and agencies should consider developing projects for additional locations identified in the analysis. All segments and intersections identified in the analysis are shown in **Appendices B** through **F**.

[10] FHWA. *Toolbox of Countermeasures and Their Potential Effectiveness for Pedestrian Crashes FHWA-SA-014*. February 1, 2013. https://safety.fhwa.dot.gov/ped_bike/tools_solve/ped_tctpepc/#:~:text=A%20CRF%20is%20the%20percentage,is%20provided%20for%20each%20countermeasure

Project Information Sheets were prepared for locations listed in **Table 19** through **Table 23**. Project Information Sheets for each jurisdiction, organized by GFA, are provided in **Appendices B** through **F**.

Figure 21. Example Project Information Sheet, Page 1

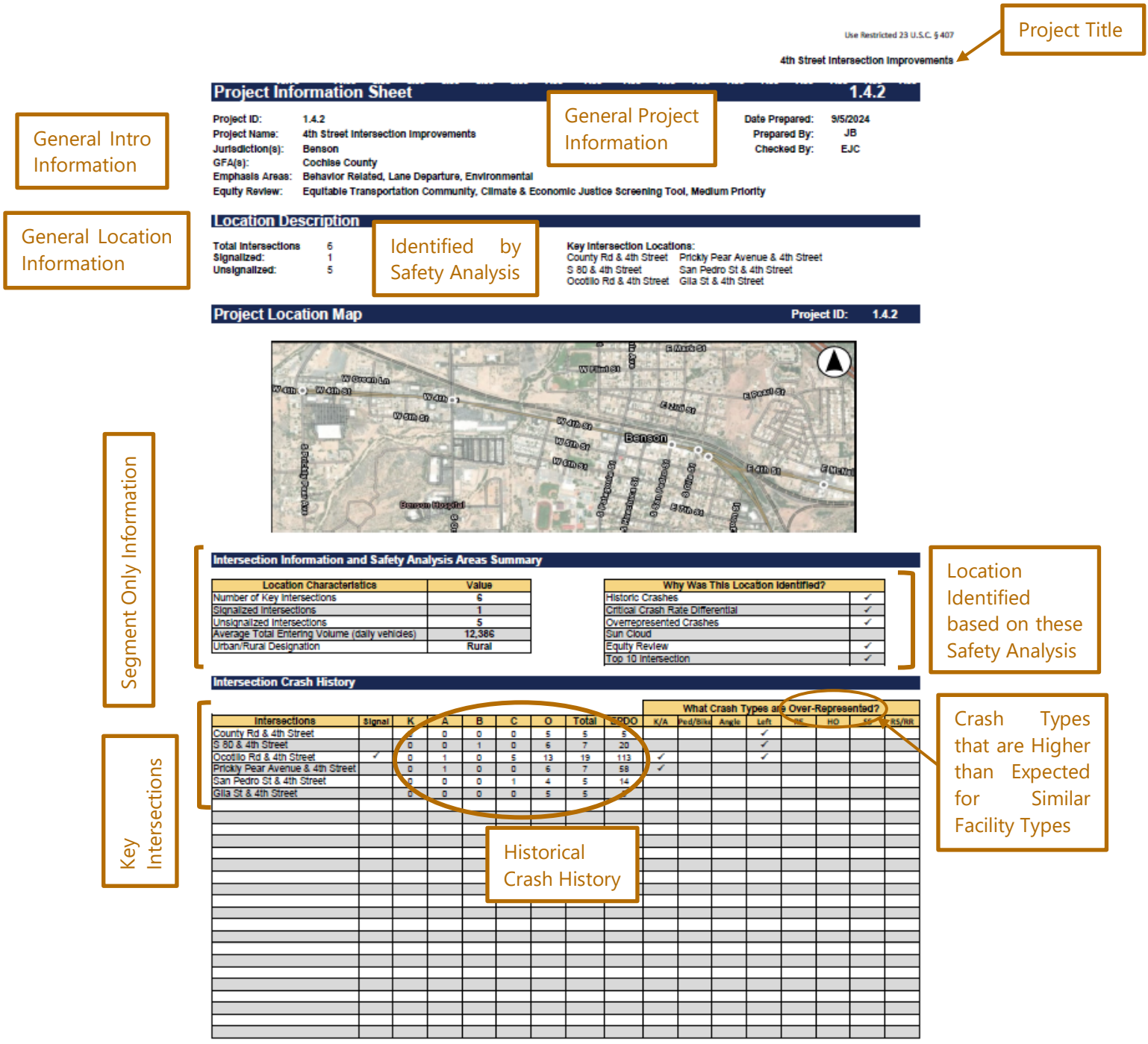
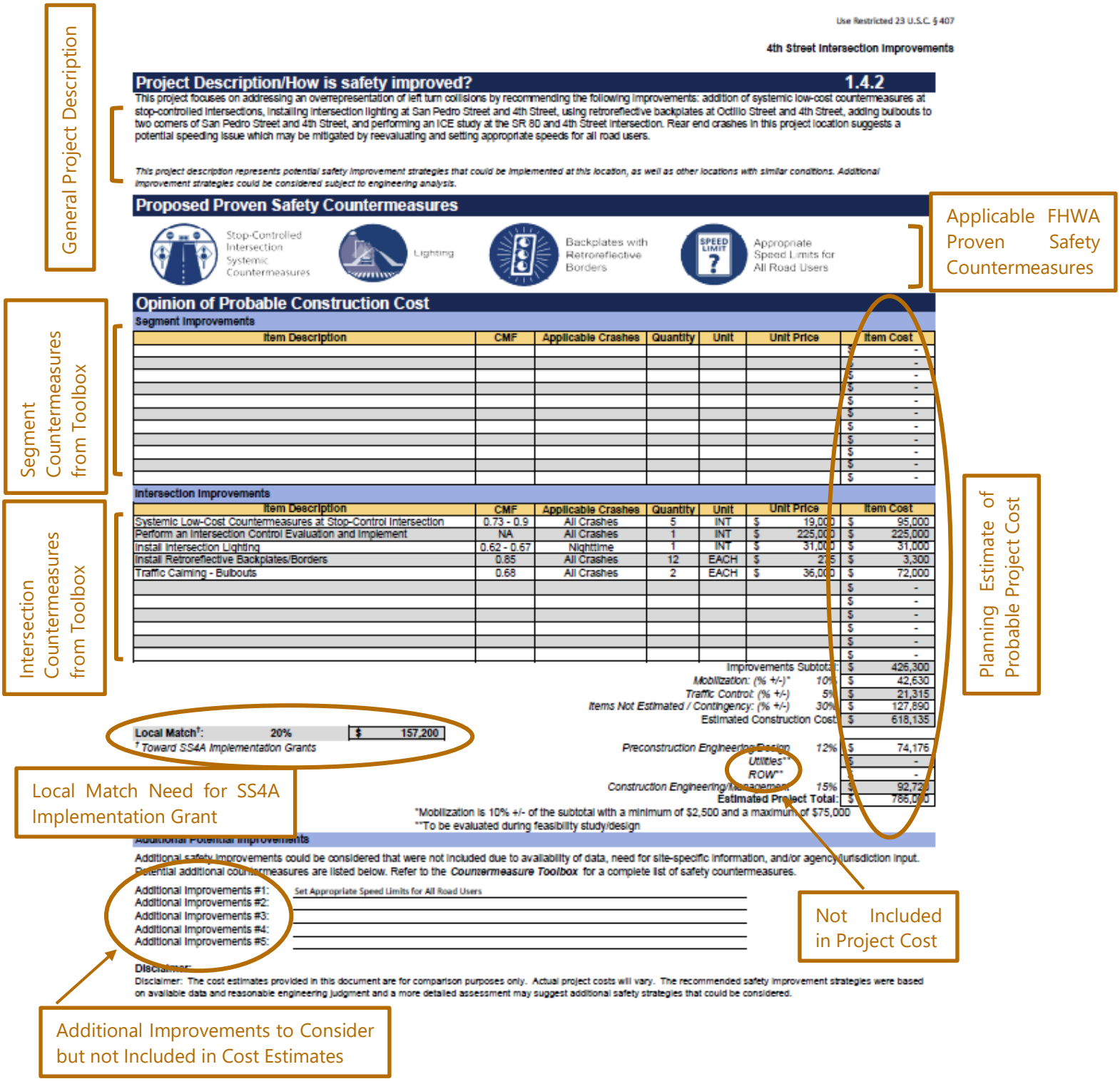


Figure 22. Example Project Information Sheet, Page 2



Use Restricted 23 U.S.C. § 407

4th Street Intersection Improvements

Project Description/How is safety improved? **1.4.2**

This project focuses on addressing an overrepresentation of left turn collisions by recommending the following improvements: addition of systemic low-cost countermeasures at stop-controlled intersections, installing intersection lighting at San Pedro Street and 4th Street, using retroreflective backplates at Ocotillo Street and 4th Street, adding bulbouts to two corners of San Pedro Street and 4th Street, and performing an ICE study at the SR 80 and 4th Street intersection. Rear end crashes in this project location suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speeds for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Stop-Controlled Intersection Systemic Countermeasures; Lighting; Backplates with Retroreflective Borders; Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	5	INT	$ 19,000	$ 95,000
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	1	INT	$ 225,000	$ 225,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	12	EACH	$ 275	$ 3,300
Traffic Calming - Bulbouts	0.68	All Crashes	2	EACH	$ 36,000	$ 72,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 426,300
*Mobilization: (% +/-)**	*10%*	$ 42,630
Traffic Control: (% +/-)	*5%*	$ 21,315
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 127,890
Estimated Construction Cost:		$ 618,135
Preconstruction Engineering/Design	*12%*	$ 74,176
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 92,720
Estimated Project Total:		$ 786,000

Local Match†: 20% $ 157,200

† *Toward SS4A Implementation Grants*

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

General Project Description

Applicable FHWA Proven Safety Countermeasures

Segment Countermeasures from Toolbox

Intersection Countermeasures from Toolbox

Planning Estimate of Probable Project Cost

Local Match Need for SS4A Implementation Grant

Not Included in Project Cost

Additional Improvements to Consider but not Included in Cost Estimates

Table 19. Project Locations - Cochise County GFA

PROJECT ID	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
1.1.3	Cochise County	SR 90 (Sharpshooter Rd to SR 80)	Centerline rumble strips, edge line rumble strips, and shoulder widening with repaving efforts along the entire length of the roadway. Low-cost countermeasures, and transverse rumble strips on SR 90 approaching the SR 80 and SR 90 intersection.
1.2.3	Cochise County	SR 80 (SR 90 to Old Divide Rd)	Upgrading/installing curve warning signage, installing retroreflective center and edge lines, adding edge line and centerline rumble strips, and providing lighting along the length of the roadway.
1.3.1	Bisbee	SR 80 (Old Divide Rd to Denn Mine Rd)	Implementing highway lighting from Simms Rd to Main St, installing retroreflective centerline and edge lines along the length of the roadway, and rumble strips along the length of the roadway, systemic low-cost countermeasures at West Blvd and SR 80.
1.4.2	Benson	4th St Intersection Improvements	Systemic low-cost countermeasures at stop-controlled intersections, installing intersection lighting at San Pedro St and 4th St, using retroreflective backplates at Ocotillo St and 4th St, adding bulb outs to two corners of San Pedro St and 4th St, and performing an ICE study at the SR 80 and 4th St intersection.
1.5.1	Bisbee	Systemic Unsignalized Intersection Improvements	Road Safety Audits, Intersection Control Evaluations, and systemic low-cost countermeasures at stop-controlled intersections.
1.6.1	Bisbee	US 92 Intersections and Naco Rd Intersections	Traffic calming median curbs, 4-lane to 3-lane road diet conversion along the length of Naco Rd, corridor access management, and signal head improvements. At the Naco Hwy and SR 92 intersection, retroreflective backplates/borders and changing permissive left-turns to permissive/protected left-turns. The intersection may also be realigned to eliminate the offset approaches.
1.8.2	Benson	SR 90 & I-10 Intersection Improvements	Retroreflective backplates, clear and grubbing foliage, and systemic low-cost countermeasures at the stop-controlled intersection of St Andrews Dr

PROJECT ID	LOCATION	PROJECT NAME	PROJECT DESCRIPTION
			and SR 90. The pavement markings and lane configuration at the intersection of I-10 Westbound and SR 90 should be reevaluated to best fit the exiting traffic.
1.9.5	Wilcox	Rex Allen Dr Intersection Improvements	Installing intersection lighting and provide a right-turn lane at Haskell Ave Systemic low-cost countermeasures at all stop-controlled intersections and installing a high-visibility crosswalk at the Austin Blvd intersection are recommended At the intersection of Bisbee Avenue and Rex Allen Drive the permissive let turns may be converted to protected or protected-permissive left turns to minimize left turning conflicts.
1.10.1	Bisbee	Main St/Naco Rd & SR 80 Interchange Improvements	Systemic low-cost countermeasures at stop-controlled intersections and lighting, ICEs at the intersections of concern.

Table 20. Project Locations - Graham County GFA

PROJECT ID	MUNICIPALITY	PROJECT NAME	PROJECT DESCRIPTION
2.1.6	Graham County	SR 366 (MP 120.8 to Boulder Ln)	Guardrails at sharp curves, enhanced curve delineation signage, and shoulders.
2.2.8	Safford	US 70 (US 191 to Montierth Ln/Lone Star Rd)	Lighting between Hollywood Rd and Montierth Ln, retroreflective backplates, and low-cost countermeasures at stop-controlled intersections. ICEs at US 70 intersections with Hollywood Rd and Montierth Ln.
2.3.8	Safford	8th Ave (3rd St to 8th St)	Intersection lighting at 8th Ave and 8th St, retroreflective backplates for signal heads at 8th Ave and US 70, other low-cost countermeasures at the stop-controlled intersections, bulb outs at 8th Ave and 7th St.
2.4.8	Safford	Main St/6th Ave (7th Ave to 7th St)	Intersection lighting and other systematic low-cost countermeasures, retroreflective strips on stop signs on Patterson Mesa Rd and an ICE.
2.5.9	Thatcher	20th Ave (8th St to US 70)	Replace the two-way left-turn lane on 20th Ave with a raised median, dual arm solar lighting in the median, provide dedicated left

PROJECT ID	MUNICIPALITY	PROJECT NAME	PROJECT DESCRIPTION
			turn lanes for business driveways that frequently back up and reevaluate signal phasing for left turns.
2.6.6	Graham County	Safford Bryce Rd (Bryce Eden Rd to Hubbard Cemetery Rd)	Upgrades of curve signage, providing a 2-ft paved shoulder and Safety Edge, and transverse rumble strips or other raised roadway features prior to curves with any repaving efforts on the roadway.
2.7.6	Graham County	Solomon Rd & Bowie Ave Intersection Improvements	Intersection lighting and other systematic low-cost countermeasures. Retroreflective strips on stop signs on east the leg of Solomon Rd 2-ft paved shoulders for driver recovery, transverse rumble trips or other raised roadway features in advance of the curve, and driver feedback speed limit signs.
2.8.8	Safford	Safford Systemic Intersection Improvements	Increased lighting, low-cost countermeasures at stop-controlled intersections, and retroreflective backplates at signal-controlled intersections. Centerline hardening, RRFBs, and traffic calming bulb outs near schools.

Table 21. Project Locations - Greenlee County GFA

PROJECT ID	MUNICIPALITY	PROJECT NAME	PROJECT DESCRIPTION
3.1.10	Clifton	US 191 (Chase Creek St to Zorilla St)	4'' retroreflective centerline and edge lines, segment lighting, systemic low-cost countermeasures for stop-controlled intersections, and access management. An ICE at Chase Creek St.
3.2.10	Clifton	US 191 (Park Ave to 7th St)	Lighting, lane narrowing, and systemic low-cost countermeasures at stop-controlled intersections. Reevaluating and setting appropriate speed limits along US 191 or installing transverse rumble strips on the lanes entering and exiting the project extents. Additional traffic calming includes lane narrowing via wider lane lines, driver feedback speed signs, and additional sidewalk width on the north side of the roadway

PROJECT ID	MUNICIPALITY	PROJECT NAME	PROJECT DESCRIPTION
3.3.12	Greenlee County	SR 78 (Greenlee Substation Rd to State Line)	Shoulder widening and centerline and edge line rumble strips focused on curves and high-crash locations.
3.4.12	Greenlee County	US 191 (Chase Creek to ADOT Grey's Peak Maint. Camp)	Shoulder widening with edge line and centerline rumble strips and retroreflective lines, segments of guardrail and Safety Edge.
3.6.12	Greenlee County	US 191 (Pine Flat Rd to Hogtrail Saddle)	Edge line and centerline rumble strips, widening the roadway shoulder, adding curve signage where not existing, segments of guardrail and transverse rumble strips within and prior to curves, and installation and/or upgrade of curve signage.
3.7.12	Greenlee County	US 191 (MP 217 to Lengthy Trailhead)	Curve signage, edge line and centerline rumble strips, shoulder widening, Safety Edge can be installed with repaving projects, installation of 4'' retroreflective centerline and edge line.
3.8.10	Greenlee County	Ward Canyon Rd (Canyon Rd to Red Wash Ln)	Centerline rumble strips transversing the curve and clear and grub along the roadway, , systemic low-cost countermeasures at stop-controlled intersections at Canyon Road & Ward Canyon Road.

Table 22. Project Locations - Santa Cruz County GFA

PROJECT ID	MUNICIPALITY	PROJECT NAME	PROJECT DESCRIPTION
4.1.13	Nogales	I-19 and Crawford St S-curve	Centerline hardening, conduct an ICE at Sonoita Ave, other low-cost countermeasures at stop-controlled intersections.
4.2.15	Santa Cruz County	SR 83 (McCarty Ln to Lyle Canyon Rd)	Centerline rumble strips raised thermal edge lines, transverse rumble strips prior to curves, transverse rumble strips prior to curve and enhanced delineation for horizontal curves.
4.3.14	Patagonia	SR 82 (McKeown Ave to Cross Creek Rd)	Additional lighting between the Patagonia Cemetery path and Cross Creek Rd, back-to-back curb medians, and bulb outs at 3rd Ave and 4th Ave.

PROJECT ID	MUNICIPALITY	PROJECT NAME	PROJECT DESCRIPTION
4.4.13	Nogales	Apache Blvd/Frank Reed Rd (I-19 to Mariposa Rd)	Driver feedback speed signs, reevaluating appropriate speed limits for the roadway, and increasing visibility of pedestrians. At Mariposa Ranch Rd, installing RRFBs, upgrading the crosswalk to high-visibility, and conducting an ICE. Converting the Shell Drive intersection to a right-in-right-out.
4.5.15	Santa Cruz County	SR 82 (900 Rd to Upper Elgin Rd)	Paved 2-foot shoulder, edge and centerline rumble strips, 4" retroreflective centerline and edge line strips, and Safety Edge with any repaving efforts. Shoulder and Safety Edge improvements focused on curves and high-crash locations.
4.6.15	Santa Cruz County	West Frontage Rd (Peck Canyon Rd to Yavapai Dr/Rio Rico Dr)	2-foot paved shoulder, installing additional lighting, revaluating the appropriate speed limit for the roadway, providing right or left turn lanes at intersections.
4.7.15	Santa Cruz County	Calle Barrio de Tubac & I-19 (East) Frontage Rd Intersection Improvements	Intersection lighting, ICE at the project location, and implementing other low-cost countermeasures for stop-controlled intersections.
4.8.15	Santa Cruz County	Duquesne Rd (Patagonia Highway/SR 82 to Buena Vista Ranch)	4" retroreflective centerline and edge lines, driver feedback speed limit signs, additional intersection lighting, eliminate the intersection skew and clear vegetation, upgrading the existing crosswalk to a high visibility crosswalk, and dedicated right turn lanes onto SR 82.
4.9.15	Santa Cruz County	SR 83 & SR 82 Intersection Improvements	Convert the existing intersection to a modern roundabout.
4.10.13	Nogales	Grand Ave from Mariposa Rd to Country Club Dr	Connecting existing sidewalks on the west side of the roadway and provide sidewalk on the east where space is available. An RSA is recommended to identify further recommendations for this project area. At Mariposa Rd, install retroreflective backplates/borders and centerline hardening of the existing curbs
4.11.13	Nogales	SR 82/Patagonia Highway (Grand Ave to Aurora Dr)	Centerline rumble strips from Bristol Dr to Aurora Dr, conduct an RSA, install or upgrade curve signage and delineations, perform an ICE at SR 82/Patagonia Hwy.
4.12.15	Santa Cruz County	East Frontage Rd from I-19 to Palo Parado Rd	Upgrade curve signage , transverse rumble strips, intersection lighting, and systemic low-cost countermeasures.

Table 23. Project Locations - SVMPO GFA

PROJECT ID	MUNICIPALITY	PROJECT NAME	PROJECT DESCRIPTION
5.1.18	Sierra Vista	Charleston Rd (Ave Escuela to Fighting Colt Dr)	Install lighting, low-cost systemic countermeasures at stop-controlled intersections, install retroreflective backplates/ borders at signalized intersections.
5.2.18	Sierra Vista	SR 92 (Charleston Rd to Ave Tienda)	Additional lighting, install retroreflective backplates on traffic signals, low-cost countermeasures at stop-controlled intersections, installation of segment lighting.
5.3.18	Sierra Vista	SR 90 (SR 92 to Kino Rd)	Retroreflective backplates on signal heads, implementation of low-cost countermeasures at stop-controlled intersections, clearing shrubs/trees, provide a shared-use path on the north side of the roadway, sidewalks, pedestrian fencing near the HAWK at Toscanini Ave/Rainbow Way.
5.4.16	Cochise County	SR 90 & SR 82 Intersection Improvements	Install retroreflective backplates/borders on all traffic signal heads, warning signs and advance street name plaques approaching the intersection, conduct an ICE.
5.5.18	Sierra Vista	Carmelita Dr (7th St to Lenzner Ave)	Intersection lighting, systemic low-cost countermeasures at stop-controlled intersections.
5.6.18	Sierra Vista	Ave Cochise (Oakmont Dr to Frontage Rd)	Perform an RSA and ICE at Home Depot and the Mall at Sierra Vista, update signal timing and Flashing Yellow Arrows at SR 92, install retroreflective backplates/borders to the SR 92 intersection signal heads, systemic low-cost countermeasures at Calle Pequeno.
5.7.18	Sierra Vista	Fry Blvd (7th St to SR 90/SR 92)	Retroreflective backplates/borders at Coronado Dr, low-cost countermeasures at stop-controlled intersections, intersection lighting at Moorman Ave, lighting along the length of the roadway.

7.Best Practices for Policies and Procedures

Best practices for safety policies, processes, education, and enforcement were identified to inform recommended policies and procedures for SVMPO and SEAGO, and their member agencies.

Previous and Ongoing Plans Review

Current policies, plans, guidelines, and standards were reviewed to identify opportunities to improve focus on traffic safety and reduce the frequency of fatalities and serious injuries. Local and county general, transportation, and active transportation plans across study area communities were reviewed to evaluate the current state of practice on safety practices in the region. **Table 24** summarizes the plans reviewed.

Table 24. Reviewed Previous and Ongoing Plans

JURISDICTIONS BY GFA	PLAN/DOCUMENT NAME (YEAR COMPLETED)
COCHISE COUNTY GFA	
Bisbee	• Mobility Master Plan (Adopted 2023) • General Plan (Adopted 2015)
Benson	• General Development Plan (Adopted 2015)
Cochise County	• Comprehensive Plan (Amended and Readopted 2015) • Zoning Code • Long Range Transportation Plan (Adopted 2015) • Road Design and Construction Standards and Specifications (Adopted 2017) • Engineering Design Handouts
Douglas	• General Plan (Adopted 2024)
Tombstone	None
Willcox	• 2040 General Plan (Adopted Date TBD)
GRAHAM COUNTY GFA	
Graham County	• Comprehensive Plan
Pima	• 2026 General Plan (Adopted 2016)
Safford	• General Plan (Adopted 2016)
Thatcher	• General Plan (Adopted 2021)
GREENLEE COUNTY GFA	
Clifton	• General Plan (Adopted 2019)
Duncan	• General Plan (Currently Being Updated)
Greenlee County	• Comprehensive Plan (Adopted 2005)
SANTA CRUZ COUNTY GFA	
Nogales	• General Plan (Adopted 2020) • Bicycle and Pedestrian Master Plan (Adopted 2018)
Patagonia	• General Plan –(Adopted 2023)
Santa Cruz County	• Comprehensive Plan (Adopted 2016)

SAN CARLOS APACHE TRIBE GFA	
San Carlos Apache Tribe	• Long Range Transportation Plan (DRAFT 2019)
SVMPO GFA	
City of Sierra Vista	• Vista 2030 Sierra Vista General Plan (Adopted 2014)
Cochise County	• See Cochise County GFA
Huachuca City	• Transportation System: Major Streets and Scenic Route Plan (Accepted 2021)
SVMPO	• 2050 Long-Range Transportation Plan (Adopted 2022)

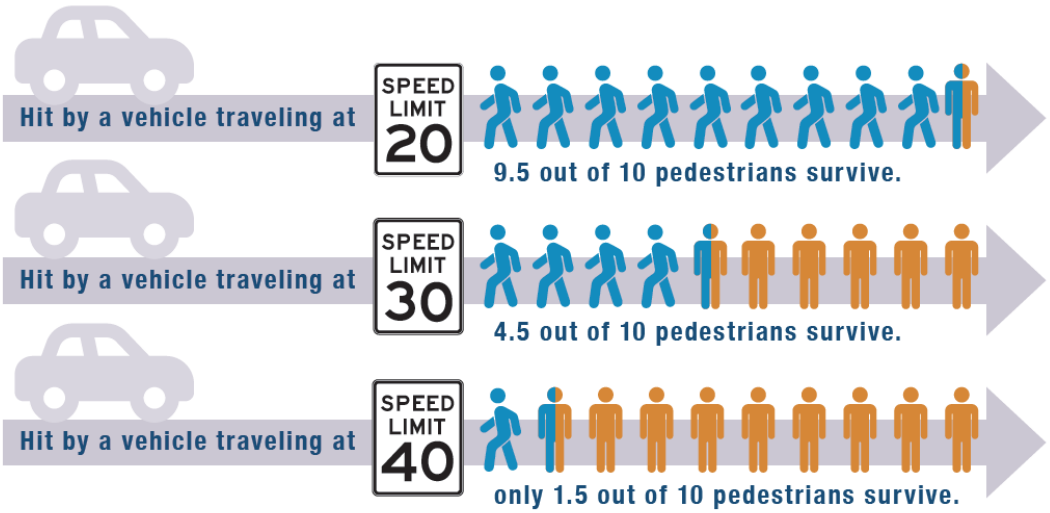
Recommendations

The previous plans review informed the following recommendations related to policies and procedures for the study area jurisdiction consideration.

Speed Limit Setting and Speed Management

National data[11] shows that one-third of fatal crashes are speed-related. A review of crashes in the SVMPO and SEAGO region shows that "Behavior Related," which includes excessive speeds and aggressive driving, accounts for 49% of fatal and severe injury crashes in the region. Speed management is important to reduce fatalities and serious injuries and is of critical importance in areas where vehicles and vulnerable road users interact. Drivers typically travel at a speed that feels reasonable for the vehicle, rather than at speeds that are safe for vulnerable road users. A pedestrian struck by a vehicle traveling 30 mph has a 45% likelihood of surviving; at 20 mph a pedestrian would have a 95% chance of surviving.[12]

Pedestrian Safety is Improved through Reduced Speed



[11] USDOT, NHTSA. *Speeding Traffic Safety Facts 2021 Data.* DOT HS 813 473. July, 2023. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813473

[12] P. Pilkington. *Reducing the speed limit to 20 mph in urban areas. Child Deaths and injuries would be decreased*. BMJ. April 29, 2000. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1127572/

FHWA recommends that states and local jurisdictions set appropriate speed limits to reduce the significant risks drivers impose on others—especially VRUs. Addressing speed is fundamental to the Safe System Approach to make streets safer, and a growing body of research shows that speed limit changes alone. Combined with driver compliance, can lead to measurable declines in speeds and crashes.[13]

FHWA provides guidance on how to develop a speed management program specific to small urban area and rural roads. A speed management program includes the following steps[14]:

- **Step 1** Establish a vision and build consensus for speed management
- **Step 2** Collect and analyze speed and safety data
- **Step 3** Identify locations for speed management proactively
- **Step 4** Select speed management countermeasures
- **Step 5** Conduct ongoing monitoring, evaluation, and adjustment

The USLIMITS2 Tool[15] is designed to guide setting reasonable, safe, and consistent speed limits for roadways. The tools consider the 85th percentile speed and the 50th percentile speed, the section length, the average daily traffic, alignment, roadway characteristics, presence of bike and on-street parking, number of driveways, number of signals, number of crashes, and the number of injury and fatal crashes to determine a recommended posted speed limit.

POTENTIAL APPLICATION It is recommended that the next update to the Cochise County Road Design and Construction Standards **incorporate speed limit setting** guidance based on the USLIMITS2 web-based tool to guide practitioners to set reasonable, safe, and consistent speed limits for roadways.

Proven Safety Countermeasures in Design Standards

FHWA identified 28 Proven Safety Countermeasures (PSCs) to reduce serious injury and fatal crashes. **Table 25** summarizes PSCs applicable to small urban and rural communities. These countermeasures could support SEAGO, SVMPO, and member agencies in their efforts to prevent and reduce the frequency of fatal and serious injury crashes.

[13] W. Hu, J. Cicchino. *Lowering the speed limit from 30 to 25 mph in Boston: effects on vehicle speeds*. Insurance Institute for Highway Safety. May 21, 2020. https://injuryprevention.bmj.com/content/26/2/99

[14] City of Bellevue Speed Management Plan, https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-09/bellevue_speedmgmt_plan.pdf

[15] FHWA. *USLIMTS2*. FHWA Highway Safety Programs. May 30, 2023. https://safety.fhwa.dot.gov/uslimits/

POTENTIAL APPLICATION It is recommended that the next update to the Cochise County Road Design and Construction Standards **incorporate rural—focused PSCs** outlined in **Table 25.**

Table 25. Proven Safety Countermeasures in Rural Communities

PROVEN SAFETY COUNTERMEASURE	DESCRIPTION
Roadway Departure	
Rumble Strips	Alert drivers when they leave the roadway across the edge line or center line through the generation of noise and vibration.
Adding Edge Lines	Enhance the visibility of travel lane boundary from a normal 4-inch width to a 6-inch width.
Enhanced Delineation for Horizontal Curves	Pavement markings, curve warning pavement markings, retroreflective strips on signposts, delineators, chevron signs, enhanced conspicuity, dynamic cure warning signs, and sequential dynamic chevrons placed either in advance of curve, within curve, or both.
Intersections	
Roundabout	Lower speeds and reduction in conflict points to replace two-way stop control, all-way stop control, and signal control.
Dedicated Left and Right-Turn Lanes at Intersections	Providing physical separate between slower or stopped turning movement traffic from the adjacent through movements.
Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	Low-cost countermeasures including enhanced signing and pavement markings to increase drivers' awareness of potential conflicts.
Pedestrian/Bicyclist	
Crosswalk Visibility Enhancements	Providing high-visibility crosswalks, lighting, and signing and pavement markings to make crosswalks and people crossing more visible to drivers.
Rectangular Rapid Flashing Beacons	Improving a marked crosswalk or pedestrian warning sign by installing a pedestrian actuated RRFB.

Wider Edge Lines

Roadway departures account for 12% of fatalities in the four-county SEAGO region. Adding or widening edge lines increase visibility of the travel lane boundaries by providing a greater portion of reflective roadway color change. Edge lines are considered wider when the marking width is increased from the minimum line width, typically at four inches, to the maximum normal line width of six inches. This strategy is a relatively low-cost solution compared to major construction projects and can be implemented on all facility types in both urban and rural areas[16,17].

Roundabouts

A review of crashes in the region shows that 2% of fatalities and severe injuries occurred at intersections. Roundabouts feature channelized, curved approaches that reduce speed of moving vehicles and minimizes angle and head-on crashes. A roundabout has eight vehicle-to-vehicle conflict points, a 70% reduction from a traditional four-legged intersection, with 32 conflict points.

Roundabouts also reduce the number of vehicles to pedestrian conflict points. The net result of lowering speeds to 15-20 mph, and reduced conflicts at roundabouts, is an environment where crashes that cause injury or fatality are reduced.

Roundabouts can be implemented in both urban and rural areas under a wide range of traffic conditions. They can replace signals, two-way stop controls, and all-way stop controls. Roundabouts are an effective option for managing speed and transitioning traffic from high-speed to low-speed environments, such as freeway interchange ramp terminals, and rural intersections to collector and local roads.

[16] FHWA. Manual on Uniform Traffic Control Devices (MUTCD) 11th Edition, Section 3A.04. December 2023. https://mutcd.fhwa.dot.gov/htm/2009/part3/part3a.htm

[17] *Pavement Markings: Wider Edgelines*. Center for transportation Research and Education. https://ctre.iastate.edu/research-synthesis/rural-speed-management/pavement-markings/wide-edgelines/

Pedestrian Refuge Islands in Urban and Suburban Areas

A pedestrian refuge island (or crossing area) is a median with a refuge area that is intended to help protect pedestrians who are crossing a road. Of the 110 VRU-involved crashes, 42 resulted in a serious injury or fatality, 38% of all crashes in the region over the five-year period. Nationally, 74% of VRU-involved crashes occur at non-intersection locations.[18] In the SVMPO and SEAGO region, 69% of crashes occur at non-intersection locations. For pedestrians to safely cross a roadway, they must estimate vehicle speeds, determine acceptable gaps in traffic based on their walking speed, and predict vehicle paths.

Installing a median or pedestrian refuge island can help improve safety by allowing pedestrians to cross one direction of traffic at a time.

Agencies should consider medians or pedestrian refuge islands in curbed sections of urban and suburban multilane roadways, particularly in areas with a significant mix of pedestrian and vehicle traffic, traffic volumes over 9,000 vehicles per day, and travel speeds 35 mph or greater. Medians/refuge islands should be at least four-feet wide, but preferably eight-feet wide for pedestrian comfort.

Locations that may benefit from medians or pedestrian refuge islands include:

- Mid-block crossings
- Approaches to multilane intersections
- Areas near transit stops or other pedestrian-focused sites.

Safety Terminology in Plans, Policies, and Studies

Future updates to plans, studies, and policies should use consistent and appropriate terminology when referring to an event involving a vehicle and a collision. Previous plans and documents sometimes use the word "accident" to describe a crash. It is recommended that the term "accident" is replaced with "collision" or "crash" in future documents. For example, the Santa Cruz County Comprehensive Plan Policy 18.2.6 reads: *"The County will work to reduce the potential for* ***accidents*** *between commercial trucks, passenger vehicles, pedestrians, pets and wildlife."* The recommended terminology of "crash" is consistent with the industry's best practices on describing the importance of human actions, infrastructure, and policies in road safety.

[18] NHTSA. *2018 Pedestrian Traffic Safety Facts*. DOT HS 812 850. March 2020. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812850

Crash Data Improvement

ADOT's Crash Records section is responsible under state law for creating crash data reports that government agencies, nonprofit groups, and other entities statewide use to improve traffic safety. ADOT's Crash Information System (ACIS) is reliant upon local agencies to submit their crash data. When reported to ADOT, accurate crash information is publicized to help agencies and stakeholders find ways to increase safety on Arizona's roads. Crash reporting is required by Arizona statute (A.R.S. §28-670 - Accident report analysis). ADOT is required to publish crash statistics annually or more frequently. Federal statutes also require crash reporting, such as the Fatality Accident Reporting System (FARS), which is operated by NHTSA. Crash reporting is also a requirement of many federal grants and roadway funding opportunities.

ADOT processes approximately 120,000 crash records per year, two thirds of which are received electronically. Electronic submissions are made through the Traffic and Criminal Software (TraCS), a mobile crash reporting software system. Review of crash data in southeastern Arizona identified jurisdictions where crash data appeared to be unreported or underreported to ACIS.

It is recommended that agencies use TraCS to electronically submit their crash data to ADOT. ADOT pays for the system through a grant from the Governor's Office of Highway Safety. The system is available to local agencies at no cost.

Complete Streets Policies

As described by Smart Growth America: *"Complete Streets is an approach to planning, designing, building, operating, and maintaining streets that enables safe access for all people who need to use them, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. A Complete Streets approach recognizes that the context and needs of users are different in rural, suburban, and urban communities, and streets will look different as a result, even when using a Complete Streets approach. A complete street may include sidewalks, bike lanes (or wide paved shoulders), bus lanes, accessible public transportation stops, frequent and safe crosswalks, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts, and more."* [19]

A Complete Streets policy specifies how a community will plan, design, and maintain roadways so they are safe for all ages and abilities. A Complete Streets policy ensures that when a maintenance or a construction project is proposed, the safety for all roadway users is evaluated. A policy would generally contain the following elements:

[19] Smart Growth America. *Complete Streets*. https://smartgrowthamerica.org/what-are-complete-streets/

- Establishes commitment and vision
- Prioritizes underinvested and underserved communities
- Applies to all projects and phases
- Allows only clear exceptions
- Mandates coordination
- Adopts excellent design guidance
- Requires proactive land use planning
- Measures progress
- Sets criteria for choosing projects
- Creates a plan for implementation

It is recommended that local agencies in the SEAGO and SVMPO planning areas consider developing and adopting Complete Streets policies.

Education Strategies

Based on feedback from the public survey completed during preparation of the SEAZ TSP, programs to enhance education and awareness of road safety practices should be implemented. Survey respondents believe that their community needs to hear messaging focused around: maintaining a safe distance while driving, not texting while driving, not driving under the influence (drug and/or alcohol), and general awareness of good driver responsibilities. Many respondents, as well as emergency service personnel, also indicated that they would like the driving public to slow down on the roadway and comply with posted and cautionary speed limit signs. Another key finding of this study is that the use of seat belts, motorcycle and bicycle helmets, and proper installation and use of car seats significantly reduce fatalities and serious injuries.

Educational materials are available through programs provided by the NHTSA and FHWA for bicycle safety, distracted driving, pedestrian safety, speeding and seat belt safety. SEAGO, SVMPO, and jurisdictions should implement outreach campaigns using these available resources.

Educational outreach advertisements can include coordination with health departments, medical facilities, and schools, to strengthen driver education and improve education for all road users.

ADOT's Arizona Vulnerable Road User Safety Assessment (VRUSA)[20] identified low, medium, and high-cost educational countermeasures aimed to reduce VRU-related crashes. Low-, medium-, and high-cost education countermeasures identified in the VRUSA are shown in **Table 26**.

[20] ADOT, *Arizona Vulnerable Road Use Safety Assessment*. https://azdot.gov/sites/default/files/2023-11/ADOT-Vulnerable-Road-User-Safety-Assessment_Final-111523.pdf. November 2023

Table 26. Example Education Strategies Countermeasures

COST	COUNTERMEASURE
Low	Promote and/or implement Safe Driving pledge campaigns.
	Train school crossing guards and coordinate with them to identify safety issues to share with students and the general public.
	Utilize Dynamic Message Signs for impaired driving educational messages.
	Implement a campaign on Driving Under the Influence (DUI) dangers and penalties.
	Provide information to government and tribal officials on crash trends.
	Promote the use of pedestrian and bicyclist safety lights and reflective wrist/ankle bands.
	Engage educational campaigns in partnership with key VRU advocacy groups.
	Promote the use of motorcycle and bicycle helmets; always buckle up campaigns.
	Engage with population groups or communities experiencing high numbers of fatal or serious VRU crashes.
	Promote safe use of recreation utility task vehicles and all-terrain vehicles.
Medium	Improve safety public awareness, education, and training for all road users to promote safer driving, walking and bicycling behaviors.
	Develop public relations campaigns highlighting the risks of distracted and impaired driving.
	Support an education and outreach campaign that creates a serious dialogue about "traffic safety culture."
	Initiate a safe driving campaign for elderly drivers.
	Conduct mock crash demonstration for high school students.
	Develop public-private campaigns to expand outreach events.
High	Include bicyclists as State Highway Users.

8.Financial Plan and Funding Resources

Funding Opportunities

Federal Funding Sources

This section provides a brief overview of potential federal funding programs.

Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant

The RAISE grant program provides support for projects that may not be easily funded through traditional federal programs. Eligible projects may include capital projects for highway, bridge, or other road project eligible under chapter 53 of title 49 of United State Code or planning projects which include planning-related activities for eligible surface transportation capital projects. Note for capital projects the minimum award is $5 million in urban areas and $1 million in rural areas. Planning projects do not have a minimum award size. The maximum grant award is $25 million.

During each round of RAISE, the USDOT receives numerous applications to construct and repair crucial components of the freight and passenger transportation networks. The evaluation process for these projects focuses on the benefits they would bring to five long-term outcomes: safety, economic competitiveness, state of good repair, quality of life, and environmental sustainability. Additionally, USDOT assesses projects based on their level of innovation, partnerships, readiness for implementation, benefit cost analysis, and cost sharing.

Highway Safety Improvement Program (HSIP)

The BIL continued the HSIP. The purpose of this program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-state-owned roads and roads on Tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance.

ADOT administers distribution of HSIP funds. Funds are awarded through a competitive application process. For the application process agencies must provide a cover/transmittal letter, complete application form, cost estimate, crash data, benefit to cost ratio, location map, project limit map, and any warrant studies. For the 2023 HSIP Application Process for FY27/28 Program, the proposed design consultant cost must be at least $150,000 and the projected construction phase must be at least $500,000[21] .

National Highway Performance Program (NHPP)

The BIL continued the NHPP, which was established under Moving Ahead for Progress in 2021 (MAP-21). The NHPP provides support for the condition and performance of the National Highway System (NHS). All pedestrian/bicyclist improvements must be associated with an NHS facility.

Surface Transportation Block Grant Program (STBG)

The STBG program provides flexible funding that states and localities can use for projects aimed at improving and maintaining the conditions and performance of any Federal-aid highway. This includes projects related to pedestrian safety, such as those focused on pedestrian and bicycle infrastructure, safety enhancements, recreational trails, safe routes to school, and projects that fall under the pre-FAST Act Title 23 definition of "transportation alternatives" (as described in the Transportation Alternatives Set-Aside section below). To be eligible for funding, these projects must be identified in the Statewide Transportation Improvement Program (STIP) and align with the Long-Range Statewide Transportation Plan and the Metropolitan Transportation Plan.

Transportation Alternatives Set-Aside (TA)

The BIL has allocated additional funds for the TASA program, which provides financial support for trails, walking paths, and bike infrastructure across the United States. The TASA program specifically aids in the development and maintenance of pedestrian and bike infrastructure, as well as the creation of recreational trails and safe routes to school. Additionally, the program

[21] ADOT, *Arizona Highway Safety Improvement Program*, https://azdot.gov/business/transportation-systems-management-and-operations/operational-traffic-safety/arizona-highway

allows states to allocate up to 5% of the available funds for technical assistance, which assists local governments in applying for additional grants.

ADOT Transportation Alternative Program provides funding to Greater Arizona through competitive grant program and a distribution formula that allocates funding to communities based on population. For the competitive grant program, first the project must complete a project screening application which requires project sponsors will need to coordinate with SEAGO or SVMPO to review potential projects for TA program submittal and to obtain a letter of support. If the project advances past the screening step, project sponsors much submit a project evaluation application.

Safe Streets and Roads for All (SS4A) Grant Program

The SS4A grant program with $5 billion in funds for a five-year period, from 2022 to 2026. The program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries.

Statewide Planning and Research (SP&R) or Metropolitan Planning Funds

Funding is provided for SP&R by a 2% set-aside from each state's apportionments of four programs: NHPP, Surface Transportation Program (STP), HSIP, and Congestion Mitigation/Air Quality (CMAQ). A minimum of 25% must be used for research purposes, and the remaining funds are used for statewide and metropolitan planning.

NHTSA Section 402: State and Community Highway Safety Grant Program

To receive Section 402 grant funds, a state must have an approved Highway Safety Program (HSP) and provide assurances that it will implement activities in support of national goals that also reflect the primary data-related factors within the state, as identified by the state highway safety planning process. States can distribute highway safety grant funds to a wide network of sub-grantees, including local law enforcement agencies, municipalities, universities, health care organizations, and other local institutions. States may spend 402 funds in accordance with an approved HSP that complies with the uniform national guidelines for highway safety programs. One of the eligible programs is to improve pedestrian and bicyclist safety.

Tribal Transportation Program (TTP)

Tribes with TTP agreement with FHWA receive funds for projects that provide safe and adequate transportation and public road access within Tribal land. Eligible activities include transportation planning, design, construction, and road/bridge maintenance.

Bureau of Indian Affairs (BIA) Indian Highway Safety Program

Funding program that manages grants that assist Indian tribes in implementing traffic safety projects that are designed to reduced traffic crashes within Indian communities.

Appropriation Request

Senators may request Congressionally Directed Spending for projects in their state. This spending can be used towards transportation-related project. Congressional Directed Spending has a

limited scope with a combined earmarks capped at 1% of all discretionary spending. Community Project Funding allows House Representatives to request funding for projects in their community. The total amount of Community Project Funding appropriation bill is capped at 0.5% of discretionary spending. It is important that agencies work their congressional representatives to get projects earmarked for these appropriations.

State Funding Sources

This section provides a brief overview of potential state funding programs.

Highway User Revenue Fund (HURF)

The Arizona Highway User Revenue Fund (HURF) are distributed to the cities, towns, and counties and to the State Highway Fund. The money comes from the state of Arizona taxes on motor fuels and collects a variety of fees and charges relating to the registration and operation of motor vehicles on the public highways of the state. The fund is made up of a collection of gasoline and use-fuel taxes, motor-carrier taxes, vehicle-license taxes, motor vehicle registration fees and other miscellaneous fees.

State Match Advantage for Rural Transportation (AZ SMART) Fund Program

The AZ SMART Fund was created by the Arizona Legislature in 2022. The program was developed to assist eligible cities, towns, counties, and ADOT that are competing for federal discretionary surface transportation grants. Any awards must be approved by the State Transportation Board (STB) and the fund is administered by ADOT.

Arizona State General Fund

The Arizona state legislature can appropriate from the state general fund towards improvement projects. In FY2023-2024 the state legislature appropriated $367.7 million from the state general fund towards specific local ADOT highway projects[22]. It is important that agencies work with ADOT and their local state representatives to get projects earmarked for state appropriation.

Prioritized Safety Project Recommendations with potential Funding Source Matrix

Through this Southeast Arizona Transportation Safety Plan analysis and stakeholder input, a set of potential projects were developed to address identified areas of concern. The preliminary set of projects were then prioritized and detailed project sheets developed. These recommended projects for local agency consideration are listed in **Table 27** through **Table 31**.

A selection of potential funding sources has been identified for each project. Note that that a project's eligibility for funding shown in these tables may change as requirements for these

[22] Arizona State Senate, *Fact Sheet for S.B. 1722/H.B. 2812*, https://www.azleg.gov/legtext/56leg/1R/summary/S.1722-2812APPROP_ASENACTED.DOCX.htm

sources may change over or these sources can only be used for certain project elements (e.g., infrastructure-related vs. programmatic-related).

Table 27. Cochise County Recommended Projects by Potential Funding Opportunities

ID	PROJECT NAME	POTENTIAL FUNDING SOURCES											
		RAISE	HSIP	NHPP	STBG	TA	SS4A	SP&R	NHSTA Sec	TTP	BIA	HURF	AZ SMART
1.1.3	SR 90 from Sharpshooter Road to SR 80			X	X		X	X	X			X	X
1.2.3	SR 80 from SR 90 to Old Divide Road	X	X	X	X		X		X			X	X
1.3.1	SR 80 from Old Divide Road to Denn Mine Road	X	X	X	X		X		X			X	X
1.4.2	4th Street Intersection Improvements					X	X	X	X			X	
1.5.1	Systemic Unsignalized Intersection Improvements					X	X	X					
1.6.1	US 92 Intersections and Naco Road Intersections	X			X	X	X		X			X	X
1.8.2	SR 90 & I-10 Intersection Improvements				X		X		X			X	X
1.9.5	Rex Allen Drive Intersection Improvements					X	X		X				
1.10.1	Main Street/Naco Road & SR 80 Interchange Improvements			X	X		X		X			X	X

Table 28. Graham County Recommended Projects by Potential Funding Opportunities

ID	PROJECT NAME	POTENTIAL FUNDING SOURCES											
		RAISE	HSIP	NHPP	STBG	TA	SS4A	SP&R	NHSTA Sec	TTP	BIA	HURF	AZ SMART
2.1.6	SR 366 from MP 120.8 to Boulder Lane			X		X			X	X		X	
2.2.8	US 70 from US 191 to Montierth Lane/Lone Star Road			X	X	X			X				
2.3.8	8th Avenue from 3rd Street to 8th Street			X	X	X							X
2.4.8	Main Street/6th Avenue from 7th Avenue to 7th Street			X	X	X			X				
2.5.9	20th Avenue from 8th Street to US 70		X	X		X							X
2.6.6	Safford Bryce Road from Bryce Eden Road to Hubbard Cemetery Road			X		X							
2.7.6	Solomon Road & Bowie Avenue Intersection Improvements			X									
2.8.8	Safford Systemic Intersection Improvements		X	X		X							X

Table 29. Greenlee County Recommended Projects by Potential Funding Opportunities

ID	PROJECT NAME	POTENTIAL FUNDING SOURCES											
		RAISE	HSIP	NHPP	STBG	TA	SS4A	SP&R	NHSTA Sec	TTP	BIA	HURF	AZ SMART
3.1.10	US 191 from Chase Creek Street to Zorilla Street						X	X	X			X	
3.2.10	US 191 from Park Avenue to 7th Street					X	X		X			X	
3.3.12	SR 78 from Greenlee Substation Road to State Line	X	X		X		X		X			X	X
3.4.12	US 191 from Chase Creek to ADOT Grey's Peak Maint. Camp	X	X				X		X			X	
3.6.12	US 191 from Pine Flat Road to Hogtrail Saddle	X	X				X		X			X	
3.7.12	US 191 from MP 217 to Lengthy Trailhead						X		X			X	

Table 30. Santa Cruz County Recommended Projects by Potential Funding Opportunities

ID	PROJECT NAME	POTENTIAL FUNDING SOURCES											
		RAISE	HSIP	NHPP	STBG	TA	SS4A	SP&R	NHSTA Sec	TTP	BIA	HURF	AZ SMART
4.1.13	I-19 and Crawford Street S-curve	X	X	X	X	X	X	X	X			X	X
4.2.15	SR 83 from McCarty Lane to Lyle Canyon Road				X		X		X			X	X
4.3.14	SR 82 from McKeown Avenue to Cross Creek Road	X			X	X	X		X			X	X
4.4.13	Apache Boulevard/Frank Reed Road from I-19 to Mariposa Road					X	X	X					
4.5.15	SR 82 from 900 Road to Upper Elgin Road				X		X		X			X	X
4.6.15	West Frontage Road from Peck Canyon Road to Yavapai Drive/Rio Rico Drive	X				X	X						
4.7.15	Calle Barrio de Tubac & I-19 (East) Frontage Road Intersection Improvements	X	X			X	X	X	X				
4.8.15	Duquesne Road from Patagonia Highway/SR 82 to Buena Vista Ranch	X			X	X	X		X				X

ID	PROJECT NAME	POTENTIAL FUNDING SOURCES											
		RAISE	HSIP	NHPP	STBG	TA	SS4A	SP&R	NHSTA Sec	TTP	BIA	HURF	AZ SMART
4.9.15	SR 83 & SR 82 Intersection Improvements	X			X		X		X			X	X
4.10.13	Grand Avenue from Mariposa Road to Country Club Drive	X	X	X	X	X	X	X	X				X
4.11.13	SR 82/Patagonia Highway from Grand Avenue to Aurora Drive				X	X	X	X	X			X	X
4.12.15	East Frontage Road from I-19 to Palo Parado Rod						X	X					

Table 31. SVMPO Recommended Projects by Potential Funding Opportunities

ID	PROJECT NAME	POTENTIAL FUNDING SOURCES											
		RAISE	HSIP	NHPP	STBG	TA	SS4A	SP&R	NHSTA Sec	TTP	BIA	HURF	AZ SMART
5.1.18	Charleston Rd from Avenida Escuela to Fighting Colt Dr		X				X		X				
5.2.18	SR 92 from Charleston Rd to Avenida Tienda		X	X	X		X		X			X	X
5.3.18	SR 90 from SR 92 to Kino Road		X	X	X	X	X		X			X	X
5.4.16	SR 90 & SR 82 Intersection Improvements				X		X	X	X			X	X
5.5.18	Carmelita Drive from 7th St to Lenzner Ave						X						
5.6.18	Avenida Cochise from Oakmont Dr to Frontage Rd					X	X	X					
5.7.18	Fry Boulevard from 7th Street to SR 90/SR 92		X			X	X						

9. Monitoring and Evaluation

The SEAZ TSP is a guide for SEAGO, SVMPO, and safety stakeholders to advance implementation of strategies, countermeasures, and policies.

SEAGO and SVMPO recognize the importance of accountability and performance monitoring to reduce traffic deaths and serious injuries. However, it is imperative that monitoring does not distract focus from the ultimate performance goal of eliminating fatal and severe injuries on all roadways for all users across the region. The general approach to tracking implementation follows:

Leadership: SEAGO and SVMPO will each assume leadership of the Safety Plan and will promote its implementation throughout their respective regions. As part of this role, they will be responsible for convening stakeholders on a regular basis to discuss implementation progress, operating as regional leaders to support partners.

Implementation Meetings: SEAGO and SVMPO anticipate that they will convene stakeholders annually, to discuss progress, associated challenges, and opportunities to implement the Safety Plan. The meeting(s) will focus on the progress towards addressing the Strategic Highway Safety Plan (SHSP) emphasis safety areas. Upon conclusion of the meeting(s), progress will be documented, and the Safety Plan may be updated as needed.

Annual Evaluation: When the most recent year's crash data is available, from ADOT, SEAGO and SVMPO will evaluate progress toward Safety Plan goals by reporting region-wide fatalities and serious injuries. To help communicate overall safety performance in the region, SEAGO and SVMPO anticipate annually reporting to stakeholders their progress towards reducing fatalities and serious injuries for all roadway users.

Updating the Plan: SEAGO and SVMPO anticipate that the Safety Plan will be updated routinely as well as revisiting data analysis and proposed strategies in context of other regional planning efforts. SEAGO and SVMPO include safety reporting within each LRTP and TIP update, as well as identify and record new capital improvements, policies, and programs that could improve regional roadway safety.

Funding Safety: SEAGO and SVMPO will encourage communities to place increased emphasis to including safety improvements in their Capital Improvement Program, as well as to seek funding for safety improvements through existing and new resources.

Other Planning Efforts: SEAGO and SVMPO continually learn about, and inform, member jurisdictions of current and new local and statewide safety programs, policies, plans, guidelines, and/or standards. SEAGO and SVMPO will identify opportunities to build upon this current Safety Plan and share updated opportunities to fund and implement solutions with their local agencies.

Safety Plan Regional Evaluation

It is recommended that annual safety reporting include **effectiveness measures** that directly assess outcomes. These metrics can be aligned with overarching goals, including reducing fatalities and serious injuries. The proposed measures are already collected and reported by ADOT, and it is expected that SEAGO and SVMPO will utilize subsets of these existing resources for region-specific review. Not only does this leverage existing procedures for crash reporting, but it

may also facilitate greater interagency uniformity and collaboration. The proposed performance measures are shown in the list below. Performance measures will be evaluated in comparison to the previous three or more years of data, as appropriate.

- Number of fatalities
- Number of serious injuries
- Number of unrestrained vehicle occupant fatalities (all seat positions)
- Number of alcohol-impaired driving fatalities
- Number of drug-impaired driving fatalities
- Number of distracted driving fatalities
- Number of speed-related fatalities
- Number of motorcyclist fatalities (helmeted and un-helmeted)
- Number of fatal crashes involving younger drivers
- Number of roadway departure fatalities
- Number of intersection fatalities
- Number of bicyclist serious injuries and fatalities
- Number of pedestrian serious injuries and crashes

Safety Monitoring Tools

Local agency staff are encouraged to request a log-in from ADOT to access ACIS. SEAGO and SVMPO will also inform local jurisdictions of training opportunities for staff on how to utilize ACIS. Promoting access to these tools will improve communities' access to safety-related resources so they can tailor local approaches to reduce fatalities and serious injuries.

SVMPO Long-Range Transportation Plan

The SVMPO Long-Range Transportation Plans sets regional priorities for meeting future transportation needs. The LRTP has a planning horizon of at least 20 years and must be updated every five years. The last LRTP was adopted in August of 2021 and an update will be underway in 2025. Safety is one of seven priority considerations for regional projects, with a 19% top weighted ranking for determining priorities for funding. The LRTP incorporates projects that improve safety and should include the recommended projects from the SVMPO identified in this Safety Plan in the next LRTP update.

Local Jurisdiction Implementation of Safety Plan

Local agencies should partner with SEAGO and SVMPO to proactively implement the recommendations of this Safety Plan, within local agency staff and resource capacity.

- ☐ Commit to implementing the recommended strategies and countermeasures, when appropriate and possible, in their local agency.
- ☐ Conduct one crash assessment or a safety analysis at identified project locations of concern.
- ☐ Collect and report on speed data annually.
- ☐ Prioritize transportation projects in general plans and capital improvement plans based on at least one safety criteria, such as total crashes, number of fatalities or serious injuries, location on Composite Network, or location in an Equity Focus Areas area.
- ☐ Consider selecting at least one of the recommended safety projects to design and begin construction within the next five years.

- ☐ Consider adopting design guidelines or Complete Street Policies to support strategic safety improvements in local codes.
- ☐ Collaborate with at least one new partner to address traffic safety, such as law enforcement, EMS, school districts, or health departments in a targeted outreach effort.
- ☐ Support safety educational messages and broadcast those through local agency social media and newsletter opportunities.

Regional Recommendations and Implementation

SEAGO and SVMPO agree to collaborate with their member jurisdictions to proactively move recommended actions and prioritized projects forward, as funding and opportunity allows. Regional support of local transportation safety projects includes providing potential resources through planning, programming, collaboration, and funding.

- ☐ Support moving at least two HSIP application forward for funding to ADOT during the timeframe of this Safety Plan.
- ☐ Support moving at least five SS4A applications forward for funding during the timeframe of this Safety Plan (note that SS4A grant cycles are available in 2025 and 2026).
- ☐ Partner with member jurisdictions to provide safety educational messages that are released in at least 50% of the member jurisdictions through local agency PIO's or offices.
- ☐ Provide press releases that reference safety data and safety messages at least once a year.
- ☐ Inform our regional Boards and TACs of updated safety information and funding opportunities for safety projects.
- ☐ Provide timely support to local agencies of any action needed to support safety project funding applications, including providing support letters and placing proposed projects into the regional TIPs, as appropriate.
- ☐ Participate with federal and state partners to prepare and implement state-wide strategic highway and alternative mode safety plans.

Appendices

A - Countermeasure Toolbox

Segment Countermeasures

Emphasis Area	Safety Countermeasure	Source	CMF	Applicable Crashes	Unit Cost	Unit	Application Guidance	Urban	Rural
Bicyclist	Install Bicycle Lane	FHWA PSC	0.51 - 0.694	Bicycle	$ 21,000	Mile	ADT ≥ 3000 and Posted Speed Limit ≥ 25 MPH	X	X
Bicyclist	Install Buffered Bicycle Lane	FHWA PSC	NA	Bicycle	$ 31,000	Mile	1. High Traffic Volumes, 2. Regular Truck Traffic, or 3. Posted Speed Limit > 35 MPH	X	
Bicyclist	Install a Separated Bicycle Lane (Cycle Track or Multi-Use Path)	FHWA PSC	NA	Bicycle	$ 1,286,000	Mile		X	
Bicyclist	Convert Traditional/Buffered Bike Lane to Separated Lane with Flexible Delineator Posts	FHWA PSC	0.468	Bicycle	$ 53,000	Mile	Existing bicycle lane present	X	
Bicyclist	4-Lane to 3-Lane Road Diet Conversion with Bicycle Lanes	FHWA PSC	0.53 - 0.812	All Crashes	$ 51,000	Mile	ADT less than 25,000 and with repaving project	X	X
Bicyclist	Install Bicycle Ramp	-	NA	Bicycle	$ 10,000	Each	Connects bicyclists from the road to the sidewalk or a shared use path; transition cyclists out of roadway when vehicle movements become complicated, or when pavement narrows and can no longer accommodate separate bike lane (on high-speed, low-comfort routes)	X	X
Bicyclist	Install Shared Sidewalk Sign	-	NA	Bicycle	$ 6,000	Mile	Signs communicate to pedestrians that bicyclists may also use the sidewalk and that bicyclists must yield to pedestrians. May be prohibited in downtown areas due to high pedestrian volumes; would require wider sidewalks (10' min) in order to accommodate both modes.	X	X
Bicyclist	Install Floating Transit Island	-	NA	All Crashes	$ 43,000	Island	An in-street transit boarding island is used in conjunction with a separated bikeway, separating transit traffic from bicycle traffic, reducing conflict between the two modes, and lowering the risk of collision.	X	
Cross-Median Crashes	Install Concrete Median Barriers on Divided Highways	FHWA PSC	0.03	Cross Median	$ 2,122,000	Mile	High-speed, fully controlled access roadways for locations where the median is 30 ft in width or less and the average daily traffic (ADT) is greater than 20,000 vehicles per day (vpd)		X
Cross-Median Crashes	Install Metal Guardrail Median Barriers on Divided Highways	FHWA PSC	0.03	Cross Median	$ 658,000	Mile	High-speed, fully controlled access roadways for locations where the median is 30 ft in width or less and the average daily traffic (ADT) is greater than 20,000 vehicles per day (vpd)		X
Cross-Median Crashes	Install Cable Median Barriers on Divided Highways	FHWA PSC	0.03	Cross Median	$ 466,000	Mile	High-speed, fully controlled access roadways for locations where the median is 30 ft in width or less and the average daily traffic (ADT) is greater than 20,000 vehicles per day (vpd)		X
Curve	Install and/or Upgrade Curve Signage to Enhanced Delineations	FHWA PSC	0.4 - 0.852	All Crashes	$ 2,000	Curve	Rural roadways with curves		X
Curve	Install In-Lane Curve Warning Pavement Markings	FHWA PSC	0.616 - 0.652	All Crashes	$ 3,000	Curve	Rural roadways with curves		X
Curve	Install Retroreflective Strips on Curve Signage	FHWA PSC	NA	All Crashes	$ 1,000	Curve	Existing curve warning signage		X
Curve	Install High Friction Surface Treatment (HFST) on Curve	FHWA PSC	0.515	Fatal & Injury	$ 53,000	Curve	Rural roadways with curves		X

Segment Countermeasures

Emphasis Area	Safety Countermeasure	Source	CMF	Applicable Crashes	Unit Cost	Unit	Application Guidance	Urban	Rural
Curve	Speed Activated Flashers on Chevron Signs	ICEA Safety Action Plans	NA	All Crashes	$ 10,000	Each			X
Curve	Transverse Rumble Strips Prior to Curve	ICEA Safety Action Plans	NA	All Crashes	$ 1,000	Curve	Segments prior to curves		X
Head-On	Install Centerline Rumble Strips	FHWA PSC	0.36 - 0.56	Head-on Fatal & Injury	$ 5,000	Mile	Rural two-lane highways		X
Multiple	Perform Road Safety Audits	FHWA PSC	0.4-0.9	All Crashes	$ 25,000	Location	All Roadways	X	X
Multiple	Install Raised Medians on Roadways with Existing TWLTL	CMF Clearinghouse	0.29	All Crashes	$ 1,360,000	Mile	Roadways with TWLTL	X	
Multiple	Clear and Grub (Both Sides of Road)	ICEA Safety Action Plans	NA	All Crashes	$ 13,000	Mile	All paved roads with speed limits ≥ 40 mph AND length > 0.5 miles		X
Multiple	4-Lane to 3-Lane Road Diet Conversion	FHWA PSC	0.53 - 0.812	All Crashes	$ 22,000	Mile	ADT less than 25,000 and with repaving project	X	X
Nighttime Crashes	Provide Highway Lighting	FHWA PSC	0.72	Nighttime	$ 300,000	Mile	All Roadways	X	X
Pedestrian	Protected Intersection	-	NA	All Crashes	$ 650,000	Intersection	Protected intersections use corner islands, curb extensions, and colored paint to delineate bicycle and pedestrian movements across an intersection. Slower driving speeds and shorter crossing distance increase safety for pedestrians. Separates bicycles from pedestrians	X	
Pedestrian	Upgrade Crosswalk to High-Visibility Crosswalk at Midblock	FHWA PSC	0.6 - 0.75	Pedestrian	$ 37,000	Crossing	Multilane roadway crossing with AADT > 10,000	X	
Pedestrian	Install High-Visibility Crosswalk at Midblock Locations	FHWA PSC	0.6 - 0.75	Pedestrian	$ 36,000	Crossing	Multilane roadway with AADT > 10,000	X	
Pedestrian	Install Raised Crosswalk	-	NA	Pedestrian	$ 71,000	Each	A Raised Crosswalk is a pedestrian crosswalk that is typically elevated 3-6 inches above the road or at sidewalk level. A Raised Crosswalk improves safety by increasing crosswalk and pedestrian visibility and slowing down motorists.	X	X
Pedestrian	Install Medians and Pedestrian Refuge Islands in Urban Areas	FHWA PSC	0.44	Pedestrian	$ 1,396,000	Mile	Multilane Roadway, 35 MPH or greater speed limit, Mix of pedestrian and Vehicle Traffic, AADT > 9,000	X	
Pedestrian	Install Medians with Marked Crosswalks	FHWA PSC	0.54	Pedestrian	$ 1,489,000	Mile	Multilane Roadway, 35 MPH or greater speed limit, Mix of pedestrian and Vehicle Traffic, AADT > 9,000	X	X
Pedestrian	Install Pedestrian Hybrid Beacons (PHB) or HAWK	FHWA PSC	0.712	Pedestrian	$ 200,000	Each	Midblock Crossings, Speed Limit > 35 MPH, Multilane Roadway, AADT > 9,000	X	
Pedestrian	Install a Rectangular Rapid Flashing Beacon (RRFB)	FHWA PSC	0.526	Pedestrian	$ 15,000	Crossing (2)	Speed Limits < 40 MPH, Multilane Roadway	X	
Pedestrian	Install Sidewalk or Walkways	FHWA PSC	NA	Pedestrian	$ 1,268,000	Mile	All Roadways with no existing sidewalk, Assumes 6' sidewalk, no side streets both sides	X	X
Run off Road, Curve	Install Post-Mounted Delineators	FHWA PSC	0.85	Run Off Road	$ 4,000	Mile	Rural roadways with existing signage		X
Run Off Road	Install 6” Edge line (Both Sides of Road)	FHWA PSC	0.64 - 0.88	All Crashes	$ 11,000	Mile	Rural two-lane highways		X
Run Off Road	Install Edge line Rumble Strips	FHWA PSC	0.49 - 0.87	Fatal & Injury	$ 9,000	Mile	Rural two-lane highways		X

Segment Countermeasures

Emphasis Area	Safety Countermeasure	Source	CMF	Applicable Crashes	Unit Cost	Unit	Application Guidance	Urban	Rural
Run Off Road	Shoulder Widening on Rural Roads	CMF Clearinghouse	0.771	All Crashes	$ 33,000	Mile	Rural Multilane Roadways		X
Run Off Road	Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	CMF Clearinghouse	0.66 - 0.89	All Crashes	$ 311,000	Mile	Rural 2-Lane Roadways without shoulders		X
Run Off Road	Install 4" Retroreflective Centerline and Edge lines	CMF Clearing House	0.76	Serious & Minor Injury	$ 28,000	Mile	All paved roads with lane widths < 12 feet ($3,00 for edge line and $3,000 for centerline)		X
Run Off Road	Remove/Relocate Object in Hazardous Locations	FHWA PSC	0.62	All Crashes	$ 1,000	Each			X
Run Off Road	Guardrail	CMF Clearing House	0.53 - 0.56	Run Off Road	$ 80	Foot	New guardrail along Embankment		X
Run Off Road	Install Raised Thermal Tape on Center or Edge Lines	-	NA	All Crashes	$ 1	Foot		X	X
Run Off Road	Install Safety Edge with Repaving Projects	FHWA PSC	0.79 - 0.892	All Crashes	$ 121,000	Mile	All rural two-lane roadways		X
Speeding	Install Variable Speed Limit Signs	FHWA PSC	0.66	Interstate	$ 54,000	Each	1. Roadways that are susceptible to significant changes over a short amount of time (e.g., congestion, crashes, weather, work zones) 2. Freeways and high-speed arterials with Posted speed limits greater than 40 MPH	X	X
Speeding	Install Driver Feedback Speed Limit Signs	-	NA	All Crashes	$ 15,000	Each	Targeted locations required speed compliance over a short distance	X	X
Speeding	Install Driver Feedback Speed Limit Signs on Rural Curves	CMF Clearinghouse	0.93 - 0.95	Rural Curves	$ 15,000	Each	Rural roadways with curves		X
Speeding	Modify Roadway Geometric Features to Match Desired Speed Limit for the Existing Land Use - Traffic Calming - Lane Narrowing	CMF Clearinghouse	0.68	All Crashes	$ 39,000	Mile	If a lower 85th percentile speed is desired	X	
Speeding	Modify Roadway Geometric Features to Match Desired Speed Limit for the Existing Land Use -Traffic Calming - Wider Lane Lines	CMF Clearinghouse	0.68	All Crashes	$ 21,000	Mile	If a lower 85th percentile speed is desired	X	
Speeding	Modify Roadway Geometric Features to Match Desired Speed Limit for the Existing Land Use -Traffic Calming - Medians (Back-To-Back Curb)	CMF Clearinghouse	0.68	All Crashes	$ 629,000	Mile	If a lower 85th percentile speed is desired	X	
Speeding	Modify Roadway Geometric Features to Match Desired Speed Limit for the Existing Land Use -Traffic Calming - Bulbouts	CMF Clearinghouse	0.68	All Crashes	$ 37,000	Each	If a lower 85th percentile speed is desired	X	
Speeding	On-Pavement Marking for Speed Control	ICEA Safety Action Plans	NA	All Crashes	$ 2,000	Each			X

Segment Countermeasures

Emphasis Area	Safety Countermeasure	Source	CMF	Applicable Crashes	Unit Cost	Unit	Application Guidance	Urban	Rural
Speeding	Install Transverse Rumble Strips as a Traffic Calming Device	CMF Clearing House	0.66	All Crashes	$ 450	Lane	Local road, minimum/maximum of 2 lanes	X	X
Vehicle	Corridor Access Management-Driveway Consolidation (Urban)	FHWA PSC	0.69 - 0.75	Fatal & Injury	$ 7,000	Driveway	All Roadways	X	
Vehicle	Corridor Access Management-Driveway Consolidation (Rural)	FHWA PSC	0.77 - 0.95	All Crashes	$ 7,000	Driveway	All Roadways		X

Intersection Countermeasures

Emphasis Area	Safety Countermeasure	Source	CMF	Applicable Crashes	Unit Cost	Unit	Application Guidance	Signal	No Signal
Angle	Install Second Stop Sign and Stop Ahead Sign	FHWA PSC	0.52	Angled	$ 1,500	Leg	For unsignalized intersections, Minor ADT > 200 or distance from previous stop sign = 1.5 miles or more		x
Angle	Create Positive Off-Set of Existing Left-Turn Lanes	FHWA PSC	0.644	All Crashes	$ 16,000	Intersection	Offset increases with design speed and approaches a value of 2.0 ft, which provides unrestricted sight distance when opposing left-turn vehicle is a passenger car. An offset of 1.0 ft accommodates design speeds 45 mph and below; offset of 1.5 ft accommodates design speeds up to 70 mph, unrestricted left-turn sight distance is provided by a 3.5-ft offset. When opposing left turn is a truck a 2.5-ft offset would accommodate design speeds of 40 mph and lower, and a 3.0-ft off et would provide adequate sight distance for design speeds up to 70 mph (https://onlinepubs.trb.org/Onlinepubs/trr/1992/1356/1356-004.pdf), page 6 of 9.	X	X
Angle	Right-in-Right-out Access Treatment	CMF Clearinghouse	0.55	All Crashes	$ 50,000	Driveway	Price per driveway	x	x
Angled, Left-Turn	Provide Left-Turn Lanes	FHWA PSC	0.52 - 0.72	Rural	$ 300,000	Lane	Major leg approaches at intersections with significant turning volumes and history of turn-related crashes	X	X
Angled, Left-Turn	Provide Right-Turn Lanes	FHWA PSC	0.74 - 0.86	All Crashes	$ 113,000	Lane	Major leg approaches at intersections with significant turning volumes of history of turn-related crashes	X	X
Angled Left-Turn	Install Reduced Left-Turn Conflict Control Intersection Type	FHWA PSC	0.37 - 0.78	Fatal & Injury	$ 809,000	Intersection	All intersections with significant angled and left-turn crash issues	X	X
Angled Left-Turn	Change a permissive only to Flashing Yellow Arrow	CMF Clearinghouse	0.5 - 0.6	Left-Turn	$ 8,000	Intersection	All permission only signals	X	
Angled Left-Turn	Change Permissive Left-Turn to Protected or Protected/Permissive	CMF Clearinghouse	0.79 - 0.95	Left-Turn	$ 8,000	Intersection	Signalized intersections with left turn issues	X	
Angled Left-Turn	Change a 5-section "Doghouse" to Flashing Yellow Arrow	CMF Clearinghouse	0.75 - 0.93	Left-Turn	$ 8,000	Intersection	All intersections with doghouse signal head	X	
Bicycle	Add Bicycle Treatments at Intersections	NACTO	NA	All Crashes	$ 9,000	Intersection	Intersection with Bicycle Lanes on approaches	X	X
Bicycle	Install a Separate Bicycle Traffic Signal	Orange County Transportation Authority	NA	All Crashes	$ 21,000	Intersection	Appropriate at locations with high volumes of cyclists or pedestrians, such as at major trail crossings or near schools or university campuses.	X	
Intersection	Install Retroreflective Backplates/Borders	FHWA PSC	0.85	All Crashes	$ 275	Each	All Signalized Intersections without backplates	X	
Intersection	Systemic Low-Cost Countermeasures at Stop-Control Intersection	FHWA PSC	0.73 - 0.9	All Crashes	$ 19,000	Intersection	All Stop-Controlled Intersections with crash issues		X
Intersection	Upgrade Signs and Pavement Markings (Paved Approach)	FHWA PSC	NA	All Crashes	$ 3,000	Leg			x
Intersection	Install Beacon on Stop Signs or Install Beacon on Stop Sign and Stop Ahead Sign	CMF Clearinghouse	0.84 - 0.95	All Crashes	$ 5,000	Each			x
Intersection	Realign Intersection Approaches to Reduce or Eliminate Skew	CMF Clearinghouse	0.57 - 0.67	All Crashes	$ 816,000	Intersection			

Intersection Countermeasures

Emphasis Area	Safety Countermeasure	Source	CMF	Applicable Crashes	Unit Cost	Unit	Application Guidance	Signal	No Signal
Intersection	Adequate Number/Visibility of Signal Heads	Caltrans Local Road Safety Manual	0.85	All Crashes	$ 24,000	Intersection	Assumes one additional signal head per approach		
Intersection	Install High Friction Surface Treatment (HFST)	FHWA PSC	0.799	All Crashes	$ 16,000	Intersection	All Intersections	X	X
Multiple	Convert Existing Intersection to Modern Roundabout	FHWA PSC	0.18 - 0.59	All Crashes	$ 2,500,000	Intersection	All Intersections	X	X
Multiple	Clear and Grub	ICEA Safety Action Plan	NA	All Crashes	$ 1,000	Leg	All unsignalized intersections		x
Multiple	Perform Road Safety Audits	FHWA PSC	0.4-0.9	All Crashes	$ 5,000	Intersection	All Intersection	X	X
Multiple	Perform an Intersection Control Evaluation (ICE)	-	NA	All Crashes	$ 30,000	Intersection	All Intersection, just conducting the ICE. (~225,000 to conduct and "implement")	X	X
Pedestrian	Upgrade Existing Crosswalk to High-Visibility Crosswalk	FHWA PSC	0.6 - 0.75	Pedestrian	$ 37,000	Crossing	Select improvements consistent with Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, Table 1 - Application of pedestrian crash countermeasures by roadway feature; https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/docs/STEP-guide-improving-ped-safety.pdf	X	X
Pedestrian	Install High-Visibility Crosswalk	FHWA PSC	0.6 - 0.75	Pedestrian	$ 36,000	Crossing	Select improvements consistent with Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, Table 1 - Application of pedestrian crash countermeasures by roadway feature; https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/docs/STEP-guide-improving-ped-safety.pdf	X	X
Pedestrian	Include a Leading Pedestrian Interval (LPI)	FHWA PSC	0.87	Pedestrian	$ 3,000	Intersection	Signalized Intersection with high turning volumes and high pedestrian crossings	X	
Pedestrian	Close Slip Lane	FHWA PEDSAFE	0.7	Pedestrian	$ 40,000	Each	Modifies the corner of an intersection to remove the sweeping right turn lane for vehicles. Results in shorter crossings for pedestrians, reduced speed for turning vehicles, better sight lines, and space for landscaping and other amenities.	X	X
Pedestrian	Centerline Hardening	San Jacinto Local Road Safety Plan	NA	Angled	$ 1,000	Intersection	Centerline hardening makes intersections safer for pedestrians by encouraging drivers to make left turns at slower speeds.	X	
Pedestrian	Add Sidewalk	FHWA PEDSAFE	0.2	Pedestrian	$ 4,500	Intersection	Adding sidewalks provides a separated and continuous facility for people to walk along the roadway. Adding sidewalks improves safety by minimizing collisions with pedestrians walking in the road.	X	X
Pedestrian	Extended Time Pushbutton	FHWA PEDSAFE	NA	Pedestrian	$ 500	Each	A pushbutton that can be pressed to request extra time for using the crosswalk, beyond the standard crossing time. Ideal near senior-serving land uses.	X	

Intersection Countermeasures

Emphasis Area	Safety Countermeasure	Source	CMF	Applicable Crashes	Unit Cost	Unit	Application Guidance	Signal	No Signal
Pedestrian	Protected Intersection	-	NA	All Crashes	$ 650,000	Intersection	Protected intersections use corner islands, curb extensions, and colored paint to delineate bicycle and pedestrian movements across an intersection. Slower driving speeds and shorter crossing distance increase safety for pedestrians. Separates bicycles from pedestrians	X	
Pedestrian	Raised Intersection/Raised Crossing	CMF Clearinghouse	0.64	All Crashes	$ 30,000	Each	Per crosswalk		
Pedestrian	Pedestrian Only Crossing Phase	-	0.65	Pedestrian	$ 50,000	Intersection			
Pedestrian	Install Pedestrian Signal Heads	-	0.75	Pedestrian	$ 7,000	Intersection	Per intersection cost, includes APS units		
Pedestrian	Install Pedestrian Refuge Island	CMF Clearinghouse	0.54	Pedestrian	$ 30,000	Each	Per island, assumes island is 50 feet long and 10 feet wide		
Pedestrian	Install High Visibility Crosswalk Markings	CMF Clearinghouse	0.6	Pedestrian	$ 2,500	Crossing	Per crosswalk, assumes crosswalk if 60 feet long and 10 feet wide		
Pedestrian	Install Pedestrian Hybrid Beacons (PHB) or HAWK	FHWA PSC	0.453	Pedestrian	$ 200,000	Each	Midblock Crossings, Speed Limit > 35 MPH, Multilane Roadway, AADT > 9,000		
Pedestrian	Install a Rectangular Rapid Flashing Beacons (RRFB)	FHWA PSC	0.526	Pedestrian	$ 15,000	Crossing (2)	Speed Limits < 40 MPH, Multilane Roadway		
Pedestrian, Vehicle	Install Intersection Lighting	FHWA PSC	0.62 - 0.67	Nighttime	$ 31,000	Intersection	All intersections Without Lighting	X	X
Pedestrian, Vehicle	Corridor Access Management-Driveway Consolidation (Urban)	FHWA PSC	0.69 - 0.75	Fatal & Injury	$ 9,000	Driveway	Limiting or eliminate driveways within the functional area of an intersection (upstream and downstream), as determined by stopping sight distance	X	X
Speeding	Traffic Calming - Bulbouts	CMF Clearinghouse	0.68	All Crashes	$ 36,000	Each	If a lower 85th percentile speed is desired		
Speeding	Transverse Rumble Strips on All or Minor Approaches	CMF Clearinghouse	0.67 - 0.87	All Crashes	$ 1,000	Leg	All paved unsignalized approaches, rural area		x
Vehicle	Corridor Access Management-Driveway Consolidation (Rural)	FHWA PSC	0.77 - 0.95	All Crashes	$ 7,000	Driveway	Limiting or eliminate driveways within the functional area of an intersection (upstream and downstream), as determined by stopping sight distance	X	X

Additional Countermeasures

Issues	Safety Countermeasure	Application Guidance
Better Data	Improve Crash Data Collection	Improve the accuracy, breadth, and consistency of crash data by creating a near-miss and unreported crash database, developing a standardized electronic reporting form for all crashes, forming agreements with shared mobility operators to acquire crash data, and/or creating a multi-jurisdiction crash database that can be updated by paramedics, police, city staff, and hospitals.
Curve	Improve Roadside Design on Curves	Roadside design improvements at curves are strategies encompassing several treatments that target the high-risk roadside environment along the outside of horizontal curves. These treatments can reduce roadway departure fatalities and serious injuries by giving vehicles the opportunity to recover safely and by reducing crash severity.
Curve	Superelevation Correction on Curve	Providing superelevation at the curve to help keep vehicles on the road is one of the key geometric design elements that affects crashes on a curve. Superelevation is designed for driver comfort during the acceleration through the curve, and works with friction between the tires and pavement to assist vehicles in maneuvering through curves
Curve	Retroreflective Strips on Chevron Signpost	A strip of retroreflective material may be used on warning sign supports to draw more attention to the sign during nighttime conditions.
Education	Bicycle Safety Education Events	Partner with local bike shops and others to host events/fairs to educate residents on bicycle safety. For example, host rides to introduce residents to new bicycle facilities as they are opened; offer tune ups at safety fairs.
Education	Youth Safe Driving Education and Outreach	Launch a transportation safety education campaign targeting youth that covers a wide range of topics, such as alcohol and drug impairment, speeding, and potentially distracted driving. Local schools can also partner in promoting safe driver behavior during school pick-up and drop offs.
Education	Education Campaigns for Vulnerable Groups	Launch targeted public education campaigns for seniors, non-English speaking populations, or other vulnerable groups.
Education	Pilot Demonstration Safety Projects	Implement pilot demonstration safety projects. Projects can be implemented on a temporary basis (tactical urbanism) or permanent basis with room for modification (quick builds).
Education	Public Information Campaigns	Launch public safety education campaigns. Example campaign topics include safe speeds, yielding to pedestrians, distracted driving, drinking and driving, awareness of bicyclists and pedestrians, appropriate crosswalk behavior, rail safety, moving over for EMS vehicles, etc. Campaigns may include yard signs, wall boards/posters in prime injury-corridor neighborhoods, ads on bus exteriors, radio ads, etc. Public education may also involve making safety and crash data publicly available on project websites, the city's data portal, social media, and other avenues as appropriate.
Intersection	Evaluate signalization at warranted intersections	Traffic signals are often chosen for operational reasons, and in some cases may represent a trade–off between safety and mobility. It is possible to lower the overall crash severity at intersections with traffic signals, but increase the crash frequency. Refer to Table 14-7 of the 2010 Highway Safety Manual to see the effects of converting a stop controlled intersection to a signalized intersection.
Intersection	Retroflected Strips on Stop Sign Posts	A strip of retroreflective material may be used on warning sign supports to draw more attention to the sign during nighttime conditions
Intersection	Coordinate with Local Jurisdiction on Signal Modifications	At signalized intersections with more than 10,000 daily entering vehicles, several signal modifications may improve safety. Adjusting signal timing, installing retroreflective backplates/border, and other low-cost countermeasures that local jurisdictions can implement.
Intersection	Signal Warrant Analysis to consider remove of signal	Traffic signals are often chosen for operational reasons, and in some cases may represent a trade–off between safety and mobility. It is possible to lower the overall crash severity at intersections with traffic signals, but increase the crash frequency. Refer to Table 14-7 of the 2010 Highway Safety Manual to see the effects of converting a stop controlled intersection to a signalized intersection.
Intersection	All-way Stop Control Warrants	Because stopping is mandatory for all movements, vehicle speeds at all way stop controlled intersections are typically lower and crossing opportunities for pedestrians and bicyclists should be frequent.
Intersection	Install Warning Sign and Advance Street Name Plaque on Major Approach	Warning signs call attention to unexpected conditions or situations n or adjacent to travel lanes that might not be readily apparent to road users. Warning signs alert road users to conditions that might call for a reduction of speed or an action.
Intersection	Flashing Beacon on Intersection Warning Sign	A Flashing Beacon can provide advanced warning and increased nighttime visibility of approaching intersections.
Maintenance	Keep Roadways Clear of Debris	A smoothly paved surface free of debris enhances safety for vehicles and bicyclists.

Additional Countermeasures

Issues	Safety Countermeasure	Application Guidance
Multiple	Appropriately Time the Yellow Change Interval	To minimize red-light running, it is imperative that the yellow change interval be appropriately timed. Too brief an interval may result in drivers being unable to stop safely and cause unintentional red-light running. Too long of an interval may result in drivers treating the yellow as an extension of the green phase and invite intentional red-light running.
Multiple	Refresh Pavement Markings	Adequately maintained pavement markings improve visibility and can reduce the risk of crashes by delineating roadways and crossings. Retroreflective markings appear brighter and are easier to see and read at night. Because pavement markings deteriorate relatively quickly, agencies need to actively manage their maintenance, remarking as needed in order to ensure that they remain clearly visible.
Partnerships	Safe Routes to School	Establish a Safe Routes to School (SRTS) program in partnership with school districts.
Pedestrian, Transit	Co-Locate Bus Stops and Pedestrian Crossings	Place bus stops and pedestrian crossings in close proximity to allow transit riders to cross the street and access transit safely.
Policies and Programs	Update City Policies and Standards	Update policies, standards, and guidelines on topics such as signal timing, street design, street lighting, complete streets, and pedestrian crossings to incorporate current best practices and improve safety for all modes.
Policies and Programs	Neighborhood Slow Zones	Develop a neighborhood slow zone program to allow neighborhoods to request treatments to slow motor vehicles to 15 to 20 mph using traffic calming features, signs, and markings. Selected locations are typically in areas serving children, seniors, public transit users, commercial activity, and pedestrian/bicycle activity.
Policies and Programs	Targeted Enforcement and Deterrence	Use crash history and corridors on the High Injury Network as one criterion for where to concentrate enforcement efforts. Add extra patrols to look for distracted drivers as part of a statewide distracted driving campaign, with focus on where data indicates that the most traffic safety benefit can be realized. Implement deterrence policies that are highly visible, such as publicized sobriety checkpoints, saturation patrol, and other forms of high visibility enforcement that are effective for safety outcomes.
Speeding	Set Appropriate Speed Limits for All Road Users	Locations identified with speed related issues and/or crashes. A driver may not see or be aware of the conditions within a corridor, and may drive at a speed that feels reasonable for themselves but may not be for all users of the system, especially vulnerable road users, including children and seniors.
Speeding	Re-Evaluate Speed Based on Roadway Context, Built Environment, and Existing Road Users	Locations where speed limits doesn't fit the build environment and existing roadway context. When setting a speed limit, agencies should consider a range of factors such as pedestrian and bicyclist activity, crash history, land use context, intersection spacing, driveway density, roadway geometry, roadside conditions, roadway functional classification, traffic volume, and observed speeds.
Pedestrian	Add Sidewalk	Well-designed pedestrian walkways, shared use paths, and sidewalks improve the safety and mobility of pedestrians. In some rural or suburban areas, where these types of walkways are not feasible, roadway shoulders provide an area for pedestrians to walk next to the roadway.
Pedestrian	Extended Time Pushbutton	Pedestrian signal timings should be designed to provide at least the minimum required WALK and clearance intervals, based on MUTCD or State/Local timing guidelines, considering the length of the crossing and specified pedestrian walking speeds. Pedestrian signal intervals can be reduced by shortening the crossing distance (i.e., construction curb extensions or road diets).
Pedestrian	Protected Intersection	At protected intersections, the bikeway is set back from the parallel motor vehicle traffic. Unlike at conventional bike intersections, people biking are not forced to merge into mixed traffic. Instead, they are given a dedicated path through the intersection, and have the right of way over turning motor vehicles.
Pedestrian	Raised Intersection/Raised Crossing	Raised crosswalks or raised intersections are ramped speed tables spanning the entire width of the roadway or intersection. Raised crosswalks are often placed at midblock crossing locations and only the width of a crosswalk. The crosswalk is demarcated with paint and/or special paving materials, and curb ramps are eliminated because the pedestrians cross the road the same level as the sidewalk. Raised crossings make the pedestrian more prominent in the driver's field of vision.
Pedestrian	Pedestrian Only Crossing Phase	The exclusive pedestrian phase stops all vehicular movement and allows pedestrians access to cross in any direction at the intersection. An exclusive pedestrian phase that incorporates advanced technology would be able to recognize the conditions under which the pedestrian phase would be appropriate based on such factors as time of day, vehicle volume, pedestrian presence, etc.

Additional Countermeasures

Issues	Safety Countermeasure	Application Guidance
Pedestrian	Install Pedestrian Signal Heads	Pedestrian signals should be clearly visible to the pedestrian at all times when in the crosswalk or waiting on the far side of the street. Large pedestrian signals can be beneficial in some circumstances (e.g., where the streets are wide). Countdown pedestrian indications are required for all newly installed traffic signals where pedestrian signals are installed. They must be designed to begin counting down at the beginning of the clearance (flashing DON'T WALK) interval and can be on fixed-time or pushbutton operation.
Pedestrian	Install Pedestrian Refuge Island	A pedestrian refuge island (or crossing area) is a median with a refuge area that is intended to help protect pedestrians who are crossing a road. Refuge islands should be considered as a supplement to the crosswalk. They are appropriate at both uncontrolled locations (i.e., where no traffic signals or stop signs exist) and signalized crossings. When installed at a midblock crossing, the island should be supplemented with a marked, high-visibility crosswalk.
Pedestrian	Install High Visibility Crosswalk Markings	On multilane roadways, agencies can use ”YIELD Here to Pedestrians“ or ”STOP Here for Pedestrians“ signs 20 to 50 feet in advance of a marked crosswalk to indicate where a driver should stop or yield to pedestrians, depending on State law. To supplement the signing, agencies can also install a STOP or YIELD bar (commonly referred to as ”shark’s teeth”) pavement markings. In-street signing, such as ”STOP Here for Pedestrians“ or ”YIELD Here to Pedestrians“ may be appropriate on roads with two- or three-lane roads where speed limits are 30 miles per hour or less.
Pedestrian	Install Pedestrian Hybrid Beacons (PHB) or HAWK	Pedestrian hybrid beacons (PHBs) are used where it is difficult for pedestrians to cross a roadway, such as when gaps in traffic are not sufficient or speed limits exceed 35 miles per hour. They are very effective at locations where three or more lanes will be crossed or traffic volumes are above 9,000 annual average daily traffic.
Pedestrian	Install a Rectangular Rapid Flashing Beacons (RRFB)	To enhance pedestrian conspicuity and increase driver awareness at uncontrolled, marked crosswalks, transportation agencies can install a pedestrian actuated Rectangular Rapid Flashing Beacon (RRFB) to accompany a pedestrian warning sign. RRFBs consist of two, rectangular- shaped yellow indications, each with a light-emitting diode (LED)-array-based light source.
Pedestrian, Vehicle	Install Intersection Lighting	Adequate lighting (i.e., at or above minimum acceptable standards) is based on research recommending horizontal and vertical illuminance levels to provide safety benefits to all users of the roadway environment. Adequate lighting can also provide benefits in terms of personal security for pedestrians, wheelchair and other mobility device users, bicyclists, and transit users as they travel along and across roadways.
Pedestrian, Vehicle	Corridor Access Management-Driveway Consolidation	Access management refers to the design, application, and control of entry and exit points along a roadway. This includes intersections with other roads and driveways that serve adjacent properties. Thoughtful access management along a corridor can simultaneously enhance safety for all modes, facilitate walking and biking, and reduce trip delay and congestion
Speeding	Traffic Calming - Bulbouts	Bulbouts extend the sidewalk or curb line out into the parking lane and reduce the effective street width, they must not extend into travel lanes and should not extend across bicycle lanes. This countermeasure improves pedestrian crossings by reducing the pedestrian crossing distance, reducing the time that pedestrians are in the street, visually and physically narrowing the roadway, and improving the ability of pedestrians and motorists to see each other.
Speeding	Transverse Rumble Strips on All or Minor Approaches	Transverse rumble strips are used to alert drivers of a need to slow down or stop, or to other upcoming changes that may not be anticipated by an inattentive driver. These rumble strips are placed in the travel lane perpendicular to the direction of travel. Typical locations for these rumble strips are on approaches to intersections, toll plazas, horizontal curves, and work zones.
Speeding	Electronic Enforcement	Electronic enforcement systems function by capturing violations, recording relevant data about the violations, and recording images of the violator vehicle and license plate (only when triggered by infractions), and when validated, issuing citations to violators. These system can assist in enforcing speed limits but are not intended to replace traditional speed management strategies, although they can be used as a supplement.

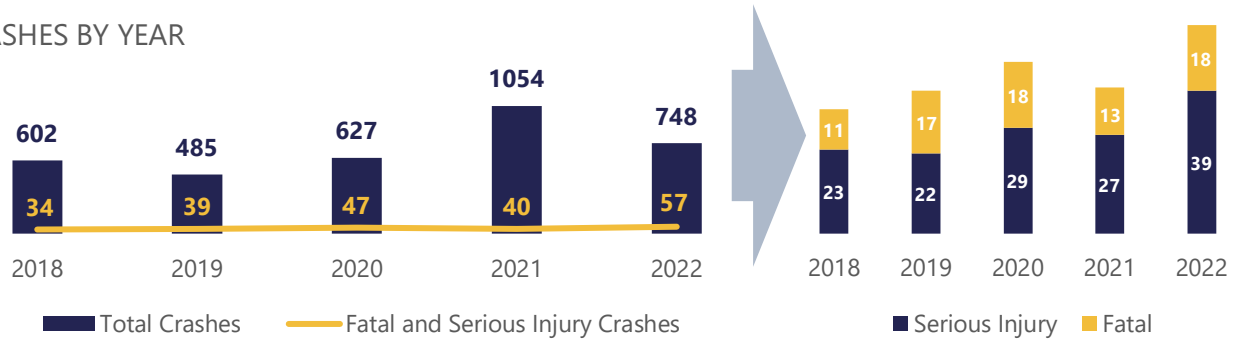
B - Cochise County

Fatal and Serious Injury Crashes by Emphasis Area in Cochise County

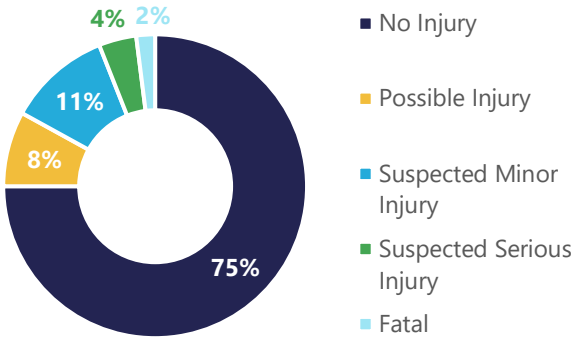
Arizona SHSP Emphasis Area	Region-wide (Four Counties)		Cochise County GFA		
	Fatal and Serious Injury Crashes	Rank	Fatal and Serious Injury Crashes	Rank	Change in Rank from SEAGO/SVMPO
Human Behavior	271 (49%)	1	103 (47%)	1	0
Intersections	102 (18%)	2	28 (13%)	2	0
Lane Departure	70 (13%)	3	23 (11%)	3	0
Vulnerable Road Users	57 (10%)	4	19 (9%)	4	0

Cochise County Safety Overview

CRASHES BY YEAR



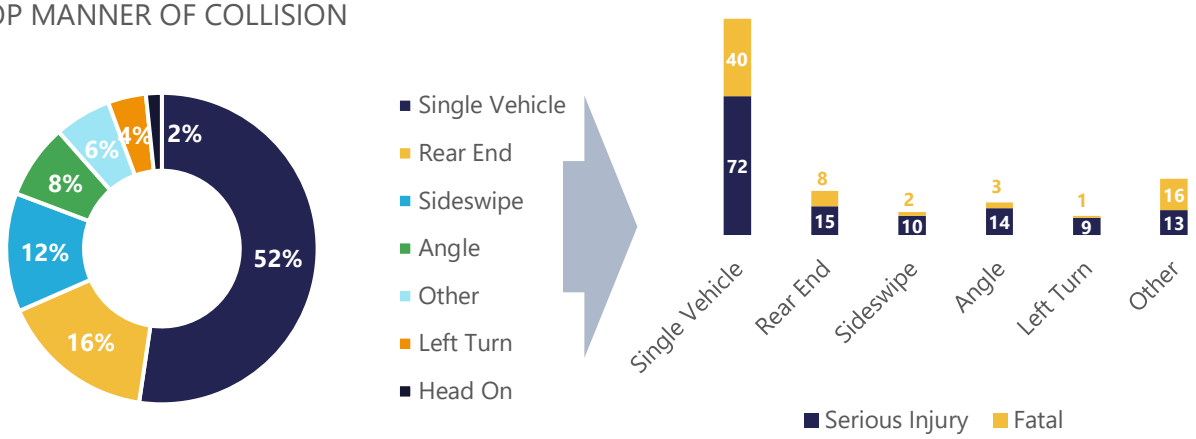
CRASHES BY INJURY LEVEL



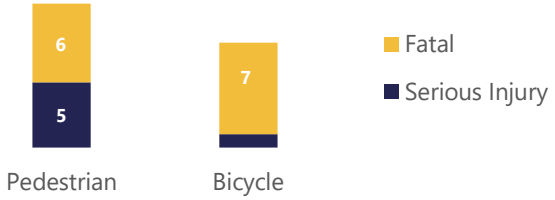
CRASH SEVERITY BY ROUTE TYPE

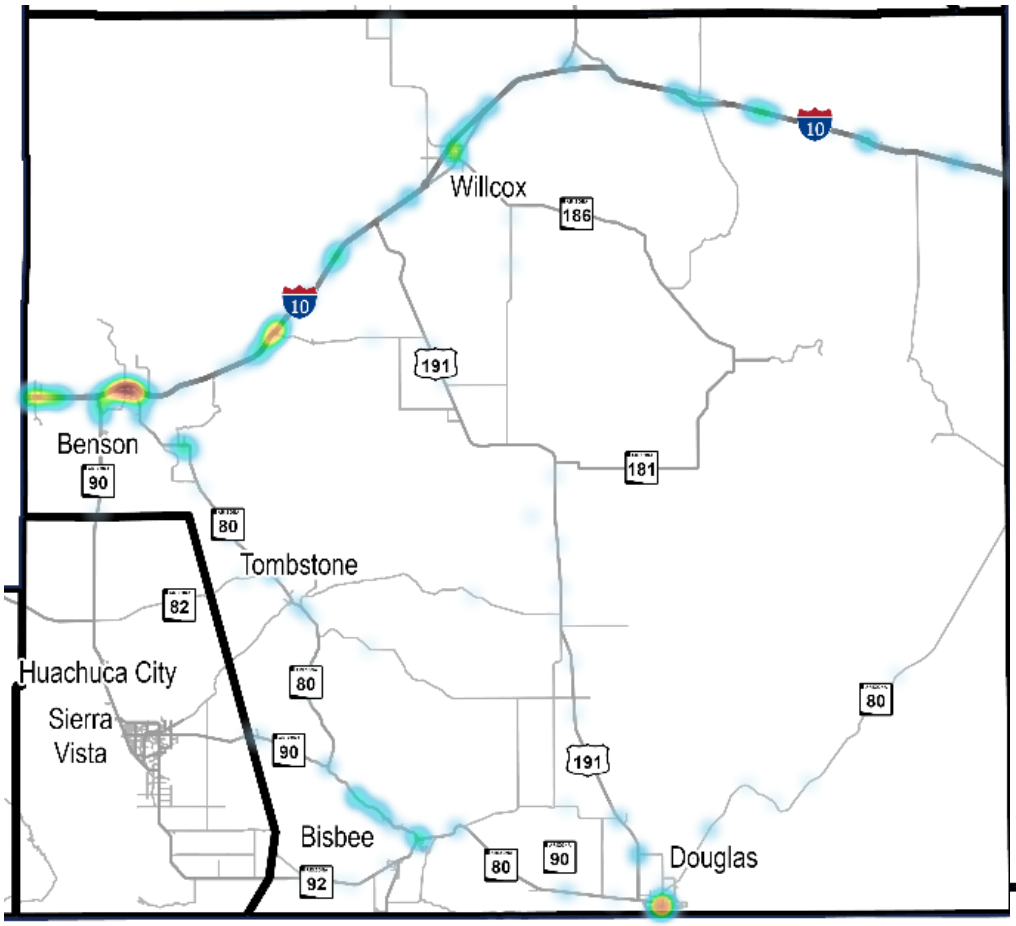
Route Type/Crash Severity	State Route	Non-State Route	Total	% of SEAGO
Fatal	63	14	77	40%
Serious Injury	130	10	140	38%
Minor Injury	325	69	394	33%
Possible Injury	205	59	264	24%
No Injury	2,018	623	2,641	34%
Unknown	38	26	64	99%
Total	**2,779**	**801**	**3,580**	**34%**

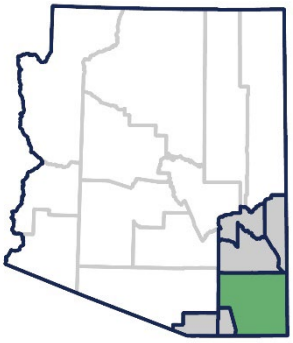
TOP MANNER OF COLLISION



19 OF **33** VRU-INVOLVED CRASHES
RESULTED IN A SERIOUS INJURY OR FATALITY





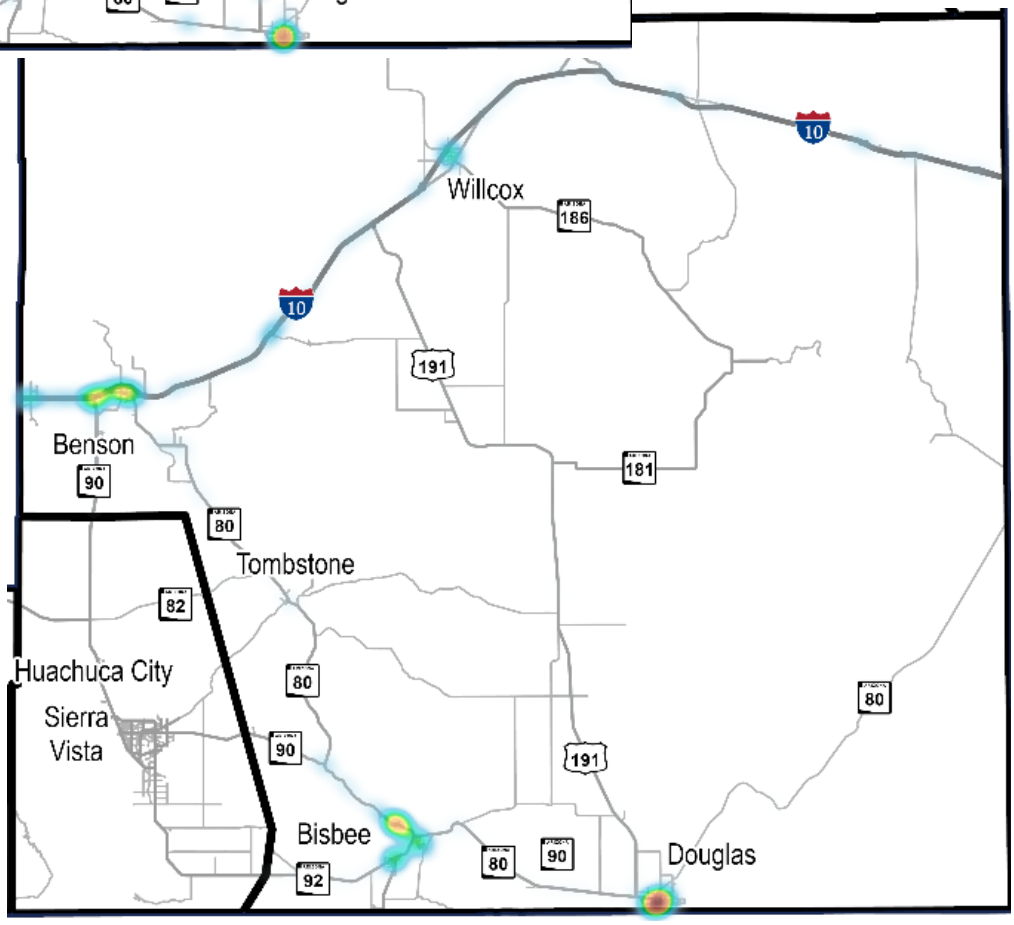


CRASH DENSITY

MORE CRASHES

FEWER CRASHES

FATAL AND SERIOUS INJURY CRASH DENSITY



Safety Analysis Results for Cochise County

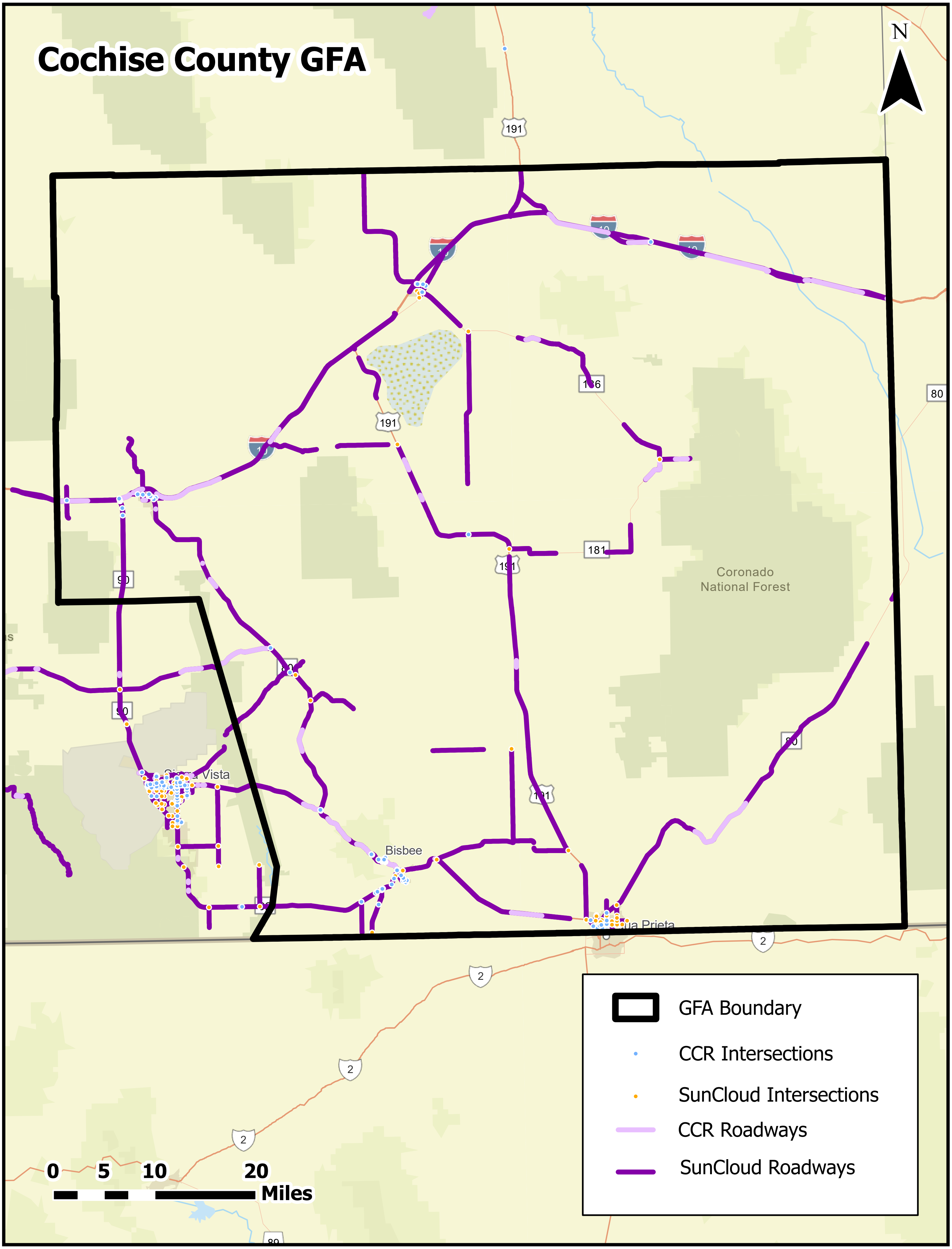
Facility	Limits	Functional Classification	City	Crashes	Critical Crash Rate Differential	EPDO[1]	Fatal	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Injury/PDO	Unknown	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (Opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
State Routes																										
I-10 Ramp	Westbound Texas Canyon Rest Area	Interstate	Unincorporated	**4**	9.0	4	0	0	0	0	4	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0
SR 80	2nd Ave to 3rd Ave	Minor Arterial	Unincorporated	**3**	7.1	3	0	0	0	0	3	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0
SR 80	Old Divide Rd (south) to Old Dived Rd (north)	Principal Arterial	Unincorporated	**19**	4.3	944	1	0	2	1	15	0	9	1	0	0	5	1	1	0	0	0	2	0	1	0
SR 80	Grant St to Maley St	Minor Arterial	Willcox	**3**	2.4	3	0	0	0	0	3	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0
SR 181	Bonita Creek Rd to Hudson Ranch Rd	Minor Arterial	Unincorporated	**3**	2.3	3	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	1	0	0	1
SR 181	Hacienda Trl to Rocky Rd	Minor Arterial	Unincorporated	**3**	2.1	3	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
I-10 Eastbound	Dragoon Rd to Eastbund Dragoon On-Ramp	Interstate	Unincorporated	**11**	2.1	41	0	0	1	2	8	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
SR 80	Country Club Rd to Hamilton Ln	Minor Arterial	Benson	**3**	1.4	12	0	0	0	1	2	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
SR 80	Curtis Flats Rd to MP 305.7	Minor Arterial	Unincorporated	**14**	1.3	40	0	0	2	0	12	0	12	1	0	0	1	0	0	0	0	0	0	0	0	0
SR 80	Gila St to San Pedro St	Minor Arterial	Benson	**6**	0.9	41	0	0	2	1	3	0	1	1	0	0	3	0	1	0	0	0	0	0	0	0
Non-State Routes																										
1st St	US 191 to J Ave	Major Collector	Douglas	**6**	25.1	6	0	0	0	0	6	0	0	1	0	0	1	0	0	0	0	0	4	0	0	0
9th St	D Ave to alleyway east of D Ave	Minor Collector	Douglas	**3**	14.7	893	1	0	0	0	2	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0
Old Douglas Rd	SR 80 to Lone St	Major Collector	Bisbee	**3**	11.7	3	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0
10th St	G Ave to driveway east of G Ave	Major Collector	Douglas	**3**	3.5	67	0	1	1	0	1	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
10th St	F Ave to driveway east of F Ave	Major Collector	Douglas	**4**	2.8	4	0	0	0	0	4	0	0	1	0	0	2	0	1	0	0	0	0	0	0	0
Tombstone Cyn	Quality Hill Rd to Curve St	Major Collector	Bisbee	**4**	2.5	13	0	0	0	1	2	1	0	0	0	0	1	0	0	0	0	0	3	0	0	0
5th St	Ocotillo St to High St	Major Collector	Benson	**3**	2.0	3	0	0	0	0	3	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
5th St	Chiricahua Rd to US 191	Major Collector	Douglas	**3**	1.4	3	0	0	0	0	3	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0
10th St	B Ave to A Ave	Major Collector	Douglas	**4**	0.9	4	0	0	0	0	4	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
US 191	Richland Way to Apache Way	Minor Arterial	Unincorporated	**3**	0.2	893	1	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	*Unknown*	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (Opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
Signalized Intesections																								
Naco Hwy & SR 92	Bisbee	**23**	0.7	49	0	0	2	0	18	3	0	0	0	0	0	0	0	0	0	0	23	0	0	0
Haskell Ave & Maley St	Willcox	**12**	0.7	1,868	2	1	2	0	7	0	2	0	1	0	2	0	3	0	0	0	4	4	0	0
SR 90 & I-10 WB Ramp	Cochise County	**16**	0.4	25	0	0	0	1	15	0	2	2	3	0	3	1	5	0	0	0	0	0	0	0
SR 90 & Village Loop Road	Cochise County	**29**	0.4	1,014	1	0	4	5	19	0	2	4	14	0	5	0	2	0	0	0	2	0	0	0
SR 90 & I-10 EB Ramp	Cochise County	**31**	0.2	74	0	0	2	2	27	0	7	2	0	0	7	0	14	1	0	0	0	0	0	1
Ocotillo Rd & 4th St	Cochise County	**19**	0.2	113	0	1	0	5	13	0	0	6	5	0	6	0	1	0	0	0	1	0	0	0
Unsignalized Intersections																								
O'Hara Ave & Quarry Canyon Rd	Bisbee	**3**	8.1	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Brewery Ave & Naco Rd	Bisbee	**13**	6.9	13	0	0	0	0	12	1	0	0	0	0	0	0	0	0	0	0	13	0	0	0
Brewery Ave & Review Aly	Bisbee	**12**	6.3	12	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0
Youngblood Hill Ave & Ok St	Bisbee	**5**	6.0	5	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	5	0	0	0
Naco Hwy & Naco Rd	Bisbee	**25**	5.0	38	0	0	1	0	24	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0
Main St & SR 80	Cochise County	**7**	4.5	46	0	0	3	0	1	3	0	0	0	0	0	0	0	0	0	0	7	0	0	0
Subway St & Sowles Ave	Bisbee	**19**	3.0	19	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0
Brewery Ave & Howell Ave	Bisbee	**5**	2.9	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
SR 80 WB & Erie St	Bisbee	**3**	2.4	16	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Shearer Ave & Howell Ave	Bisbee	**6**	2.3	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0

1. Equivalent Property Damage

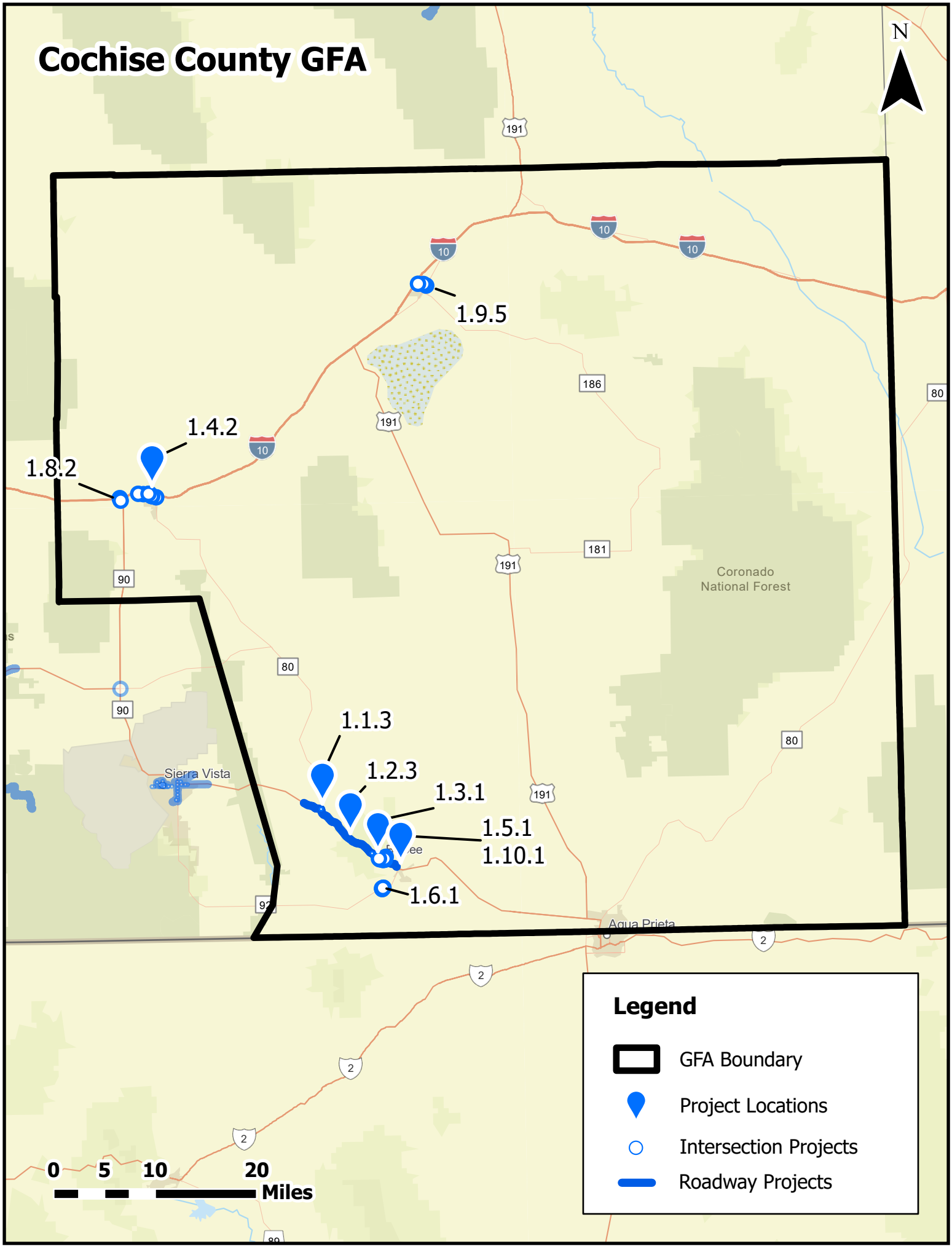
Project Information Sheets



Cochise County GFA
N
191
186
181
80
90
Coronado
National Forest
Bisbee
2
GFA Boundary
CCR Intersections
SunCloud Intersections
CCR Roadways
SunCloud Roadways
0
5
10
20
Miles

Cochise County GFA Projects

Project ID	Jurisdictions	Project Name
1.1.3	Cochise County	SR 90 from Sharpshooter Road to SR 80
1.2.3	Cochise County	SR 80 from SR 90 to Old Divide Road
1.3.1	Bisbee	SR 80 from Old Divide Road to Denn Mine Road
1.4.2	Benson	4th Street Intersection Improvements
1.5.1	Bisbee	Systemic Unsignalized Intersection Improvements
1.6.1	Bisbee	US 92 Intersections and Naco Road Intersections
1.8.2	Benson	SR 90 & I-10 Intersection Improvements
1.9.5	Wilcox	Rex Allen Drive Intersection Improvements
1.10.1	Bisbee	Main Street/Naco Road & SR 80 Interchange Improvements


Cochise County GFA
N
1.9.5
1.4.2
1.8.2
1.1.3
1.2.3
1.3.1
1.5.1
1.10.1
1.6.1
Coronado National Forest
Sierra Vista
Agua Prieta
191
10
186
181
90
80
2
Legend
GFA Boundary
Project Locations
Intersection Projects
Roadway Projects
0 5 10 20
Miles

Project Information Sheet 1.1.3

Project ID:	**1.1.3**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 90 from Sharpshooter Road to SR 80**	**Prepared By:**	**JB**
Jurisdiction(s):	**Cochise County**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway: SR 90
From: Sharpshooter Road
To: SR 80
Length: 1.91 miles

Key Intersection Locations:
SR 80 & SR 90

Project Location Map — Project ID: 1.1.3

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.91**
Average Daily Traffic (vehicles per day)	**3,644**
Functional Classification	**Other Principal Arteria**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**2**
Possible Injury Crashes (C)	**2**
No Injury/PDO Crashes (O)	**11**
Total Crashes	**15**
Total EPDO Crashes	**58**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	✓
Bicycle (Bike)	✓	Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	✓
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

Intersections	Signal	K	A	B	C	O	Total	EPDO	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
									What Crash Types are Over-Represented?							
SR 80 & SR 90		0	1	1	3	6	11	100	✓		✓					

Project Description/How is safety improved? 1.1.3

This project focuses on improving motorist safety by addressing an overrepresentation of rear end, sideswipe and motorcycle crashes with the following improvements: installation centerline rumble strips, edge line rumble strips, and shoulder widening with any repaving efforts along the entire length of the roadway. Intersection improvements at SR 80 and SR 90 include the installation of lighting, systemic low-cost countermeasures, and transverse rumble strips on SR 90 approaching the intersection to better prepare motorists for the intersection with SR 80. Removing the right turn slip lanes is recommended as there is not sufficient merging areas from the slip lanes to the main lanes and there is an overrepresentation of sideswipe crashes. An Intersection Control Evaluation and implementation of the results is also recommended.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Stop-Controlled Intersection Systemic Countermeasures


Lighting

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	1.91	MILE	$ 5,000	$ 9,550
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	1.91	MILE	$ 9,000	$ 17,190
Shoulder Widening on Rural Roads	0.771	All Crashes	1.91	MILE	$ 33,000	$ 63,030
Install Transverse Rumble Strips as a Traffic Calming Device	0.66	All Crashes	1	LANE	$ 450	$ 450
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
Close Slip Lane	0.7	Pedestrian	2	EACH	$ 40,000	$ 80,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 250,220
*Mobilization: (% +/-)**	*10%*	$ 25,030
Traffic Control: (% +/-)	*5%*	$ 12,511
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 75,066
Estimated Construction Cost:		$ 362,827

Local Match†: 20% $ 92,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 43,539
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 54,424
Estimated Project Total:		$ 461,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 1.2.3

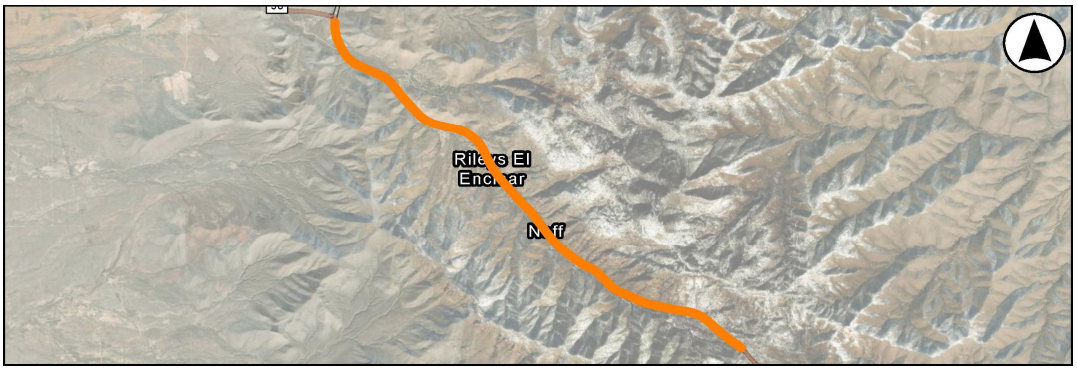
Project ID:	**1.2.3**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 80 from SR 90 to Old Divide Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Cochise County**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium/Low Priority**		

Location Description

Roadway: SR 80
From: SR 90
To: Old Divide Road
Length: 5.92 miles

Key Intersection Locations:

Project Location Map **Project ID: 1.2.3**



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**5.92**
Average Daily Traffic (vehicles per day)	**4,448**
Functional Classification	**Other Principal Arteria**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**4**
Suspected Minor Injury Crashes (B)	**9**
Possible Injury Crashes (C)	**6**
No Injury/PDO Crashes (O)	**45**
Total Crashes	**65**
Total EPDO Crashes	**1,326**

What Crash Types are Over-Represented?			
Fatal		Angle	✓
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	✓
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 1.2.3

This project improves safety by addressing an over representation of motorcycle and roadway departure crashes. Systemic improvements include: upgrading/installing curve warning signage, installing retroreflective center and edge lines, adding edge line and centerline rumble strips, and providing lighting along the length of the roadway.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Lighting


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	5.92	MILE	$ 28,000	$ 165,760
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	5.92	MILE	$ 9,000	$ 53,280
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	5.92	MILE	$ 5,000	$ 29,600
Provide Highway Lighting	0.72	Nighttime	5.92	MILE	$ 300,000	$ 1,776,000
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	4	CURVE	$ 2,000	$ 8,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 2,032,640
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 101,632
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 609,792
Estimated Construction Cost:		$ 2,819,064

Local Match†: **20%** **$ 716,200**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 338,288
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 422,860
Estimated Project Total:		$ 3,581,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Targeted Enforcement and Deterrence
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 1.3.1

Project ID:	**1.3.1**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 80 from Old Divide Road to Denn Mine Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Bisbee**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, High Priority**		

Location Description

Roadway: SR 80
From: Old Divide Road
To: Denn Mine Road
Length: 3.66 miles

Key Intersection Locations:
West Boulevard & SR 80

Project Location Map **Project ID: 1.3.1**

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**3.66**
Average Daily Traffic (vehicles per day)	**4,198**
Functional Classification	**Other Principal Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**2**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**8**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**17**
Total Crashes	**29**
Total EPDO Crashes	**1,972**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	✓
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)	✓	Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle	✓	Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
West Boulevard & SR 80		0	0	0	0	4	4	4								

Project Description/How is safety improved? 1.3.1

This project improves safety along SR 80 from Old Divide Road to Denn Mine Road by implementing highway lighting from Simms Road to Main Street, installing retroreflective centerline and edge lines along the length of the roadway, and rumble strips along the length of the roadway. It is also recommended that systemic low-cost countermeasures be implemented at the intersection of West Boulevard and SR 80.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Stop-Controlled Intersection Systemic Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	2.75	MILE	$ 300,000	$ 825,581
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	3.66	MILE	$ 28,000	$ 102,519
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	3.66	MILE	$ 5,000	$ 18,307
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	3.66	MILE	$ 9,000	$ 32,953
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 998,361
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 49,918
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 299,508
Estimated Construction Cost:		$ 1,422,787

Local Match†: 20% $ 361,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 170,734
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 213,418
Estimated Project Total:		$ 1,807,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Improve Crash Data Collection
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 1.4.2

Project ID:	**1.4.2**	**Date Prepared:**	**9/14/2024**
Project Name:	**4th Street Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Benson**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Total Intersections	6
Signalized:	1
Unsignalized:	5

Key Intersection Locations:

County Rd & 4th Street	Prickly Pear Avenue & 4th Street
S 80 & 4th Street	San Pedro St & 4th Street
Ocotillo Rd & 4th Street	Gila St & 4th Street

Project Location Map

Project ID: 1.4.2

Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**6**
Signalized Intersections	**1**
Unsignalized Intersections	**5**
Average Total Entering Volume (daily vehicles)	**12,386**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Intersection	✓

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
County Rd & 4th Street		0	0	0	0	5	5	5				✓				
S 80 & 4th Street		0	0	1	0	6	7	20				✓				
Ocotillo Rd & 4th Street	✓	0	1	0	5	13	19	113	✓			✓				
Prickly Pear Avenue & 4th Street		0	1	0	0	6	7	58	✓							
San Pedro St & 4th Street		0	0	0	1	4	5	14								
Gila St & 4th Street		0	0	0	0	5	5	5								

Project Description/How is safety improved? 1.4.2

This project focuses on addressing an overrepresentation of left turn collisions by recommending the following improvements: addition of systemic low-cost countermeasures at stop-controlled intersections, installing intersection lighting at San Pedro Street and 4th Street, using retroreflective backplates at Octillo Street and 4th Street, adding bulbouts to two corners of San Pedro Street and 4th Street, and performing an ICE study at the SR 80 and 4th Street intersection. Rear end crashes in this project location suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speeds for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Stop-Controlled Intersection Systemic Countermeasures


Lighting


Backplates with Retroreflective Borders

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	5	INT	$ 19,000	$ 95,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	12	EACH	$ 275	$ 3,300
Traffic Calming - Bulbouts	0.68	All Crashes	2	EACH	$ 36,000	$ 72,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 231,300
*Mobilization: (% +/-)**	*10%*	$ 23,130
Traffic Control: (% +/-)	*5%*	$ 11,565
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 69,390
Estimated Construction Cost:		$ 335,385

Local Match†: **20%** **$ 85,200**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 40,246
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 50,308
Estimated Project Total:		$ 426,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 1.5.1

Project ID:	**1.5.1**	**Date Prepared:**	**9/14/2024**
Project Name:	**Systemic Unsignalized Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Bisbee**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Climate & Economic Justice Screening Tool, Low Priority**		

Location Description

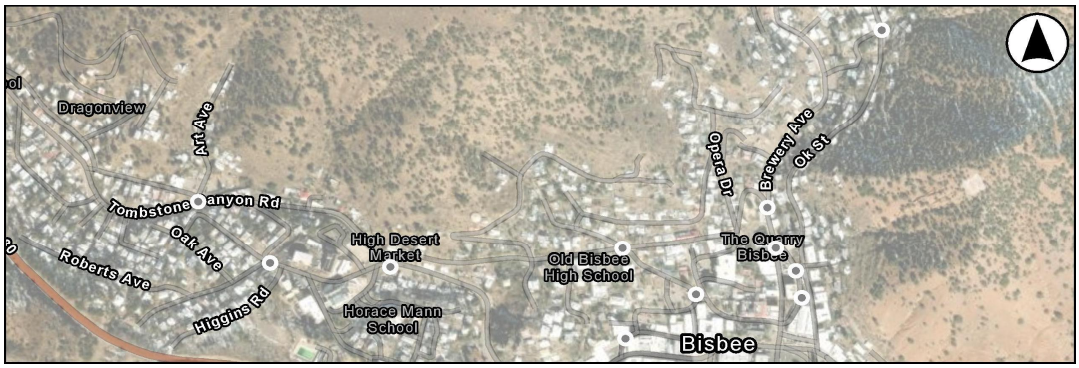
Total Intersections	10
Signalized:	0
Unsignalized:	10

Key Intersection Locations:

Brewery Ave	Ore Alley	Shearer Ave	Clawson Ave
Tombstone Canyon Rd	Taylor Ave	Tack Ave	Review Aly
Curve St/Quarry Canyon	Garden Ave	Howell Ave	Subway St

Project Location Map

Project ID: 1.5.1



Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**10**
Signalized Intersections	**0**
Unsignalized Intersections	**10**
Average Total Entering Volume (daily vehicles)	**2,984**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	
Sun Cloud	
Equity Review	✓
Top 10 Intersection	✓

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Brewery Ave & Howell Ave		0	0	0	0	5	5	5								
Tombstone Canyon Rd & Clawso		0	0	0	0	5	5	5								
Curve St/Quarry Canyon Rd & O'		0	0	1	0	3	4	17								
Ore Alley & Review Alley		0	0	0	0	2	2	2								
Taylor Ave & Brewery Ave		0	0	0	0	1	1	1								
Garden Ave & Tombstone Canyo		0	0	0	0	10	10	10								
Shearer Ave & Howell Ave		0	0	0	0	6	6	6								
Tack Ave & Subway St		0	0	0	0	19	19	19								
Shearer Ave & Clawson Ave		0	0	1	0	2	3	16								
Brewery Ave & Review Aly		0	0	0	0	12	12	12								

Project Description/How is safety improved? 1.5.1

This project improves safety by recommending the following improvements: Road Safety Audits, intersection Control Evaluations, and systemic low-cost countermeasures at stop controlled intersections. the unique layout of the Bisbee and various intersection types requires different countermeasures to best suit the area. Road Safety Audits are recommended to involve the public, enforcement, etc. to further discuss the best improvements to all intersections. Intersection Control Evaluations are recommended at numerous intersections to determine appropriate improvements for each location.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Road Safety Audit


Stop-Controlled Intersection Systemic Countermeasures

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Perform Road Safety Audits	0.4-0.9	All Crashes	1.00	LOC	$ 25,000	$ 25,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	5	INT	$ 19,000	$ 95,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	5	INT	$ 30,000	$ 150,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 270,000
*Mobilization: (% +/-)**	*10%*	$ 27,000
Traffic Control: (% +/-)	*5%*	$ 13,500
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 81,000
Estimated Construction Cost:		$ 391,500

Local Match†: 20% $ 99,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 46,980
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 58,725
Estimated Project Total:		$ 498,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Targeted Enforcement and Deterrence
Additional Improvements #3: Refresh Pavement Markings
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 1.6.1

Project ID:	**1.6.1**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 92 Intersections and Naco Road Intersections**	**Prepared By:**	**JB**
Jurisdiction(s):	**Bisbee**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Total Intersections	5
Signalized:	1
Unsignalized:	4

Key Intersection Locations:

Naco Hwy & Burger King Entrance
Naco Hwy & Safeway Entrance
Naco Hwy & SR 92
McKinley Ave & SR 92
Harrison Ave & SR 92

Project Location Map

Project ID: 1.6.1

Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**5**
Signalized Intersections	**1**
Unsignalized Intersections	**4**
Average Total Entering Volume (daily vehicles)	**6,121**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	
Sun Cloud	✓
Equity Review	✓
Top 10 Intersection	✓

Intersection Characteristics

Intersection Information	Naco Hwy & Burger King Entrance	Naco Hwy & Safeway Entrance	Naco Hwy & SR 92	McKinley Ave & SR 92	Harrison Ave & SR 92
Signal YN			✓		
Total Entering Volume (daily)	**2,549**	**2,549**	**9,020**	**12,227**	**4,259**
CCR[1]	✓	✓	✓	✓	✓
Sun Cloud			✓		
Top 10 Intersection		✓			
Crash History					
Fatal Crash	**0**	**0**	**0**	**0**	**0**
Serious Injury Crash	**0**	**0**	**0**	**0**	**0**
Minor Injury Crash	**0**	**0**	**1**	**2**	**0**
Possible Injury Crash	**0**	**0**	**0**	**0**	**0**
No Injury/PDO[2] Crash	**6**	**24**	**18**	**3**	**7**
Total Crashes	**6**	**24**	**19**	**5**	**7**
EPDO[3]	**6**	**24**	**32**	**31**	**7**
Over-Represented Crashes					
Fatal/Serious Injury					
Pedestrian/Bicycle					
Angle					
Left/U-Turn					
Rear End					
Head On					
Sideswipe					
Rear to Side/Rear to Rear					

Project Description/How is safety improved? 1.6.1

This project is focused on improving safety on rural roadways and intersections. Recommended countermeasures include: traffic calming median curbs, 4 lane to 3-lane road diet conversion along the length of Naco Road, corridor access management, and signal head improvements. A raised median in the section of Naco Highway included in this project would restrict left turns and reduce the number of turning conflict points. At the Naco Highway and SR 92 intersection retroreflective backplates/borders and changing permissive left-turns to permissive/protected left-turns may improve safety. The intersection may also be realigned to eliminate the offset approaches. Other low-cost countermeasures at stop-controlled intersections along Naco Road are recommended. Sidewalks may be installed on the south side of the Naco Highway.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Traffic Calming - Medians (Back-To-Back Curb)	0.68	All Crashes	0.20	MILE	$ 629,000	$ 125,800
Corridor Access Management-Driveway Consolidation (Rural)	0.77 - 0.95	All Crashes	3	DRIVEW	$ 7,000	$ 21,000
4-Lane to 3-Lane Road Diet Conversion with Bicycle Lanes	0.53 - 0.812	All Crashes	1.50	MILE	$ 51,000	$ 76,500
Install Sidewalk or Walkways	NA	Pedestrian	0.74	MILE	$ 1,268,000	$ 938,320
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Retroreflective Backplates/Borders	0.85	All Crashes	13	EACH	$ 275	$ 3,575
Change Permissive Left-Turn to Protected or Protected/Permissive	0.79 - 0.95	Left-Turn	1	INT	$ 8,000	$ 8,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	4	INT	$ 31,000	$ 124,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	3	INT	$ 19,000	$ 57,000
Realign Intersection Approaches to Reduce or Eliminate Skew	0.57 - 0.67	All Crashes	1	INT	$ 816,000	$ 816,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 2,170,195
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 108,510
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 651,059
Estimated Construction Cost:		$ 3,004,763

Local Match†: 20% $ 763,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 360,572
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 450,714
Estimated Project Total:		$ 3,817,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Refresh Pavement Markings
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 1.8.2

Project ID:	**1.8.2**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 90 & I-10 Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Benson**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Total Intersections	4
Signalized:	3
Unsignalized:	1

Key Intersection Locations:

I-10 WB & SR 90 St Andrews Dr

I-10 EB & SR 90 Village Loop & SR 90

Project Location Map Project ID: 1.8.2

Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**4**
Signalized Intersections	**3**
Unsignalized Intersections	**1**
Average Total Entering Volume (daily vehicles)	**14,097**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Intersection	

Intersection Characteristics

Intersection Information	I-10 WB & SR 90	I-10 EB & SR 90	St Andrews Dr & SR 90	Village Loop & SR 90	
Signal YN	✓	✓		✓	
Total Entering Volume (daily)	**8,253**	**22,769**	**8,936**	**16,431**	
CCR[1]	✓	✓	✓	✓	
Sun Cloud				✓	
Top 10 Intersection					
Crash History					
Fatal Crash	**0**	**0**	**0**	**1**	
Serious Injury Crash	**0**	**0**	**0**	**0**	
Minor Injury Crash	**0**	**2**	**0**	**4**	
Possible Injury Crash	**1**	**2**	**0**	**5**	
No Injury/PDO[2] Crash	**15**	**27**	**3**	**19**	
Total Crashes	**16**	**31**	**3**	**29**	
EPDO[3]	**25**	**74**	**3**	**1,014**	
Over-Represented Crashes					
Fatal/Serious Injury					
Pedestrian/Bicycle					
Angle		✓			
Left/U-Turn					
Rear End					
Head On					
Sideswipe	✓	✓			
Rear to Side/Rear to Rear					

Project Description/How is safety improved? 1.8.2

This project addresses an overrepresentation of sideswipe and angle crashes by recommending the following improvements: retroreflective backplates where not existing, clear and grubbing foliage surrounding the intersection of I-10 Eastbound and SR 90, systemic low-cost countermeasures at the stop-controlled intersection of St Andrews Drive and SR 90. A dedicated right-turn lane at the St Andrews Drive and SR 90 intersection may also mitigate angle crashes at this location. The pavement markings and lane configuration at the intersection of I-10 Westbound and SR 90 should be reevaluted to best fit the exiting traffic. Rear end crashes in this project location suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speeds for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Stop-Controlled Intersection Systemic Countermeasures


Dedicated Left and Right-Turn Lanes at Intersections


Backplates with Retroreflective Borders

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
Provide Right-Turn Lanes	0.74 - 0.86	All Crashes	1	LANE	$ 113,000	$ 113,000
Clear and Grub	NA	All Crashes	1	LEG	$ 1,000	$ 1,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	40	EACH	$ 275	$ 11,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 144,000
*Mobilization: (% +/-)**	*10%*	$ 14,400
Traffic Control: (% +/-)	*5%*	$ 7,200
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 43,200
Estimated Construction Cost:		$ 208,800

Local Match†: 20% $ 53,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 25,056
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 31,320
Estimated Project Total:		$ 266,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Refresh pavement markings
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 1.9.5

Project ID:	**1.9.5**	**Date Prepared:**	**9/14/2024**
Project Name:	**Rex Allen Drive Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Willcox**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Medium Priority**		

Location Description

Total Intersections	3
Signalized:	0
Unsignalized:	3

Key Intersection Locations:
Bisbee Ave & Rex Allen Dr
Austin Blvd & Rex Allen Dr
Haskell Ave/I-10 & Rex Allen Dr

Project Location Map

Project ID: **1.9.5**

Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**3**
Signalized Intersections	**0**
Unsignalized Intersections	**3**
Average Total Entering Volume (daily vehicles)	**4,911**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Intersection	

Intersection Characteristics

Intersection Information	Bisbee Ave & Rex Allen Dr	Austin Blvd & Rex Allen Dr	Haskell Ave/I-10 & Rex Allen Dr		
Signal YN					
Total Entering Volume (daily)	**4,739**	**6,714**	**3,877**		
CCR[1]	✓	✓	✓		
Sun Cloud		✓			
Top 10 Intersection					
Crash History					
Fatal Crash	**0**	**0**	**0**		
Serious Injury Crash	**0**	**1**	**0**		
Minor Injury Crash	**2**	**0**	**2**		
Possible Injury Crash	**0**	**0**	**0**		
No Injury/PDO[2] Crash	**1**	**3**	**1**		
Total Crashes	**3**	**4**	**3**		
EPDO[3]	**29**	**55**	**29**		
Over-Represented Crashes					
Fatal/Serious Injury		✓			
Pedestrian/Bicycle					
Angle					
Left/U-Turn					
Rear End					
Head On					
Sideswipe					
Rear to Side/Rear to Rear					

Project Description/How is safety improved? 1.9.5

This project includes the following improvements for intersections on Rex Allen Drive: install intersection lighting to increase visibility and provide a right-turn lane at Haskell Avenue to mitigate curb and rear end collisions, and implement systemic low-cost countermeasures at all stop-controlled intersections, and installing a high-visibility crosswalk at the Austin Boulevard intersection. Sidewalk extensions at each intersection are recommended to reduce pedestrian crossing distances and provide additional pedestrian space. At the intersection of Bisbee Avenue and Rex Allen Drive the permissive let turns may be converted to protected or protected-permissive left turns to minimize left turning conflicts. A presence of rear end crashes in this project location suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speeds for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Stop-Controlled Intersection Systemic Countermeasures


Dedicated Left and Right-Turn Lanes at Intersections


Crosswalk Visibility Enhancements


Walkways

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	2	INT	$ 31,000	$ 62,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	3	INT	$ 19,000	$ 57,000
Provide Right-Turn Lanes	0.74 - 0.86	All Crashes	1	LANE	$ 113,000	$ 113,000
Install High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	1	XING	$ 36,000	$ 36,000
Add Sidewalk	0.2	Pedestrian	3	INT	$ 4,500	$ 13,500
Change Permissive Left-Turn to Protected or Protected/Permissive	0.79 - 0.95	Left-Turn	1.00	INT	$ 8,000	$ 8,000
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 289,500
*Mobilization: (% +/-)**	*10%*	$ 28,950
Traffic Control: (% +/-)	*5%*	$ 14,475
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 86,850
Estimated Construction Cost:		$ 419,775

Local Match†: 20% $ 106,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 50,373
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 62,966
Estimated Project Total:		$ 534,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet 1.10.1

Project ID:	**1.10.1**	**Date Prepared:**	**9/14/2024**
Project Name:	**Main Street/Naco Road & SR 80 Interchange Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Bisbee**	**Checked By:**	**EJC**
GFA(s):	**Cochise County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Environmental**		
Equity Review:	**Climate & Economic Justice Screening Tool, Low Priority**		

Location Description

Roadway:	Main Street/Naco Road	**Key Intersection Locations:**	
From:	Copper Queen Library	Main St & SR 80	Tombstone Canyon Rd & Commerce St
To:	SR 80 Interchange	Brewery Ave & Naco Rd	Shearer Ave & Subway St
Length:	0.72 miles		

Project Location Map Project ID: 1.10.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.72**
Average Daily Traffic (vehicles per day)	**2,398**
Functional Classification	**Other Principal Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**4**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**3**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**33**
Total Crashes	**36**
Total EPDO Crashes	**75**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)	✓	Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Main St & SR 80		0	0	0	0	3	3	3								
Brewery Ave & Naco Rd		0	0	0	0	12	12	12								
Tombstone Canyon Rd & Comme		0	0	0	0	17	17	17								
Shearer Ave & Subway St		0	0	0	0	3	3	3								

Project Description/How is safety improved? 1.10.1

This project focuses on improving safety in Bisbee surrounding the Main Street/Naco Road and SR 80 interchange. The Bisbee area has several irregular intersections, access points, and the interchange with SR 80. This project includes the interchange and roadway segments from SR 80 to the Copper Queen Library. This area includes several pedestrian destinations such as the library, restaurants, and hotels. Systemic low-cost countermeasures at stop controlled intersections and lighting are recommended at each intersection. Additional recommendations for this project are to be identified by performing an Intersection Control Evaluation at the intersections of concern.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Stop-Controlled Intersection Systemic Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	2	INT	$ 31,000	$ 62,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	3	INT	$ 19,000	$ 57,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 149,000
*Mobilization: (% +/-)**	*10%*	$ 14,900
Traffic Control: (% +/-)	*5%*	$ 7,450
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 44,700
Estimated Construction Cost:		$ 216,050

Local Match†: **20%** **$ 55,000**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 25,926
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 32,408
Estimated Project Total:		$ 275,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Improve Crash Data Collection
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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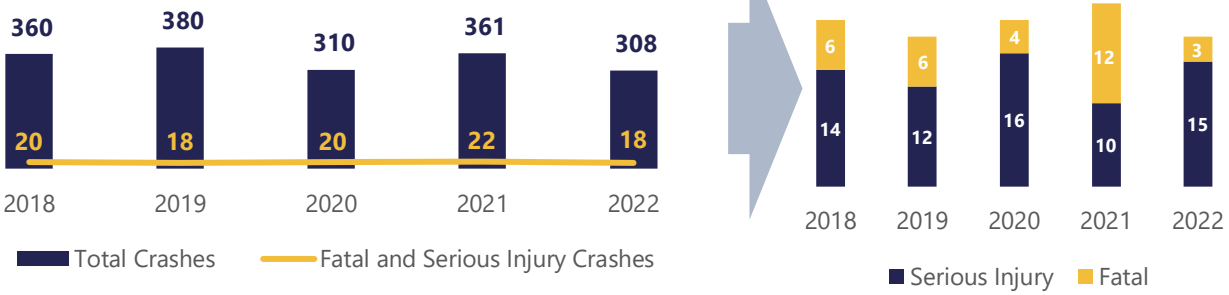
C - Graham County

Fatal and Serious Injury Crashes by EA in Graham County

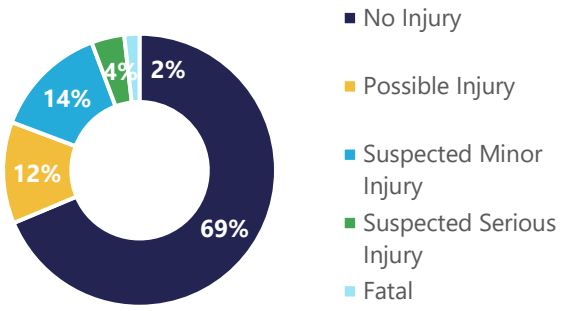
Arizona SHSP Emphasis Area	Region-wide (Four Counties)		Graham County GFA		
	Fatal and Serious Injury Crashes	Rank	Fatal and Serious Injury Crashes	Rank	Change in Rank from SEAGO
Behavior Related	271 (49%)	1	54 (55%)	1	0
Intersections	102 (18%)	2	17 (17%)	3	-1
Lane Departure	70 (13%)	3	13 (13%)	4	-1
Vulnerable Road Users	57 (10%)	4	19 (19%)	2	+2

Graham County Safety Overview

CRASHES BY YEAR



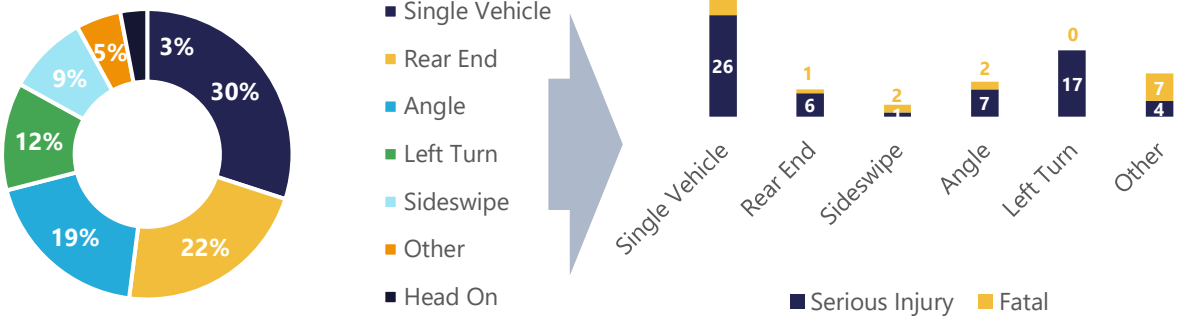
CRASHES BY INJURY LEVEL



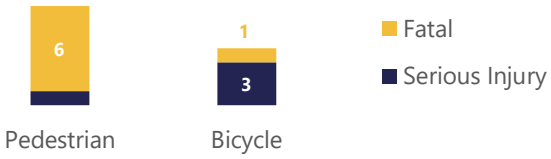
CRASH SEVERITY BY ROUTE TYPE

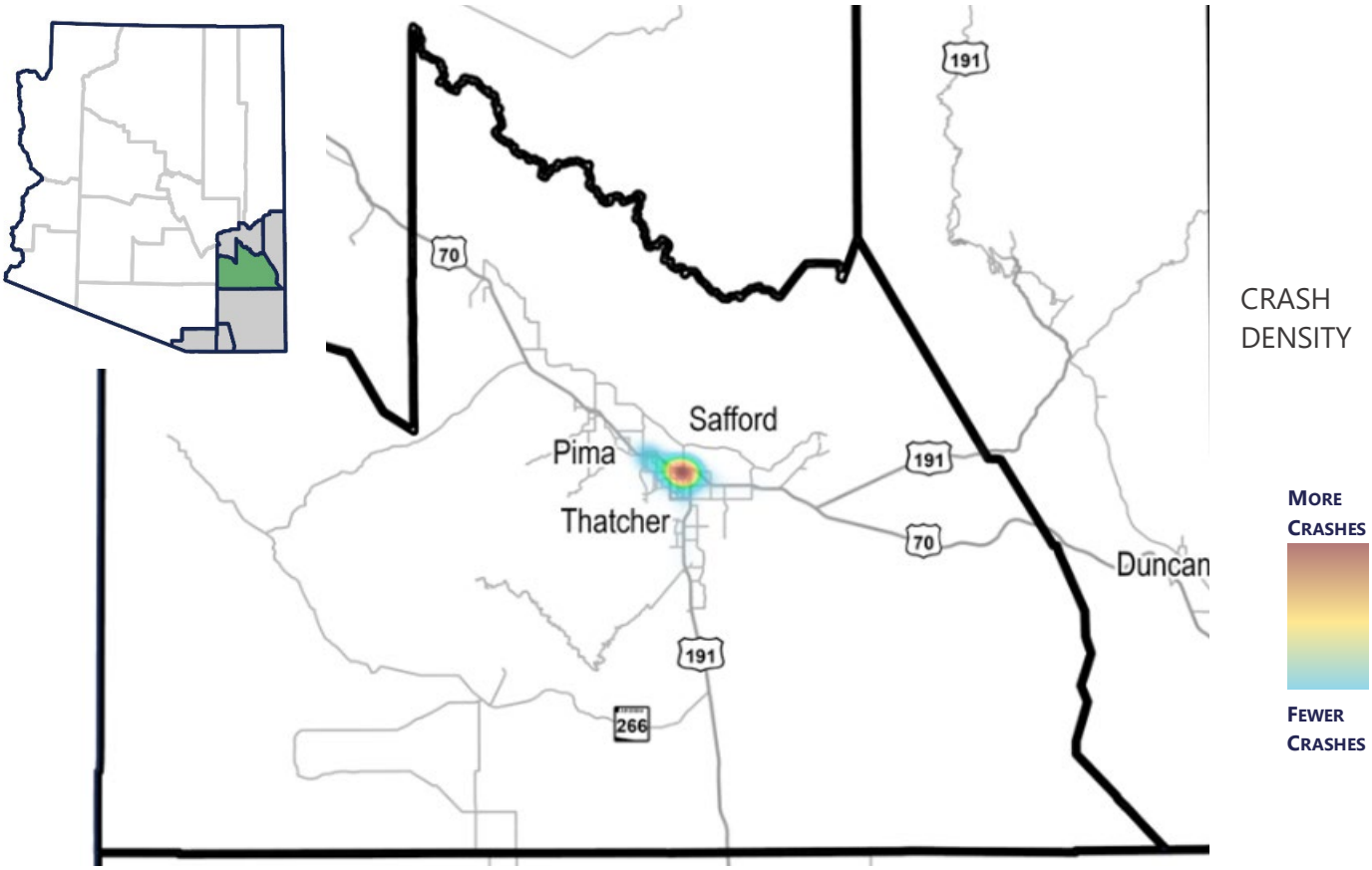
Route Type/Crash Severity	State Route	Non-State Route	Total	% of SEAGO
Fatal	18	13	31	16%
Serious Injury	52	15	67	18%
Minor Injury	153	80	233	20%
Possible Injury	121	87	208	19%
No Injury	668	512	1,108	15%
Total	**1,012**	**707**	**1,719**	**16%**

TOP MANNER OF COLLISION



11 OF **19** VRU-INVOLVED CRASHES RESULTED IN A SERIOUS INJURY OR FATALITY

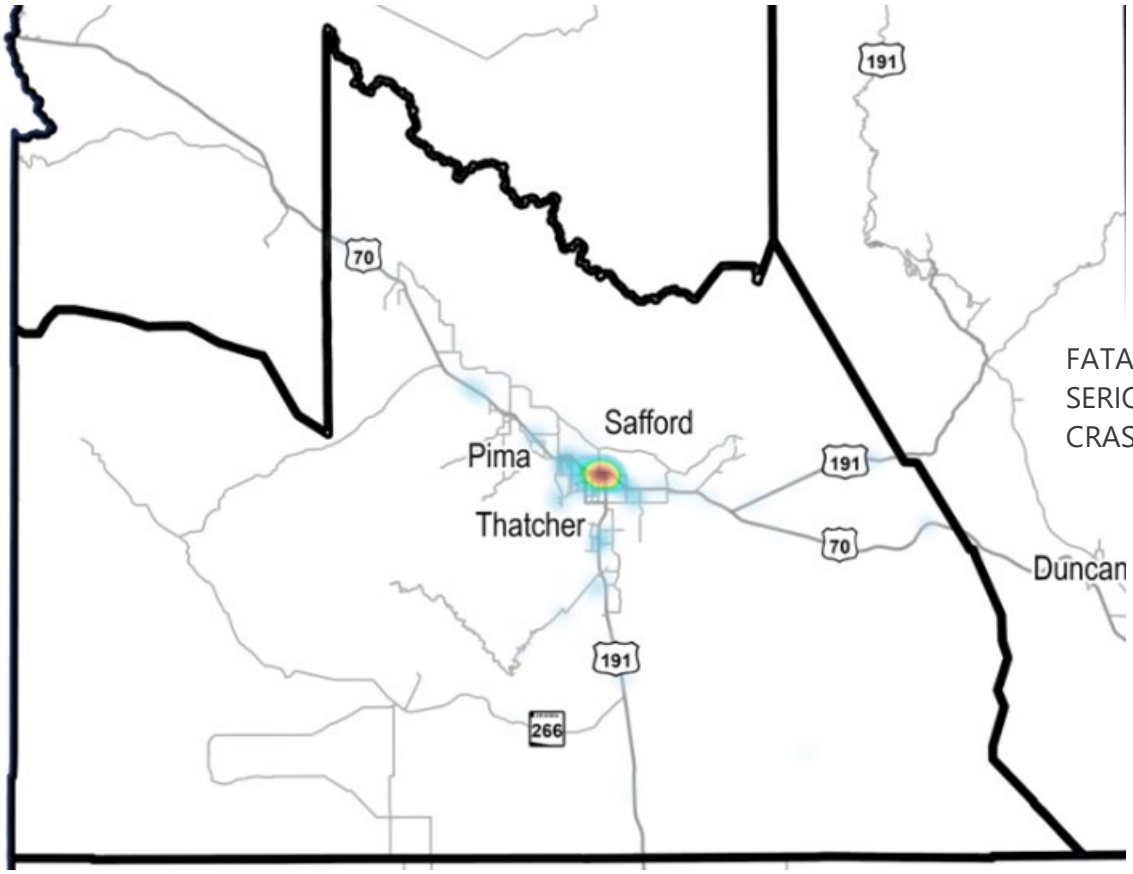




CRASH DENSITY

MORE CRASHES

FEWER CRASHES



FATAL AND SERIOUS INJURY CRASH DENSITY

Safety Analysis Results for Graham County

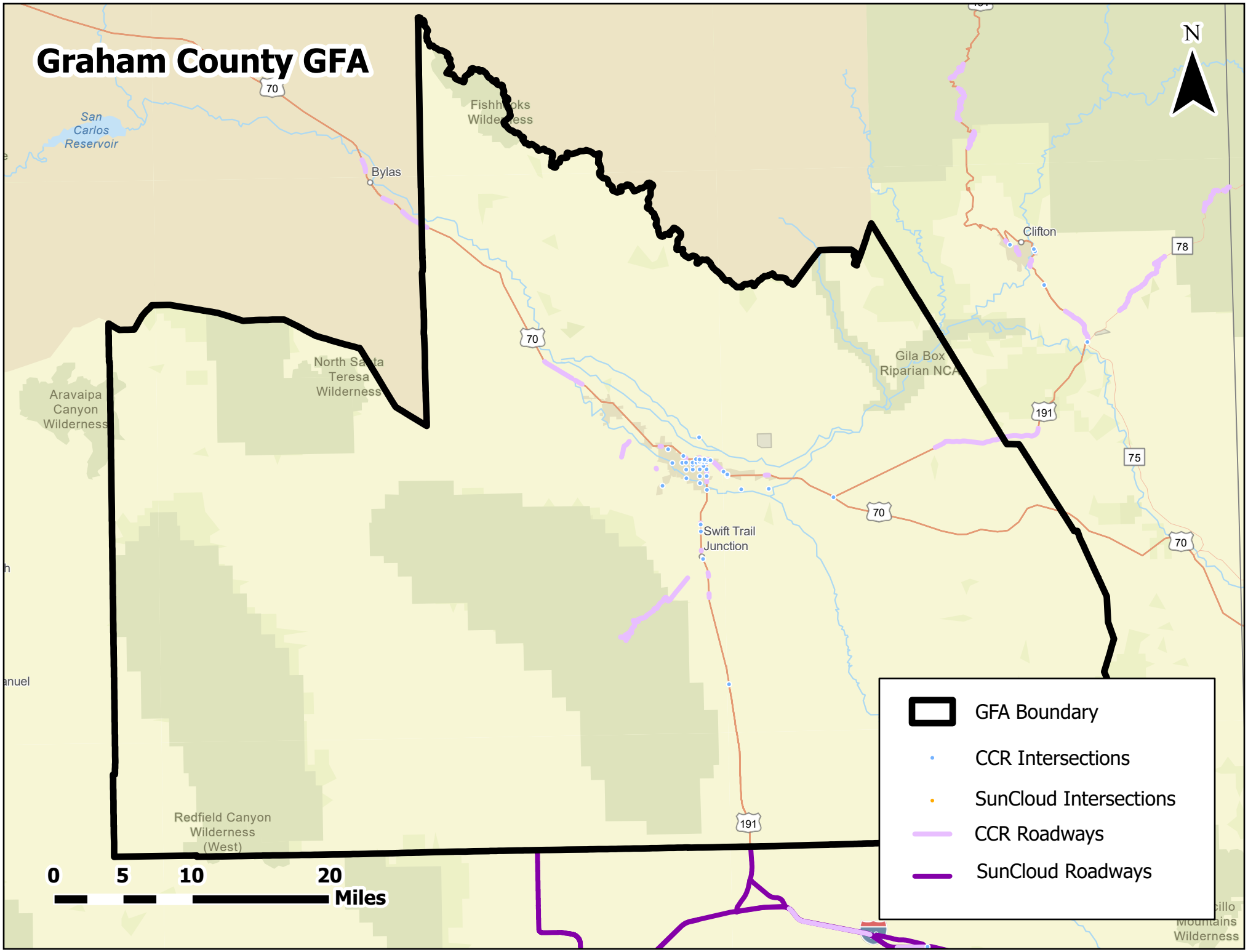
Facility	Limits	Functional Classification	City	Crashes	Critical Crash Rate Differential	EPDO[1]	Fatal	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Injury/PDO	Unknown	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (Opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
State Routes																										
SR 366	MP 120.8 to MP 125.5	Major Collector	Unincorporated	**14**	8.9	147	0	1	5	2	6	0	12	0	0	0	1	0	0	1	0	0	0	0	0	5
US 191	24th Pl to Trinity Acres	Minor Arterial	Safford	**4**	2.1	17	0	0	1	0	3	0	2	0	0	0	1	0	0	0	1	0	0	0	0	0
US 191	8th St to 9th St	Minor Arterial	Safford	**5**	1.8	77	0	1	1	1	2	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0
SR 366	Noon Creek Picnic Area to Boulder Ln	Major Collector	Unincorporated	**10**	1.6	985	1	1	2	1	5	0	10	0	0	0	0	0	0	0	0	0	0	0	0	1
US 70	20th Ave to Safeway Plaza Driveway	Minor Arterial	Safford	**8**	1.6	80	0	1	1	1	5	0	1	1	2	0	3	0	1	0	0	0	0	0	0	0
US 191	Main St to 5th St	Minor Arterial	Safford	**5**	1.6	5	0	0	0	0	5	0	0	2	0	0	1	0	1	0	0	0	1	0	0	0
US 191	Concho St to driveway north of Concho St	Minor Arterial	Unincorporated	**4**	1.3	39	0	0	2	1	1	0	0	0	0	1	2	0	1	0	0	0	0	0	0	0
US 70	Copper Canyon Dr to Safford E MHP	Minor Arterial	Unincorporated	**6**	1.3	959	1	1	1	0	3	0	1	1	3	0	0	0	0	0	0	0	1	1	0	0
US 70	8th Ave to Stadium Ave	Minor Arterial	Thatcher	**7**	0.9	75	0	1	0	2	4	0	2	2	0	0	2	0	1	0	0	0	0	0	0	0
US 191	Castle Rd to Evans Ln	Minor Arterial	Unincorporated	**3**	0.8	20	0	0	0	2	1	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
Non-State Routes																										
8th Ave	Court St to Main St	Major Collector	Safford	**4**	14.7	13	0	0	0	1	3	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0
6th Ave	7th St to Main St	Local Roadway	Safford	**4**	12.5	4	0	0	0	0	4	0	0	1	0	0	0	0	0	1	0	0	2	0	0	0
8th Ave	3rd St to 4th St	Major Collector	Safford	**6**	9.8	15	0	0	0	1	5	0	1	0	0	0	2	0	2	0	0	0	1	0	0	0
Main St	7th Ave to 6th Ave	Minor Collector	Safford	**3**	6.3	3	0	0	0	0	3	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0
Reay Ln	12th St to Kayci Ln	Major Collector	Thatcher	**3**	5.8	29	0	0	0	3	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0
8th Ave	8th St to 7th St	Major Collector	Safford	**4**	5.6	4	0	0	0	0	4	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0
20th Ave	8th St to Walmart plaza south entrance	Minor Arterial	Thatcher	**5**	5.1	35	0	0	1	2	2	0	0	2	1	0	0	0	0	0	0	0	2	1	0	0
8th Ave	US 70 to 4th St	Major Collector	Safford	**3**	3.3	3	0	0	0	0	3	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0
20th Ave	Walmart plaza south entrance to north entrance	Minor Arterial	Thatcher	**7**	3.3	906	1	0	0	1	5	0	1	2	2	0	0	0	1	0	0	0	1	1	0	0
Layton Rd	Grandma's Dr to Cemetery Rd	Major Collector	Unincorporated	**3**	2.5	38	0	0	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	*Unknown*	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (Opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
Signalized Intesections																								
US 191 & Discovery Park Blvd	Safford	**20**	0.2	124	0	0	6	3	11	0	0	3	5	0	8	0	3	0	0	0	1	0	0	0
8th Ave & US 70	Safford	**47**	0.2	252	0	2	4	6	35	0	1	14	12	0	13	2	2	1	0	0	2	0	2	0
20th Ave & 8th St	Safford	**26**	0.1	99	0	0	5	1	20	0	0	7	14	0	1	1	1	1	1	0	0	0	0	0
Unsignalized Intersections																								
Solomon Rd & Bowie Ave	Graham County	**7**	1.3	7	0	0	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
Montierth Ln & Lone Star Rd	Graham County	**4**	0.8	4	0	0	0	0	4	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0
8th Ave & 8th St	Safford	**16**	0.6	29	0	0	1	0	15	0	1	8	2	0	4	0	1	0	0	0	0	0	0	0
8th Ave & 20th St	Safford	**11**	0.6	50	0	0	3	0	8	0	0	8	1	0	0	1	1	0	0	0	0	0	0	0
Central Ave & 11th St	Safford	**4**	0.5	13	0	0	0	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0
8th Ave & Relation St	Safford	**14**	0.5	31	0	0	0	2	12	0	0	9	1	0	3	0	0	0	0	0	1	0	0	0
US 70 & US 191	Graham County	**6**	0.4	6	0	0	0	0	6	0	3	0	2	0	1	0	0	0	0	0	0	0	0	0
US 191 & Relation St	Safford	**13**	0.4	77	0	1	1	0	11	0	1	4	6	0	0	1	1	0	0	0	0	0	0	0
Hoopes Ave & Golf Course Rd	Thatcher	**5**	0.4	14	0	0	0	1	4	0	0	1	0	0	1	0	3	0	0	0	0	0	0	0
Barney Ln & Solomon Rd	Graham County	**3**	0.4	12	0	0	0	1	2	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0

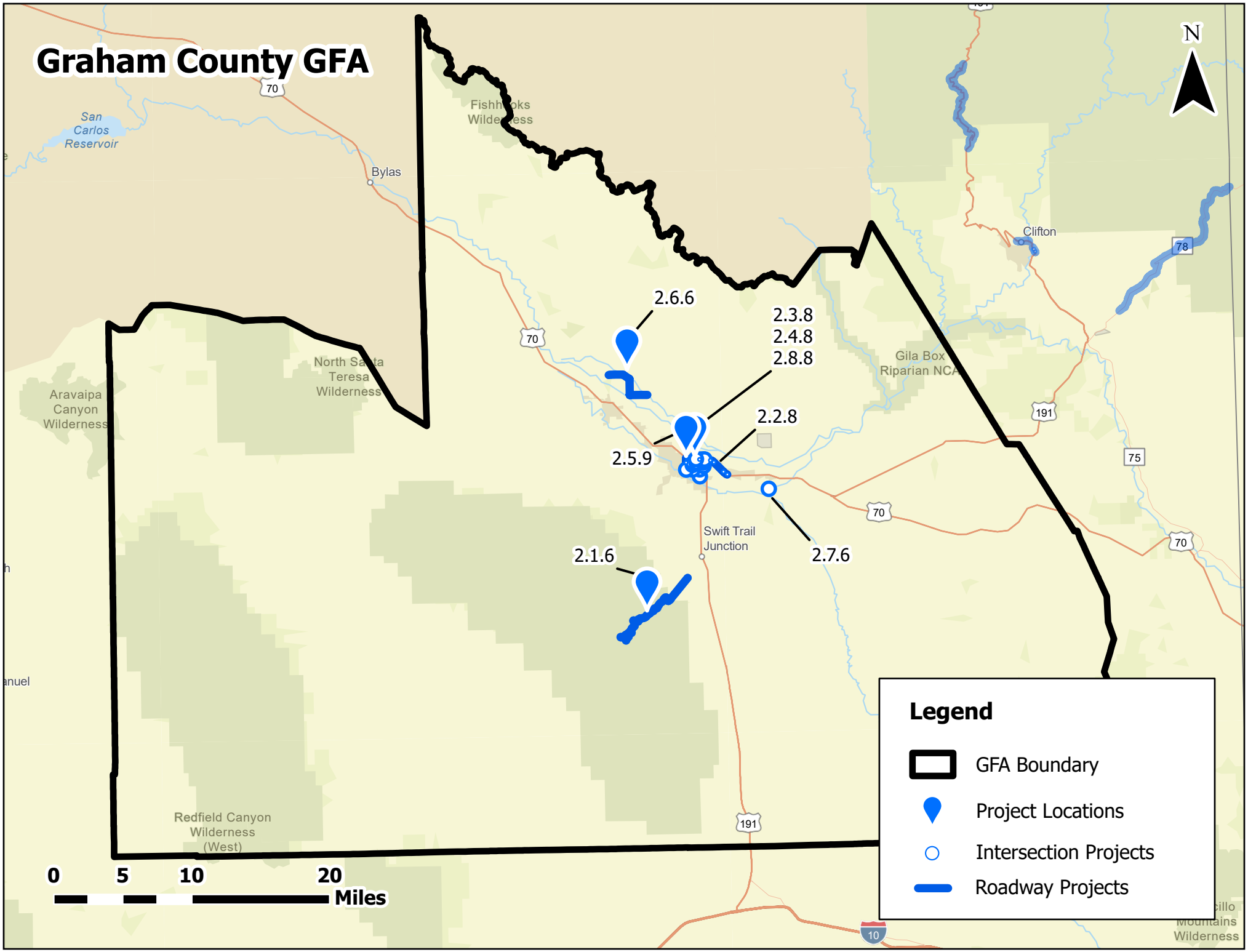
1. Equivalent Property Damage

Project Information Sheets


Graham County GFA
N
San Carlos Reservoir
Bylas
Fishhooks Wilderness
Clifton
78
70
North Santa Teresa Wilderness
Gila Box Riparian NCA
Aravaipa Canyon Wilderness
191
75
Swift Trail Junction
70
70
191
Redfield Canyon Wilderness (West)
0 5 10 20
Miles
GFA Boundary
CCR Intersections
SunCloud Intersections
CCR Roadways
SunCloud Roadways

Graham County GFA Projects

Project ID	Jurisdictions	Project Name
2.1.6	Graham County	SR 366 from MP 120.8 to Boulder Lane
2.2.8	Safford	US 70 from US 191 to Montierth Lane/Lone Star Road
2.3.8	Safford	8th Avenue from 3rd Street to 8th Street
2.4.8	Safford	Main Street/6th Avenue from 7th Avenue to 7th Street
2.5.9	Thatcher	20th Avenue from 8th Street to US 70
2.6.6	Graham County	Safford Bryce Road from Bryce Eden Road to Hubbard Cemetery Road
2.7.6	Graham County	Solomon Road & Bowie Avenue Intersection Improvements
2.8.8	Safford	Safford Systemic Intersection Improvements


Graham County GFA
N
San Carlos Reservoir
Bylas
Fishhooks Wilderness
Clifton
Gila Box Riparian NCA
North Santa Teresa Wilderness
Aravaipa Canyon Wilderness
Swift Trail Junction
Redfield Canyon Wilderness (West)
Mountains Wilderness
2.6.6
2.3.8
2.4.8
2.8.8
2.2.8
2.5.9
2.7.6
2.1.6
70
191
75
78
10
0 5 10 20 Miles
Legend
GFA Boundary
Project Locations
Intersection Projects
Roadway Projects

Project Information Sheet 2.1.6

Project ID: 2.1.6
Project Name: SR 366 from MP 120.8 to Boulder Lane
Jurisdiction(s): Graham County
GFA(s): Graham County
Emphasis Areas: Behavior Related, Lane Departure, Vulnerable Road Users
Equity Review: Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium/Low Priority

Date Prepared: 11/19/2024
Prepared By: JB
Checked By: EJC

Location Description

Roadway: SR 366
From: MP 120.8
To: Boulder Lane
Length: 9.52 miles

Key Intersection Locations:

Project Location Map

Project ID: 2.1.6

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	9.52
Average Daily Traffic (vehicles per day)	99
Functional Classification	Major Collector
Roadway Ownership	State
Urban/Rural Designation	Rural
Number of Key Intersections	0

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	1
Suspected Serious Injury Crashes (A)	2
Suspected Minor Injury Crashes (B)	7
Possible Injury Crashes (C)	3
No Injury/PDO Crashes (O)	11
Total Crashes	24
Total EPDO Crashes	1,132

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle	✓	Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	Signal	K	A	B	C	O	Total	EPDO	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 2.1.6

This project focuses on addressing roadway departure and motorcycle crashes on SR 366 between MP 120.8 and Boulder Lane. Recommendations include guardrails and curve treatments. Guardrails at sharp curves along the roadway, enhanced curve delineation signage, and shoulders are recommended to mitigate roadway departure and motorcycle crashes. All recommendations are to be focused on curves and crash locations as outlined in gray.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Roadside Design Improvements at Curves


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	3.50	MILE	$ 311,000	$ 1,088,500
Guardrail	0.53 - 0.56	Run Off Road	19,000	FOOT	$ 80	$ 1,520,000
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	23	CURVE	$ 2,000	$ 46,000
Transverse Rumble Strips Prior to Curve	NA	All Crashes	23	CURVE	$ 1,000	$ 23,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 2,677,500
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 133,875
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 803,250
Estimated Construction Cost:		$ 3,689,625

Local Match†: 20% $ 937,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 442,755
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 553,444
Estimated Project Total:		$ 4,686,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:
Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

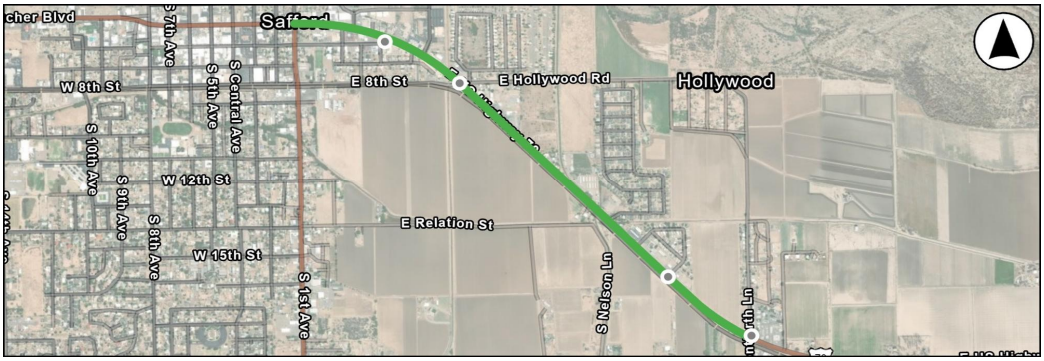
Project Information Sheet 2.2.8

Project ID:	**2.2.8**	**Date Prepared:**	**9/14/2024**
Project Name:	**US 70 from US 191 to Montierth Lane/Lone Star Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Safford**	**Checked By:**	**EJC**
GFA(s):	**Graham County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Climate & Economic Justice Screening Tool, Medium/Low Priority**		

Location Description

Roadway:	US 70	**Key Intersection Locations:**	
From:	US 191	Main St & US 70	Hollywood Rd &
To:	Montierth Lane/Lone Star Road	Safford E MHP & US 70	
Length:	1.93 miles	Montierth Ln & US 70	

Project Location Map Project ID: 2.2.8



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.93**
Average Daily Traffic (vehicles per day)	**9,034**
Functional Classification	**Minor Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**4**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**2**
Suspected Serious Injury Crashes (A)	**4**
Suspected Minor Injury Crashes (B)	**5**
Possible Injury Crashes (C)	**6**
No Injury/PDO Crashes (O)	**26**
Total Crashes	**43**
Total EPDO Crashes	**2,142**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury	✓	Left/U-Turn	✓
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	✓
Single Vehicle		Rear to Side (RS)	
Other/Unknown	✓	Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Main St & US 70		0	0	1	0	2	3	16								
Safford E MHP & US 70		0	0	1	0	3	4	17								
Montierth Ln & US 70		0	0	2	1	3	6	41			✓					
Hollywood Rd & US 70		0	0	1	0	5	6	19								

Project Description/How is safety improved? 2.2.8

US 70 is a major route through Safford and connecting to US 191. The roadway includes segments with 3-5 lanes including a Two-Way Left-Turn Lane (TWLTL). This project was identified because of an overrepresentation of several crash types. Safety improvements include safety lighting between Hollywood Road and Montierth Lane, retroreflective backplates where not existing, and low-cost countermeasures at stop controlled intersections. A presence of rear end crashes in this project location suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speeds for all road users. Intersection Control Evaluations are recommended at the US 70 intersections with Hollywood Road and Montierth Lane because of the intersection skew and wide cross sections.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Stop-Controlled Intersection Systemic Countermeasures


Backplates with Retroreflective Borders

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	1.30	MILE	$ 300,000	$ 390,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	10	INT	$ 19,000	$ 190,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	19	EACH	$ 275	$ 5,225
Install Intersection Lighting	0.62 - 0.67	Nighttime	2	INT	$ 31,000	$ 62,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	2	INT	$ 30,000	$ 60,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 707,225
*Mobilization: (% +/-)**	*10%*	$ 70,730
Traffic Control: (% +/-)	*5%*	$ 35,361
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 212,168
Estimated Construction Cost:		$ 1,025,484

Local Match†: **20%** **$ 260,600**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 123,058
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 153,823
Estimated Project Total:		$ 1,303,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 2.3.8

Project ID:	**2.3.8**	**Date Prepared:**	**9/14/2024**
Project Name:	**8th Avenue from 3rd Street to 8th Street**	**Prepared By:**	**JB**
Jurisdiction(s):	**Safford**	**Checked By:**	**EJC**
GFA(s):	**Graham County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Climate & Economic Justice Screening Tool, Medium/Low Priority**		

Location Description

Roadway:	8th Avenue	**Key Intersection Locations:**	
From:	3rd Street	8th St & 8th Ave	
To:	8th Street	7th St & 8th Ave	
Length:	0.35 miles	8th Ave & US 70/5th St	

Project Location Map

Project ID: 2.3.8

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.35**
Average Daily Traffic (vehicles per day)	**3,617**
Functional Classification	**Major Collector**
Roadway Ownership	**Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**3**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	
Sun Cloud	
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**2**
No Injury/PDO Crashes (O)	**15**
Total Crashes	**17**
Total EPDO Crashes	**34**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
8th St & 8th Ave		0	0	1	0	15	16	29				✓				
7th St & 8th Ave		0	0	5	1	2	8	81								
8th Ave & US 70/5th St	✓	0	2	0	0	35	37	138				✓			✓	

Project Description/How is safety improved? 2.3.8

This project addresses an overrepresentation of left turn/angle crashes at intersections. Recommendations for this project include intersection lighting at 8th Avenue and 8th Street, retroreflective backplates for signal heads at 8th Avenue and US 70, and other low-cost countermeasures at the stop controlled intersections. An Intersection Control Evaluation (ICE) is recommended 8th Avenue and 8th Street to further study the interaction with the railroad. The installation of bulbouts at the 8th Avenue and 7th Street intersection are recommended to protect pedestrians, shorten the crossing distance, and narrow the lanes through the intersection. Existing parking on the north and east legs of the 8th Avenue and 7th Street intersection should not be impacted by bulbouts. A presence of rear end crashes at this project location suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speeds for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Rectangular Rapid Flashing Beacons (RRFB)


Stop-Controlled Intersection Systemic Countermeasures


Backplates with Retroreflective Borders

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	0.15	MILE	$ 300,000	$ 45,000
Install a Rectangular Rapid Flashing Beacon (RRFB)	0.526	Pedestrian	1	XING (2)	$ 15,000	$ 15,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	2	INT	$ 19,000	$ 38,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	18	EACH	$ 275	$ 4,950
Traffic Calming - Bulbouts	0.68	All Crashes	4	EACH	$ 36,000	$ 144,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 307,950
*Mobilization: (% +/-)**	*10%*	$ 30,800
Traffic Control: (% +/-)	*5%*	$ 15,398
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 92,385
Estimated Construction Cost:		$ 446,533

Local Match†: 20% $ 113,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 53,584
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 66,980
Estimated Project Total:		$ 568,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Youth Education
Additional Improvements #3: Evaluate signalization at warranted intersections
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 2.4.7

Project ID:	**2.4.7**	**Date Prepared:**	**9/14/2024**
Project Name:	**Patterson Mesa Road & US 70 Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Pima**	**Checked By:**	
GFA(s):	**Graham County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Total Intersections	1
Signalized:	0
Unsignalized:	1

Key Intersection Locations:
Patterson Mesa Rd & US 70

Project Location Map **Project ID: 2.4.7**

Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**1**
Signalized Intersections	**0**
Unsignalized Intersections	**1**
Average Total Entering Volume (daily vehicles)	**4,245**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	
Critical Crash Rate Differential	
Overrepresented Crashes	
Sun Cloud	
Equity Review	✓
Top 10 Intersection	

Intersection Characteristics

Intersection Information	Patterson Mesa Rd & US 70				
Signal YN					
Total Entering Volume (daily)	**4,245**				
CCR[1]					
Sun Cloud					
Top 10 Intersection					
Crash History					
Fatal Crash	**0**				
Serious Injury Crash	**0**				
Minor Injury Crash	**0**				
Possible Injury Crash	**0**				
No Injury/PDO[2] Crash	**0**				
Total Crashes	**0**				
EPDO[3]	**0**				
Over-Represented Crashes					
Fatal/Serious Injury					
Pedestrian/Bicycle					
Angle					
Left/U-Turn					
Rear End					
Head On					
Sideswipe					
Rear to Side/Rear to Rear					

Project Description/How is safety improved? 2.4.7

This project improves safety at the Patterson Mesa Road and US 70 intersection by adding intersection lighting and implementing other systematic low-cost countermeasures. Retroreflective strips on stop signs is recommended on Patterson Mesa Road to improve visibility of the stop sign. The skewed intersection and railroad interaction requires unique improvements that are to be determined through conducting an Intersection Control Evaluation (ICE). Implementing the result of the ICE may improve safety at this intersection.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 80,000
*Mobilization: (% +/-)**	*10%*	$ 8,000
Traffic Control: (% +/-)	*5%*	$ 4,000
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 24,000
Estimated Construction Cost:		$ 116,000

Local Match†: 20% $ 29,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 13,920
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 17,400
Estimated Project Total:		$ 148,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Retroflected Strips on Stop Sign Posts
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 2.5.9

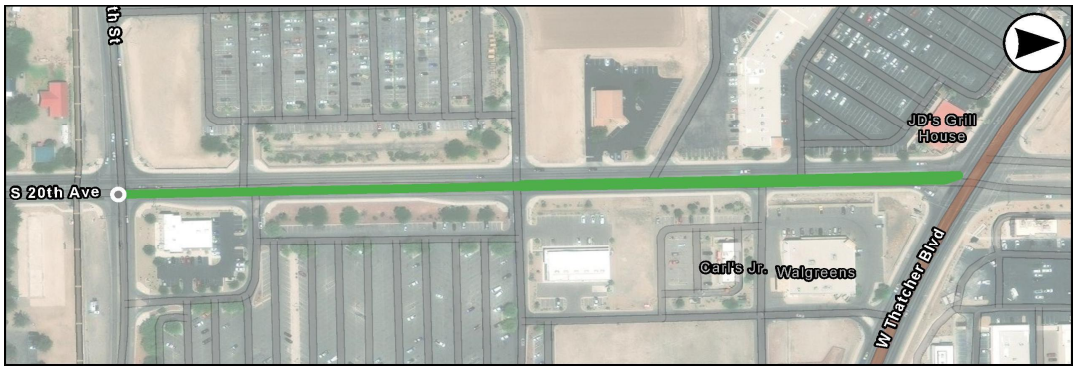
Project ID:	**2.5.9**	**Date Prepared:**	**9/14/2024**
Project Name:	**20th Avenue from 8th Street to US 70**	**Prepared By:**	**JB**
Jurisdiction(s):	**Thatcher**	**Checked By:**	**EJC**
GFA(s):	**Graham County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Medium Priority**		

Location Description

Roadway: 20th Avenue
From: 8th Street
To: US 70
Length: 0.31 miles

Key Intersection Locations:
8th St & 20th Ave

Project Location Map Project ID: 2.5.9



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.31**
Average Daily Traffic (vehicles per day)	**6,715**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**4**
No Injury/PDO Crashes (O)	**9**
Total Crashes	**15**
Total EPDO Crashes	**953**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury		Left/U-Turn	✓
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
8th St & 20th Ave	✓	0	0	0	0	20	20	20								

Project Description/How is safety improved? 2.5.9

The project will replace a two-way left-turn lane on 20th Avenue with a raised median to restrict turning movements at commercial driveways with existing turn restrictions or a history of crashes. Dual arm solar lighting will be added to the new median as the corridor is currently unlit. Providing dedicated left turn lanes for business driveways that frequently back up and reevaluating signal phasing for left turns to best suit the existing traffic volumes. At the access driveway to the Safeway is it recommended to install Right-in-Right-out access treatments to prevent left turns to and from 20th Avenue. The project will also include installation of two rectangular rapid flashing beacons with a pedestrian refuge island and striping wider edge lines to narrow the lanes.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Traffic Calming - Wider Lane Lines	0.68	All Crashes	0.31	MILE	$ 21,000	$ 6,510
Provide Highway Lighting	0.72	Nighttime	0.60	MILE	$ 300,000	$ 180,000
Install Driver Feedback Speed Limit Signs	NA	All Crashes	2	EACH	$ 15,000	$ 30,000
Install a Rectangular Rapid Flashing Beacon (RRFB)	0.526	Pedestrian	2	XING (2)	$ 15,000	$ 30,000
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	0.31	MILE	$ 1,360,000	$ 421,600
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Retroreflective Backplates/Borders	0.85	All Crashes	32	EACH	$ 275	$ 8,800
Provide Left-Turn Lanes	0.52 - 0.72	Rural	2	LANE	$ 300,000	$ 600,000
Change Permissive Left-Turn to Protected or Protected/Permissive	0.79 - 0.95	Left-Turn	2	INT	$ 8,000	$ 16,000
Right-in-Right-out Access Treatment	0.55	All Crashes	1	DRIVEW	$ 50,000	$ 50,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,342,910
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 67,146
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 402,873
Estimated Construction Cost:		$ 1,887,929

Local Match†: 20% $ 479,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 226,551
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 283,189
Estimated Project Total:		$ 2,398,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Appropriately Time the Yellow Change Interval
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 2.6.6

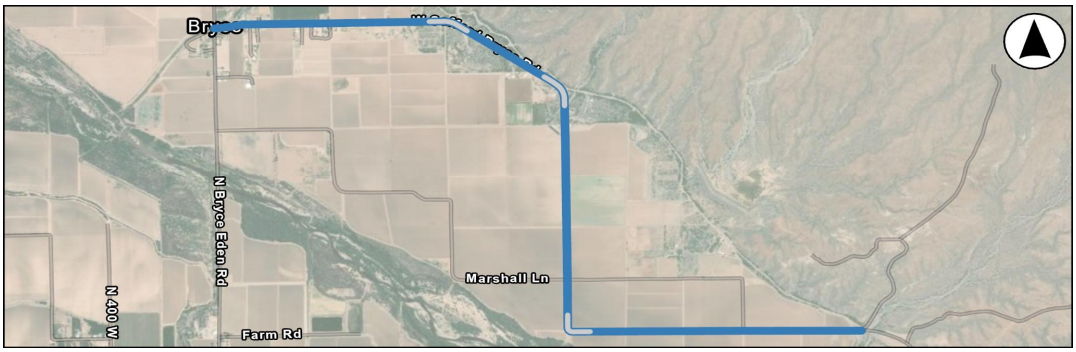
Project ID:	**2.6.6**	**Date Prepared:**	**11/19/2024**
Project Name:	**Safford Bryce Road from Bryce Eden Road to Hubbard Cemetery Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Graham County**	**Checked By:**	**EJC**
GFA(s):	**Graham County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway: Safford Bryce Road
From: Bryce Eden Road
To: Hubbard Cemetery Road
Length: 4.03 miles

Key Intersection Locations:

Project Location Map **Project ID: 2.6.6**



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**4.03**
Average Daily Traffic (vehicles per day)	**381**
Functional Classification	**Major Collector**
Roadway Ownership	**Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**3**
Total Crashes	**5**
Total EPDO Crashes	**904**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 2.6.6

This project focuses on reducing the severity of crashes on a rural, two-lane road. Recommendations include the installation or upgrades of curve signage, providing a 2-ft paved shoulder and Safety Edge, and transverse rumble strips prior to curves with any repaving efforts on the roadway. Improvements are intended to improve visibility of curve warnings to increase driver awareness. Where transverse rumble strips are not feasible, other raised roadway features may be considered to provide additional warnings for upcoming curves. Paved shoulders and the Safety Edge are intended to provide the driver better opportunities for recovery preventing a roadway departure crash.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


SafetyEdge™


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	0.54	MILE	$ 311,000	$ 167,940
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	0.54	MILE	$ 121,000	$ 65,340
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	3	CURVE	$ 2,000	$ 6,000
Install Driver Feedback Speed Limit Signs	NA	All Crashes	3	EACH	$ 15,000	$ 45,000
Transverse Rumble Strips Prior to Curve	NA	All Crashes	3	CURVE	$ 1,000	$ 3,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 287,280
*Mobilization: (% +/-)**	*10%*	$ 28,730
Traffic Control: (% +/-)	*5%*	$ 14,364
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 86,184
Estimated Construction Cost:		$ 416,558

Local Match†: 20% $ 106,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 49,987
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 62,484
Estimated Project Total:		$ 530,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Retroreflective Strip on Chevron Signpost
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 2.7.6

Project ID:	**2.7.6**	**Date Prepared:**	**11/19/2024**
Project Name:	**Solomon Road & Bowie Avenue Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Graham County**	**Checked By:**	**EJC**
GFA(s):	**Graham County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Medium Priority**		

Location Description

Total Intersections	1
Signalized:	0
Unsignalized:	1

Key Intersection Locations:
Solomon Rd & Bowie Ave

Project Location Map

Project ID: 2.7.6

Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**1**
Signalized Intersections	**0**
Unsignalized Intersections	**1**
Average Total Entering Volume (daily vehicles)	**2,310**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	
Sun Cloud	
Equity Review	✓
Top 10 Intersection	✓

Intersection Characteristics

Intersection Information	Solomon Rd & Bowie Ave				
Signal YN					
Total Entering Volume (daily)	**2,310**				
CCR[1]	✓				
Sun Cloud					
Top 10 Intersection	✓				
Crash History					
Fatal Crash	**0**				
Serious Injury Crash	**0**				
Minor Injury Crash	**0**				
Possible Injury Crash	**0**				
No Injury/PDO[2] Crash	**7**				
Total Crashes	**7**				
EPDO[3]	**7**				
Over-Represented Crashes					
Fatal/Serious Injury					
Pedestrian/Bicycle					
Angle					
Left/U-Turn					
Rear End					
Head On					
Sideswipe					
Rear to Side/Rear to Rear					

Project Description/How is safety improved? 2.7.6

This project improves safety at the Solomon Road and Bowie Avenue intersection by adding intersection lighting and implementing other systematic low-cost countermeasures. Retroreflective strips on stop signs is recommended on east the leg of Solomon Road to improve visibility of the stop sign. A significant number of crashes at this location occurred at night and noted speeds too fast for the roadway geometry. As such, the project includes 2-ft paved shoulders for driver recovery, transverse rumble trips in advance of the curve, and driver feedback speed limit signs. Where transverse rumble strips are not feasible, other raised roadway features may be considered to provide additional warnings for upcoming curves. Reevaluating speed limits based on the roadway context and built environment of this location may also be included in this project.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Lighting


Stop-Controlled Intersection Systemic Countermeasures

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	0.25	MILE	$ 311,000	$ 77,750
Transverse Rumble Strips Prior to Curve	NA	All Crashes	1	CURVE	$ 1,000	$ 1,000
Install Driver Feedback Speed Limit Signs on Rural Curves	0.93 - 0.95	Rural Curves	2	EACH	$ 15,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 158,750
*Mobilization: (% +/-)**	*10%*	$ 15,880
Traffic Control: (% +/-)	*5%*	$ 7,938
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 47,625
Estimated Construction Cost:		$ 230,193

Local Match†: 20% $ 58,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 27,623
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 34,529
Estimated Project Total:		$ 293,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Retroflected Strips on Stop Sign Posts
Additional Improvements #2: Re-Evaluate Speed Based on Roadway Context, Built Environment, and Existing Road Users
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 2.8.8

Project ID:	**2.8.8**	**Date Prepared:**	**9/14/2024**
Project Name:	**Safford Systemic Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Safford**	**Checked By:**	**EJC**
GFA(s):	**Graham County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Medium Priority**		

Location Description

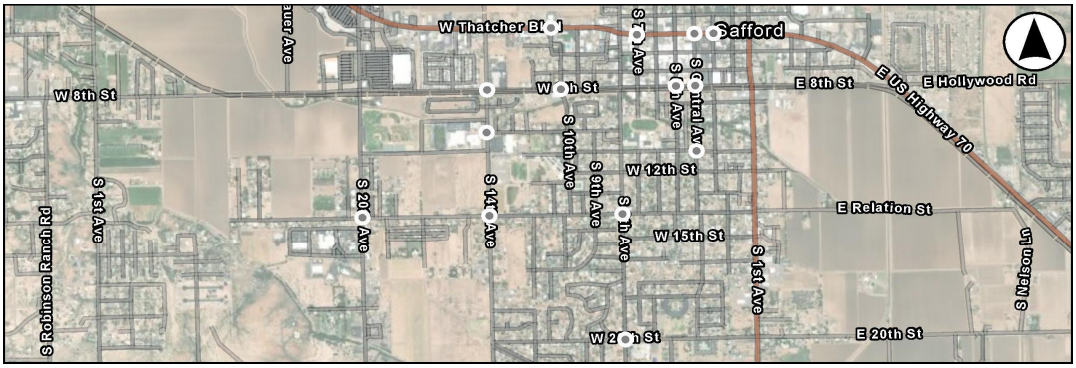
Total Intersections	14
Signalized:	1
Unsignalized:	13

Key Intersection Locations:

Central Ave\4th Ave	8th Ave	20th Ave	11th St	US 70\5th St
3rd Ave	11th Ave	8th St	20th St	
5th Ave	14th Ave	10th St	Relation St	

Project Location Map

Project ID: 2.8.8



Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**14**
Signalized Intersections	**1**
Unsignalized Intersections	**13**
Average Total Entering Volume (daily vehicles)	**12,814**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Intersection	✓

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Central Ave/4th Ave & 8th St		0	0	0	0	6	6	6							✓	
5th Ave & 8th St		0	0	0	2	3	5	22								
11th Ave & 8th St		0	0	1	2	4	7	37								
14th Ave & 8th St		0	0	0	1	7	8	17								
8th Ave & Relation St		0	0	3	0	12	15	54						✓		
14th Ave & Relation St		0	0	0	2	3	5	22								
20th Ave & Relation St	✓	0	0	0	1	5	6	15								
10th St & 14th Ave		0	0	0	1	3	4	13								
11th St & Central Ave/4th Ave		0	0	1	3	3	7	46								
20th St & 8th Ave		0	0	0	0	8	8	8								
Central Ave/4th Ave & US 70/5th		0	2	2	0	4	8	135	✓							
3rd Ave & US 70/5th St		0	0	1	1	6	8	30							✓	
7th Ave & US 70/5th St		0	0	0	1	4	5	14								
11th Ave & US 70/5th St		0	0	2	0	6	8	34								

Project Description/How is safety improved? 2.8.8

This project improves intersection safety at several intersections in City of Safford that show an overrepresentation of head on, sideswipe, serious injury, and fatal crashes. Recommened systemic intersection improvements include increased lighting, low-cost countermeasures at stop-controlled intersections, and retroreflective backplates at signal-controlled intersections. This project includes intersections near schools (10th Street and 14th Avenue, 20th Street and 8th Avenue) where centerline hardening, Rectangular Rapid Flashing Beacons (RRFB), and traffic calming bulbouts are recommended to improve pedestrian safety. Youth education programs focused on crossing safety and railroad safety is also recommended to service the schools in the area.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Stop-Controlled Intersection Systemic Countermeasures


Lighting


Rectangular Rapid Flashing Beacons (RRFB)


Backplates with Retroreflective Borders

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	13	INT	$ 19,000	$ 247,000
Centerline Hardening	NA	Angled	1	INT	$ 1,000	$ 1,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	8	INT	$ 31,000	$ 248,000
Install a Rectangular Rapid Flashing Beacons (RRFB)	0.526	Pedestrian	4	XING (2)	$ 15,000	$ 60,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	16	EACH	$ 275	$ 4,400
Traffic Calming - Bulbouts	0.68	All Crashes	2	EACH	$ 36,000	$ 72,000
						$ -
						$ -
						$ -
						$ -
						$ -

55 Improvements Subtotal:		$ 632,400
*Mobilization: (% +/-)**	*10%*	$ 63,240
Traffic Control: (% +/-)	*5%*	$ 31,620
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 189,720
Estimated Construction Cost:		$ 916,980

Local Match†: 20% $ 233,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 110,038
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 137,547
Estimated Project Total:		$ 1,165,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Youth Safe Driving Education and Outreach
Additional Improvements #2: Investigate safety compliance of railroad at grade crossings
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

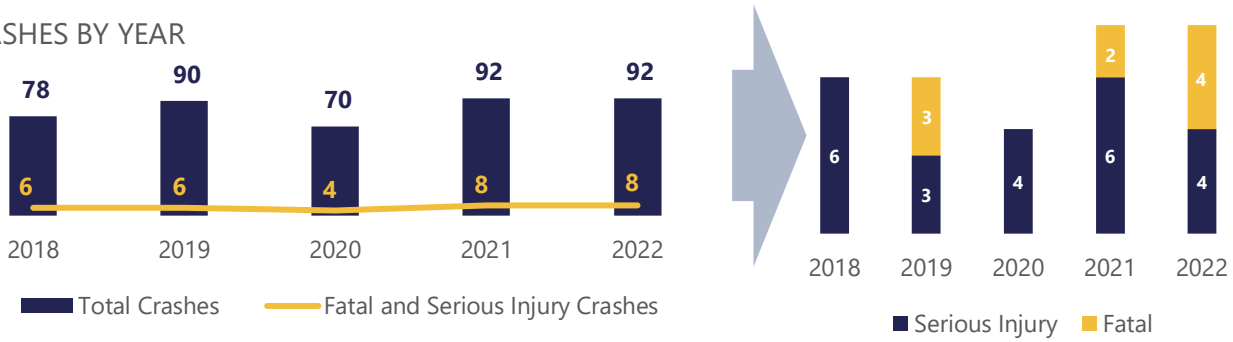
D - Greenlee County

Fatal and Serious Injury Crashes by EA in Greenlee County

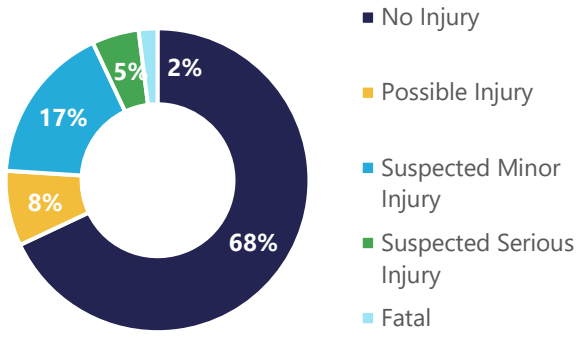
Arizona SHSP Emphasis Area	Region-wide (Four Counties)		Greenlee County GFA		
	Fatal and Serious Injury Crashes	Rank	Fatal and Serious Injury Crashes	Rank	Change in Rank from SEAGO
Behavior Related	271 (49%)	1	23 (72%)	1	0
Intersections	102 (18%)	2	2 (6%)	3	-1
Lane Departure	70 (13%)	3	3 (9%)	2	+1
Vulnerable Road Users	57 (10%)	4	0 (0%)	4	0

Greenlee County Safety Overview

CRASHES BY YEAR



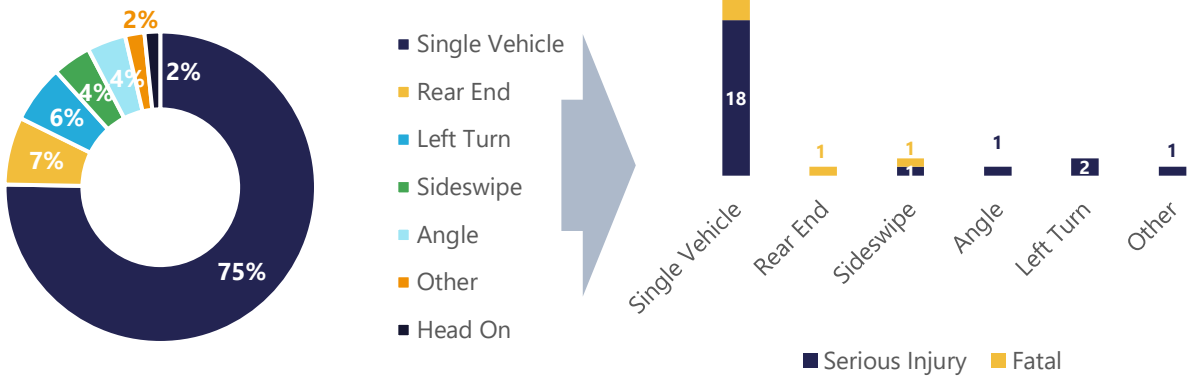
CRASHES BY INJURY LEVEL



CRASH SEVERITY BY ROUTE TYPE

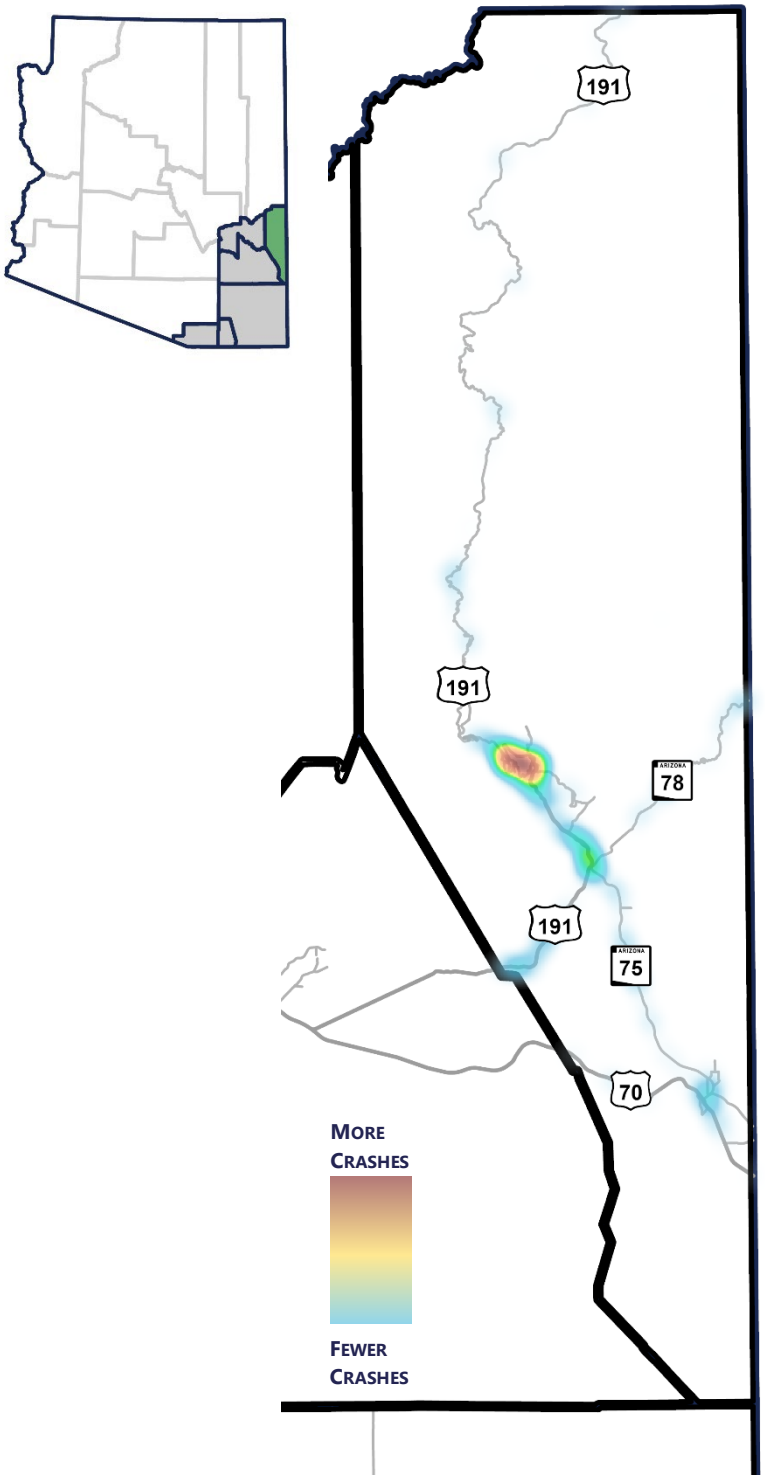
Route Type/Crash Severity	State Route	Non-State Route	Total	% of SEAGO
Fatal	8	1	9	5%
Serious Injury	20	3	23	6%
Minor Injury	59	12	71	6%
Possible Injury	24	9	33	3%
No Injury	249	37	286	4%
Total	**360**	**62**	**422**	**4%**

TOP MANNER OF COLLISION

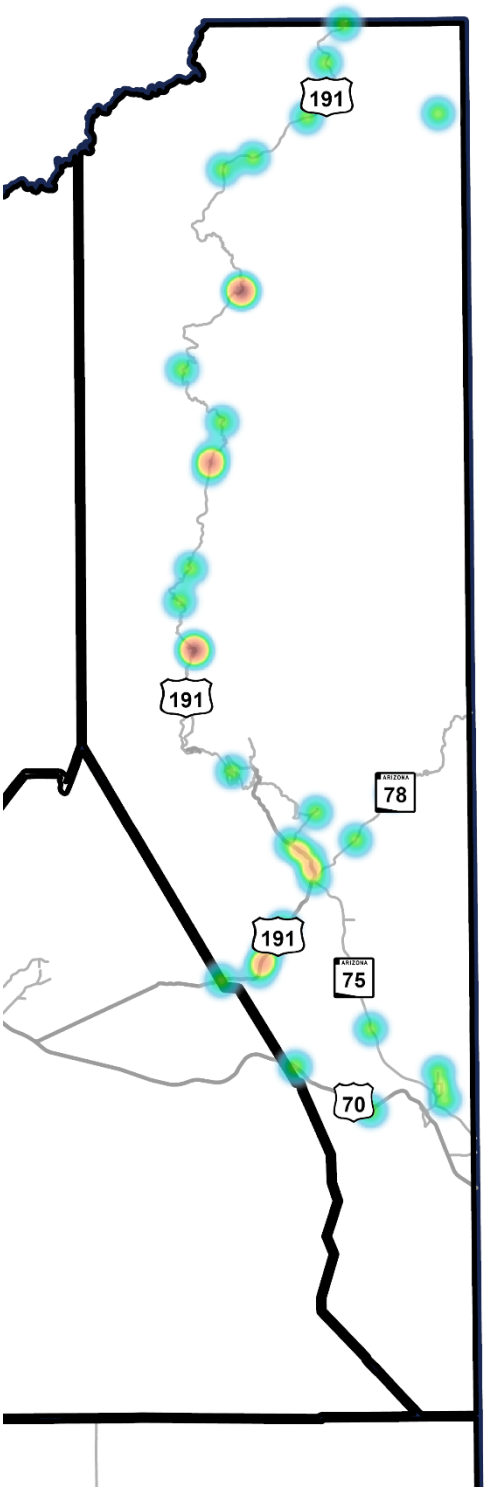


THERE ARE NO VRU-INVOLVED CRASHES

CRASH DENSITY



FATAL AND SERVIOUS INJURY CRASH DENSITY



Safety Analysis Results for Greenlee County

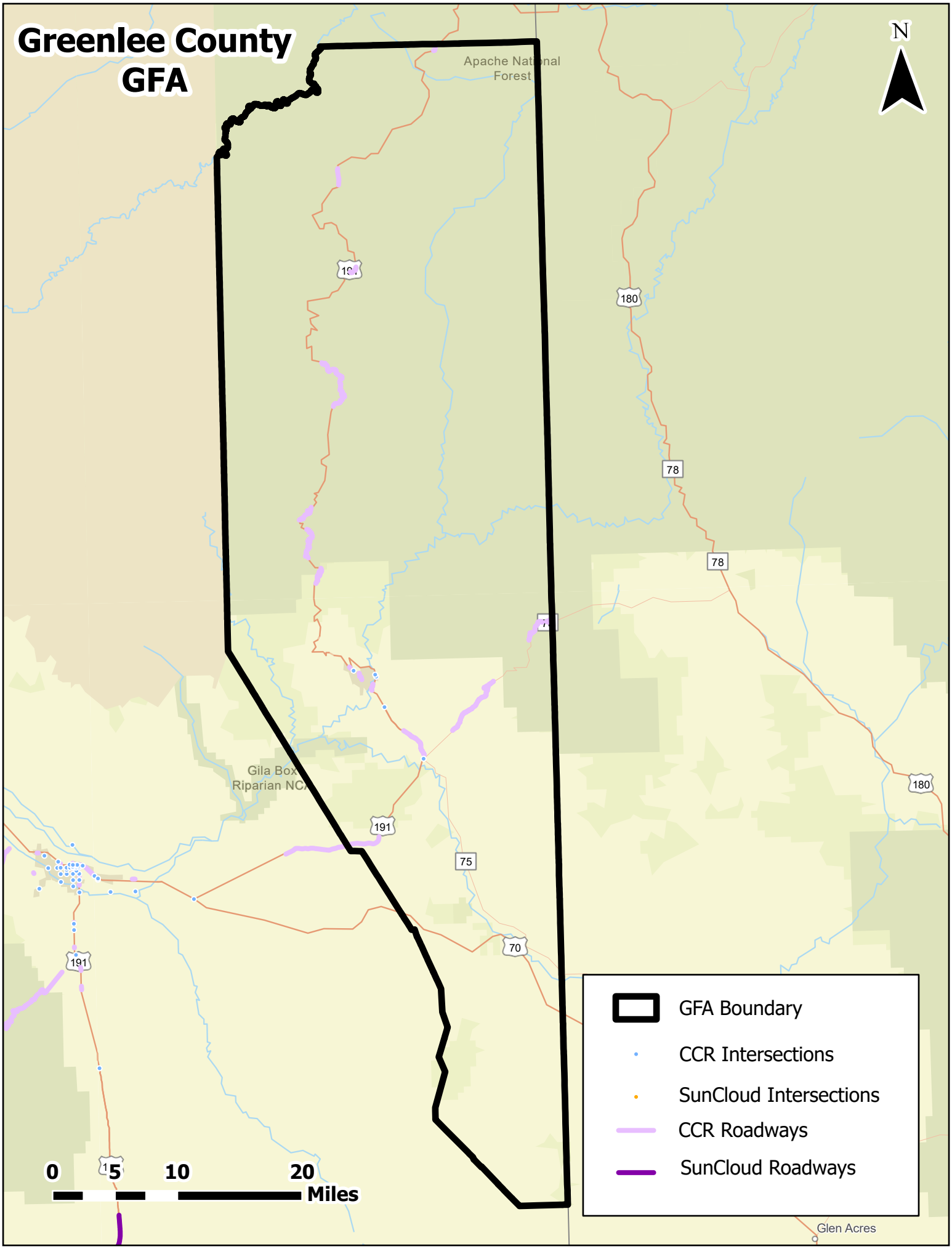
Facility	Limits	Functional Classification	City	Crashes	Critical Crash Rate Differential	EPDO[1]	Fatal	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Injury/PDO	Unknown	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (Opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
State Routes																										
US 191	FR 514 to ADOT driveway	Major Collector	Unincorporated	**8**	15.6	34	0	0	2	0	6	0	8	0	0	0	0	0	0	0	0	0	0	0	0	5
US 191	Mp 246.9 to MP 247.4	Major Collector	Unincorporated	**3**	12.8	42	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2
SR 78	New Mexico State Line to MP 174	Major Collector	Unincorporated	**6**	7.9	54	0	0	3	1	2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	4
US 191	MP 178.5 to 182.5	Major Collector	Unincorporated	**7**	6.7	923	1	0	2	0	4	0	7	0	0	0	0	0	0	0	0	0	0	0	0	3
US 191	Pine Flat Rd to Bearpen Creek	Major Collector	Unincorporated	**9**	4.9	103	0	1	2	2	4	0	8	0	0	0	0	0	1	0	0	0	0	0	0	5
US 191	MP 174.5 to 177.5	Major Collector	Unincorporated	**4**	4.7	76	0	1	1	1	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2
US 191	MP 217.2 to MP 217.8	Major Collector	Unincorporated	**3**	4.4	117	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2
SR 78	Cold Creek Ranch Rd to Downing Trail	Major Collector	Unincorporated	**13**	2.6	89	0	1	2	0	10	0	13	0	0	0	0	0	0	0	0	0	0	0	0	2
US 191	MP 229.5 to MP 231.2	Major Collector	Unincorporated	**4**	2.6	68	0	1	1	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2
US 191	Cold Creek to Guthrie Rd	Minor Arterial	Unincorporated	**12**	0.8	42	0	0	1	2	9	0	10	0	0	0	0	0	2	0	0	0	0	0	0	0
Local Streets																										
Copper Verde Ln	Cemetery Rd to Kiko St	Minor Collector	Clifton	**3**	3.0	38	0	0	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1

1. Equivalent Property Damage Only Crashes

Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	*Unknown*	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (Opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
Unsignalized Intersections																								
US 191 & SR 75	Greenlee County	**9**	0.6	120	0	1	4	1	3	0	2	4	2	0	1	0	0	0	0	0	0	0	0	0
US 191 & Table Top Rd	Clifton	**4**	0.3	4	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
US 191 & 2nd St	Clifton	**6**	0.2	6	0	0	0	0	6	0	2	1	1	0	2	0	0	0	0	0	0	0	0	0
US 191 & Mountain View Rd	Clifton	**6**	0.1	65	0	1	0	1	4	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0
US 191 & South St	Clifton	**4**	0.1	4	0	0	0	0	4	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0

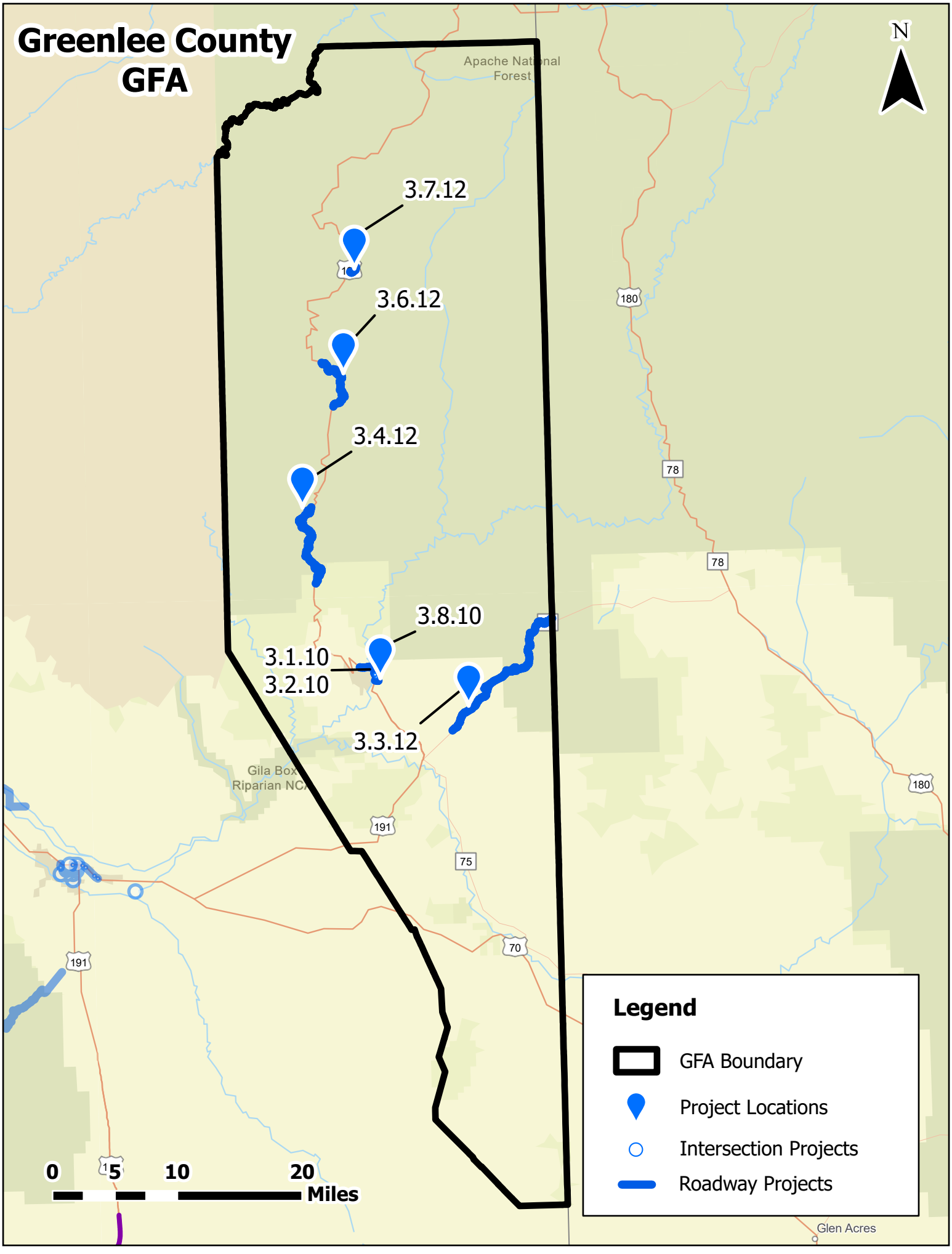
1. Equivalent Property Damage

Project Information Sheets


Greenlee County
GFA
N
Apache National
Forest
180
78
78
Gila Box
Riparian NCA
191
75
70
191
180
GFA Boundary
CCR Intersections
SunCloud Intersections
CCR Roadways
SunCloud Roadways
0
5
10
20
Miles
Glen Acres

Greenlee County GFA Projects

Project ID	Jurisdictions	Project Name
3.1.10	Clifton	US 191 from Chase Creek Street to Zorilla Street
3.2.10	Clifton	US 191 from Park Avenue to 7th Street
3.3.12	Greenlee County	SR 78 from Greenlee Substation Road to State Line
3.4.12	Greenlee County	US 191 from Chase Creek to ADOT Grey's Peak Maint. Camp
3.6.12	Greenlee County	US 191 from Pine Flat Road to Hogtrail Saddle
3.7.12	Greenlee County	US 191 from MP 217 to Lengthy Trailhead
3.8.10	Clifton	Ward Canyon Road from Canyon Road to Red Wash Lane


Greenlee County GFA
N
Apache National Forest
3.7.12
3.6.12
3.4.12
3.8.10
3.1.10
3.2.10
3.3.12
Gila Box Riparian NCA
180
78
78
180
191
75
70
191
Glen Acres
0
5
10
20
Miles
Legend
GFA Boundary
Project Locations
Intersection Projects
Roadway Projects

Project Information Sheet 3.1.10

Project ID:	**3.1.10**	**Date Prepared:**	**9/14/2024**
Project Name:	**US 191 from Chase Creek Street to Zorilla Street**	**Prepared By:**	**JB**
Jurisdiction(s):	**Clifton**	**Checked By:**	**EJC**
GFA(s):	**Greenlee County**		
Emphasis Areas:	**Behavior Related, Environmental, Lane Departure**		
Equity Review:	**Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway: US 191
From: Chase Creek Street
To: Zorilla Street
Length: 0.91 miles

Key Intersection Locations:

Project Location Map **Project ID: 3.1.10**

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.91**
Average Daily Traffic (vehicles per day)	**8,307**
Functional Classification	**Major Collector**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	
Overrepresented Crashes	
Sun Cloud	
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**2**
Total Crashes	**3**
Total EPDO Crashes	**12**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 3.1.10

This project improves safety on US 191 between Chase Creek Street and Zorilla Street. Recommended improvements include the addition of 4" retroreflective centerline and edge lines along the length of the roadway to enhance visibility, segment lighting to better illuminate the roadway, systemic low-cost countermeasures for stop-controlled intersections, and access management. An Intersection Control Evaluation is recommended at the eastern most intersection with Chase Creek Street. The skewed intersection experiences vehicle queues and conflicts with the high speeds on US 191.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Corridor Access Management


Stop-Controlled Intersection Systemic Countermeasures

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	0.91	MILE	$ 28,000	$ 25,480
Provide Highway Lighting	0.72	Nighttime	1.00	MILE	$ 300,000	$ 300,000
Corridor Access Management-Driveway Consolidation (Rural)	0.77 - 0.95	All Crashes	2	DRIVEW	$ 7,000	$ 14,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	6	INT	$ 19,000	$ 114,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 514,480
*Mobilization: (% +/-)**	*10%*	$ 51,450
Traffic Control: (% +/-)	*5%*	$ 25,724
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 154,344
Estimated Construction Cost:		$ 745,998

Local Match†: 20% $ 189,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 89,520
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 111,900
Estimated Project Total:		$ 948,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Targeted Enforcement and Deterrence
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 3.2.10

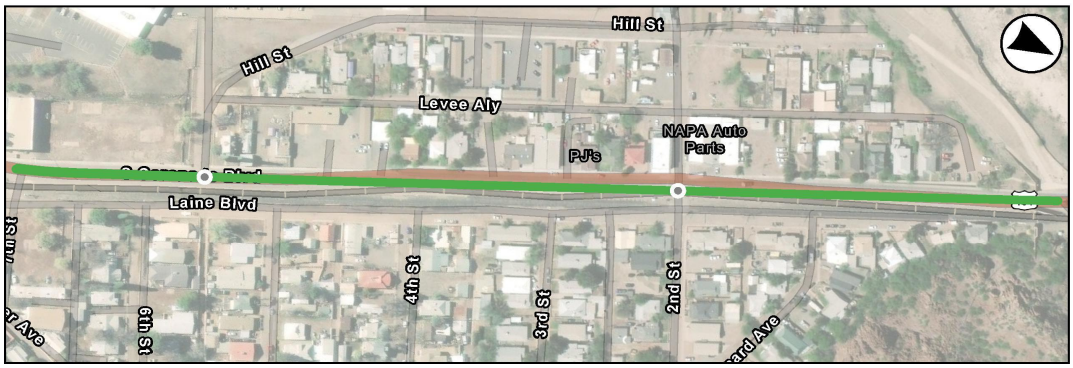
Project ID:	**3.2.10**	**Date Prepared:**	**9/14/2024**
Project Name:	**US 191 from Park Avenue to 7th Street**	**Prepared By:**	**JB**
Jurisdiction(s):	**Clifton**	**Checked By:**	**EJC**
GFA(s):	**Greenlee County**		
Emphasis Areas:	**Behavior Related, Environmental, Lane Departure**		
Equity Review:	**Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway: US 191
From: Park Avenue
To: 7th Street
Length: 0.39 miles

Key Intersection Locations:
2nd St & US 191
Hill St & US 191

Project Location Map **Project ID: 3.2.10**



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.39**
Average Daily Traffic (vehicles per day)	**7,518**
Functional Classification	**Minor Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**4**
Total Crashes	**5**
Total EPDO Crashes	**18**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	✓
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
2nd St & US 191		0	0	0	0	6	6	6								
Hill St & US 191		0	0	0	0	4	4	4								

Project Description/How is safety improved? 3.2.10

This project improves safety on US 191 (Colorado Boulevard) and addresses an overrepresentation of rear-end crashes. Improvements include lighting, lane narrowing, and systemic low-cost countermeasures at stop controlled intersections. Overrepresentation of rear-end crashes suggests that speeding may require mitigation by reevaluating and setting appropriate speed limits along US 191 or installing transverse rumble strips on the lanes entering and exiting the project extents. Additional traffic calming is recommended through lane narrowing via wider lane lines, driver feedback speed signs, and additional sidewalk width on the north side of the roadway. The railroad at grade crossing at the intersection of 2nd Street and US 191 should be investigated further to compliance of all safety standards for rail crossings. At both intersections, bulbouts are recommended to shorten pedestrian crossing distances, provide more pedestrian spaces, and narrow lanes through the intersections.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Wider Edge Lines


Stop-Controlled Intersection Systemic Countermeasures

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	0.39	MILE	$ 300,000	$ 117,000
Traffic Calming - Wider Lane Lines	0.68	All Crashes	0.39	MILE	$ 21,000	$ 8,190
Install Driver Feedback Speed Limit Signs	NA	All Crashes	2	EACH	$ 15,000	$ 30,000
Install Transverse Rumble Strips as a Traffic Calming Device	0.66	All Crashes	2	LANE	$ 450	$ 900
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	2	INT	$ 19,000	$ 38,000
Traffic Calming - Bulbouts	0.68	All Crashes	8	EACH	$ 36,000	$ 288,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 513,090
*Mobilization: (% +/-)**	*10%*	$ 51,310
Traffic Control: (% +/-)	*5%*	$ 25,655
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 153,927
Estimated Construction Cost:		$ 743,982

Local Match†: 20% $ 189,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 89,278
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 111,597
Estimated Project Total:		$ 945,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Widen sidewalks to 5 - 6 feet
Additional Improvements #3: Investigate safety compliance of railroad at grade crossings
Additional Improvements #4: Targeted Enforcement and Deterrence
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 3.3.12

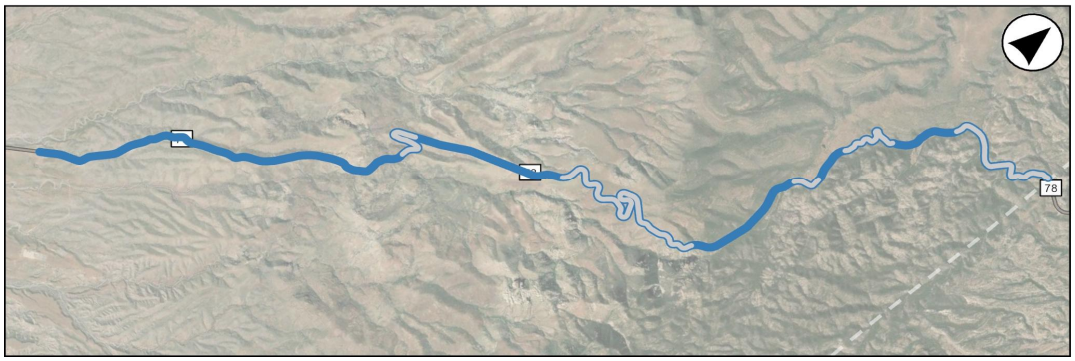
Project ID:	**3.3.12**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 78 from Greenlee Substation Road to State Line**	**Prepared By:**	**JB**
Jurisdiction(s):	**Greenlee County**	**Checked By:**	**EJC**
GFA(s):	**Greenlee County**		
Emphasis Areas:	**Behavior Related, Environmental, Lane Departure**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway: SR 78
From: Greenlee Substation Road
To: State Line
Length: 9.16 miles

Key Intersection Locations:

Project Location Map **Project ID: 3.3.12**



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**9.16**
Average Daily Traffic (vehicles per day)	**222**
Functional Classification	**Major Collector**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**7**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**19**
Total Crashes	**29**
Total EPDO Crashes	**1,069**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 3.3.12

This project improves vehicle and motorcycle safety on SR 78 by addressing overrepresentation of motorcycle and roadway departure crashes. Improvements include shoulder widening and centerline and edge line rumble strips to prevent roadway departure crashes. The installation of a 4" retroreflective centerline and edge line will aid visibility and the addition of curve signage will better prepare motorists for upcoming curves. All recommendations are to be focused on curves and crash locations as outlined in gray.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


SafetyEdge™


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	6.68	MILE	$ 311,000	$ 2,077,480
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	6.68	MILE	$ 9,000	$ 60,120
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	6.68	MILE	$ 5,000	$ 33,400
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	6.68	MILE	$ 121,000	$ 808,280
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	6.68	MILE	$ 28,000	$ 187,040
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	12	CURVE	$ 2,000	$ 24,000
Transverse Rumble Strips Prior to Curve	NA	All Crashes	12	CURVE	$ 1,000	$ 12,000
Install Driver Feedback Speed Limit Signs on Rural Curves	0.93 - 0.95	Rural Curves	12	EACH	$ 15,000	$ 180,000
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 3,382,320
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 169,116
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,014,696
Estimated Construction Cost:		$ 4,641,132

Local Match†: 20% $ 1,179,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 556,936
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 696,170
Estimated Project Total:		$ 5,895,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 3.4.12

Project ID:	**3.4.12**	**Date Prepared:**	**9/14/2024**
Project Name:	**US 191 from Chase Creek to ADOT Grey's Peak Maint. Camp**	**Prepared By:**	**JB**
Jurisdiction(s):	**Greenlee County**	**Checked By:**	**EJC**
GFA(s):	**Greenlee County**		
Emphasis Areas:	**Behavior Related, Environmental, Lane Departure**		
Equity Review:	**Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway: US 191
From: Chase Creek
To: ADOT Grey's Peak Maint. Camp
Length: 8.28 miles

Key Intersection Locations:

Project Location Map **Project ID: 3.4.12**

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**8.28**
Average Daily Traffic (vehicles per day)	**97**
Functional Classification	**Major Collector**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**5**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**11**
Total Crashes	**19**
Total EPDO Crashes	**1,033**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 3.4.12

This project improves safety on US 191 by addressing overrepresentation of roadway departure and motorcycle crashes. Recommended countermeasures include shoulder widening with edge line and centerline rumble strips and retroreflective lines along the length of the roadway. Segments of guardrail are recommended to prevent roadway departures. Safety edge can also be installed with repaving projects to help motorists recover control in cases of roadway departure. All recommendations are to be focused on curves and crash locations as outlined in gray.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


SafetyEdge™


Roadside Design Improvements at Curves


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	6.48	MILE	$ 311,000	$ 2,015,280
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	6.48	MILE	$ 9,000	$ 58,320
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	6.48	MILE	$ 5,000	$ 32,400
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	6.48	MILE	$ 28,000	$ 181,440
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	6.48	MILE	$ 121,000	$ 784,080
Guardrail	0.53 - 0.56	Run Off Road	14,500	FOOT	$ 80	$ 1,160,000
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	37	CURVE	$ 2,000	$ 74,000
Transverse Rumble Strips Prior to Curve	NA	All Crashes	37	CURVE	$ 1,000	$ 37,000
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 4,342,520
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 217,126
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,302,756
Estimated Construction Cost:		$ 5,937,402

Local Match†: 20% $ 1,508,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 712,488
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 890,610
Estimated Project Total:		$ 7,541,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 3.6.12

Project ID: 3.6.12
Project Name: US 191 from Pine Flat Road to Hogtrail Saddle
Jurisdiction(s): Greenlee County
GFA(s): Greenlee County
Emphasis Areas: Behavior Related, Environmental, Lane Departure
Equity Review: Climate & Economic Justice Screening Tool, Medium Priority

Date Prepared: 9/14/2024
Prepared By: JB
Checked By: EJC

Location Description

Roadway: US 191
From: Pine Flat Road
To: Hogtrail Saddle
Length: 6.35 miles

Key Intersection Locations:

Project Location Map

Project ID: 3.6.12

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	6.35
Average Daily Traffic (vehicles per day)	97
Functional Classification	Major Collector
Roadway Ownership	State
Urban/Rural Designation	Rural
Number of Key Intersections	0

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	0
Suspected Serious Injury Crashes (A)	1
Suspected Minor Injury Crashes (B)	2
Possible Injury Crashes (C)	2
No Injury/PDO Crashes (O)	4
Total Crashes	9
Total EPDO Crashes	103

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	Signal	K	A	B	C	O	Total	EPDO	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 3.6.12

This project includes countermeasures Tto address overrepresentation of motorcycle crashes and roadway departures on US 191. Improvements include installation of edge line and centerline rumble strips along the length of the roadway, widening the roadway shoulder, andadding curve signage where not existing. Recommendations also incldue segments of guardrail and transverse rumble strips within and prior to curves, along with the installation and/or upgrade of curve signage. All recommendations are to be focused on curves and crash locations as outlined in gray.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


SafetyEdge™


Roadside Design Improvements at Curves


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	1.17	MILE	$ 311,000	$ 363,870
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	1.17	MILE	$ 9,000	$ 10,530
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	1.17	MILE	$ 5,000	$ 5,850
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	1.17	MILE	$ 28,000	$ 32,760
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	1.17	MILE	$ 121,000	$ 141,570
Guardrail	0.53 - 0.56	Run Off Road	5,500	FOOT	$ 80	$ 440,000
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	3	CURVE	$ 2,000	$ 6,000
Transverse Rumble Strips Prior to Curve	NA	All Crashes	11	CURVE	$ 1,000	$ 11,000
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,011,580
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 50,579
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 303,474
Estimated Construction Cost:		$ 1,440,633

Local Match†: 20% $ 366,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 172,876
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 216,095
Estimated Project Total:		$ 1,830,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 3.7.12

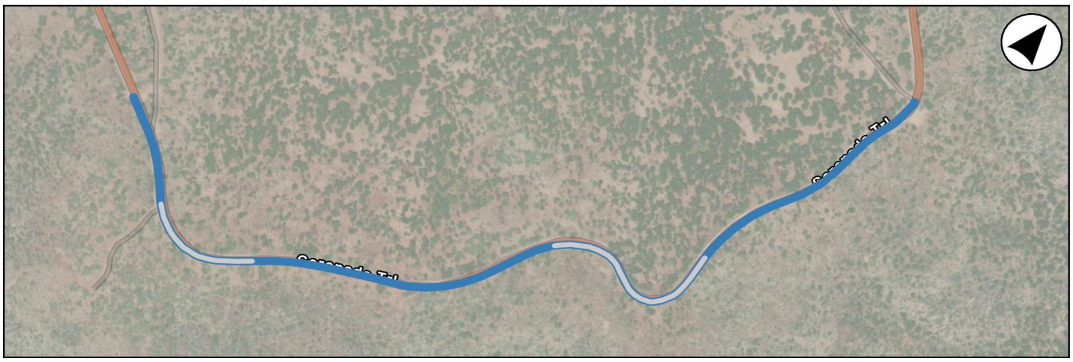
Project ID:	**3.7.12**	**Date Prepared:**	**9/14/2024**
Project Name:	**US 191 from MP 217 to Lengthy Trailhead**	**Prepared By:**	**JB**
Jurisdiction(s):	**Greenlee County**	**Checked By:**	**EJC**
GFA(s):	**Greenlee County**		
Emphasis Areas:	**Behavior Related, Environmental, Lane Departure**		
Equity Review:	**Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway: US 191
From: MP 217
To: Lengthy Trailhead
Length: 0.81 miles

Key Intersection Locations:

Project Location Map **Project ID: 3.7.12**



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.81**
Average Daily Traffic (vehicles per day)	**198**
Functional Classification	**Major Collector**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**2**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**0**
Total Crashes	**3**
Total EPDO Crashes	**117**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury	✓	Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 3.7.12

This project improves vehicle and motorcycle safety on US 191 between MP 217 and Lengthy Trailhead by addressing overrepresentation of serious injury crashes due to roadway departure. Recommended improvements include curve signage, edge line and centerline rumble strips, and shoulder widening to prevent roadway departures. Safety edge can also be installed with repaving projects to help motorists recover control to prevent roadway departure. Installation of 4" retroreflective centerline and edge line is recommended for improved visibility for motorists. All recommendations are to be focused on curves and crash locations as outlined in gray.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


SafetyEdge™


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	0.26	MILE	$ 311,000	$ 80,860
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	0.26	MILE	$ 28,000	$ 7,280
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	0.26	MILE	$ 9,000	$ 2,340
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	0.26	MILE	$ 5,000	$ 1,300
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	0.26	MILE	$ 121,000	$ 31,460
Transverse Rumble Strips Prior to Curve	NA	All Crashes	2	CURVE	$ 1,000	$ 2,000
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	2	CURVE	$ 2,000	$ 4,000
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 129,240
*Mobilization: (% +/-)**	*10%*	$ 12,930
Traffic Control: (% +/-)	*5%*	$ 6,462
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 38,772
Estimated Construction Cost:		$ 187,404

Local Match†: 20% $ 47,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 22,488
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 28,111
Estimated Project Total:		$ 239,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 3.8.10

Project ID: 3.8.10
Project Name: Ward Canyon Road from Canyon Road to Red Wash Lane
Jurisdiction(s): Clifton
GFA(s): Greenlee County
Emphasis Areas: Behavior Related, Environmental, Lane Departure
Equity Review: Climate & Economic Justice Screening Tool, Medium Priority

Date Prepared: 11/19/2024
Prepared By: JB
Checked By: EJC

Location Description

Roadway: Ward Canyon Road
From: Canyon Road
To: Red Wash Lane
Length: 0.26 miles

Key Intersection Locations: Canyon Road & Ward Canyon Road

Project Location Map

Project ID: 3.8.10

Picture

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	0.26
Average Daily Traffic (vehicles per day)	946
Functional Classification	Major Collector
Roadway Ownership	Local
Urban/Rural Designation	Urban
Number of Key Intersections	1

Why Was This Location Identified?	
Historic Crashes	
Critical Crash Rate Differential	
Overrepresented Crashes	
Sun Cloud	
Equity Review	
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	0
Suspected Serious Injury Crashes (A)	0
Suspected Minor Injury Crashes (B)	0
Possible Injury Crashes (C)	2
No Injury/PDO Crashes (O)	0
Total Crashes	2
Total EPDO Crashes	19

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	Signal	K	A	B	C	O	Total	EPDO	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Canyon Road & Ward Canyon Rd		0	0	1	2	1	4	34								

Project Description/How is safety improved? 3.8.10

This project proactively improves safety along Ward Canyon Road near Red Wash Lane. Vehicles traveling on Ward Canyon Road near the Mares Bluff Veteran's Memorial Trailhead must pass underneath a rock bluff that obstructs sight distance and feels unsafe to users. In preparation for increased traffic in this area, the improvements for this project include, centerline rumble strips transversing the curve and clear and grub along the roadway. At the intersection of Canyon Road & Ward Canyon Road, systemic low-cost countermeasures at stop-controlled intersections are recommended to address a history of crashes. The removal of the rock bluff is recommended in the project, however the cost is not estimated as the demolition and clean up costs are variable.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	0.15	MILE	$ 5,000	$ 750
Clear and Grub (Both Sides of Road)	NA	All Crashes	0.15	MILE	$ 13,000	$ 1,950
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 21,700
*Mobilization: (% +/-)**	*10%*	$ 2,500
Traffic Control: (% +/-)	*5%*	$ 1,085
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 6,510
Estimated Construction Cost:		$ 31,795

Local Match†: 20% $ 8,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 3,815
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 4,769
Estimated Project Total:		$ 41,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Remove or reduce the rock bluff overhanging the roadway
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:
Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

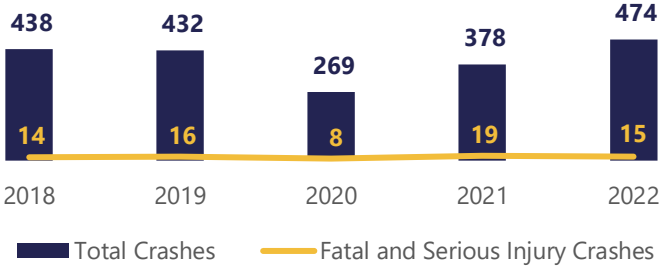
E - Santa Cruz County

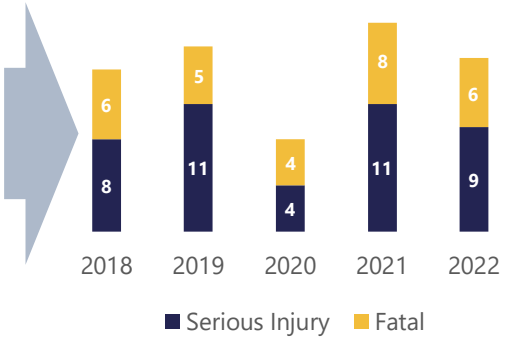
Fatal and Serious Injury Crashes by EA in Santa Cruz County

Arizona SHSP Emphasis Area	Region-wide (Four Counties)		Santa Cruz County GFA		
	Fatal and Serious Injury Crashes	Rank	Fatal and Serious Injury Crashes	Rank	Change in Rank from SEAGO
Behavior Related	271 (49%)	1	34 (47%)	1	0
Intersections	102 (18%)	2	6 (8%)	4	-2
Lane Departure	70 (13%)	3	11 (15%)	3	0
Vulnerable Road Users	57 (10%)	4	18 (25%)	2	+2

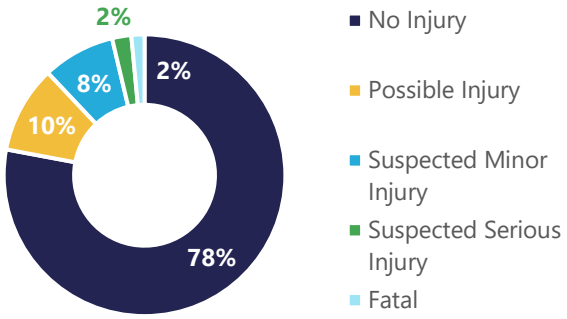
Santa Cruz County Safety Overview

CRASHES BY YEAR





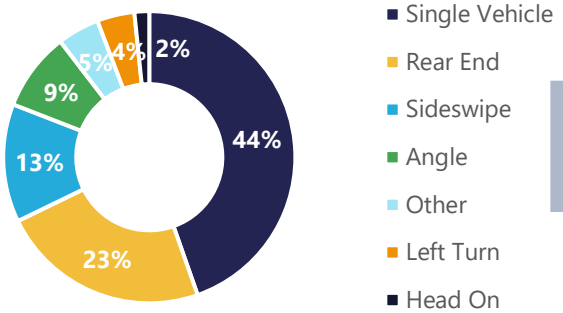
CRASHES BY INJURY LEVEL

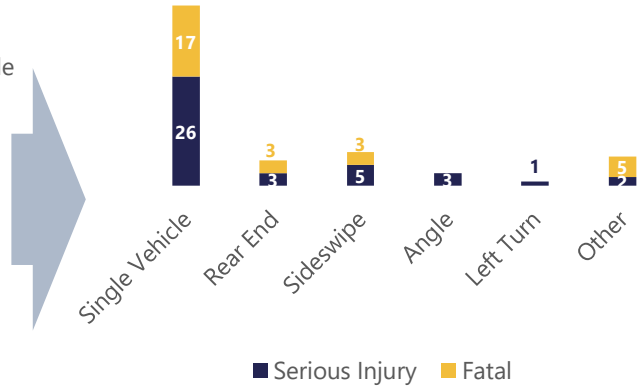


CRASH SEVERITY BY ROUTE TYPE

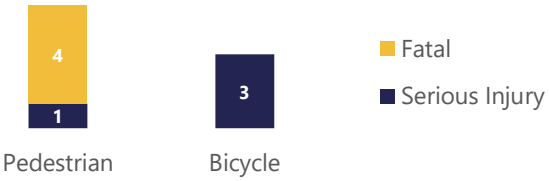
Route Type/Crash Severity	State Route	Non-State Route	Total	% of SEAGO
Fatal	23	6	29	15%
Serious Injury	34	9	43	12%
Minor Injury	130	36	166	14%
Possible Injury	125	74	199	18%
No Injury	1,153	401	1,554	20%
Total	**1,465**	**526**	**1,991**	**19%**

TOP MANNER OF COLLISION



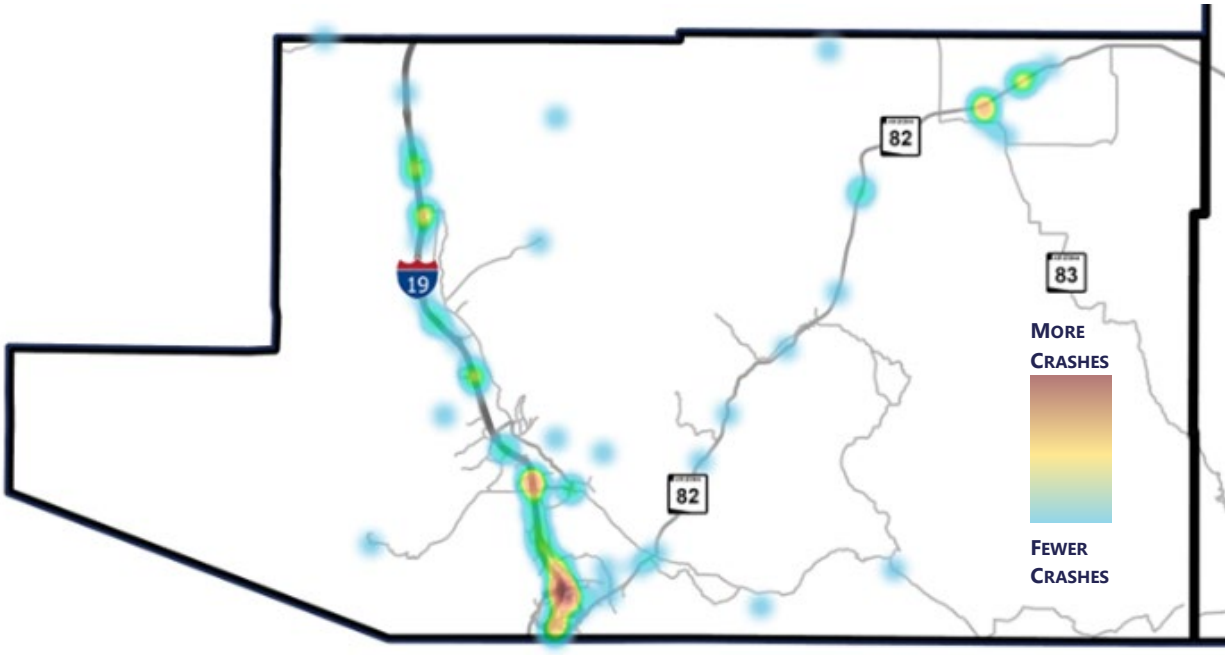


8 OF **18** VRU-INVOLVED CRASHES RESULTED IN A SERIOUS INJURY OR FATALITY



CRASH DENSITY

FATAL AND SERIOUS INJURY CRASH DENSITY



Safety Analysis Results for Santa Cruz County

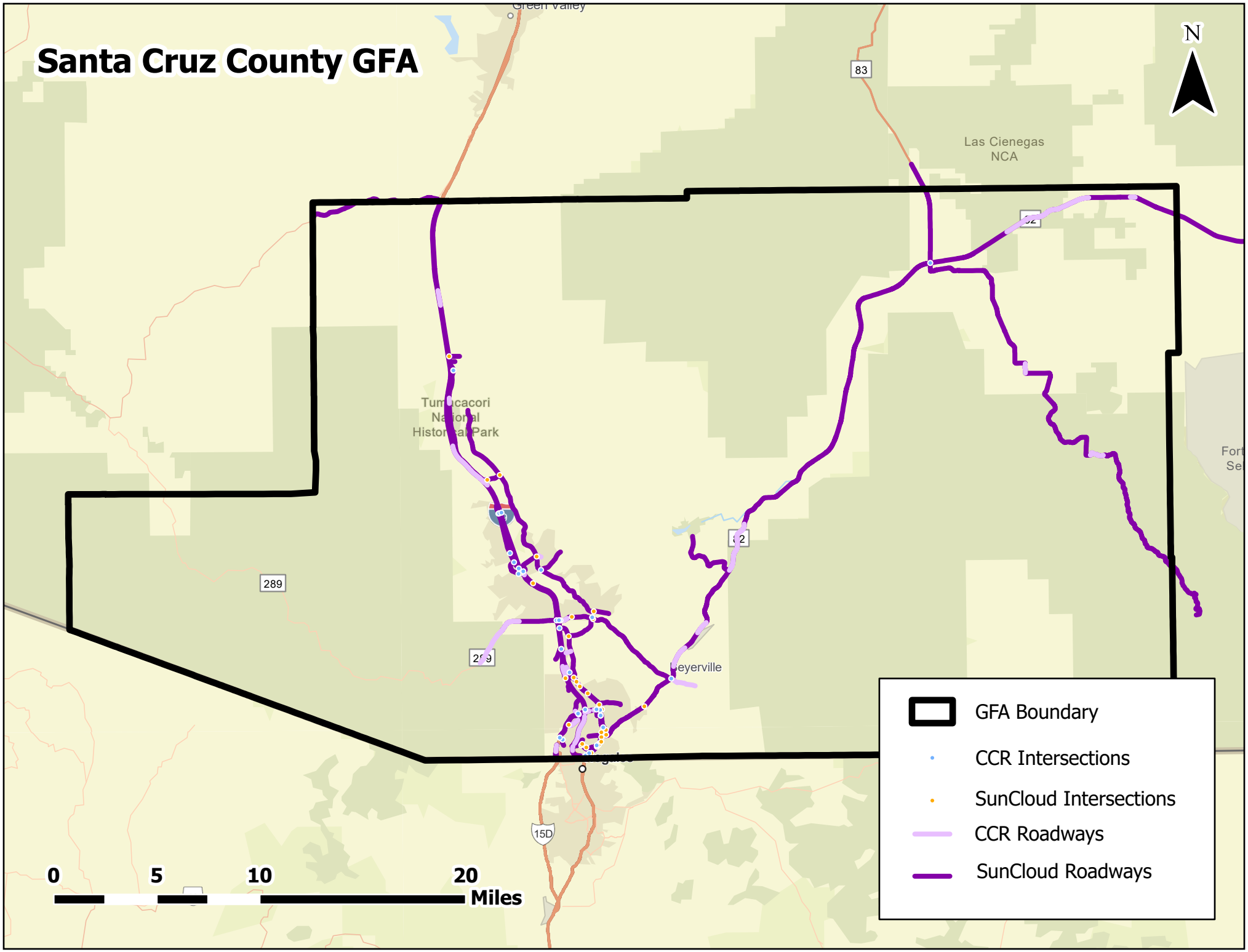
Facility	Limits	Functional Classification	City	Crashes	Critical Crash Rate Differential	EPDO[1]	Fatal	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Injury/PDO	Unknown	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
State Routes																										
Frontage Rd	Old Bailey Xing to Apache Ln	Major Collector	Unincorporated	**5**	5.8	5	0	0	0	0	5	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0
I-19 Ramp	Rio Rico Dr SB Off-Ramp	Interstate	Unincorporated	**3**	5.0	3	0	0	0	0	3	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
SR 83	MP 22.5 to MP 23.1	Major Collector	Unincorporated	**3**	3.9	29	0	0	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1
SR 83	Membrillo Ln to Whisper Ln	Major Collector	Unincorporated	**3**	3.3	3	0	0	0	0	3	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0
SR 82	Nogales Airport to Jarillas Tank turnoff	Minor Arterial	Unincorporated	**8**	1.6	924	1	0	2	0	5	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Ave	White Park Drive to Horne Ford drivewa	Principal Arterial	Nogales	**8**	1.3	59	0	1	0	0	7	0	1	2	0	0	5	0	0	0	0	0	0	0	0	0
SR 189	I-19 to Harbor Freight driveway	Principal Arterial	Nogales	**12**	1.2	902	1	0	0	0	11	0	0	1	0	1	9	1	0	0	0	0	0	0	0	0
SR 189	Harbor Freight driveway to Congress Dr	Principal Arterial	Nogales	**4**	1.0	4	0	0	0	0	4	0	0	1	0	0	1	0	2	0	0	0	0	0	0	0
Grand Ave	Old Tucson Rd to Paseo Verde Dr	Principal Arterial	Nogales	**6**	0.8	15	0	0	0	1	5	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0
I-19	Chavez Siding Access to El Burro Ln	Interstate	Unincorporated	**21**	0.8	56	0	0	2	1	18	0	4	0	0	0	13	0	4	0	0	0	0	0	0	0
Non-State Routes																										
Crawford St	West St to I-19	Local Roadway	Nogales	**3**	18.3	12	0	0	0	1	2	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0
Duquesne Rd	Patagonia Hwy to Buena Vista Ranch	Minor Collector	Unincorporated	**3**	1.9	12	0	0	0	1	2	0	2	0	0	1	0	0	0	0	0	0	0	0	0	1
Bravo Ln	Old Tucson Rd to dead end	Local Roadway	Unincorporated	**4**	1.8	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
Frank Reed Rd	Shell Rd to Apache Blvd	Major Collector	Nogales	**4**	1.5	26	0	0	1	1	2	0	0	0	0	1	2	0	0	0	0	0	1	0	0	0
Rio Rico Dr	Pendleton Dr to Willow Dr	Minor Collector	Unincorporated	**3**	1.2	3	0	0	0	0	3	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
Industrial Park Dr	Industrial Park Ave to Manor Dr	Major Collector	Nogales	**3**	0.9	12	0	0	0	1	2	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0
Ruby Rd	Frontage Rd to Chaleco Ct	Minor Arterial	Unincorporated	**8**	0.8	25	0	0	0	2	6	0	2	0	1	0	4	0	1	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	*Unknown*	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
Signalized Intesections																								
Frontage Rd & Ruby Rd	Rio Rico	**22**	0.2	44	0	0	1	1	20	0	1	2	1	0	7	0	11	0	0	0	0	0	0	0
I-19 NB Ramps & Rio Rico Rd	Rio Rico	**13**	0.2	35	0	0	1	1	11	0	1	0	0	0	12	0	0	0	0	0	0	0	0	0
Mastick Way & SR 189	Nogales	**22**	0.1	83	0	0	2	4	16	0	0	9	2	0	7	0	4	0	0	0	0	0	0	0
I-19 NB Ramps & SR 289	Rio Rico	**13**	0.1	35	0	0	1	1	11	0	0	5	1	0	5	0	2	0	0	0	0	0	0	0
Unsignalized Intersections																								
Crawford St & Terrace Ave	Nogales	**5**	1.2	31	0	0	2	0	3	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0
SR 83 & SR 82	Santa Cruz County	**9**	1.0	31	0	0	1	1	7	0	0	7	0	0	1	0	0	0	0	0	1	0	0	0
Frontage Rd & Calle Barrio De Tubac	Tubac	**5**	0.8	69	0	1	1	0	3	0	0	3	0	0	0	0	0	0	0	0	2	0	1	0
Frank Reed Rd & Shell Rd	Nogales	**8**	0.6	17	0	0	0	1	7	0	0	5	3	0	0	0	0	0	0	0	0	0	0	0
Frontage Rd & Via Estrella Vis	Rio Rico	**10**	0.6	10	0	0	0	0	10	0	1	3	0	0	2	0	4	0	0	0	0	0	0	0
I-19 NB Ramps & Peck Canyon Rd	Rio Rico	**3**	0.6	54	0	1	0	0	2	0	0	1	0	0	0	1	0	0	0	0	1	0	1	0
Frontage Rd & Old Tucson Rd	Santa Cruz County	**5**	0.5	5	0	0	0	0	5	0	0	1	0	0	2	0	1	0	0	0	1	0	0	0
SR 189 & Target Range Rd	Nogales	**12**	0.5	73	0	0	4	1	7	0	0	6	1	0	0	0	3	1	0	0	1	0	0	0
Frontage Rd & Boulevard del Rey David	Santa Cruz County	**4**	0.3	4	0	0	0	0	4	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0
Camino Caralampi & Yavapai Dr	Rio Rico	**6**	0.3	23	0	0	0	2	4	0	0	5	0	0	0	0	0	1	0	0	0	1	0	0

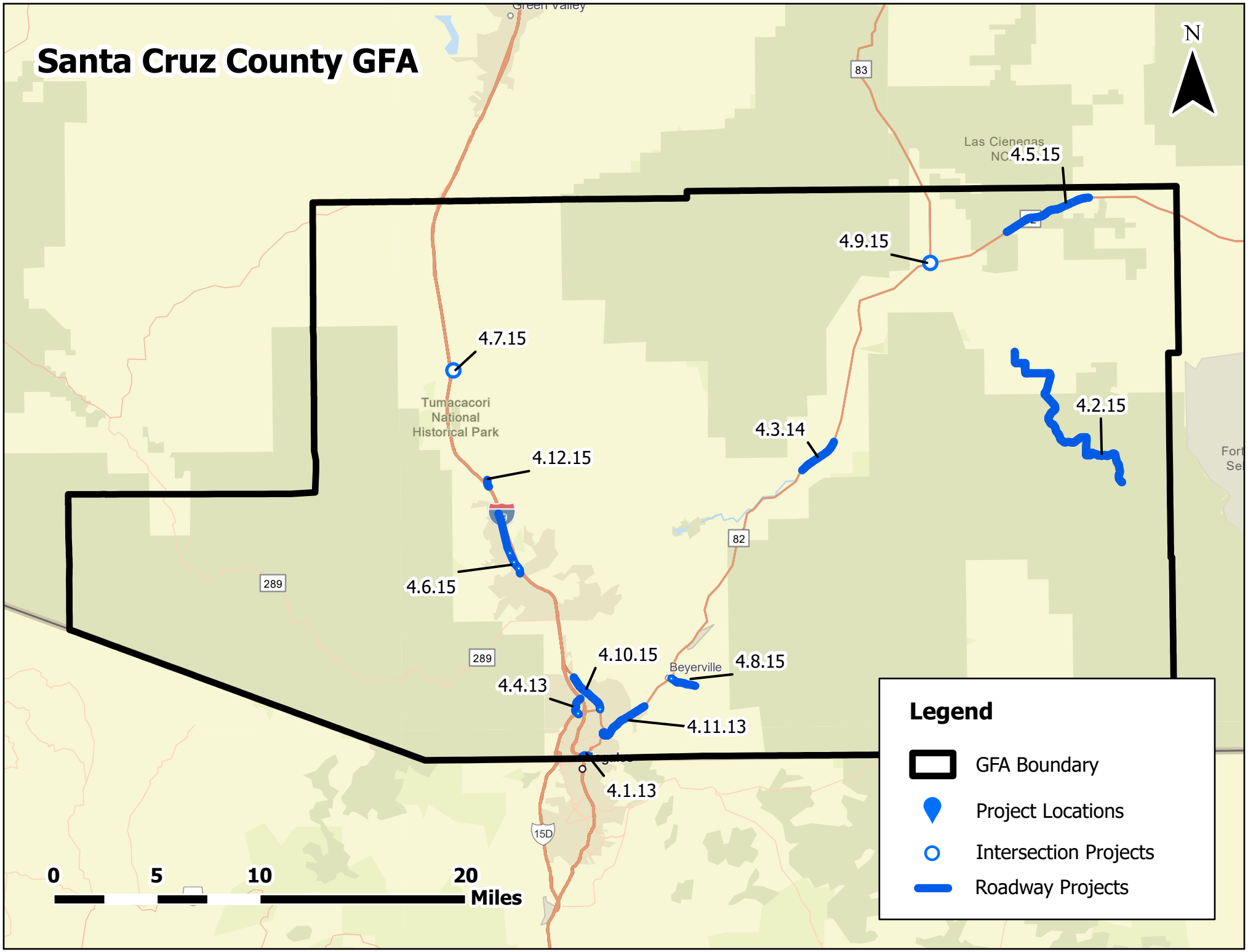
1. Equivalent Property Damage Only Cras

Project Information Sheets


Santa Cruz County GFA
N
Green Valley
83
Las Cienegas
NCA
Tumacacori
National
Historical Park
289
Sahuarita
15D
0
5
10
20
Miles
GFA Boundary
CCR Intersections
SunCloud Intersections
CCR Roadways
SunCloud Roadways

Santa Cruz County GFA Projects

Project ID	Jurisdictions	Project Name
4.1.13	Nogales	I-19 and Crawford Street S-curve
4.2.15	Santa Cruz County	SR 83 from McCarty Lane to Lyle Canyon Road
4.3.14	Patagonia	SR 82 from McKeown Avenue to Cross Creek Road
4.4.13	Nogales	Apache Boulevard/Frank Reed Road from I-19 to Mariposa Road
4.5.15	Santa Cruz County	SR 82 from 900 Road to Upper Elgin Road
4.6.15	Santa Cruz County	West Frontage Road from Peck Canyon Road to Yavapai Drive/Rio Rico Drive
4.7.15	Santa Cruz County	Calle Barrio de Tubac & I-19 (East) Frontage Road Intersection Improvements
4.8.15	Santa Cruz County	Duquesne Road from Patagonia Highway/SR 82 to Buena Vista Ranch
4.9.15	Santa Cruz County	SR 83 & SR 82 Intersection Improvements
4.10.13	Nogales	Grand Avenue from Mariposa Road to Country Club Drive
4.11.13	Nogales	SR 82/Patagonia Highway from Grand Avenue to Aurora Drive
4.12.15	Santa Cruz County	East Frontage Road from I-19 to Palo Parado Rod


Santa Cruz County GFA
N
Green Valley
83
Las Cienegas
NC
4.5.15
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4.7.15
Tumacacori
National
Historical Park
4.2.15
4.3.14
4.12.15
82
289
4.6.15
289
4.10.15
4.8.15
Beyerville
4.4.13
4.11.13
4.1.13
15D
0
5
10
20
Miles
Legend
GFA Boundary
Project Locations
Intersection Projects
Roadway Projects

Project Information Sheet 4.1.13

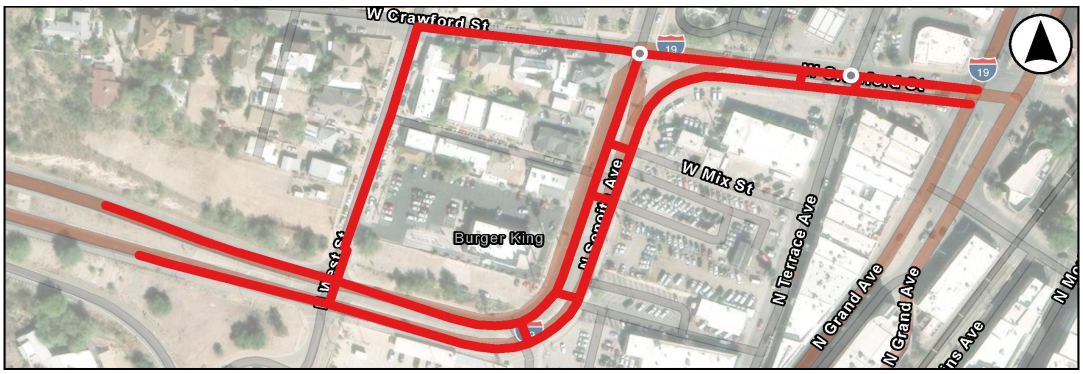
Project ID:	**4.1.13**	**Date Prepared:**	**9/14/2024**
Project Name:	**I-19 and Crawford Street S-curve**	**Prepared By:**	**JB**
Jurisdiction(s):	**Nogales**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, High Priority**		

Location Description

Roadway:	I-19	**Key Intersection Locations:**	
From:	West Street	Sonoita Ave & Crawford St	
To:	Terrace Avenue	Terrace Ave & Crawford St	
Length:	1.67	miles	

Project Location Map

Project ID: 4.1.13



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.67**
Average Daily Traffic (vehicles per day)	**4,955**
Functional Classification	**pal Arterial, Major Coll**
Roadway Ownership	**State, Local Agency**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**2**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**11**
Total Crashes	**15**
Total EPDO Crashes	**940**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury		Left/U-Turn	✓
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Sonoita Ave & Crawford St		0	0	0	0	3	3	3				✓				
Terrace Ave & Crawford St		0	0	2	0	3	5	31				✓				

Project Description/How is safety improved? 4.1.13

This project recommends improvements to the S-curve at the terminus of I-19, and includes Compound Street, Sonoita Avenue, and Crawford Street north of the U.S./Mexico border in Nogales. Intersections included in this project have an overrepresentation of left-turn involved crashes, likely attributable to curves and vehicle speed as vehicles transition from I-19 to the surface streets. To improve pedestrian safety at the intersection of Sonoita Avenue and Crawford Street, centerline hardening treatments are recommended to separate left turning vehicles from crossing pedestrians. It is recommended to conduct an ICE study at the Sonoita Avenue intersection to clarify turning movements. Other low-cost countermeasures may be applied to the stop controlled intersections identified. Additional safety lighting is recommended in the area to increase visibility. High visibility crosswalks are also recommended at both identified intersections and a HAWK is proposed at the intersection with Terrace Avenue.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Stop-Controlled Intersection Systemic Countermeasures


Crosswalk Visibility Enhancements


Pedestrian Hybrid Beacons

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	1.67	MILE	$ 300,000	$ 501,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	2	INT	$ 19,000	$ 38,000
Centerline Hardening	NA	Angled	1	INT	$ 1,000	$ 1,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
Upgrade Existing Crosswalk to High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	2	XING	$ 37,000	$ 74,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	2	INT	$ 31,000	$ 62,000
Install Pedestrian Hybrid Beacons (PHB) or HAWK	0.453	Pedestrian	1	EACH	$ 200,000	$ 200,000
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 906,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 45,300
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 271,800
Estimated Construction Cost:		$ 1,298,100

Local Match†: 20% $ 329,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 155,772
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 194,715
Estimated Project Total:		$ 1,649,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 4.2.15

Project ID:	**4.2.15**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 83 from McCarty Lane to Lyle Canyon Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Santa Cruz County**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Medium Priority**		

Location Description

Roadway: SR 83
From: McCarty Lane
To: Lyle Canyon Road
Length: 10.60 miles

Key Intersection Locations:

Project Location Map **Project ID: 4.2.15**

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**10.60**
Average Daily Traffic (vehicles per day)	**350**
Functional Classification	**Major Collector**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**4**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**11**
Total Crashes	**15**
Total EPDO Crashes	**67**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 4.2.15

This project improves safety on rural, two-lane facilities with an overrepresentation of motorcycle crashes. In addition, roadway departure crashes may be mitigated with the installation of centerline line rumble strips, raised thermal edge lines, and transverse rumble strips prior to curves. The roadway includes several curves where roadway departure and motorcycle crashes have occurred. Improvements to curves on SR 83 include transverse rumble strips prior to curve and enhanced delineation for horizontal curves. All recommendations are to be focused on curves and crash locations as outlined in gray.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	4.27	MILE	$ 5,000	$ 21,350
Install Raised Thermal Tape on Center or Edge Lines	NA	All Crashes	45,090	FOOT	$ 1	$ 45,090
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	11	CURVE	$ 2,000	$ 22,000
Transverse Rumble Strips Prior to Curve	NA	All Crashes	11	CURVE	$ 1,000	$ 11,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 99,440
*Mobilization: (% +/-)**	*10%*	$ 9,950
Traffic Control: (% +/-)	*5%*	$ 4,972
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 29,832
Estimated Construction Cost:		$ 144,194

Local Match†: 20% $ 36,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 17,303
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 21,629
Estimated Project Total:		$ 184,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 4.3.14

Project ID:	**4.3.14**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 82 from McKeown Avenue to Cross Creek Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Patagonia**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Medium Priority**		

Location Description

Roadway: SR 82
From: McKeown Avenue
To: Cross Creek Road
Length: 2.10 miles

Key Intersection Locations:

Project Location Map **Project ID: 4.3.14**

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.10**
Average Daily Traffic (vehicles per day)	**2,008**
Functional Classification	**Minor Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	
Overrepresented Crashes	
Sun Cloud	✓
Equity Review	
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**1**
Total Crashes	**3**
Total EPDO Crashes	**25**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 4.3.14

This project improves safety on SR 82 through Patagonia. Additional lighting is recommended between the Patagonia Cemetery path (approximatly milepost 19) and Cross Creek Road. Pedestrian-focused improvements include back to back curb medians to restrict conflicting vehicle movements and bulb outs at crossing locations like 3rd Avenue and 4th Avenue.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Lighting

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	0.84	MILE	$ 300,000	$ 250,568
Traffic Calming - Medians (Back-To-Back Curb)	0.68	All Crashes	1.00	MILE	$ 629,000	$ 629,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Traffic Calming - Bulbouts	0.68	All Crashes	8	EACH	$ 36,000	$ 288,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,167,568
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 58,378
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 350,270
Estimated Construction Cost:		$ 1,651,217

Local Match†: 20% $ 419,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 198,146
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 247,683
Estimated Project Total:		$ 2,098,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Youth Education
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet — 4.4.13

Project ID:	**4.4.13**	**Date Prepared:**	**9/14/2024**
Project Name:	**Apache Boulevard/Frank Reed Road from I-19 to Mariposa Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Nogales**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, High Priority**		

Location Description

Roadway:	Apache Boulevard/Frank Reed Road	**Key Intersection Locations:**	
From:	I-19	Shell Dr & Alpache Blvd/Frank Reed Rd	
To:	Mariposa Road		
Length:	0.92 miles		

Project Location Map — Project ID: 4.4.13

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.92**
Average Daily Traffic (vehicles per day)	**3,051**
Functional Classification	**Major Collector**
Roadway Ownership	**Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**3**
No Injury/PDO Crashes (O)	**5**
Total Crashes	**9**
Total EPDO Crashes	**48**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	✓
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Shell Dr & Alpache Blvd/Frank Re		0	0	0	1	7	8	17				✓				

Project Description/How is safety improved? 4.4.13

This project address overrepresentation of rear-end crashes to improve safety surrounding Nogales High School. Recommendations include driver feedback speed signs, reevaluating appropriate speed limits for the roadway, and increasing visibility of pedestrians. The Mariposa Ranch Road intersection directly services Nogales High School ; therefore installing Rectangular Rapid Flashing Beacons (RRFB), upgrading the existing crosswalk to be a high-visibility crosswalk, and conducting an Intersection Control Evaluation are recommended. Converting the Shell Drive intersection to a Right-in-Right-out intersection is recommended to reduce the number of left turn conflicts.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Rectangular Rapid Flashing Beacons (RRFB)


Lighting


Stop-Controlled Intersection Systemic Countermeasures


Crosswalk Visibility Enhancements


Reduced Left-Turn Conflict Intersections

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install a Rectangular Rapid Flashing Beacon (RRFB)	0.526	Pedestrian	1	XING (2)	$ 15,000	$ 15,000
Install Driver Feedback Speed Limit Signs	NA	All Crashes	4	EACH	$ 15,000	$ 60,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
Upgrade Existing Crosswalk to High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	1	XING	$ 37,000	$ 37,000
Right-in-Right-out Access Treatment	0.55	All Crashes	1	DRIVEW	$ 50,000	$ 50,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 242,000
*Mobilization: (% +/-)**	*10%*	$ 24,200
Traffic Control: (% +/-)	*5%*	$ 12,100
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 72,600
Estimated Construction Cost:		$ 350,900

Local Match†: 20% $ 89,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 42,108
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 52,635
Estimated Project Total:		$ 446,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Safe Routes to School Plans
Additional Improvements #2: Youth Safe Driving Education and Outreach
Additional Improvements #3: Set Appropriate Speed Limits for All Road Users
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 4.5.15

Project ID: 4.5.15
Project Name: SR 82 from 900 Road to Upper Elgin Road
Jurisdiction(s): Santa Cruz County
GFA(s): Santa Cruz County
Emphasis Areas: Behavior Related, Lane Departure, Vulnerable Road Users
Equity Review: Medium Priority

Date Prepared: 9/14/2024
Prepared By: JB
Checked By: EJC

Location Description

Roadway: SR 82
From: 900 Road
To: Upper Elgin Road
Length: 4.38 miles

Key Intersection Locations:

Project Location Map

Project ID: 4.5.15

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	4.38
Average Daily Traffic (vehicles per day)	1,930
Functional Classification	Minor Arterial
Roadway Ownership	State
Urban/Rural Designation	Rural
Number of Key Intersections	0

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	1
Suspected Serious Injury Crashes (A)	2
Suspected Minor Injury Crashes (B)	1
Possible Injury Crashes (C)	1
No Injury/PDO Crashes (O)	22
Total Crashes	27
Total EPDO Crashes	1,040

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	Signal	K	A	B	C	O	Total	EPDO	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 4.5.15

This project improves safety on a rural section of SR 82 between 900 Road and Upper Elgin Road by addressing an overrepresentation of motorcycle crashes with several attributed to failure to keep in the proper lane. Unsafe lane changes and passing maneuvers were also noted as causes of crashes in this area. Roadway improvements to address these issues include providing a paved 2 foot shoulder, edge and centerline rumble strips, 4" retroreflective centerline and edge line strips, and Safety Edge with any repaving efforts. The shoulder and Safety Edge improvements are to be focused on curves and crash locations as outlined in gray.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


SafetyEdge™

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	0.50	MILE	$ 311,000	$ 155,500
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	4.38	MILE	$ 9,000	$ 39,420
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	4.38	MILE	$ 5,000	$ 21,900
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	4.38	MILE	$ 28,000	$ 122,640
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	0.50	MILE	$ 121,000	$ 60,500
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 399,960
*Mobilization: (% +/-)**	*10%*	$ 40,000
Traffic Control: (% +/-)	*5%*	$ 19,998
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 119,988
Estimated Construction Cost:		$ 579,946

Local Match†: 20% $ 147,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 69,594
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 86,992
Estimated Project Total:		$ 737,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

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Project Information Sheet 4.6.15

Project ID:	**4.6.15**	**Date Prepared:**	**9/14/2024**
Project Name:	**West Frontage Road from Peck Canyon Road to Yavapai Drive/Rio Rico Drive**	**Prepared By:**	**JB**
Jurisdiction(s):	**Santa Cruz County**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**High Priority**		

Location Description

Roadway:	West Frontage Road	**Key Intersection Locations:**	
From:	Peck Canyon Road	Via Euclid & West Frontage Rd	
To:	Yavapai Drive/Rio Rico Drive	Yavapai Dr & West Frontage Rd	
Length:	3.13 miles	Camino Ramanote & West Frontage Rd	

Project Location Map Project ID: 4.6.15

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**3.13**
Average Daily Traffic (vehicles per day)	**5,137**
Functional Classification	**Major Collector**
Roadway Ownership	**Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**3**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	
Sun Cloud	✓
Equity Review	
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**2**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**16**
Total Crashes	**19**
Total EPDO Crashes	**54**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Via Euclid & West Frontage Rd		0	0	0	2	1	3	20								
Yavapai Dr & West Frontage Rd		0	0	0	0	10	10	10								
Camino Ramanote & West Fronta		0	0	1	1	2	4	26								

Project Description/How is safety improved? 4.6.15

This project improves safety on West Frontage Road by constructing a 2-foot paved shoulder and installing additonal lighting as several crashes in the area occurred in not lighted conditions. Rear end crashes noted in the area may be mitigated by revaluating the appropriate speed limit for the roadway. Sidewalks are recommended from Circulo Mercado to Via Euclid on the east side of the roadway to service commercial buildings. Intersection improvements include lighting and other low-cost countermeasures. Providing right or left turn lanes at the intersections identified at this project may are intended to improve safety for vehicles on the minor street approaches.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Walkways


Stop-Controlled Intersection Systemic Countermeasures


Dedicated Left and Right-Turn Lanes at Intersections

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	3.13	MILE	$ 300,000	$ 939,000
Install Sidewalk or Walkways	NA	Pedestrian	3.13	MILE	$ 1,268,000	$ 3,968,840
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	2.08	MILE	$ 311,000	$ 647,917
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	3	INT	$ 31,000	$ 93,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	3	INT	$ 19,000	$ 57,000
Provide Right-Turn Lanes	0.74 - 0.86	All Crashes	4	LANE	$ 113,000	$ 452,000
Provide Left-Turn Lanes	0.52 - 0.72	Rural	2	LANE	$ 300,000	$ 600,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 6,757,757
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 337,888
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 2,027,327
Estimated Construction Cost:		$ 9,197,972

Local Match†: 20% $ 2,336,400

† Toward SS4A Implementation Grants

Preconstruction Engineering/Design	*12%*	$ 1,103,757
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 1,379,696
Estimated Project Total:		$ 11,682,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet 4.7.15

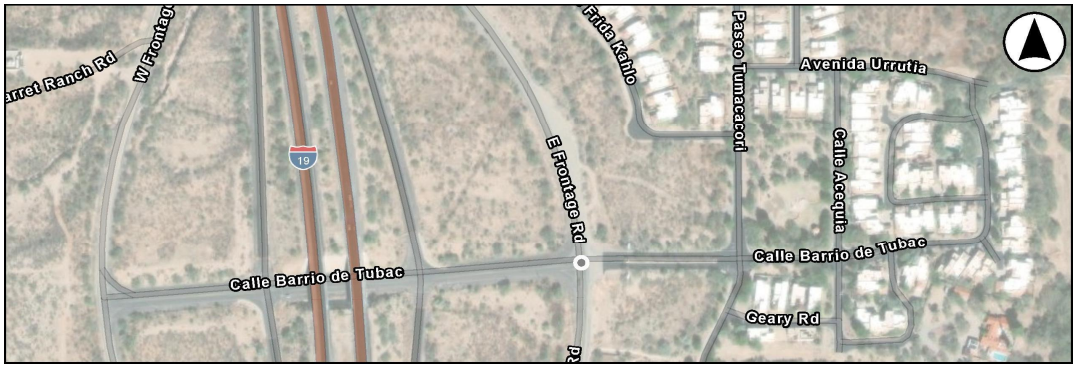
Project ID:	**4.7.15**	**Date Prepared:**	**9/14/2024**
Project Name:	**Calle Barrio de Tubac & I-19 (East) Frontage Road Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Santa Cruz County**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Medium Priority**		

Location Description

Total Intersections	1
Signalized:	0
Unsignalized:	1

Key Intersection Locations:
Calle Barrio De Tubac & I-19 Frontage Road

Project Location Map **Project ID: 4.7.15**



Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**1**
Signalized Intersections	**0**
Unsignalized Intersections	**1**
Average Total Entering Volume (daily vehicles)	**2,500**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Intersection	

Intersection Characteristics

Intersection Information	Calle Barrio De Tubac & I-19 Frontage Road				
Signal YN					
Total Entering Volume (daily)	**2,500**				
CCR[1]	✓				
Sun Cloud	✓				
Top 10 Intersection					
Crash History					
Fatal Crash	**0**				
Serious Injury Crash	**1**				
Minor Injury Crash	**1**				
Possible Injury Crash	**0**				
No Injury/PDO[2] Crash	**3**				
Total Crashes	**5**				
EPDO[3]	**69**				
Over-Represented Crashes					
Fatal/Serious Injury	✓				
Pedestrian/Bicycle	✓				
Angle					
Left/U-Turn					
Rear End					
Head On					
Sideswipe					
Rear to Side/Rear to Rear					

Project Description/How is safety improved? 4.7.15

This project improves safety at the intersection of Calle Barrio de Tubac and the I-19 East Frontage Road. Recommendations include installing intersection lighting, performing an Intersection Control Evaluation (ICE) at the project location, and implementing other low-cost countermeasures for stop controlled intersections. If supported by the ICE, a modern roundabout may further improve safety at this intersection.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Walkways


Lighting


Stop-Controlled Intersection Systemic Countermeasures


Crosswalk Visibility Enhancements

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Sidewalk or Walkways	NA	Pedestrian	0.34	MILE	$ 1,268,000	$ 437,076
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
Install High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	1	XING	$ 36,000	$ 36,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 553,076
*Mobilization: (% +/-)**	*10%*	$ 55,310
Traffic Control: (% +/-)	*5%*	$ 27,654
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 165,923
Estimated Construction Cost:		$ 801,962

Local Match†: 20% $ 203,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 96,235
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 120,294
Estimated Project Total:		$ 1,019,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 4.8.15

Project ID:	**4.8.15**	**Date Prepared:**	**9/14/2024**
Project Name:	**Duquesne Road from Patagonia Highway/SR 82 to Buena Vista Ranch**	**Prepared By:**	**JB**
Jurisdiction(s):	**Santa Cruz County**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Medium Priority**		

Location Description

Roadway:	Duquesne Road	**Key Intersection Locations:**
From:	Patagonia Highway/SR 82	SR 82 & Duquesne Road
To:	Buena Vista Ranch	
Length:	1.25 miles	

Project Location Map

Project ID: 4.8.15

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.25**
Average Daily Traffic (vehicles per day)	**256**
Functional Classification	**Minor Collector**
Roadway Ownership	**Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	0
Suspected Serious Injury Crashes (A)	0
Suspected Minor Injury Crashes (B)	0
Possible Injury Crashes (C)	1
No Injury/PDO Crashes (O)	2
Total Crashes	**3**
Total EPDO Crashes	**12**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
SR 82 & Duquesne Road		0	0	1	0	2	3	16							✓	

Project Description/How is safety improved? 4.8.15

This project improves safety on Duquesne Road between Patagonia Highway/SR 82 and Buena Vista Ranch. The roadway provides access to a schoolhouse, a pumping plant, and other minor roadways. An overrepresentation of motorcycle crashes due to roadway departures are addressed by the installation of 4" retroreflective centerline and edge lines, driver feedback speed limit signs, and additional intersection lighting. To improve safety at the project intersection, it is recommend to eliminate the intersection skew and clear vegetation. Additional improvements includes upgrading the existing crosswalk to a high visibility crosswalk and providing dedicated right turn lanes onto SR 82 at the intersection serving the schoolhouse and pumping station.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Crosswalk Visibility Enhancements


Dedicated Left and Right-Turn Lanes at Intersections

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Centerline and Edge lines	0.76	Serious & Minor Injury	1.25	MILE	$ 28,000	$ 35,000
Install Driver Feedback Speed Limit Signs	NA	All Crashes	4	EACH	$ 15,000	$ 60,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	2	INT	$ 31,000	$ 62,000
Realign Intersection Approaches to Reduce or Eliminate Skew	0.57 - 0.67	All Crashes	1	INT	$ 816,000	$ 816,000
Upgrade Existing Crosswalk to High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	1	XING	$ 37,000	$ 37,000
Clear and Grub	NA	All Crashes	2	LEG	$ 1,000	$ 2,000
Provide Right-Turn Lanes	0.74 - 0.86	All Crashes	1	LANE	$ 113,000	$ 113,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,125,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 56,250
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 337,500
Estimated Construction Cost:		$ 1,593,750

Local Match†: 20% $ 405,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 191,250
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 239,063
Estimated Project Total:		$ 2,025,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Youth Education
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 4.9.15

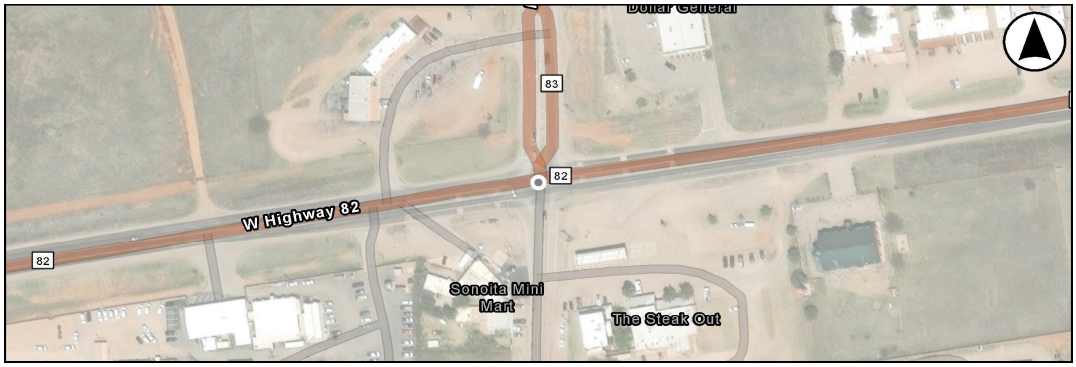
Project ID:	**4.9.15**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 83 & SR 82 Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Santa Cruz County**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Medium Priority**		

Location Description

Total Intersections	1
Signalized:	0
Unsignalized:	1

Key Intersection Locations:
SR 83 & SR 82

Project Location Map **Project ID: 4.9.15**



Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**1**
Signalized Intersections	**0**
Unsignalized Intersections	**1**
Average Total Entering Volume (daily vehicles)	**3,878**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	
Sun Cloud	
Equity Review	✓
Top 10 Intersection	✓

Intersection Characteristics

Intersection Information	SR 83 & SR 82				
Signal YN					
Total Entering Volume (daily)	**3,878**				
CCR[1]	✓				
Sun Cloud					
Top 10 Intersection	✓				
Crash History					
Fatal Crash	**0**				
Serious Injury Crash	**0**				
Minor Injury Crash	**1**				
Possible Injury Crash	**1**				
No Injury/PDO[2] Crash	**7**				
Total Crashes	**9**				
EPDO[3]	**31**				
Over-Represented Crashes					
Fatal/Serious Injury					
Pedestrian/Bicycle					
Angle					
Left/U-Turn					
Rear End					
Head On					
Sideswipe					
Rear to Side/Rear to Rear					

Project Description/How is safety improved? 4.9.15

This project improves safety at the intersection of SR 83 and SR 82 and the surrounding driveways. The recommendation is to convert the existing intersection to a modern roundabout. Any previously completed Intersection Control Evaluations (ICE) will be crucial to the roundabout's design.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Roundabouts

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	1	INT	$ 2,500,000	$ 2,500,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 2,500,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 125,000
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 750,000
Estimated Construction Cost:		$ 3,450,000

Local Match†: 20% $ 876,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 414,000
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 517,500
Estimated Project Total:		$ 4,382,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Evaluate signalization at warranted intersections
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 4.10.13

Project ID:	**4.10.13**	**Date Prepared:**	**9/14/2024**
Project Name:	**Grand Avenue from Mariposa Road to Country Club Drive**	**Prepared By:**	**JB**
Jurisdiction(s):	**Nogales**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, High Priority**		

Location Description

Roadway: Grand Avenue
From: Mariposa Road
To: Country Club Drive
Length: 1.00 miles

Key Intersection Locations:
Mariposa Road & Grand Avenue

Project Location Map

Project ID: 4.10.13

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.00**
Average Daily Traffic (vehicles per day)	**15,707**
Functional Classification	**Other Principal Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**9**
Total Crashes	**12**
Total EPDO Crashes	**84**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury	✓	Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Mariposa Road & Grand Avenue	✓	0	0	0	3	12	15	41								

Project Description/How is safety improved? 4.10.13

This project improves safety along Grand Avenue by connecting the sidewalks on the west side of the roadway and providing sidewalk on the east where space is available. A Road Safety Audit is recommended to identify further recommendations for this project area. At the intersection with Mariposa Road it is recommended to install retroreflective backplates/ borders to improve signal compliance and centerline hardening of the existing curbs to protect pedestrians using the crosswalks. A presence of rear end crashes in this project location suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speeds for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Walkways


Road Safety Audit


Backplates with Retroreflective Borders

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Sidewalk or Walkways	NA	Pedestrian	1.00	MILE	$ 1,268,000	$ 1,268,000
Perform Road Safety Audits	0.4-0.9	All Crashes	1	LOC	$ 25,000	$ 25,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Retroreflective Backplates/Borders	0.85	All Crashes	18	EACH	$ 275	$ 4,950
Centerline Hardening	NA	Angled	1	INT	$ 1,000	$ 1,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,298,950
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 64,948
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 389,685
Estimated Construction Cost:		$ 1,828,583

Local Match†: 20% $ 464,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 219,430
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 274,287
Estimated Project Total:		$ 2,323,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet 4.11.13

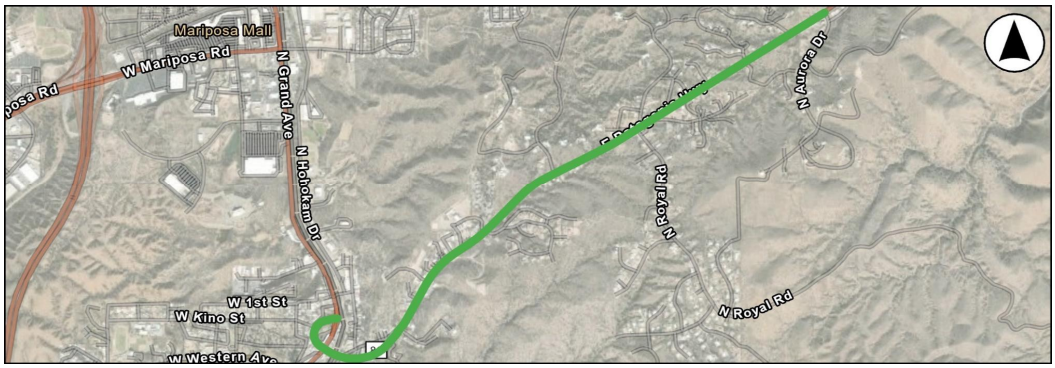
Project ID:	**4.11.13**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 82/Patagonia Highway from Grand Avenue to Aurora Drive**	**Prepared By:**	**JB**
Jurisdiction(s):	**Nogales**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, High Priority**		

Location Description

Roadway: SR 82/Patagonia Highway
From: Grand Avenue
To: Aurora Drive
Length: 2.71 miles

Key Intersection Locations:

Project Location Map **Project ID: 4.11.13**



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.71**
Average Daily Traffic (vehicles per day)	**3,420**
Functional Classification	**Minor Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**5**
Total Crashes	**7**
Total EPDO Crashes	**66**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury	✓	Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR

Project Description/How is safety improved? 4.11.13

The project improves safety along SR 82/Patagonia Highway and at the intersection with Grand Avenue. Improvements include centerline rumble strips from Bristol Drive to Aurora Drive where the roadway is undivided and conducting a Road Safety Audit to focus on the pedestrian facilities. Areas like the Circle K and housing developments currently do not have safe crossing locations to cross SR 82/Patagonia Highway. Approaching the Grand Avenue intersection, it is recommend to install or upgrade the curve signage and delineations, and perform an Intersection Control Evaluation where SR 82/Patagonia Highway and Grand Avenue intersect. A presence of rear end crashes in this project location suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speeds for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Road Safety Audit


Enhanced Delineation for Horizontal Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injury	0.75	MILE	$ 5,000	$ 3,750
Perform Road Safety Audits	0.4-0.9	All Crashes	1	LOC	$ 25,000	$ 25,000
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	1	CURVE	$ 2,000	$ 2,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 60,750
*Mobilization: (% +/-)**	*10%*	$ 6,080
Traffic Control: (% +/-)	*5%*	$ 3,038
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 18,225
Estimated Construction Cost:		$ 88,093

Local Match†: 20% $ 22,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 10,571
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 13,214
Estimated Project Total:		$ 112,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 4.12.15

Project ID:	**4.12.15**	**Date Prepared:**	**9/14/2024**
Project Name:	**East Frontage Road from I-19 to Palo Parado Rod**	**Prepared By:**	**JB**
Jurisdiction(s):	**Santa Cruz County**	**Checked By:**	**EJC**
GFA(s):	**Santa Cruz County**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Medium Priority**		

Location Description

Roadway: East Frontage Road
From: I-19
To: Palo Parado Rod
Length: 0.36 miles

Key Intersection Locations:
Palo Parado Road & East Frontage Road

Project Location Map

Project ID: 4.12.15

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.36**
Average Daily Traffic (vehicles per day)	**51**
Functional Classification	**Local**
Roadway Ownership	**Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Historic Crashes	
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**1**
Total Crashes	**1**
Total EPDO Crashes	**1**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Palo Parado Road & East Frontag		0	0	0	1	4	5	14								

Project Description/How is safety improved? 4.12.15

This project focuses on the East I-19 Frontage Road near Exit 25 and the intersection with Palo Parado Road. Improvements include upgrading curve signage to enhance delineations and transverse rumble strips in the travel lanes to alert drivers of a change in speed and upcoming intersection. At the intersection of the East Frontage Road and Palo Pardo it is recommended to install intersection lighting to make vehicles exiting the parking lot to be more visible. Systemic low-cost countermeasures recommended at this location include refreshing pavement markings, stop signs on both sides of the roadway on each approach, retroreflective sheeting on signposts, or advanced "Stop Ahead" signage etc. An Intersection Control Evaluation is recommended to determine if this intersection would be more safe as an all -way stop or another configuration.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Enhanced Delineation for Horizontal Curves


Lighting


Stop-Controlled Intersection Systemic Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	1	CURVE	$ 2,000	$ 2,000
Install Transverse Rumble Strips as a Traffic Calming Device	0.66	All Crashes	1	LANE	$ 450	$ 450
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1	INT	$ 19,000	$ 19,000
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 82,450
*Mobilization: (% +/-)**	*10%*	$ 8,250
Traffic Control: (% +/-)	*5%*	$ 4,123
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 24,735
Estimated Construction Cost:		$ 119,558

Local Match†: 20% $ 30,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 14,347
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 17,934
Estimated Project Total:		$ 152,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: All-way Stop Control Warrants
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

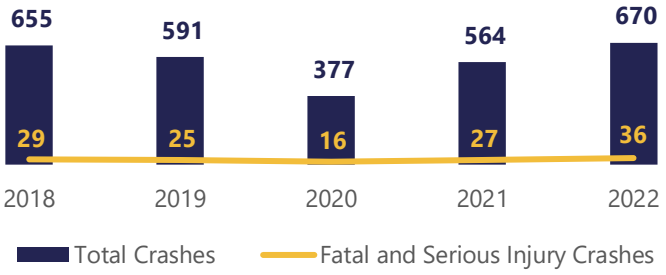
F – SVMPO

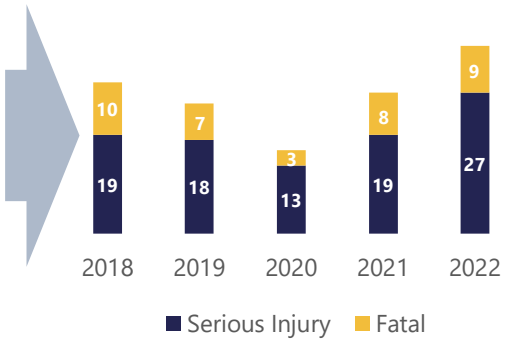
Fatal and Serious Injury Crashes by EA in SVMPO

Arizona SHSP Emphasis Area	Region-wide (Four Counties)		Santa Cruz County GFA		
	Fatal and Serious Injury Crashes	Rank	Fatal and Serious Injury Crashes	Rank	Change in Rank from SEAGO
Behavior Related	271 (49%)	1	54 (41%)	1	0
Intersections	102 (18%)	2	49 (37%)	2	0
Lane Departure	70 (13%)	3	17 (13%)	4	-1
Vulnerable Road Users	57 (10%)	4	19 (14%)	3	+1

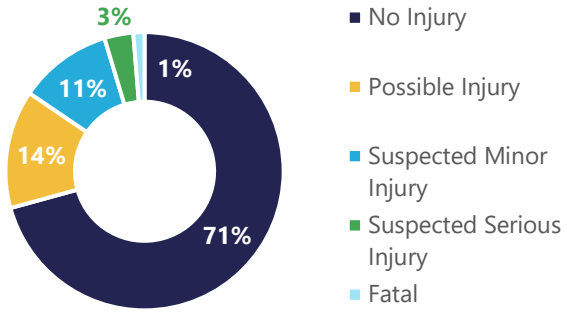
SVMPO County Safety Overview

CRASHES BY YEAR





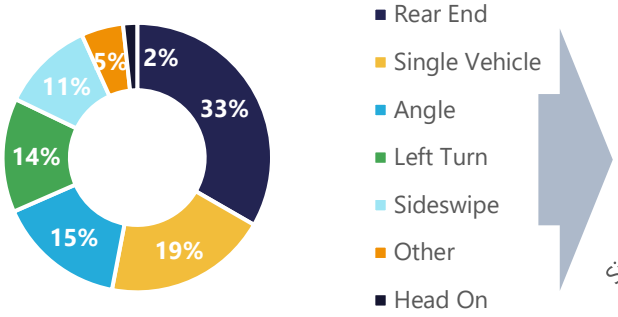
CRASHES BY INJURY LEVEL

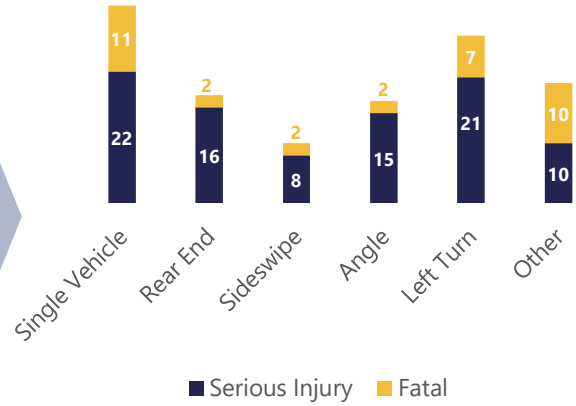


CRASH SEVERITY BY ROUTE TYPE

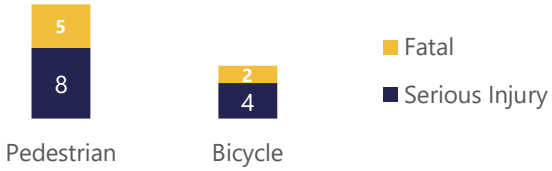
Route Type/Crash Severity	State Route	Non-State Route	Total	% of SEAGO
Fatal	23	14	37	19%
Serious Injury	56	40	96	26%
Minor Injury	179	131	310	26%
Possible Injury	213	180	393	36%
No Injury	1,060	951	2,021	26%
Unknown	0	1	1	2%
Total	**1,540**	**1,318**	**2,858**	**27%**

TOP MANNER OF COLLISION

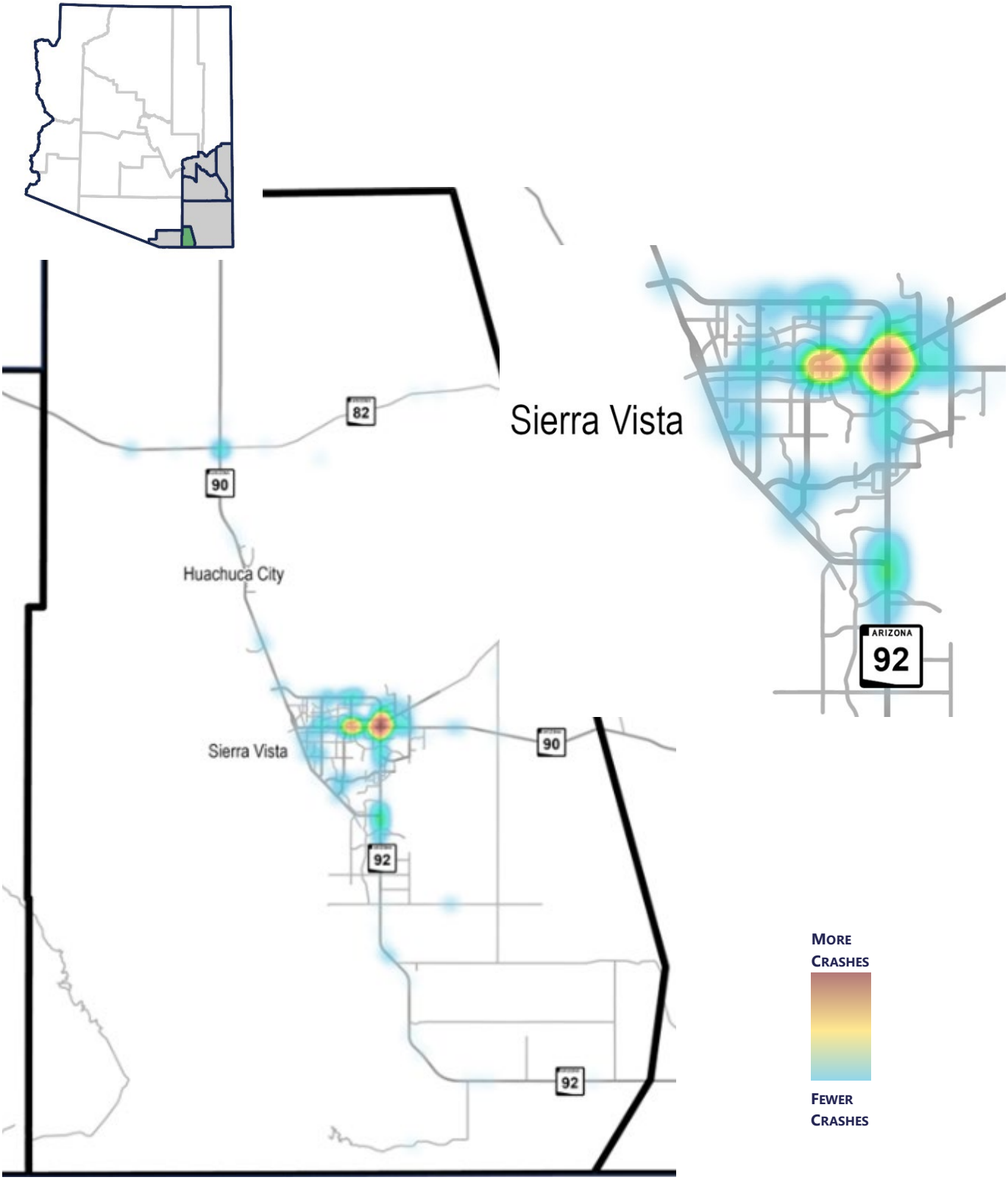




19 OF **65** VRU-INVOLVED CRASHES RESULTED IN A SERIOUS INJURY OR FATALITY



FATAL AND SERIOUS INJURY CRASH DENSITY



Safety Analysis Results for SVMPO

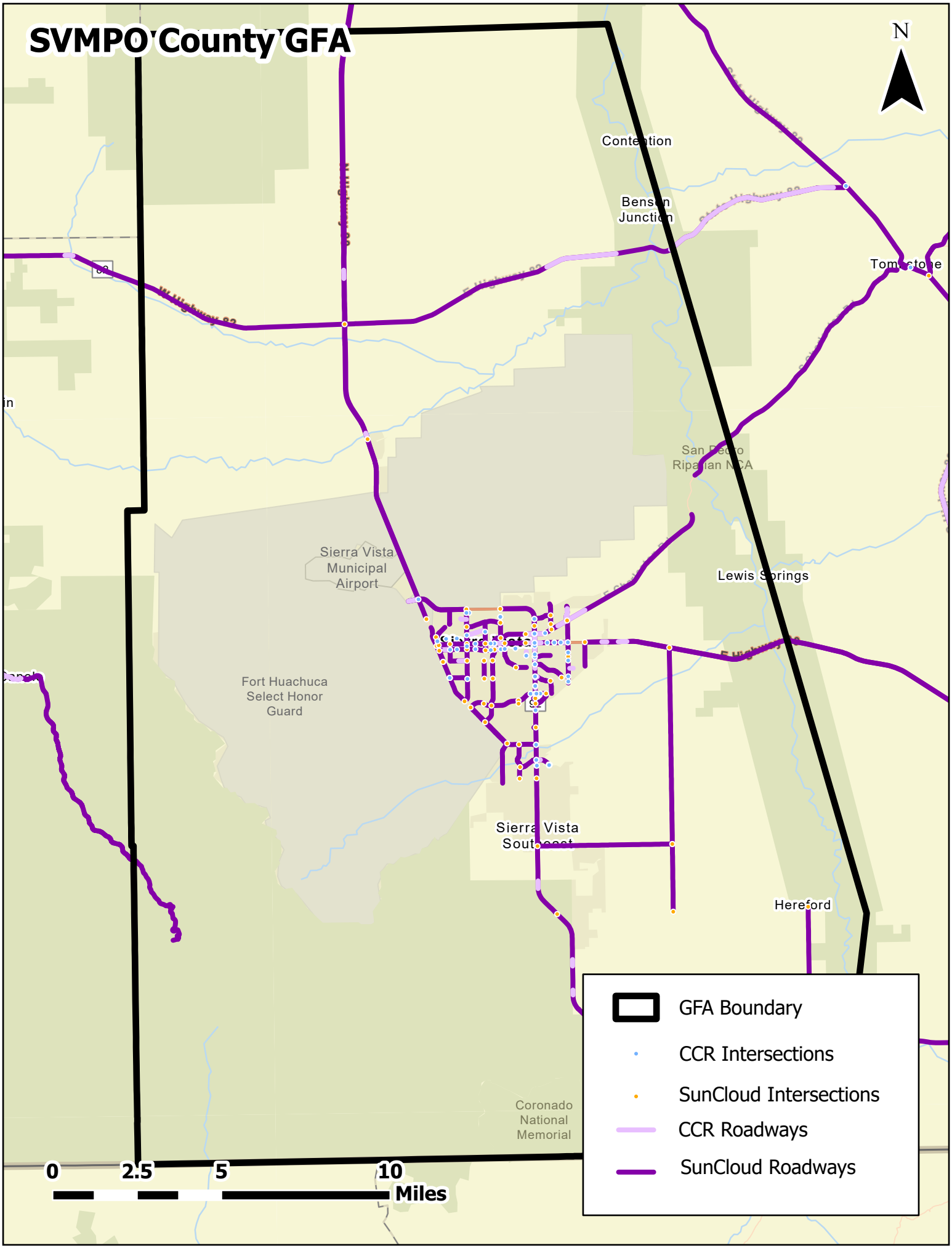
Facility	Limits	Functional Classification	City	Crashes	Critical Crash Rate Differential	EPDO[1]	Fatal	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Injury/PDO	Unknown	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
State Routes																										
SR 92	Snyder Blvd to Quality Inn driveway	Principal Arterial	Sierra Vista	**15**	5.0	67	0	0	2	3	10	0	0	0	1	0	13	0	1	0	0	0	0	0	0	0
SR 92	Canyon De Flores to AmeriGas driveway	Minor Arterial	Sierra Vista	**12**	5.0	21	0	0	0	1	11	0	1	0	0	0	9	0	2	0	0	0	0	0	0	0
SR 92	Fry Blvd to Harbor Freight driveway	Principal Arterial	Sierra Vista	**18**	3.5	180	0	2	2	4	10	0	1	1	4	0	8	0	4	0	0	0	0	0	0	0
SR 90	MP 321.2 to Queens Way	Principal Arterial	Sierra Vista	**26**	3.5	994	1	0	2	6	17	0	0	3	1	0	15	0	4	0	0	0	3	1	0	1
SR 92	Foothills Dr to Desert Gold Plaza driveway	Principal Arterial	Unincorporated	**17**	2.0	99	0	0	3	5	9	0	0	2	1	0	13	0	1	0	0	0	0	0	0	0
SR 92	Hazen Rd to Chevron driveway	Principal Arterial	Sierra Vista	**6**	1.8	70	0	1	1	0	4	0	0	1	1	0	3	0	1	0	0	0	0	0	0	0
SR 82	MP 51.8 to High Desert Cir	Major Collector	Unincorporated	**3**	1.4	3	0	0	0	0	3	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0
SR 92	Hunter Canyon Rd to Baumkirchner Rd	Minor Arterial	Unincorporated	**5**	1.2	5	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
SR 90	MLK Jr. Pkwy to Fry Blvd	Principal Arterial	Sierra Vista	**30**	1.2	99	0	0	2	5	23	0	1	8	4	1	7	0	9	0	0	0	0	0	0	1
SR 92	Dead Bear Draw to Emory Oak Ridge	Minor Arterial	Unincorporated	**6**	1.1	28	0	0	1	1	4	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0
Non-State Routes																										
Avenida Escuela	Blackbird Dr to Cardinal Pl	Minor Collector	Sierra Vista	**3**	11.6	893	1	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Calle Granada	Monte Vista Ave to San Jacinto Dr	Minor Collector	Sierra Vista	**3**	5.3	3	0	0	0	0	3	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0
Coronado Dr	Wilcox Dr to Fry Blvd	Minor Arterial	Sierra Vista	**18**	4.6	77	0	1	0	1	16	0	5	6	3	0	1	0	2	0	0	0	1	0	0	0
Carmelita Dr	7th St to Lenzner Ave	Minor Collector	Sierra Vista	**8**	3.9	8	0	0	0	0	8	0	0	4	0	0	2	0	0	0	0	0	2	0	0	0
Canyon De Flores	SR 92 to Resort Dr	Major Collector	Sierra Vista	**4**	3.1	4	0	0	0	0	4	0	1	0	0	1	0	0	2	0	0	0	0	0	0	0
7th St	Bartow Dr to Fry Blvd	Minor Arterial	Sierra Vista	**5**	2.5	27	0	0	1	1	3	0	0	0	1	0	2	0	2	0	0	0	0	0	0	0
Charleston Rd	SR 90 to Tree Top Ave	Minor Arterial	Sierra Vista	**22**	2.5	87	0	0	3	3	16	0	0	8	6	0	5	1	1	0	0	0	1	0	1	0
MLK Jr. Pkwy	Avienda Escuela to SR 90	Minor Arterial	Sierra Vista	**22**	2.1	87	0	0	3	3	16	0	1	3	9	0	3	0	5	0	0	0	1	1	0	0
Fry Blvd	Bel Aire Pl to Coronado Dr	Minor Arterial	Sierra Vista	**13**	1.8	39	0	0	2	0	11	0	1	1	1	0	4	0	5	0	0	0	1	0	1	0
Giulio Cesare Ave	Charleston Rd to Buena School Blvd	Major Collector	Sierra Vista	**4**	1.5	4	0	0	0	0	4	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	*Unknown*	Single Vehicle	Angle	Left	U-Turn	Rear End	Head On	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Rear to Side	Rear to Rear	Other	Pedestrian	Bicycle	Motorcycle
Signalized Intesections																								
SR 90 & Martin Luther King Jr Pkwy	Sierra Vista	**123**	1.2	733	0	3	20	23	77	0	5	21	52	0	22	1	19	1	0	0	2	2	0	3
SR 90 & Fryh Blvd	Sierra Vista	**110**	0.5	588	0	5	6	17	82	0	1	15	13	0	60	1	16	0	0	0	4	0	1	0
SR 90 & Hatfield St	Cochise County	**53**	0.4	1,093	1	1	3	7	41	0	2	2	7	0	35	0	5	0	0	1	1	0	0	2
Coronado Dr & Fry Blvd	Sierra Vista	**55**	0.4	1,062	1	0	3	9	42	0	2	16	11	0	13	1	7	0	0	0	5	0	2	0
SR 92 & Buffalo Soilder Trail	Sierra Vista	**54**	0.2	259	0	2	2	9	41	0	1	7	2	0	35	1	8	0	0	0	0	0	0	1
Avienda Del Sol & SR 90	Sierra Vista	**33**	0.2	183	0	1	5	4	23	0	2	9	8	0	12	0	2	0	0	0	0	0	0	0
SR 92 & Foothills Dr	Cochise County	**51**	0.2	253	0	1	5	10	35	0	2	4	3	0	40	1	1	0	0	0	0	0	0	1
SR 92 & Canyon De Flores	Sierra Vista	**39**	0.2	303	0	3	4	7	25	0	0	10	6	0	21	0	1	0	0	0	1	1	0	0
SR 92 & Avienda Cochise	Sierra Vista	**44**	0.2	118	0	0	3	4	37	0	5	6	6	1	22	0	3	0	0	0	1	0	0	0
Unsignalized Intersections																								
Frontage Rd & Avenida Cochise	Sierra Vista	**12**	0.8	29	0	0	0	2	10	0	1	6	2	0	2	0	1	0	0	0	0	0	0	0
Calle Portal & Wilcox Dr	Sierra Vista	**6**	0.8	6	0	0	0	0	6	0	0	2	2	0	1	1	0	0	0	0	0	0	0	0
Paseo San Luis & Paseo De La Luna	Sierra Vista	**6**	0.7	15	0	0	0	1	5	0	0	2	0	1	2	0	0	1	0	0	0	0	0	0
Avenida Del Sol & Calle Cumbre	Sierra Vista	**3**	0.5	12	0	0	0	1	2	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0
Moorman Ave & Wilcox Dr	Sierra Vista	**8**	0.5	38	0	0	1	2	5	0	0	5	1	0	0	1	1	0	0	0	0	0	0	0
Rainbow Way & SR 90	Sierra Vista	**8**	0.4	961	1	1	1	0	5	0	0	2	0	0	4	0	0	0	0	0	2	1	1	1
El Camino Real & Wilcox Dr	Sierra Vista	**8**	0.4	21	0	0	1	0	7	0	1	5	1	1	0	0	0	0	0	0	0	0	0	1
Avenida Del Sol & Snyder Blvd	Sierra Vista	**5**	0.4	22	0	0	0	2	3	0	1	2	1	0	1	0	0	0	0	0	0	0	0	0
Calle Pequeno & Avenida Cochise	Sierra Vista	**6**	0.4	28	0	0	1	1	4	0	1	3	1	0	1	0	0	0	0	0	0	0	0	0
Leon Way & Ocotillo Dr	Sierra Vista	**3**	0.4	16	0	0	1	0	2	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0

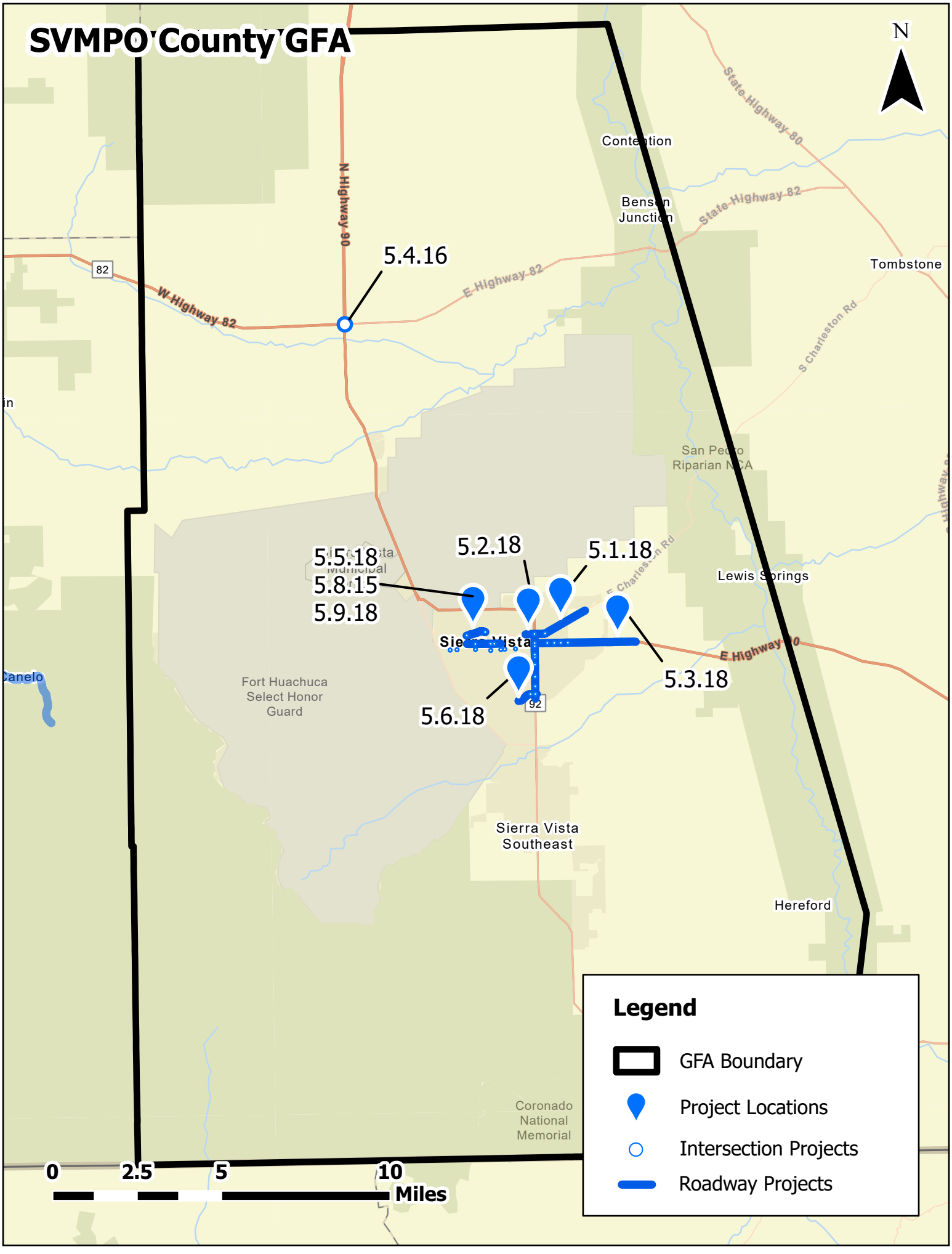
1. Equivalent Property Damage Only Crashe

Project Information Sheets


SVMPO County GFA
N
Contention
Benson Junction
Tombstone
San Pedro Riparian NCA
Sierra Vista Municipal Airport
Lewis Springs
Fort Huachuca Select Honor Guard
Sierra Vista Southeast
Hereford
Coronado National Memorial
GFA Boundary
CCR Intersections
SunCloud Intersections
CCR Roadways
SunCloud Roadways
0
2.5
5
10
Miles

SVMPO GFA Projects

Project ID	Jurisdictions	Project Name
5.1.18	Sierra Vista	Charleston Road from Avenida Escuela to Fighting Colt Drive
5.2.18	Sierra Vista	SR 92 from Charleston Road to Avenida Tienda
5.3.18	Sierra Vista	SR 90 from SR 92 to Kino Road
5.4.16	Cochise County	SR 90 & SR 82 Intersection Improvements
5.5.18	Sierra Vista	Carmelita Drive from 7th Street to Lenzner Avenue
5.6.18	Sierra Vista	Avendia Cochise from Oakmont Drive to Frontage Road
5.7.18	Sierra Vista	Fry Boulevard from 7th Street to SR 90/SR 92


SVMPO County GFA
N
5.4.16
5.5.18
5.8.15
5.9.18
5.2.18
5.1.18
5.3.18
5.6.18
N Highway 90
W Highway 82
E Highway 82
State Highway 80
State Highway 82
Contention
Benson Junction
Tombstone
S Charleston Rd
San Pedro Riparian NCA
Lewis Springs
E Highway 90
Fort Huachuca Select Honor Guard
Sierra Vista Southeast
Hereford
Coronado National Memorial
82
92
0
2.5
5
10
Miles
Legend
GFA Boundary
Project Locations
Intersection Projects
Roadway Projects

Project Information Sheet 5.1.18

Project ID:	**5.1.18**	**Date Prepared:**	**9/14/2024**
Project Name:	**Charleston Road from Avenida Escuela to Fighting Colt Drive**	**Prepared By:**	**JB**
Jurisdiction(s):	**Sierra Vista**	**Checked By:**	**EJC**
GFA(s):	**SVMPO**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway:	Charleston Road
From:	Avenida Escuela
To:	Fighting Colt Drive
Length:	1.94 miles

Key Intersection Locations:
SR 90 & Martin Luther King Jr Pk
Tree Top Ave & Charleston Rd

Project Location Map **Project ID: 5.1.18**

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.94**
Average Daily Traffic (vehicles per day)	**7,551**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**8**
Possible Injury Crashes (C)	**8**
No Injury/PDO Crashes (O)	**44**
Total Crashes	**62**
Total EPDO Crashes	**1,175**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury	✓	Left/U-Turn	✓
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	✓
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
SR 90 & Martin Luther King Jr Pk	✓	0	3	20	23	77	123	733		✓					✓	
Tree Top Ave & Charleston Rd		0	0	0	0	3	3	3								

Project Description/How is safety improved? 5.1.18

This project improves safety by addressing overrepresentation of sideswipe and left/U-turn crashes at intersections located on Charleston Road between Avenida Escuela and Fighting Colt Drive. Buena High School and the University of Arizona campus are in close proximity to Charleston Road. Installing lighting along the length of the roadway will improve. Low-cost systemic countermeasures at stop-controlled intersections are recommended at the driveways onto Charleston Road. At signalized intersections it is recommended to install retroreflective backplates/borders on all signal heads. A presence rear end crashes suggests a potential speeding issues which may be mitigated by reevaluating and setting appropriate speed for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Stop-Controlled Intersection Systemic Countermeasures


Backplates with Retroreflective Borders

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	1.65	MILE	$ 300,000	$ 495,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	6	INT	$ 19,000	$ 114,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	2	INT	$ 31,000	$ 62,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	100	EACH	$ 275	$ 27,500
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 698,500
*Mobilization: (% +/-)**	*10%*	$ 69,850
Traffic Control: (% +/-)	*5%*	$ 34,925
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 209,550
Estimated Construction Cost:		$ 1,012,825

Local Match†: 20% $ 257,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 121,539
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 151,924
Estimated Project Total:		$ 1,287,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Youth Education
Additional Improvements #2: Set Appropriate Speed Limits for All Road Users
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 5.2.18

Project ID:	**5.2.18**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 92 from Charleston Road to Avenida Tienda**	**Prepared By:**	**JB**
Jurisdiction(s):	**Sierra Vista**	**Checked By:**	**EJC**
GFA(s):	**SVMPO**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium/Low Priority**		

Location Description

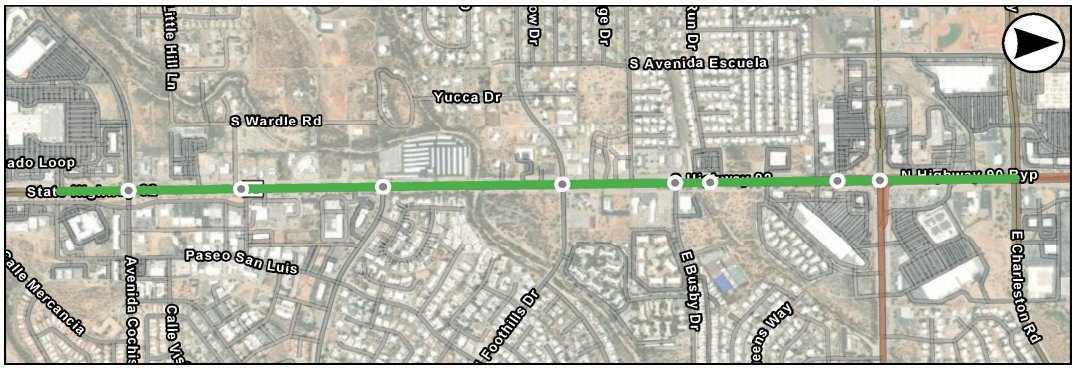
Roadway: SR 92
From: Charleston Road
To: Avenida Tienda
Length: 1.91 miles

Key Intersection Locations:

Hazen Rd/La Linda Way & SR 92	Quail Run Dr & SR 92
Snyder Blvd & SR 92	Ferry Blvd & SR 92
Foothills Dr & SR 92	Fry Blvd & SR 90/92
Busby Dr & SR 92	SR 90/92 & Fry Blvd

Project Location Map

Project ID: 5.2.18



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.91**
Average Daily Traffic (vehicles per day)	**24,044**
Functional Classification	**Minor Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**8**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**4**
Suspected Minor Injury Crashes (B)	**16**
Possible Injury Crashes (C)	**19**
No Injury/PDO Crashes (O)	**80**
Total Crashes	**119**
Total EPDO Crashes	**693**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury	✓	Left/U-Turn	✓
Pedestrian (Ped)		Rear End (RE)	✓
Bicycle (Bike)		Head On (HO)	✓
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Hazen Rd/La Linda Way & SR 92	✓	0	0	3	4	37	44	118			✓					
Snyder Blvd & SR 92		0	0	0	0	5	5	5								
Foothills Dr & SR 92		0	0	4	0	7	11	63								
Busby Dr & SR 92	✓	0	1	5	10	35	51	253						✓		
Quail Run Dr & SR 92		0	0	3	2	8	13	69		✓						
Ferry Blvd & SR 92		0	0	2	0	5	7	33								
Fry Blvd & SR 90/92		0	0	1	1	8	10	32								
SR 90/92 & Fry Blvd	✓	0	5	6	17	82	110	588						✓		

Project Description/How is safety improved? 5.2.18

This project improves vehicle safety by addressing an overrepresentation of vehicle and motorcycle crashes that include rear-end, head-on, and left/U-turn crashes. Improvements include additional lighting to intersections (Hazen Road/La Linda Way), installation of retroreflective backplates on traffic signals (Avenida Cochise, Foothills Drive, Fry Boulevard), addition of low-cost countermeasures at stop-controlled intersections (Hazen Boulevard/La Linda Way, Snyder Boulevard, Busby Drive, Quail Run Drive, Ferry Boulevard), installation of segment lighting along the length of the project segment for better visibility for pedestrians and motorists. Designated turn lanes are recommended at Hazen Road/La Linda Way and Ferry Boulevard. An overrepresentation of rear-end crashes suggests speeding along the roadway, of which evaluating and setting appropriate speeds may help mitigate.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Dedicated Left and Right-Turn Lanes at Intersections


Stop-Controlled Intersection Systemic Countermeasures


Backplates with Retroreflective Borders

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	1.91	MILE	$ 300,000	$ 573,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Right-Turn Lanes	0.74 - 0.86	All Crashes	2	LANE	$ 113,000	$ 226,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	5	INT	$ 19,000	$ 95,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	40	EACH	$ 275	$ 11,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 936,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 46,800
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 280,800
Estimated Construction Cost:		$ 1,338,600

Local Match†: **20%** **$ 340,200**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 160,632
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 200,790
Estimated Project Total:		$ 1,701,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

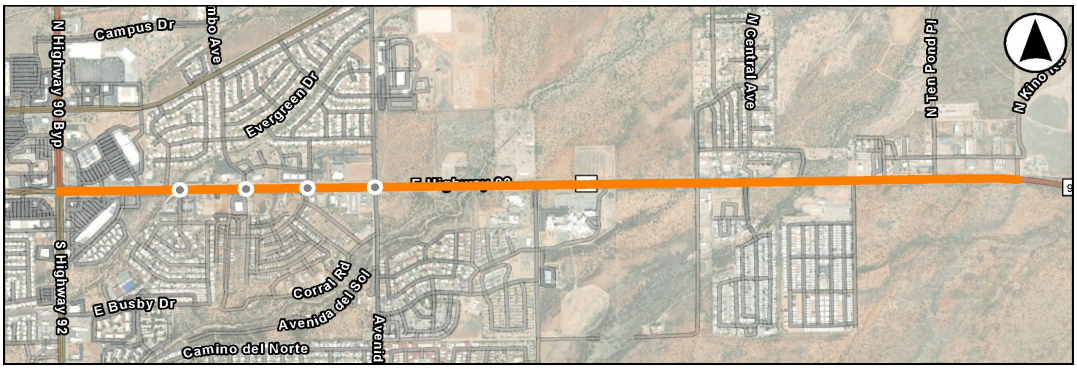
Project Information Sheet 5.3.18

Project ID:	**5.3.18**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 90 from SR 92 to Kino Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Sierra Vista**	**Checked By:**	**EJC**
GFA(s):	**SVMPO**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway:	SR 90	**Key Intersection Locations:**	
From:	SR 92	Kings Way & SR 90	Avenida Del Sol & SR 90
To:	Kino Road	Columbo Ave & SR 90	
Length:	2.99 miles	Rainbow Way & SR 90	

Project Location Map Project ID: 5.3.18



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.99**
Average Daily Traffic (vehicles per day)	**11,963**
Functional Classification	**Other Principal Arteria**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**4**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**2**
Suspected Minor Injury Crashes (B)	**5**
Possible Injury Crashes (C)	**8**
No Injury/PDO Crashes (O)	**31**
Total Crashes	**47**
Total EPDO Crashes	**1,172**

What Crash Types are Over-Represented?			
Fatal		Angle	✓
Serious Injury	✓	Left/U-Turn	✓
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	✓
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Kings Way & SR 90		0	0	2	1	0	3	38			✓					
Colombo Ave & SR 90		0	1	0	2	4	7	75				✓				
Rainbow Way & SR 90		1	1	1	0	5	8	961	✓	✓						
Avenida Del Sol & SR 90	✓	0	1	5	4	23	33	183				✓				

Project Description/How is safety improved? 5.3.18

This project addresses an overrepresentation of head-on and left/U-turn crashes with the following improvements: retroreflective backplates on signal heads, implementation of low-cost countermeasures at stop-controlled intersections, clearing shrubs/trees around the roadway, and providing a shared-use path on the north side of the roadway (Ave Del Sol to Kino Road). Note, the cost of acquiring additional ROW to install a separated bike lane is not included in the estimated project total cost. Sidewalks are also recommended at the intersection of Avenida Del Sol and SR 90 to better facilitate pedestrian crossings, especially on the northeast corner of the intersection. The HAWK at Toscanini Avenue/Rainbow Way may benefit from pedestrian fencing to direct pedestrians away from other midblock crossings. A presence of rear end crashes suggests a potential speeding issues which may be mitigated by reevaluating and setting appropriate speed for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Bicycle Lanes


Walkways


Stop-Controlled Intersection Systemic Countermeasures


Backplates with Retroreflective Borders

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Clear and Grub (Both Sides of Road)	NA	All Crashes	0.50	MILE	$ 13,000	$ 6,500
Install a Separated Bicycle Lane (Cycle Track or Multi-Use Path)	NA	Bicycle	2	MILE	$ 1,286,000	$ 2,572,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Add Sidewalk	0.2	Pedestrian	1	INT	$ 4,500	$ 4,500
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	3	INT	$ 19,000	$ 57,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	21	EACH	$ 275	$ 5,775
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 2,645,775
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 132,289
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 793,733
Estimated Construction Cost:		$ 3,646,796

Local Match†: 20% $ 926,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 437,616
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 547,019
Estimated Project Total:		$ 4,632,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 5.4.16

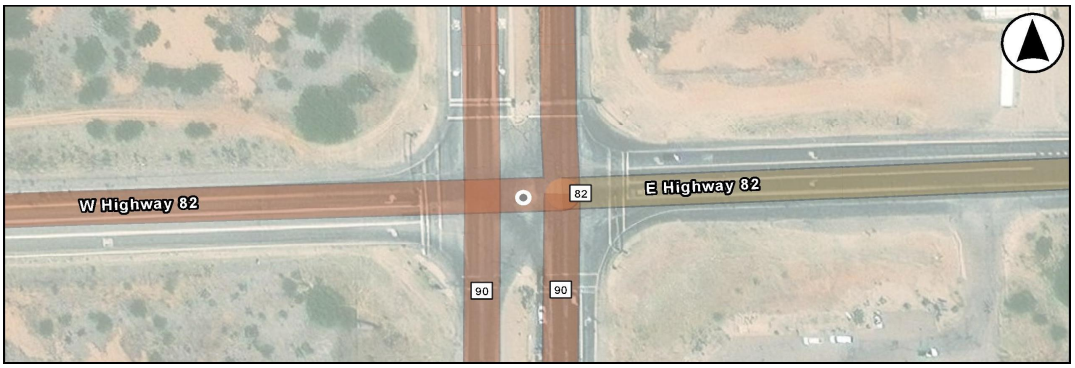
Project ID:	**5.4.16**	**Date Prepared:**	**9/14/2024**
Project Name:	**SR 90 & SR 82 Intersection Improvements**	**Prepared By:**	**JB**
Jurisdiction(s):	**Cochise County**	**Checked By:**	**EJC**
GFA(s):	**SVMPO**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Medium Priority**		

Location Description

Total Intersections	1
Signalized:	1
Unsignalized:	0

Key Intersection Locations:
SR 90 & SR 82

Project Location Map **Project ID: 5.4.16**



Intersection Information and Safety Analysis Areas Summary

Location Characteristics	Value
Number of Key Intersections	**1**
Signalized Intersections	**1**
Unsignalized Intersections	**0**
Average Total Entering Volume (daily vehicles)	**16,618**
Urban/Rural Designation	**Rural**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Intersection	

Intersection Characteristics

Intersection Information	SR 90 & SR 82				
Signal YN	✓				
Total Entering Volume (daily)	**16,618**				
CCR[1]					
Sun Cloud	✓				
Top 10 Intersection					
Crash History					
Fatal Crash	**1**				
Serious Injury Crash	**1**				
Minor Injury Crash	**3**				
Possible Injury Crash	**2**				
No Injury/PDO[2] Crash	**11**				
Total Crashes	**18**				
EPDO[3]	**1,015**				
Over-Represented Crashes					
Fatal/Serious Injury	✓				
Pedestrian/Bicycle					
Angle					
Left/U-Turn					
Rear End					
Head On					
Sideswipe					
Rear to Side/Rear to Rear					

Project Description/How is safety improved? 5.4.16

This project improves safety by installing retroreflective backplates/borders on all traffic signal heads. Retroreflective backplates or borders on each signal head will increase signal visibility and may improve signal compliance. It is recommended that warning signs and advance street name plaques be installed approaching the intersection. An Intersection Control Evaluation is also recommended to further evaluate potentially safety improvements.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Backplates with Retroreflective Borders


Yellow Change Intervals

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Retroreflective Backplates/Borders	0.85	All Crashes	20	EACH	$ 275	$ 5,500
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	1	INT	$ 30,000	$ 30,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 35,500
*Mobilization: (% +/-)**	*10%*	$ 3,550
Traffic Control: (% +/-)	*5%*	$ 1,775
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 10,650
Estimated Construction Cost:		$ 51,475

Local Match†: 20% $ 13,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 6,177
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 7,721
Estimated Project Total:		$ 66,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Appropriately Time the Yellow Change Interval
Additional Improvements #2: Coordinate with Local Jurisdiction on Signal Modifications
Additional Improvements #3: Install Warning Sign and Advance Street Name Plaque on Major Approach
Additional Improvements #4: Targeted Enforcement and Deterrence
Additional Improvements #5:

Disclaimer:

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Project Information Sheet 5.5.18

Project ID:	**5.5.18**	**Date Prepared:**	**9/14/2024**
Project Name:	**Carmelita Drive from 7th Street to Lenzner Avenue**	**Prepared By:**	**JB**
Jurisdiction(s):	**Sierra Vista**	**Checked By:**	**EJC**
GFA(s):	**SVMPO**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway: Carmelita Drive
From: 7th Street
To: Lenzner Avenue
Length: 0.58 miles

Key Intersection Locations:
7th St & Carmelita Dr/Denman Ave
Lenzner Ave & Carmelita Dr

Project Location Map

Project ID: 5.5.18

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.58**
Average Daily Traffic (vehicles per day)	**1,325**
Functional Classification	**Minor Collector**
Roadway Ownership	**Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	
Sun Cloud	
Equity Review	✓
Top 10 Segment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**8**
Total Crashes	**8**
Total EPDO Crashes	**8**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle		Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
7th St & Carmelita Dr/Denman Av		0	1	1	0	8	10	74				✓				
Lenzner Ave & Carmelita Dr		0	0	0	2	1	3	20								

Project Description/How is safety improved? 5.5.18

This project addresses historic left-turn and angle crashes on Carmelita Drive at the intersections at 7th Street and at Lenzner Avenue. The project recommends intersection lighting for improved visibility and systemic low-cost countermeasures at stop-controlled intersections. A presence of rear end crashes suggests a potential speeding issue which may be mitigated by reevaluating and setting appropriate speed for all road users.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Stop-Controlled Intersection Systemic Countermeasures

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	2	INT	$ 31,000	$ 62,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	2	INT	$ 19,000	$ 38,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 100,000
*Mobilization: (% +/-)**	*10%*	$ 10,000
Traffic Control: (% +/-)	*5%*	$ 5,000
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 30,000
Estimated Construction Cost:		$ 145,000

Local Match†: **20%** **$ 37,000**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 17,400
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 21,750
Estimated Project Total:		$ 185,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet 5.6.18

Project ID:	**5.6.18**	**Date Prepared:**	**9/14/2024**
Project Name:	**Avendia Cochise from Oakmont Drive to Frontage Road**	**Prepared By:**	**JB**
Jurisdiction(s):	**Sierra Vista**	**Checked By:**	**EJC**
GFA(s):	**SVMPO**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Low Priority**		

Location Description

Roadway:	Avendia Cochise	**Key Intersection Locations:**	
From:	Oakmont Drive	Calle Paqueno & Avenida Cochise	
To:	Frontage Road	SR 92 & Avenida Cochise	
Length:	0.60 miles		

Project Location Map Project ID: 5.6.18

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.60**
Average Daily Traffic (vehicles per day)	**4,024**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**3**
Total Crashes	**4**
Total EPDO Crashes	**17**

What Crash Types are Over-Represented?			
Fatal		Angle	
Serious Injury		Left/U-Turn	
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)		Head On (HO)	
Motorcycle	✓	Sideswipe (SS)	
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Calle Paqueno & Avenida Cochise		0	0	1	1	4	6	28				✓				
SR 92 & Avenida Cochise	✓	0	0	3	4	37	44	118			✓					

Project Description/How is safety improved? 5.6.18

This project improves safety on Avendia Cochise between Oakmont Drive and SR 92. Recommendations include performing a Road Safety Audit along the roadway and Intersection Control Evaluations at the intersections with Home Depot and the Mall at Sierra Vista. Updating signal timing and potentially adding Flashing Yellow Arrows at the SR 92 intersection may improve flow at that location. It is also recommended to install retroreflective backplates/borders to the SR 92 intersection signal heads. Systemic low-cost countermeasures are recommended at the intersection with Calle Pequeno.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Road Safety Audit


Backplates with Retroreflective Borders


Yellow Change Intervals

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Perform Road Safety Audits	0.4-0.9	All Crashes	1	LOC	$ 25,000	$ 25,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Perform an Intersection Control Evaluation (ICE)	NA	All Crashes	2	INT	$ 30,000	$ 60,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	16	EACH	$ 275	$ 4,400
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 89,400
*Mobilization: (% +/-)**	*10%*	$ 8,940
Traffic Control: (% +/-)	*5%*	$ 4,470
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 26,820
Estimated Construction Cost:		$ 129,630

Local Match†: 20% $ 33,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 15,556
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 19,445
Estimated Project Total:		$ 165,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Appropriately Time the Yellow Change Interval
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet 5.7.18

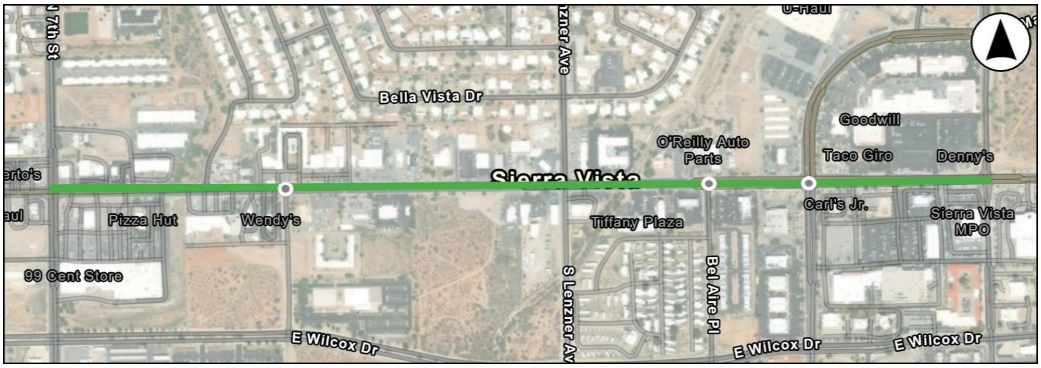
Project ID:	**5.7.18**	**Date Prepared:**	**9/14/2024**
Project Name:	**Fry Boulevard from 7th Street to SR 90/SR 92**	**Prepared By:**	**JB**
Jurisdiction(s):	**Sierra Vista**	**Checked By:**	**EJC**
GFA(s):	**SVMPO**		
Emphasis Areas:	**Behavior Related, Lane Departure, Vulnerable Road Users**		
Equity Review:	**Equitable Transportation Community, Climate & Economic Justice Screening Tool, Medium Priority**		

Location Description

Roadway:	Fry Boulevard	**Key Intersection Locations:**	
From:	7th Street	Marianne Dr & Fry Blvd	
To:	SR 90/SR 92	Bel Aire Pl & Fry Blvd	
Length:	2.01 miles	Coronado Dr & Fry Blvd	

Project Location Map

Project ID: 5.7.18



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.01**
Average Daily Traffic (vehicles per day)	**26,979**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**3**

Why Was This Location Identified?	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Overrepresented Crashes	✓
Sun Cloud	✓
Equity Review	✓
Top 10 Segment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**3**
Suspected Minor Injury Crashes (B)	**14**
Possible Injury Crashes (C)	**24**
No Injury/PDO Crashes (O)	**78**
Total Crashes	**120**
Total EPDO Crashes	**1,551**

What Crash Types are Over-Represented?			
Fatal	✓	Angle	
Serious Injury		Left/U-Turn	✓
Pedestrian (Ped)		Rear End (RE)	
Bicycle (Bike)	✓	Head On (HO)	✓
Motorcycle		Sideswipe (SS)	✓
Single Vehicle		Rear to Side (RS)	
Other/Unknown		Rear to Rear (RR)	

Intersection Crash History

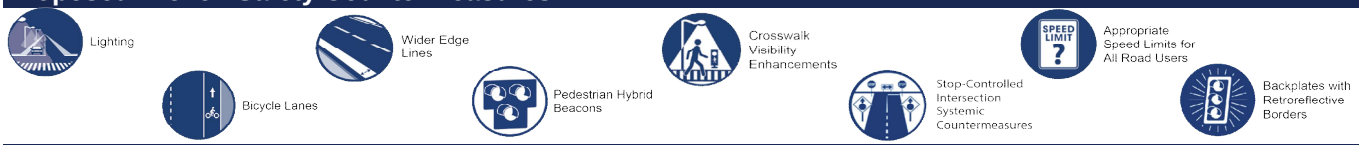
									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	Left	RE	HO	SS	RS/RR
Marianne Dr & Fry Blvd		0	0	1	1	3	5	27				✓				
Bel Aire Pl & Fry Blvd	✓	1	0	3	9	42	55	1,062		✓		✓				
Coronado Dr & Fry Blvd		0	0	1	0	6	7	20								

Project Description/How is safety improved? 5.7.18

This project improves vehicle safety on Fry Boulevard by addressing an overrepresentation of left-turn/U-turn and fatal crashes. Improvements include retroreflective backplates/borders at Coronado Drive, low-cost countermeasures at stop-controlled intersections, intersection lighting at Moorman Avenue, and lighting along the length of the roadway. A presence of rear end crashes suggests a potential speeding issues which may be mitigated by reevaluating and setting appropriate speed for all road users. Additional safety improvements include matching the cross section of Fry Boulevard from Buffalo Soldier Trail to Carmicheal Avenue throughout the project segment.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures



Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Highway Lighting	0.72	Nighttime	4	MILE	$ 300,000	$ 1,200,000
Install Buffered Bicycle Lane	NA	Bicycle	4	MILE	$ 31,000	$ 124,000
Traffic Calming - Lane Narrowing	0.68	All Crashes	4	MILE	$ 39,000	$ 156,000
Traffic Calming - Wider Lane Lines	0.68	All Crashes	2	MILE	$ 21,000	$ 42,000
Install Pedestrian Hybrid Beacons (PHB) or HAWK	0.712	Pedestrian	2	EACH	$ 200,000	$ 400,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	2	INT	$ 19,000	$ 38,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	1	INT	$ 31,000	$ 31,000
Install High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	3	XING	$ 36,000	$ 108,000
Install Retroreflective Backplates/Borders	0.85	All Crashes	32	EACH	$ 275	$ 8,800
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 2,107,800
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 105,390
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 632,340
Estimated Construction Cost:		$ 2,920,530

Local Match†: 20% $ 742,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 350,464
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 438,080
Estimated Project Total:		$ 3,710,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Youth Safe Driving Education and Outreach
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

G – Public Engagement Results

Interactive Map Comments

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
Bicycle Safety Issue		
Add multi use path	N/A	Cochise County
Add multi use path	N/A	Cochise County
Add multi use path	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Add multi-use path.	N/A	Cochise County
Create a standalone crossing on the west side of the intersection so bicycles can proceed into the bike lane southbound. Currently cyclists have to cross on the east side and either ride the sidewalk southbound, ride against traffic or cross 4 lanes to get the correct SB bike lane.	N/A	Cochise County
Create separated bike lane from BST and Hwy 90 to BST and Cherokee.	N/A	Cochise County
Frequently encounter bicyclists on SR83. There is no shoulder, it makes for a tense interaction between highway traffic and bicyclists. I strongly advocate for the County to fully support the bike linking Patagonia-Sonoita and on - it could alleviate a lot of tensions.	N/A	Santa Cruz County
Multi-use path ends with no connection to other walkways or directions to other pathways.	N/A	Cochise County
Bike path crosses into an intersection where cars are going 55mph. Bikers do not always stop with the light and right turn cars have close calls with the bikers	N/A	Cochise County
Extend bike/multiuse path to Moson Rd	N/A	Cochise County
Make a parallel bike path to get cyclists off highway.	N/A	Cochise County
pave this old railroad bed and make it a multi-use path going from Coronado Dr all the way to the ball-fields and hwy 90	N/A	Cochise County
Going south on this multiuse path, you have to turn into traffic to enter the multiuse path on the other side of the road (along BST). Not sure what the right of way is there, but there would have been enough room to make the MUP straight across from each other.	N/A	Cochise County
I love the pedestrian crossings a little to the West (hope the one that got ran over is fixed soon!), but they are so close together that I am not sure why there is not something at North Ave where there is a dedicated bike lane going North along that road. Instead, I have to	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
cross at one of the earlier crossings and go what is, according to the arrows on the bike lanes, the 'wrong way' to get to North. :-/		
I am very excited that a MUP connector is forthcoming! YAY!	N/A	Cochise County
The button for crossing is about 15' away from the ramp at the crosswalk. A person has to go there, turn their bike around and point it back in the right direction (because the light changes so fast after activation) push the button and hurry back to the crossing ramp. A cyclist/pedestrian friendly push button post would be a great idea here. (Fortunately, the light changes well for cyclists in the lanes, but because of heavy traffic that is only useful if you are going straight through very early when there is no traffic, otherwise it is too dangerous to take the lane.)	N/A	Cochise County
The light does not change for cyclists in the lane or pushing the crossing button. I have waited, after pushing the crossing button, many minutes to get a light, even when it is so early there no traffic. I am generally force to just cross against a red light.	N/A	Cochise County
There is no entrance from Carmichael, which has a designated bike lane, onto the MUP. :-(It is a curb.	N/A	Cochise County
This is the nicest intersection in town for getting across and on/off the MUP. The crossing buttons and design are great! Thank you!	N/A	Cochise County
This section of the MUP or bike route is awful.	N/A	Cochise County
Other		
Create additional overflow parking for Sport fields.	N/A	Cochise County
Extend BST to Moson rd	N/A	Cochise County
Improve street lights along entire Fry blvd. Arear is poor lit with high traffic.	N/A	Cochise County
Possible to get a Green turn arrow for each direction	N/A	Cochise County
This section of road is frequently in disrepair with potholes large enough for a child to stand in.	N/A	Santa Cruz County
Homeowners building concrete, brick, and large stone barriers into the city easement (where the sidewalk would be in the future) right up to the lip of the curb, preventing delivery vehicles, first responders, and vehicular traffic from pulling over for emergencies, deliveries, or accident avoidance.	N/A	Cochise County
Another pothole only growing in size. also, south bound traffic goes past the stop sign almost blocking drivers trying to turn on Cherokee from the west on Yaqui	N/A	Cochise County
deep pothole growing for past year. danger to all vehicles and traffic due to trying to avoid it. Nothing done and passed the buck on who needs to fix	N/A	Cochise County
Fix this and other lights so we are not sitting at a full length red light, when there is not any cross traffic. One car made a right turn, which could have been made on red, and then nothing else, but you are stuck there at a red light for nobody. It looks like there are sensors at the light, but they must not be working. Have had similar experiences at other lights.	N/A	Cochise County
Hire someone to synchronize the traffic lights so they work better together. Traffic will flow better, and people will be less likely to run red lights maybe.	N/A	Cochise County
road in front of mail boxes deep pothole affects people getting mail and school drop off	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
This area of State-owned land has become a dumping ground for contractor materials. Vehicle access should be restricted to first responders only.	N/A	Cochise County
This map needs to be updated to reflect the road extension here.	N/A	Cochise County
This property is an eye sore and provides an unsafe environment for the surrounding community. The unsafe structure (home) on the property should be demolished ASAP	N/A	Cochise County
Could you put the Hereford road signal sign a little further back from the actual road. It come up fast and a little more notice would be nice. This is heading towards Palominas. Thank you!	N/A	Cochise County
Downtown San Diego has this amazing light system! You can literally make it through 5 lights doing 35 miles an hour before you come to a red light. It is amazing! You have to do the speed limit though otherwise you will come up on the next light and it will be red. Look into this! It is the greatest road/light experience of my life! All the lights in this town is the problem. If we are going to have them, then we need something better set up.	N/A	Cochise County
Is this not a highway??? Just put in a turn lane. BOOM! Problem solved.	N/A	Cochise County
Please DO NOT put in another stop light! I have lived here almost 30 years and the worst thing that ever happened was all the lights. Put in an extended merging lane. If people are trying to turn right at this intersection, they should know to just drive the small road over to the Foothills light. I have done it for years. It is really easy.	N/A	Cochise County
There is no reason this should not be a two lane road again or at least mark the lane closest to Safeway as a turn lane. Since moving this area from 2 lanes to 1, it is very difficult to see where the road way actually is. I drive this multiple times per month, and I still get confused.	N/A	Cochise County
Since ADOT does not want to change the light timing sequence now that the new school is backing up traffic in all directions before and after school, this spot would be an ideal location for another fire station like the one on south 7 Street by Tompkins park. You can also build a helipad for AirEvac and Lifenet because there WILL be multiple collisions and fatalities.	N/A	Cochise County
Multiple road erosions from monsoons	N/A	Cochise County
pot holes developing	N/A	Cochise County
The West end of Avenida Cochise speed limit should be increased to 45 mph to match the rest of the road.	N/A	Cochise County
Pedestrian Safety Issue		
No crosswalk or light here, leaving people to cross 5 lanes of traffic to make it across. Children cross here regularly to get to and from school at both Town and Country, Joyce Clark, and the school at First Baptist church.	N/A	Cochise County
Add speed humps and flashing pedestrian crosswalk signs.	N/A	Cochise County
Create an extension of the Newman Trail multiuse path to the top of Ramsey Canyon to limit impact on vehicular traffic	N/A	Cochise County
Customers leaving the nearby bars frequently walk out into the road without looking for traffic. The sharp turn and poor lighting at night make for a bad mix. I am not advocating for street lights - our community values our dark skies. But a temporary flashing pedestrian crossing, or better parking arrangements (like a shared common parking lot) could help.	N/A	Santa Cruz County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
Extend sidewalk from Calle Mercancia all the way to the intersection. The SE corner forces pedestrians and bicycles into the traffic lane due to lack of sidewalks or bike lane.	N/A	Cochise County
Side walk abruptly ends no crosswalk to or connection to multi use path.	N/A	Cochise County
Drivers do not respect existing Pedestrian Signal-Light Sign when Lights are flashing!	N/A	Cochise County
People speed through the park, excess of 30+ mph. It is going to kill a kid one day. Speed bumps, post police officers, do something.	N/A	Cochise County
Need speed bumps in front of schools. People speed through posted school zones everyday with nothing being done about it	N/A	Cochise County
There needs to be more school zone posted signs on this side of the school for the kids trying to walk home. Or a speed bump to keep people from going 35+ during school hours	N/A	Cochise County
Bench seating along the fence line would provide a place for spectators/parents to sit while their children practice on the fields. This would assist with vehicles parking in the No Parking zone.	N/A	Cochise County
Bench seating along the fence line would provide a place for spectators/parents to sit while their children practice on the fields. This would assist with vehicles parking in the No Parking zone.	N/A	Cochise County
Bench seating along the fence line would provide a place for spectators/parents to sit while their children practice on the fields. This would assist with vehicles parking in the No Parking zone.	N/A	Cochise County
Children are walking to and from the newly constructed school (ALA) and there are no crosswalks or safety measures in place to protect them as they walk along a busy highway.	N/A	Cochise County
Even though there are No Parking signs along the road, many cars still park there and speed down the road. Speed Bumps should be installed to deter speeders.	N/A	Cochise County
Map needs to reflect new parking area that does not currently have any lights which makes people prefer to park along Cyr Center Rd even though there are no parking signs.	N/A	Cochise County
SVPD is constantly writing citations for speeders who disregard speed limit signs and put small children in danger who are crossing back and forth during sporting events.	N/A	Cochise County
This is a high-traffic area for school children to walk to the nearby elementary or get picked up/dropped off by the school bus. Traffic does not stop along Quail Run, there are only stop signs for vehicles coming from Calle Portal. There should at least be a cross-walk or better, yet a 4-way stop to ensure that the children cross safely. Speeding vehicles do not currently give them the right-of-way.	N/A	Cochise County
Vehicles speed down Heather Dr on their way to the cul-de-sac at the South end of S Savanna Dr. There should be speed-bumps installed to deter drivers from using residential streets as a short cut to Tompkins Park while speeding back and forth towards 7th St.	N/A	Cochise County
Vehicles speed down Heather Dr on their way to the cul-de-sac at the South end of S Savanna Dr. There should be speed-bumps installed to deter drivers from using residential streets as a short cut to Tompkins Park while speeding back and forth towards 7th St.	N/A	Cochise County
My family and I walk across this intersection a lot. Each time, we come very close to getting hit by drivers turning right/left. Is there an added safety measure that can be included to help protect pedestrians?	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
There are no sidewalks here to enter into this commerce area.	N/A	Cochise County
There are no sidewalks to enter into this shopping area towards Target.	N/A	Cochise County
A pedestrian crossing area here would be beneficial. Please no traffic light. It is not needed.	N/A	Cochise County
SR 80 from Old Divide Road to Denn Mine Road	This is where Bisbee Bikeways (https://bisbeebikeways.com/) has done a lot of groundwork already to plan and build a bicycle path and improve the safety of the road / highway in the process. I would highly recommend contacting them to cooperate and coordinate your efforts!	Cochise County
SR 90 from SR 92 to Kino Rd	Main area of concern. Causing damage to vehicles. Unsafe roadway conditions.	SVMPO
A crosswalk without a full traffic signal would not be safe at this location! Crosswalks have a very low rate of compliance. If a crosswalk is needed, there needs to be a full signal. You all have cars on the east and west legs trying to dart across five lanes of traffic.	N/A	Cochise County
Remove unwarranted crosswalk and install more restrictive medians to force right turn only.	N/A	Cochise County
Remove unwarranted crosswalk.	N/A	Cochise County
Safford Bryce Road from Bryce Eden Road to Hubbard Cemetery Road	There have been multiple runoffs at this corner. There was rollover there this year.	Graham County
Potential Safety-Focused Improvement Location		
Benson Intersection	TOO many people try to rush the light getting into/out of Walmart	Cochise County
Benson Intersection	This light takes forever to turn green for left turns.	Cochise County
West Frontage Road from Peck Canyon Dr to Yavapai Dr	With the increased Semi truck traffic since the Loves was built at exit 12, this entire area has become clogged with semi-truck traffic and other cars trying to get through. People do not wait for stoplights and are very impatient at the Exit 12 and frontage road area. That entire exit needs to be redesigned, and Loves should have to help foot the bill.	Santa Cruz County
Charleston Rd from Avenida Escuela to Fighting Colt Dr	This needs the light fixed at the entrance of Lowes and Walmart. The left turn first is ridiculous, there is 15 to 20 cars waiting to go straight but	SVMPO

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
	we have to wait for 1 car turn left fix this please thanks	
SR 83 & SR 82 Intersection	This area is really bad for a couple of reasons. 1. People are driving too fast for the type of roads. 2. There are no shoulders, lots of blind corners and hills and cyclists are using these roads and not staying to the sides. It is incredibly dangerous. And last, hwy 83 south of the intersection with 82 is in such bad repair, people are driving it as if they were a pinball in a pinball machine.	Santa Cruz County
SR 80 from SR 90 to Old Divide Road	No one yields or even looks for oncoming cars at the 90 / 80 junction. Cars assume they have the right-of-way. Traveling down 80 we have to keep an eye extra carefully on vehicles merging onto 80 from 90.	Cochise County
Charleston Rd from Avenida Escuela to Fighting Colt Dr	Entrance and exit from Plaza Vista Mall is a high traffic area. Visibility is often impaired due to traffic, position of the sun, or the curve of the road. A more organized system of entrance and exit would be safer.	SVMPO
West Frontage Road from Peck Canyon Dr to Yavapai Dr	An overpass for the train would definitely assist with continuous traffic jams	Santa Cruz County
SR 90 from SR 92 to Kino Rd	This cannot be repaired soon enough.	SVMPO
Vehicle Safety Issue		
Drivers runoff the corner	N/A	Graham County
Turn lane has been suggested for this location	N/A	Graham County
No right turn lanes. Vehicles travel at high rates of speed. Speed limit 55 mph but most travel 65+ and tailgate. If you want to make a right turn you need to turn you signal long (even 1/4 mile out is not enough for tailgates to slow down or change lanes) before your turn or get onto the shoulder over the rumble strips onto rocks, gravel, and anything else laying on shoulder to make a right turn. Even then vehicles pass within inches of your car.	N/A	Cochise County
Highway 83 is in poor condition south of Sonoita, but exceptionally dangerous the closer one gets to Parker Canyon Lake.	N/A	Cochise County
Add street lights	N/A	Cochise County
All four lanes are in terrible condition - worse than an un-maintained dirt road in places.	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
Border Patrol frequently leaves speed change signage up when the checkpoint is not in use. This creates confusion for drivers and results in some folks dangerously slowing down. If the checkpoint is not in use, the signage should be laid down.	N/A	Santa Cruz County
Create 4 way stop. Drivers use Camino Montana to avoid Snyder (and the Hwy 92 intersection) creating a higher than expected used. BUT the electrical junction box on the NE side of the intersection of Via Riata and Avenida Cochise limits view of traffic approaching from the west.	N/A	Cochise County
Increase E/W signal time for single vehicles. Light will turn red before a vehicle (from a stop) can clear the intersection	N/A	Cochise County
Install 4 way stop. Limited sight distance for vehicles turning from Snyder to NB Avenida Del Sol.	N/A	Cochise County
Install stop light and create right turn lane for EB 92 traffic turning onto Wilson.	N/A	Cochise County
Install stop light to improve traffic flow for both vehicles turning from Snyder to SB Hwy 92 and also vehicle turning from SB 92 onto Snyder.	N/A	Cochise County
LEFT TURN LANE IS TRAILING DIFFERENT FROM OTHER NEARBY INSTERSECTIONS.	N/A	Cochise County
left turn onto Ave Cochise from Ave Pequeno/shopping center becomes very dangerous in late afternoon sunsetting. Shrubs on left need to be eliminated for visibility of east bound traffic (Vehicle Safety Issue)	N/A	Cochise County
left turn onto Ave Cochise from shopping center becomes very dangerous in late afternoon sunsetting. Shrubs on left need to be eliminated for visibility of east bound traffic	N/A	Cochise County
Mine traffic has already become an issue. Recent construction at the mine required several dump trucks travelling back and forth between Patagonia and Tucson. These trucks (the red dump trucks) would consistently drive well above the speed limit and carelessly cross the double yellow line - forcing other drivers to pull into the shoulder to avoid collision. I am worried about how much worse this will get when the mine actually begins production operations.	N/A	Santa Cruz County
Reduce speed limit from 65 mph to 55 mph all the way to the 45 mph change by the Palominas school.	N/A	Cochise County
This is an asinine intersection. 83 northbound tilts sharply right before the turn, causing people to jerk their steering wheels to correct. Folks leaving the dump cannot see up the hill southbound. Folks heading to the dump have to play a crazy game of chicken to beat traffic heading northbound.	N/A	Santa Cruz County
This road area is in pathetic shape, and in desperate need of repair work.	N/A	Cochise County
This stretch of road is poorly maintained and consistently full of potholes. It is bad enough that the local residents frequently fill them in on their own.	N/A	Santa Cruz County
Turn into traffic circle.	N/A	Cochise County
Vehicles regularly fly down this stretch of SR 82, going well above the speed limit. Just today, I was tailgated by 4 separate vehicles, all attempting to drive at roughly 75 mph down the road, and all 4 were passing vehicles in blind turns.	N/A	Santa Cruz County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
Wide loads regularly disrupt traffic and sometimes outright block it (when a wide load breaks down). If the bridge issues connecting to I10 have been addressed, reroute the wide-loads.	N/A	Santa Cruz County
Drivers drive recklessly fast and cut-off drivers on outside lane just to arrive first and turn right at Coronado Dr Stop-Light.	N/A	Cochise County
Drivers drive recklessly fast and cut-off drivers on outside lane just to arrive first and turn right at Fry Blvd Stop-Light.	N/A	Cochise County
Entry-Exit traffic flow is High-Risk Zone, reckless drivers create a 'trailing line' of vehicles to enter into parking lot and completely jam vehicles attempting to exit the parking lot.	N/A	Cochise County
On the N/S part of 90 and 92, perhaps the speed limit should be reduced to 35mph until one reaches the southern part of town. There is more traffic these days then when the signs originally went up.	N/A	Cochise County
This easily the worst parking lot in town. I do not know what can be done, but it is really bad!	N/A	Cochise County
This is a major shopping center. The only shopping center in town without a light. People risk their lives trying to take a left out of this shopping center.	N/A	Cochise County
Too much traffic. Difficult making left turns as nobody slows down to the speed limit here. On 82 the speed limit goes down to 40 leading up to the intersection with 90. But on 90 approaching 82, with more businesses and residents, speed is 55 and grasses are tall now. Hard to see the speeders heading your way. Wish there were a couple of stoplights, one at Oak and another by the dollar general north of the intersection. Feel like Whetstone does not get any respect.	N/A	Cochise County
With three new sports fields I would think the town would have put in a parking lot for all the traffic. There is a wash running through the softball field parking lot. At least put down some rock gravel.	N/A	Cochise County
Intersections too close to each other	N/A	Cochise County
Low visibility due to parking lot being way too small. Coming out of lot due to road design is the worst.	N/A	Cochise County
The lane shifts to the right toward where cars are exiting the parking lot in front of Dollar Tree. Some cars do not realize the shift due to the curb being right before the shift, they pull out into the street blocking roads. The shift to the right causes the left lane cars pull to the right to avoid the curb coming into their lane. The right lane cars do not always shift with the lanes coming really close to the left lane cars	N/A	Cochise County
Trees and advertising sign block visibility coming out of Tacoma St into Coronado.	N/A	Cochise County
Worst parking lot in town. Too small for two way traffic, curving roads make it hard to see vehicles. In and out traffic is really bad	N/A	Cochise County
Avenida Cochise between Coronado and Highway 92 has a 45 MPH speed limit. How is this area different from other parts of Avenida Cochise that are 35 MPH? 45 is too fast especially since in one direction in is downhill and vehicles tend to go faster than 50 MPH. There will be an accident at Remington Drive due to the cars going so fast downhill.	N/A	Cochise County
Consistent problems with westbound left side passing in spite of this being marked as a single yellow no passing zone. I cannot define the number of times I have almost been hit trying to make a left onto Chula Vista despite signaling early and doing brake tapping. People just blow off the yellow stripe and pass.	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
The center lane at BST eastbound where it continues across Hwy. 92 is confusing to many people. Some think it is an additional left turn lane. It is not, and this has caused many near misses, and will eventually result in a MVA. This needs to be marked with appropriate signing and arrows to foster understanding that there is only 1 left turn lane from eastbound to northbound at this location.	N/A	Cochise County
why is it a left turn only lane? it should be a left/straight lane together and a right turn lane only. if you are trying to turn right but other people are going straight, you have to wait for the light so they can go. right turn lanes should always be by themselves	N/A	Cochise County
Widen Hwy 90 to four lanes to Moson Rd.	N/A	Cochise County
Adding a second lane on the east side of this intersection would make it safer and allow for better traffic flow. All other directions at this intersection has two lanes at this point. Vehicles heading north on Gulio Cesare and making right turn into Charleston sometimes assume there are 2 lanes to their right and go thinking it is safe, as there are no cars in the right lane heading east on Charleston, but there is no right lane on the other side of the intersection. There is only one lane. Being used to it, it is not a big deal, but for people new to the area, or tourists heading to Tombstone, it is unexpected and unsafe imo. It does not need to be a long lane, but a safety buffer zone basically.	N/A	Cochise County
Almost impossible most of the day to try and make a left turn out of the shopping center to go East on Charleston Rd. Lots of accidents happen here. A 4-way stop sign may be needed.	N/A	Cochise County
Dear SVMPO, I have already completed the survey but have additional comments as I think of them. Here are two more: 1. What is with the dark-tinted license plate covers? These need to be prohibited. 2. Lobby MVD to return to display of front as well as rear license plates. I realize this is AZ wide and not just Cochise County. Thank you.	N/A	Cochise County
deep pothole growing for past year. danger to all vehicles and traffic due to trying to avoid it. Nothing done and pass the buck on who needs to fix	N/A	Cochise County
Electrical box outside of Ulta Beauty blocks view of vehicles trying to turn left towards Charleston Rd	N/A	Cochise County
Large shrubbery along Coronado Dr blocks view of vehicles exiting the Safeway shopping center and turning South on Coronado Dr.	N/A	Cochise County
Left turning lane onto Guilio Cesare Ave towards Buena HS needs to be extended. Traffic before and after school piles up at that intersection.	N/A	Cochise County
More street sweeping everywhere, so there will not be so many nails and screws on the road and in tires, please!	N/A	Cochise County
Railing along wash obstructs view of vehicles as they are trying to pull out of shopping center onto Fry Blvd	N/A	Cochise County
The large bushes along the West side of 7th St block the view of vehicles trying to turn North onto 7th St from Heather Dr. There are many near-misses at that intersection.	N/A	Cochise County
The timer for the traffic light needs to be adjusted. For those vehicles trying to cross SR90 via Campus Dr there is a long wait before the light changes, even when there are no vehicles heading north or south along SR90.	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane bypass so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane Hwy so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision at speeds of at least 55mph.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane Hwy so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision at speeds of at least 55mph.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane Hwy so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision at speeds of at least 55mph.	N/A	Cochise County
There are no safety reflectors or rumble strips along the middle of the 4-lane Hwy so there is nothing to prevent/warn drivers from crossing the center line and causing a head-on collision at speeds of at least 55mph.	N/A	Cochise County
There have been many bad accidents at this intersection due to obstructed field of view caused by speed, curve in the road, landscaping, and sunrise/sunset.	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
There should be an exit here to allow vehicles to exit the shopping center instead of having one horrible way in/out towards the already crowded Wal-Mart parking lot.	N/A	Cochise County
When Sierra Vista narrowed Fry Boulevard from 4 lanes to 2 in the west end, they planted trees along the former lanes that now make it nearly impossible to see oncoming traffic when trying to exit establishments between North Avenue and North Garden Avenue. What were they thinking?	N/A	Cochise County
With construction of new school (ALA) the traffic light timing needs to be adjusted as well as a turning lane created.	N/A	Cochise County
When facing East, Bushes/Shrub on this corner to the right make it very difficult to see northbound traffic without inching into the "intersection"	N/A	Cochise County
Heading South on 92, the turn lane going onto 90 is at a bad angle. This is a rough turn and needs to be fixed. Possible solution: move the inner turn lane coming from 90 to 92 on the left turn back a couple of feet. Make the lanes a stare step so people turning are not so close.	N/A	Cochise County
The lights are so backed up at this intersection when driving south on 92 that traffic will be backed up all the way to the mall. I have had my vehicle overheat just waiting in the lines. With the new school here, traffic has increased drastically causing major issues getting around.	N/A	Cochise County
The pot hole has been a real issue. I have to drive down this road quite often and there is no way to get around it. Fix this before you pay for any other road projects, please.	N/A	Cochise County
The turn lane coming out of Walmart heading towards 92 is at a horrible angle. The law states that when making a turn, you have to turn into the closest lane. This intersection does not allow for that.	N/A	Cochise County
This is another area where the median has been an issue. People who are wanting to turn into Family Dollar cannot safely get into the middle lane. Other drivers are not expecting people to slam on their breaks and quickly swerve into the small area where they can turn into the parking lot. Please remove the medians. It was just fine before them.	N/A	Cochise County
This median has done nothing but cause problems. It has cut off the businesses in this area and causes people to drive erratically trying to get around the median. Having a no U-turn at this light has also cause problems. I agree that there is not enough room to turn around safely here, but that brings the problem back to the median and lack of accessibility.	N/A	Cochise County
Would rather be driving on dirt	N/A	Cochise County
High rates of speed that exceed the posted speed limit by 20+ mph as vehicles use Golf Links Rd as a connector between 7th and Coronado. High pedestrian usage during school start and end with children walking in the bike lane as there is no sidewalk on Golf Links Rd. Solution: Sidewalks or increased speed monitoring.	N/A	Cochise County
Reduce speed limit on this part of hwy 90 to 55 mph.	N/A	Cochise County
The large tree/bush along the East side of 7th St and South side of Golf Links Rd blocks the view of vehicles trying to turn South through oncoming traffic onto 7th St from Golf Links Rd. There are many near-misses at that intersection.	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
This should absolutely be a 4 way stop. Making a left leaving the school is very dangerous. The view is blocked by many people taking a right into school.	N/A	Cochise County
Too many speeding vehicles, esp. 18-wheeled trucks, ATVs, motorcycles, on this road. Significant noise and vehicle safety issue.	N/A	Cochise County
I second a longer left turn lane coming off Guilio Cesare onto Charleston.	N/A	Cochise County
It is very disappointing that there is no plan to extend the four lanes for that little section before Moson (west of Moson). I realize this is an ADOT issue, but if you have any pull...	N/A	Cochise County
Pretty much all over town and throughout the county something needs to be done about the views being blocked when turning onto roads. It is ubiquitous. The city/county needs to tend to what is theirs and should create ordinances that private businesses/individuals care for their part. This would include flora, business flags, signs, political signage... Just because some people might be able to see does not mean everyone can. I am of a height and in my vehicle my view is very often blocked when turning (and I am of average height and my vehicle is of average size, so I am guessing a large portion of the driving population do not have a clear view).	N/A	Cochise County
Probably nothing will be done about this 'rough road' for a long time. There is a yellow 45 mph sign, but people treat that as a 'recommendation,' which it is. 65 is entirely too fast. Going the suggested 45 mph results in road rage from those behind. If the condition of the road does not support the posted limit, it should be lowered.	N/A	Cochise County
Road is unlined due to wear, telling where the lines of the road are completely up to the driver's judgement up until the next light, this is especially bad at night as well. Also, the road condition is terrible and is need of immediate repaving.	N/A	Cochise County
The crazy changing speed limits along Guilio Cesare/Charleston/MLK/Coronado are so odd. They should be consistent, at least for the length of the particular road. As busy as they all are, 35 is sufficient for all of them. But the 45/35/45/35 on Charleston/MLK is very strange.	N/A	Cochise County
The left turn lane, from Guilio Cesare onto 90 east, really needs to be left on green arrow only. There is no way to see oncoming traffic and the impatience of drivers has resulted in accidents at this intersection.	N/A	Cochise County
Tree obscuring stop sign when heading west on Wilcox.	N/A	Cochise County
Good luck ever making a right hand turn out of here. There needs to be a light	N/A	Cochise County
I second this being dangerous. It is hard for people to see where the road jogs over	N/A	Cochise County
Need a right turn lane onto 92. Now that the new Dollar Store is in there is a lot more traffic crossing.	N/A	Cochise County
Slant parking and less planters would have helped out so much. I have seen so many wrecks in this parking lot. If you drive a SUV or pickup, then it is even worse trying to find a spot that you fit into. Really bad design	N/A	Cochise County
Starting to have as many holes as the roads in the area	N/A	Cochise County
The road conditions on Hwy 90, 92.and fry blvd are deplorable it is an embarrassment to our city !	N/A	Cochise County

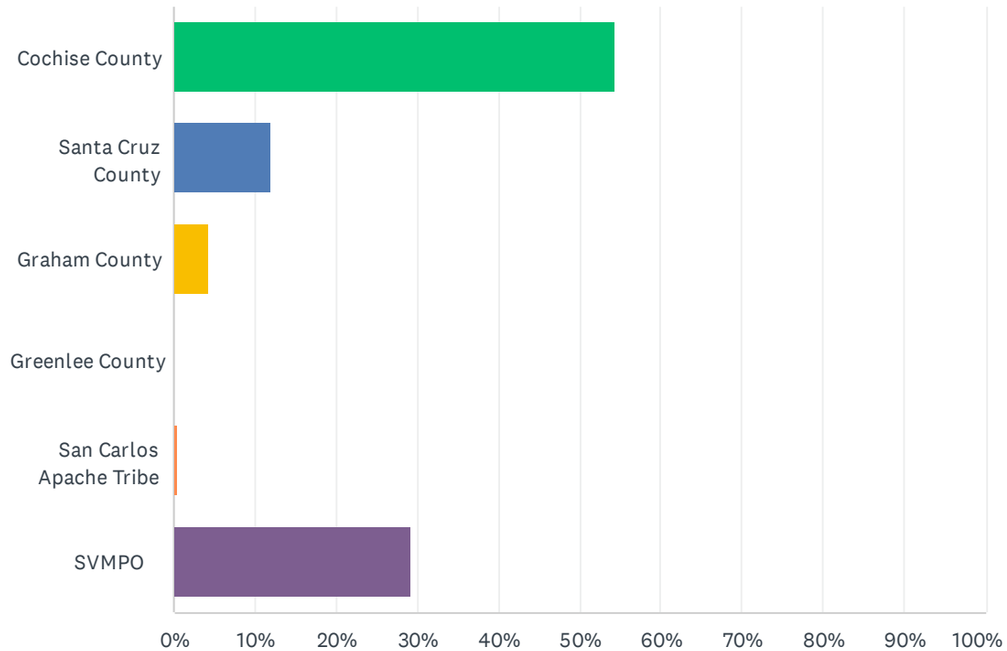
COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
The road is more gravel than asphalt. It is brutal driving on this stretch	N/A	Cochise County
The roads are so bad. There are no lines left	N/A	Cochise County
The worst parking lot in town. The entrance is too narrow and there is no room to turn if there is a vehicle coming out. It is also very dangerous for people trying to cross over from the Walmart parking lot. Very poorly designed	N/A	Cochise County
There are no lines on the roads, and it is worse than driving on dirt	N/A	Cochise County
There is no stop sign and you cannot see around the bushes for oncoming traffic. No one knows who has right of way	N/A	Cochise County
Trying to turn out of any parking lot is so hard. You cannot see past all the planted stuff and the curb are so tight. Look at how black they are from being hit.	N/A	Cochise County
Very hard to see to turn onto Fry. Why is it hard to see to pull out in most of this town?	N/A	Cochise County
Very poor setup. The angle on the turn to merge is way too tight	N/A	Cochise County
Way too much traffic for this intersection. Was poorly planned when they designed it. There is now a school on the dirt side and the lines are unreal.	N/A	Cochise County
When they redid the turning lanes, they made the left hand lane EXTREMELY narrow.	N/A	Cochise County
You cannot see to turn from the stop light. You have to pull way farther just to see	N/A	Cochise County
This entire stretch of road from the intersection at 92, to where the new circle K is going in, is in an absolutely deplorable state. Every time I drive over this I wonder if my car will make it due to all the potholes, chunks of pavement missing, rough road, lack of lines on road indicating where the lanes are. It has been this way for over a year now.	N/A	Cochise County
Turning left into the Lowe's when coming from hwy 90 is so dangerous in the right lane. It crosses direct paths with oncoming traffic turning left into Walmart from the opposite direction.	N/A	Cochise County
Absolutely the worst parking lot in Sierra Vista	N/A	Cochise County
Bushes along sidewalk obstruct vehicle view of oncoming when turning out of the parking lot.	N/A	Cochise County
The road in this area is incredibly damaged and torn up that it poses a risk to your vehicle to drive on. It is absolutely mind boggling that the roads have been in this state for so long.	N/A	Cochise County
The road is more hole than road. This is AWFUL.	N/A	Cochise County
Congestion is a real problem here with two schools in close proximity to each other and parents all arriving at the same time to drop off and pick up their kids. There needs to be a better traffic control plan for the schools!	N/A	Cochise County
I agree, the timing of this light needs to be adjusted with shorter waits on Campus Drive. Westbound traffic is particularly annoying because there is a shared thru/right lane. A vehicle wanting to turn right on the Bypass has to wait forever because a single vehicle at the front of the line who wants to go straight is blocking anyone from making a right turn (the majority).	N/A	Cochise County
Please close this driveway! Why anyone would attempt to make a left turn here is beyond me, but people try it all the time and get t-boned.	N/A	Cochise County

COMMENT	COMMENT ON POTENTIAL SAFETY LOCATION	GFA
There needs to be a raised median here. An eastbound vehicle wanting to turn left onto the Frontage Road will stop in the middle of the lane so no other cars can squeeze by to their right. Traffic backs-up into State Route 92 quickly, and cars stuck behind the vehicle blocking traffic have nowhere to go when the light changes.	N/A	Cochise County
There perhaps needs to be information put out to let people know that there is another entrance to WalMart off State Route 92. People will overfill the left turn bay and cause back-ups into thru traffic and wait three signal cycles rather than just go up to Campus Drive. It is ridiculous.	N/A	Cochise County
This median break needs to be closed. Northbound left turns are not safe due to site distance restrictions. Despite the fact there is not eastbound left turn lane and posted "no U-Turn" signs, vehicles stop in the travel lane to make a u-turn. Eastbound traffic at the Avenida Cochise and State Route 92 intersection sometimes backs up all the way to this intersection.	N/A	Cochise County
Because drop-off and pick-up times are so congested, parents do not follow posted signs or traffic laws. For example, parents will pull up to the curb on Giulio Cesare to let their student out and then make a u-turn in the middle of the road rather than waiting in line for less than five minutes to drop off their student in front of the school. Parents will also park in fire lanes, signed no-parking zones, and the private parking lot at SSVEC for afternoon pick-ups.	N/A	Cochise County
The left turns into the high school really back up in the morning. People will go straight through the light and then make a u-turn in the middle of the road to cut the line.	N/A	Cochise County
Severe High-Risk vehicle intersection, two large vehicle trucks avoided front-to-front collision; (1) white truck towing a trailer traveling North on SR-90 nearly collided against a truck attempting a left turn towards East Charleston RD. SV-ADOT change the Stop Light signals!	N/A	Cochise County
Two fatalities occurred on this treacherous stretch of Highway 70 today. WE NEED A CENTER LANE FROM SOLOMON TO SAN JOSE. Numerous serious accidents and fatalities have occurred here. Please.	N/A	Graham County
There have been multiple runoffs in this corner. There was a rollover this year.	N/A	Graham County
there have been several runoffs and a fatality here.	N/A	Graham County

Survey Responses

Q1 In which County or Geographic Focus Area do you primarily commute or drive?

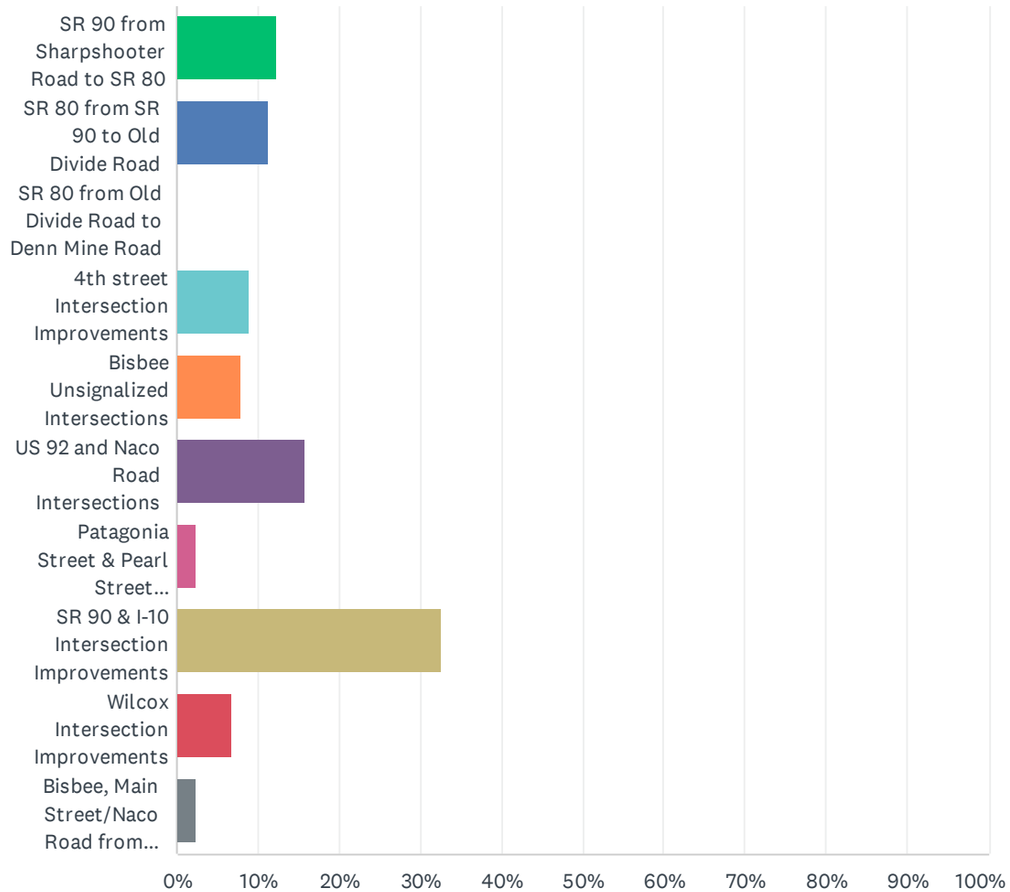
Answered: 261 Skipped: 0



ANSWER CHOICES	RESPONSES	
Cochise County	54.41%	142
Santa Cruz County	11.88%	31
Graham County	4.21%	11
Greenlee County	0.00%	0
San Carlos Apache Tribe	0.38%	1
SVMPO	29.12%	76
TOTAL		261

Q2 The below safety improvement projects have been identified within Cochise County. Please select one project that you feel should be addressed first. These projects can also be viewed on the project's interactive map.

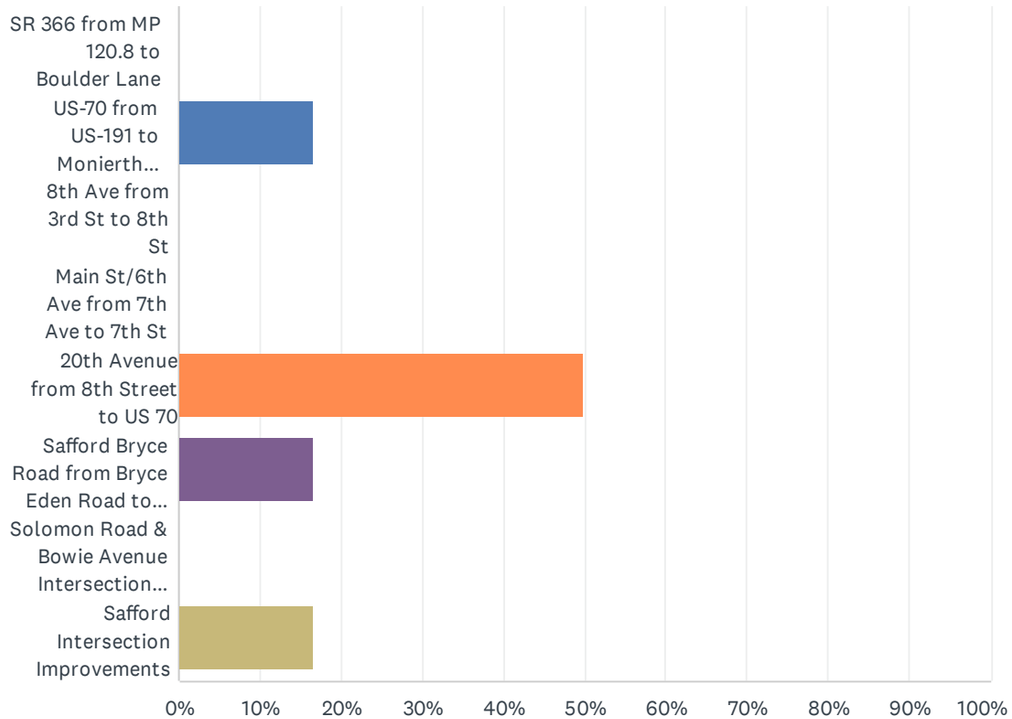
Answered: 89 Skipped: 172



ANSWER CHOICES	RESPONSES	
SR 90 from Sharpshooter Road to SR 80	12.36%	11
SR 80 from SR 90 to Old Divide Road	11.24%	10
SR 80 from Old Divide Road to Denn Mine Road	0.00%	0
4th street Intersection Improvements	8.99%	8
Bisbee Unsignalized Intersections	7.87%	7
US 92 and Naco Road Intersections	15.73%	14
Patagonia Street & Pearl Street Intersection Improvements	2.25%	2
SR 90 & I-10 Intersection Improvements	32.58%	29
Wilcox Intersection Improvements	6.74%	6
Bisbee, Main Street/Naco Road from Copper Queen Library to SR 80 Interchange	2.25%	2
TOTAL		89

Q3 The below safety improvement projects have been identified within Graham County. Please select one project that you feel should be addressed first. These projects can also be viewed on the project's interactive map.

Answered: 6 Skipped: 255



ANSWER CHOICES	RESPONSES	
SR 366 from MP 120.8 to Boulder Lane	0.00%	0
US-70 from US-191 to Monierth Ln/Lone Star Rd	16.67%	1
8th Ave from 3rd St to 8th St	0.00%	0
Main St/6th Ave from 7th Ave to 7th St	0.00%	0
20th Avenue from 8th Street to US 70	50.00%	3
Safford Bryce Road from Bryce Eden Road to Hubbard Cemetery Road	16.67%	1
Solomon Road & Bowie Avenue Intersection Improvements	0.00%	0
Safford Intersection Improvements	16.67%	1
TOTAL		6

Q4 The below safety improvement projects have been identified within Greenlee County. Please select one project that you feel should be addressed first. These projects can also be viewed on the project's interactive map.

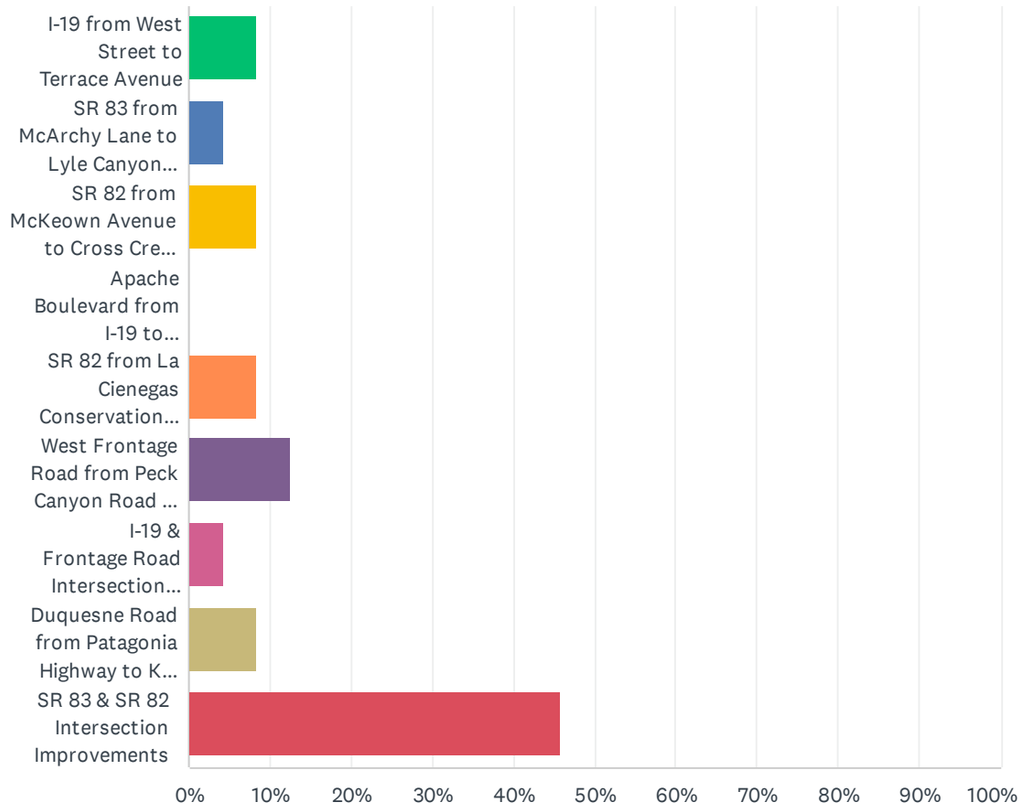
Answered: 0 Skipped: 261

⚠ No matching responses.

ANSWER CHOICES	RESPONSES	
US 191 from Chase Creek Street to Zorilla Street	0.00%	0
US-191 from Park Avenue to 7th St	0.00%	0
SR 78 from Greenlee Substation Rd to State Line	0.00%	0
US 191 from Chase Creek to ADOT Grey's Peak Maint. Camp	0.00%	0
US 191 from Pine Flat Rd to Hogtrail Saddle	0.00%	0
US 191 from MP 217 to Lengthy Trailhead	0.00%	0
TOTAL		0

Q5 The below safety improvement projects have been identified within Santa Cruz County. Please select one project that you feel should be addressed first. These projects can also be viewed on the project's interactive map.

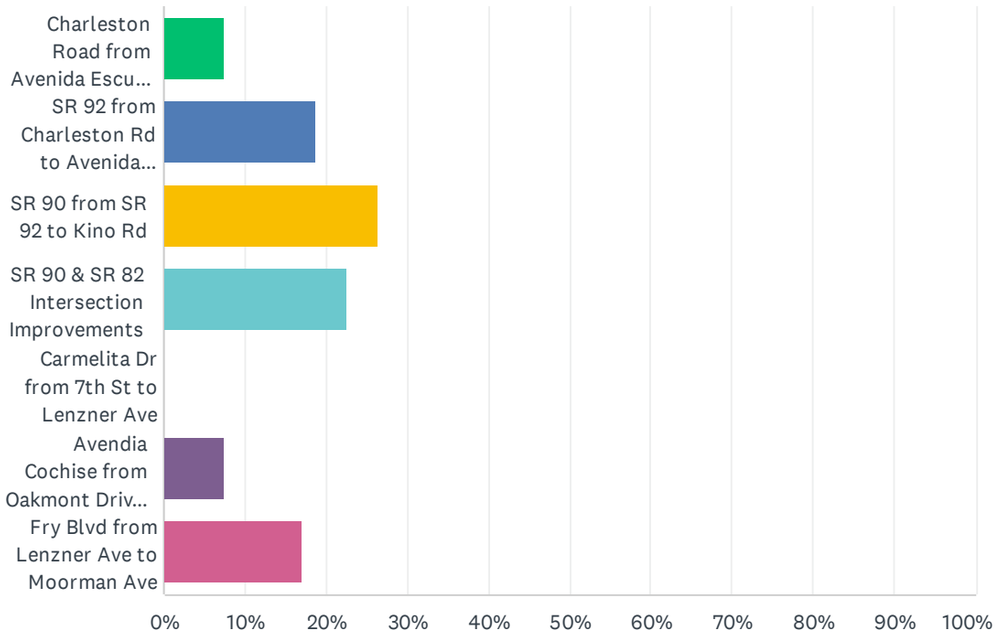
Answered: 24 Skipped: 237



ANSWER CHOICES	RESPONSES	
I-19 from West Street to Terrace Avenue	8.33%	2
SR 83 from McArchy Lane to Lyle Canyon Road	4.17%	1
SR 82 from McKeown Avenue to Cross Creek Road	8.33%	2
Apache Boulevard from I-19 to Mariposa Road	0.00%	0
SR 82 from La Cienegas Conservation Area Entrance to Upper Elgin Rd	8.33%	2
West Frontage Road from Peck Canyon Road to Yavapai Drive	12.50%	3
I-19 & Frontage Road Intersection Improvements	4.17%	1
Duquesne Road from Patagonia Highway to Kino Springs Drive	8.33%	2
SR 83 & SR 82 Intersection Improvements	45.83%	11
TOTAL		24

Q6 The below safety improvement projects have been identified within the SVMPO region. Please select one project that you feel should be addressed first. These projects can also be viewed on the project's interactive map.

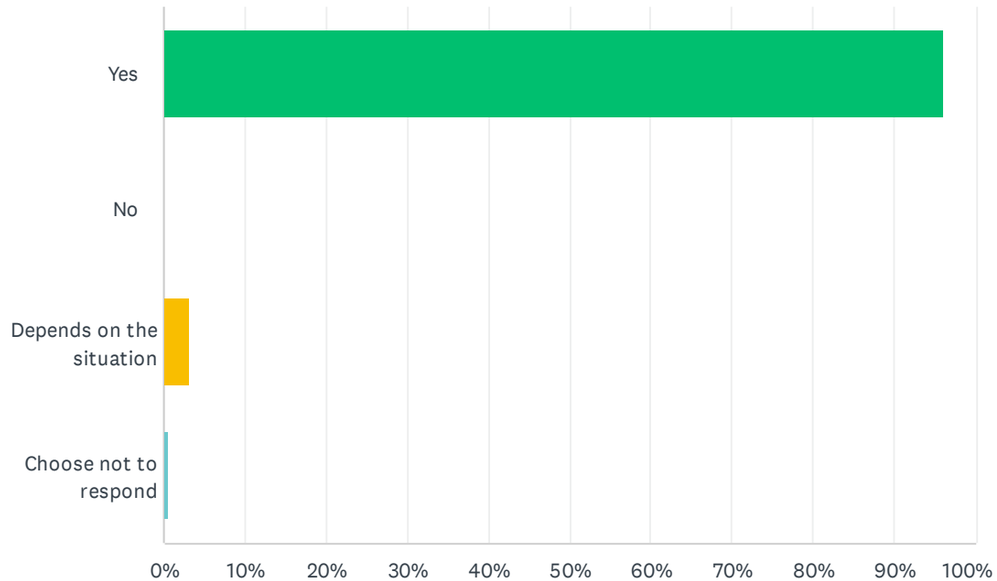
Answered: 53 Skipped: 208



ANSWER CHOICES	RESPONSES	
Charleston Road from Avenida Escuela to Fighting Colt Drive	7.55%	4
SR 92 from Charleston Rd to Avenida Tienda	18.87%	10
SR 90 from SR 92 to Kino Rd	26.42%	14
SR 90 & SR 82 Intersection Improvements	22.64%	12
Carmelita Dr from 7th St to Lenzner Ave	0.00%	0
Avendia Cochise from Oakmont Drive to SR 92	7.55%	4
Fry Blvd from Lenzner Ave to Moorman Ave	16.98%	9
TOTAL		53

Q7 Do you consider yourself a safe driver?

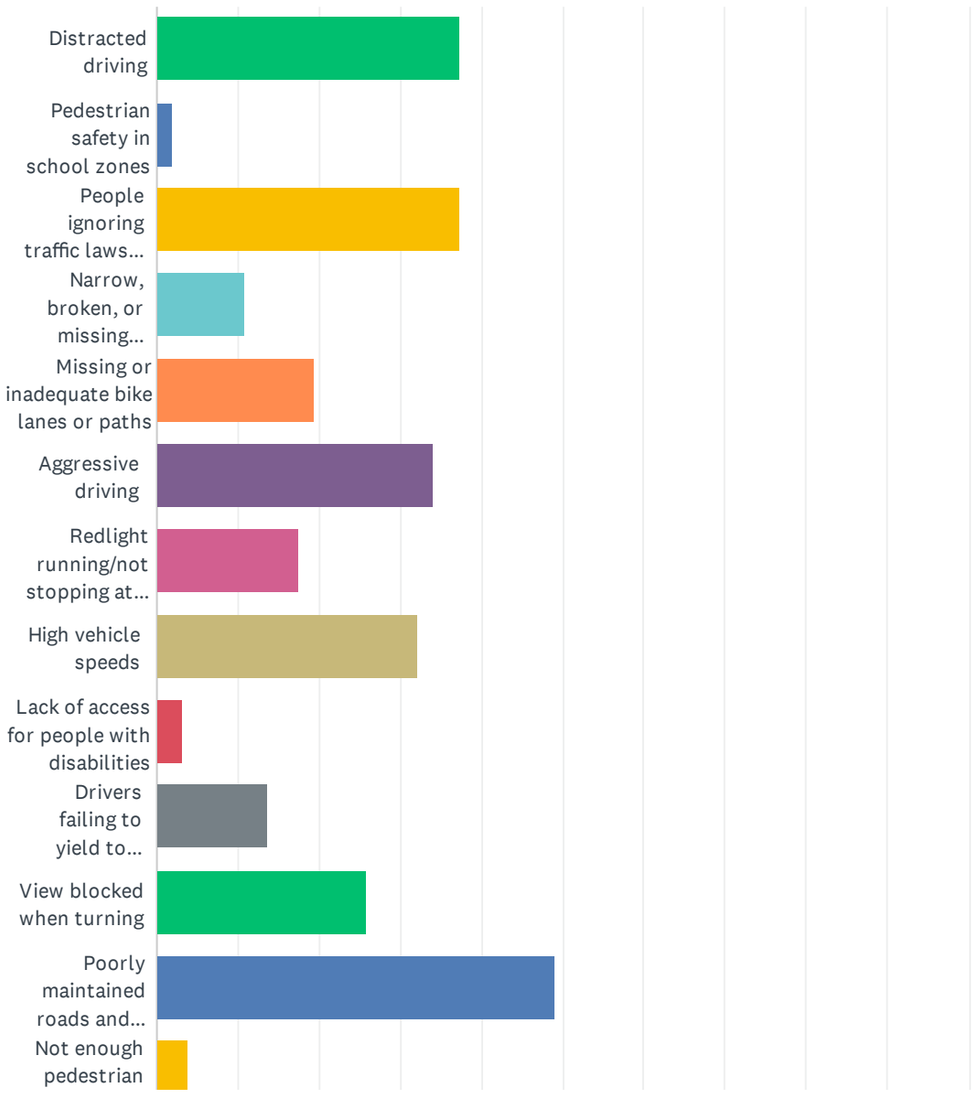
Answered: 154 Skipped: 107

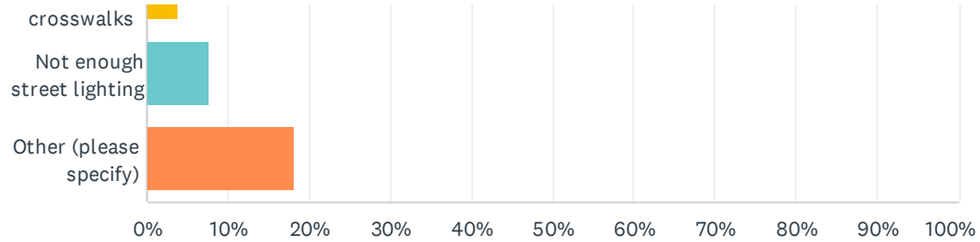


ANSWER CHOICES	RESPONSES	
Yes	96.10%	148
No	0.00%	0
Depends on the situation	3.25%	5
Choose not to respond	0.65%	1
TOTAL		154

Q8 Which of the following traffic safety issues concern you the most? (Select your top-3)

Answered: 155 Skipped: 106





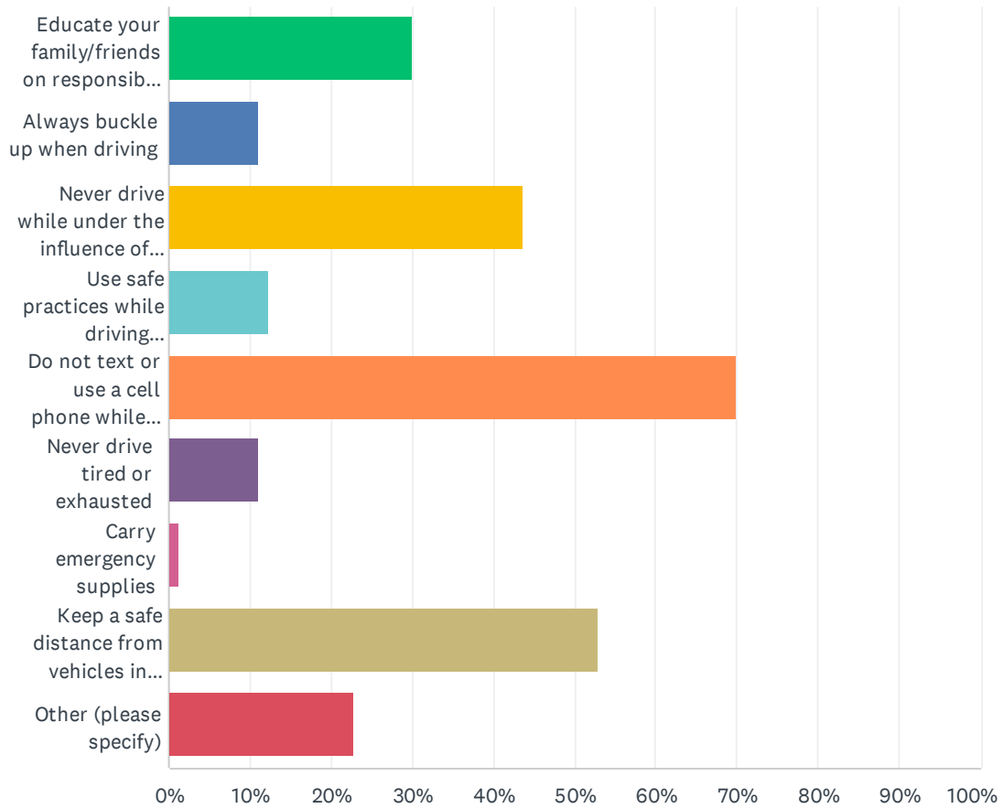
ANSWER CHOICES	RESPONSES	
Distracted driving	37.42%	58
Pedestrian safety in school zones	1.94%	3
People ignoring traffic laws while driving	37.42%	58
Narrow, broken, or missing sidewalks	10.97%	17
Missing or inadequate bike lanes or paths	19.35%	30
Aggressive driving	34.19%	53
Redlight running/not stopping at stop signs	17.42%	27
High vehicle speeds	32.26%	50
Lack of access for people with disabilities	3.23%	5
Drivers failing to yield to pedestrians and cyclists	13.55%	21
View blocked when turning	25.81%	40
Poorly maintained roads and shoulders	49.03%	76
Not enough pedestrian crosswalks	3.87%	6
Not enough street lighting	7.74%	12
Other (please specify)	18.06%	28
Total Respondents: 155		

#	OTHER (PLEASE SPECIFY)	DATE
1	Load vehicles reaching speeds of 100mph. I was tboned by a load vehicle that was being chased by border patrol.	9/24/2024 10:12 AM
2	1. The street on fry in frount of target & FOODcity in Sierra vista 2. Lighting in bisbee the big hole it’s terrifying driving at night	9/23/2024 11:03 AM
3	Too many goddamed stop lights in Sierra Vista	9/20/2024 7:44 PM
4	People cutting into turn opposite turn lanes when turning left at intersection. My car has had multiple near misses. One driver had to swerve to avoide hitting me.	9/20/2024 6:09 PM
5	Lack of Police Presents in SV Giving the impression there is no enforcement of laws	9/19/2024 1:21 PM
6	speeding through school zone	9/19/2024 10:23 AM
7	Load cars	9/18/2024 5:17 PM
8	Slow drivers	9/17/2024 4:05 PM
9	Hwy 80, heading south out of benson. 2 lane with a middle suicide lane. When people turn to exit the highway, people are passing in the median, almost hitting people who have to merge into the suicide lane to turn left across the traffic. Biggest issue points: hwy 80 and 7th street, hwy 80 and Junction Express Gas Station, Hwy 80 and San Pedro RV park, and Hwy 80 and Saguaro Drive (skp park). This are is subjecting itself to the potential of head-on collisions. Another issue is the flashing yellow light in Benson when a train comes through. The intersection of 4th and Patagonia is a half flashing yellow and half flashing red light. SOOO many could be accidents and only gets worse when snowbirds come down and try to be courteous instead of just driving like they should.	9/16/2024 4:51 AM
10	Aggressive driving by young and middle-aged males with high performance motorcycles, muscle cars, and lifted pickups. Some of these are burning racing fuel (which should be outlawed) due to the high compression engines. They race between stoplights resulting in reckless and unnecessary acceleration and braking. The same may be said for many commuter drivers, who drive way too fast, just trying to make the next light before it changes. The SVPD could achieve significant reductions in accidents and near misses by just doing 2 things: 1. Initiate speed traps along known offender routes, and 2. Return to remote intersection cameras to record license plates of red-light runners.	9/15/2024 4:57 PM
11	Hwy 90 all through Sierra Vista	9/15/2024 6:23 AM
12	Most of these are significant	9/14/2024 5:07 AM
13	More speed limit signs. There are both extreme cases here. Excess speed and very slow impeding speeds in town. Believe it or not'the impeding traffic out weighs the excessive speed by far. Albeit, excessive more deadly.	9/13/2024 1:05 PM
14	The light signals are set to turn yellow as cars are way to close to the intersection, causing people to have to either gun it through, or slam on their brakes. Very very poor planning.	9/12/2024 10:03 PM
15	Road maintenance, 92 was repaved on the main road but the intersections were ignored, this is causing excess wear and pothole to form from the old and new sections.	9/12/2024 7:10 PM
16	Lack of traffic enforcement on 82 and 83 and wide load traffic on 82 and 83.	9/12/2024 10:57 AM
17	U-turns being allowed at 92 and avenida cochise.	9/11/2024 9:56 PM
18	Political signs in the islander obscuring views	9/11/2024 7:31 PM
19	Passing cars on one lane - no built in passing areas so you risk your life in one single lane to pass at 65 mph	9/11/2024 7:01 PM

20	Border crosses illegally cause terrible accidents	9/11/2024 1:49 PM
21	Roads are not built to manage water effectively	9/10/2024 11:21 PM
22	An increase in mining trucks on our roads.	9/8/2024 7:26 PM
23	Brush and trees hanging over and growing into shoulders	9/4/2024 8:54 PM
24	Not enough patrolling by law enforcement	9/4/2024 6:06 PM
25	Wide load trucks on "scenic highways" disrupting traffic, scenery	9/3/2024 12:31 PM
26	Debris on shoulders	8/29/2024 7:16 AM
27	bicycles on narrow roads	8/21/2024 12:25 PM
28	Elderly drivers that drive too slow(especially between exit 302-303) driving too slow can be a danger too.	8/21/2024 10:13 AM

Q9 Which of these safety messages do you think your community needs to hear the most? (Select your top-3)

Answered: 153 Skipped: 108



ANSWER CHOICES	RESPONSES	
Educate your family/friends on responsible driving behavior	30.07%	46
Always buckle up when driving	11.11%	17
Never drive while under the influence of alcohol, drugs, and/or medications	43.79%	67
Use safe practices while driving (headlights, clean windshield, etc.)	12.42%	19
Do not text or use a cell phone while driving	69.93%	107
Never drive tired or exhausted	11.11%	17
Carry emergency supplies	1.31%	2
Keep a safe distance from vehicles in front of you	52.94%	81
Other (please specify)	22.88%	35
Total Respondents: 153		

#	OTHER (PLEASE SPECIFY)	DATE
1	Stop messing with everything else in your car and pay attention to the road. If you aren't doing the speed limit and aren't turning left within half a mile, get out of the left lane. Pedestrians need to look both ways and not just step out in front of a vehicle while assuming they are safe because they are in a crosswalk. There are no special rules for bicycles and they need to stop at red lights and 4-way stops too. Unless there is an obstruction, you should not stop in the thru lanes for any reason (yes, people actually do this...they'll just decide to turn left or make a u-turn from the thru lane)	9/26/2024 2:51 PM
2	We live in a community with many elderly people. Many of these people are no longer capable of driving safely. Public transportation needs to be expanded for these people so we can get them off the road.	9/25/2024 10:09 AM
3	Be aware of so many intersections that have blind spots. Slowly pull forward to view if roadway clear.	9/25/2024 6:08 AM
4	Watch intersections before proceeding, even if you have the green	9/24/2024 10:12 AM
5	Hold Government responsible for not repairing the roads.	9/24/2024 5:37 AM
6	Sierra Vista needs to stop installing stop lights before someone loses their fucking mind and becomes the next Hitler	9/20/2024 7:44 PM
7	Stop cutting into lanes when turning	9/20/2024 6:09 PM
8	Safety messages are useless if there is no police presence	9/19/2024 1:21 PM
9	School Signs around all Schools!!!	9/18/2024 10:02 PM
10	Obey law	9/18/2024 5:17 PM
11	Watch out for bad roads	9/16/2024 6:59 AM

12	Yellow flashing lights at an intersection do not mean stop. (RR lights in Benson, 4th street and Patagonia.	9/16/2024 4:51 AM
13	Yield for pedestrians in crosswalks	9/15/2024 8:28 PM
14	Get serious about traffic safety penalties. With every moving violation recorded, require completion of the National Safety Council Safe Driving course, with proof of completion submitted prior to adjudicating the offense.	9/15/2024 4:57 PM
15	Get the fuck out of the fast lane.	9/14/2024 3:56 PM
16	Elderly driving education. There are a shocking number of people on the roads driving 10 or more miles under the speed limit	9/13/2024 6:18 PM
17	Not to use 4way flashers in rain, move right if not actively passing someone	9/12/2024 7:10 PM
18	Left lane for passing and turning left only	9/12/2024 3:22 PM
19	Fix the fucking Highway 90 by Fry's. You've had years to fix it, you incompetent mother fuckers	9/12/2024 2:18 PM
20	Adhere to the no passing zones and speed limits	9/12/2024 10:57 AM
21	I don't think these gov't messages impact people	9/12/2024 9:47 AM
22	Drive the speed limit	9/11/2024 8:43 PM
23	I strongly question whether blasting safety messages will have any positive impact.	9/11/2024 8:11 PM
24	Stop speeding	9/11/2024 7:31 PM
25	Dont pass unless its worth risking your life	9/11/2024 7:01 PM
26	Remain vigilant for high speed chases involving boarder runners	9/11/2024 2:28 PM
27	Watch out for illegal drivers coming from the border causing accidents	9/11/2024 1:49 PM
28	Look for pedestrian	9/11/2024 1:27 PM
29	Keep left except to pass.	9/10/2024 12:25 PM
30	Drive reasonably and prudent	9/6/2024 4:33 PM
31	Keep the bullies off the roads. They drive way too fast and pass cars no matter what the line markings say.	9/6/2024 2:30 AM
32	No passing zones are being ignored.	9/4/2024 8:54 PM
33	keep santa cruz county officials from stealing money	8/21/2024 12:25 PM
34	excessive speeding on I-10 through Cochise County. Speeds >90mph even if not out running law enforcement	8/21/2024 8:22 AM
35	Speed kills	8/13/2024 11:32 AM

Q10 Have you or someone you know been impacted by a serious crash? Please share your story if you are comfortable doing so.

Answered: 55 Skipped: 206

#	RESPONSES	DATE
1	I've had many near misses. The most recent was at Paseo San Luis and Snyder. I was eastbound in the left lane. A lady turned left off Paseo San Luis straight into the side of my car! I had to take evasive action. She never saw me and continued driving like nothing had happened.	9/26/2024 2:51 PM
2	Everyone I know has had a minor crash or a near-crash story to tell, all from Sierra Vista. Just saying.	9/25/2024 11:25 AM
3	No	9/25/2024 10:09 AM
4	No	9/25/2024 5:34 AM
5	I was tboned by a load vehicle. I also work for Sierra Vista Fire Department and gave responded to many of these accidents.	9/24/2024 10:12 AM
6	Poor road conditions have led to numerous accidents and vehicle damage.	9/24/2024 5:37 AM
7	NA	9/23/2024 11:03 AM
8	Na	9/23/2024 10:21 AM
9	No	9/23/2024 10:08 AM
10	Yes. They flipped their car because the stop lights in Sierra Vista are retarded	9/20/2024 7:44 PM
11	Yes	9/20/2024 6:59 AM
12	My long time friend was traveling westbound down meyer drive when someone crossed meyer going from St. Vincent de Paul to second street. The person leaving st. Vincent tried to beat traffic but had very poor distance judgment and smashed into my friends car on passenger. Fortunately, my god children werw not in the vehicle at the time with her as it would've resulted in serious injury. Her car was totaled leaving her with no transportation and a month long investigation as to what happened.	9/19/2024 8:16 PM
13	yes, drunk driver crossed the center line and hit me head on on road from douglas to Bisbee	9/19/2024 10:23 AM
14	October 2019 was hit by a vehicle that ran a stop sign due to cell phone usage. 5 years later still have back problems, pain in hand that was crushed, mobility issues. All because someone was texting and driving.	9/19/2024 9:05 AM
15	Yes	9/19/2024 6:57 AM
16	My daughter was hit by a car riding her bike to Cochise College for her classes on the streets of Colombo and Charleston in Sierra Vista, the driver was at fault in the incident! In the same intersection my fiancé was rear ended by a vehicle with a woman driving while on her phone! We have multiple schools in that vicinity with no signs posted stating school zone and the speed limit is too excessive at 45 mph! So please post school lights, school signs and lower the speed limit!!	9/18/2024 10:02 PM

17	No	9/18/2024 6:25 PM
18	No	9/18/2024 5:17 PM
19	Yes my friend was shot and killed by a road rage driver on 7th st.	9/17/2024 4:05 PM
20	Thankfully, no.	9/16/2024 2:15 PM
21	potholes damaging cars	9/16/2024 11:06 AM
22	N/A	9/16/2024 6:59 AM
23	Yes, intersection of Fry Blvd and the Target/Frys entrance. We had the green light for turning and someone barreled through headed west.	9/16/2024 4:51 AM
24	NA	9/15/2024 9:24 PM
25	A woman was killed at the crosswalk in front of Denny's trying to cross Fry Blvd. It needs a light to stop traffic. I've had several close calls trying to cross at the same place.	9/15/2024 8:28 PM
26	neighbor was hit by a speeder who ignored the westbound no passing restriction on HWY 82 2 miles west of the 82 & 90 intersection.	9/15/2024 12:59 PM
27	N/A	9/14/2024 5:45 PM
28	Yes	9/14/2024 3:56 PM
29	Children in vehicle when it was in accident. Vehicle totalled. They don't want to learn how to drive.	9/14/2024 5:07 AM
30	No	9/13/2024 6:32 PM
31	Yes.	9/13/2024 6:18 PM
32	A border patrol agent got rear ended on his way home from work with someone not yielding nor stopping. Excess speed.	9/13/2024 1:05 PM
33	I work in Fire, I see serious crashes on a regular basis	9/13/2024 6:51 AM
34	Mother was hit head on on hwy 90 south bond coming off bypass	9/12/2024 5:18 PM
35	We are in the white truck at RT90 and I-10 in Benson. The perp in the white car ran the red light at a police estimated 60+ mph. He should have hit a concrete wall not us.....https://www.youtube.com/watch?v=itscAZnZzFU	9/12/2024 5:14 PM
36	An SUV drove through a red light at 92 and BST. She was turning left and was crossing both south bound lanes. I drove right into her front wheel at the speed limit of 55 mph. Needless to say my Miata was totaled. I suffered a fractured sternum and three broken ribs. She was cited for the red light violation but not for a distraction. What other possible reason for not noticing a red light or on coming traffic would there be other than she was on her phone. I was extremely fortunate.	9/12/2024 4:24 PM
37	no	9/12/2024 2:07 PM
38	Yes, a head-on car accident. I was a passenger. Another car was on our side of the road in our lane. Airbag fractured my skull and caused chemical burns.	9/12/2024 12:43 PM
39	No	9/12/2024 9:47 AM
40	No	9/12/2024 7:38 AM

41	Yes. Husband hit head on at full speed on Hwy 92 and Avenida Cochise by teenager texting and spending. Three vehicles totaled.	9/11/2024 9:56 PM
42	Not a serious crash, but I have been a victim of road rage on SR 82 in between Patagonia and Sonoita. The other driver hit my car while driving at 55 mph. That driver proceeded to speed away, driving in excess of 80 mph.	9/11/2024 8:11 PM
43	Yes high speed chases in our community	9/11/2024 1:49 PM
44	I was driving my pick up truck behind a woman driving erratically where the southbound lane of 82 nears the airport near Nogales. The erratic driver appeared to be texting (do not know for sure if texting but looked like it. I dropped way behind her when she suddenly swerved partially in the oncoming traffic lane and hit a pick up truck just coming over the rise in the road. A violent head-on crash occurred with devastating results. The innocent driver coming over the rise was trapped in her truck for hair-raising minutes with fire under the hood. Another truck came up behind this very serious crash and by breaking windows and using a crowbar the woman driver and her dog were finally able to escape The woman who caused the wreck was in her car which had flown to the side of the road a ways and never moved. Don’t know if she survived.	9/10/2024 7:37 PM
45	Red light runner! Failure to make turns and stay in your lane! Proper speeds, regardless of over or under! Turn signals! Tailgating! Road rage!	9/10/2024 10:41 AM
46	Yes.	9/8/2024 7:26 PM
47	I watched a car miss the 90 degree curve on Safford Bryce Road. A coworker's daughter also missed it and went into the ditch and was trapped in the vehicle. A car load teenagers ran off the road and rolled the vehicle on the 2nd curve west of the 90 curve.	9/6/2024 4:33 PM
48	LOTS of near misses!!	9/6/2024 1:57 PM
49	I live a block away from where med flight lands for pick up in Patagonia. I know every time they are here. It’s loud and upsetting	9/6/2024 2:30 AM
50	Yes, friend died in rollover.	9/4/2024 6:50 PM
51	N/A	8/29/2024 11:27 AM
52	David Clonts on reservation, Ocon on Hwy 70 east of Solomon. Both caused by drunk drivers.	8/28/2024 12:26 PM
53	No	8/21/2024 12:25 PM
54	yes	8/20/2024 1:37 PM
55	No	8/20/2024 11:02 AM

Q11 Please share additional comments, concerns, or suggestions about roadway safety in your county, city or reservation.

Answered: 77 Skipped: 184

#	RESPONSES	DATE
1	The traffic around the high school is a nightmare. Parents park in fire lanes all the time. Also, because the left turn into the high school at Fighting Colt backs up so badly, people will go straight through the light and then make a u-turn in the middle of the road to cut the line.	9/27/2024 8:55 AM
2	People think crosswalks are a cure-all. DRIVERS DO NOT PAY ATTENTION TO CROSSWALKS. Unwarranted crosswalks need to be removed. There is nothing magic about those white lines. If you step in front of a car, you will get hit.	9/26/2024 2:51 PM
3	Many of the roads are in serious need of fixing. They are more pothole than road. This is not my only concern but it is unbelievable that this issue hasn't been addressed in the slightest.	9/25/2024 11:25 AM
4	Highway between Bisbee and Sierra Vista has sections of dashed line passing opportunities that are going around blind curves. This is on Highway 80 and 90. Some elderly people are no longer capable of driving. Also, the amount of intoxicated drivers is alarming. Additionally, people like to speed around 15-25mph over the 25mph speed limit on Tombstone Cyn in Bisbee, up by the Circle K gas station.	9/25/2024 10:09 AM
5	There are so many intersections within our city where your view is obscured by curbing, signs, unkept bushes, and vegetation.	9/25/2024 6:08 AM
6	The highway intersection at fry blvd and highway 90 and 92 in Sierra Vista the road is in horrible shape and it needs repavement now.	9/25/2024 5:34 AM
7	Stop chasing load vehicles. The policy is to not chase but we all know it still happens.	9/24/2024 10:12 AM
8	Fix the damn roads!	9/24/2024 5:37 AM
9	No u turns at stop lights and other intersections creates more chaos, it’s safer to drive in Tucson through much more traffic than Sierra vista	9/24/2024 5:14 AM
10	Bisbee hole needs light Street on fry in frount of food city and target needs to be fixed it’s really BAD it’s been like that for over 2 years	9/23/2024 11:03 AM
11	Na	9/23/2024 10:21 AM
12	Addressing Potholes and maintenance to make roads safer.	9/23/2024 10:08 AM
13	With the frequent fatal accidents on I-10, often involving a vehicle crossing the median, why haven’t cable barriers been installed on ALL decided highways in Arizona? This should be the #1 improvement above all others.	9/21/2024 6:40 PM
14	Sierra Vista needs to execute anyone suggesting we install another faggot-fucking stoplight	9/20/2024 7:44 PM
15	The section of hwy 90 East in SVC between The bypass and Colombo Ave is in terrible shape and dangerous. I know it's a state hwy, but my personal reports have gone ignored when I report it to AZDOT.	9/20/2024 6:09 PM
16	Too many accidents..people are driving too fast or not paying attention. We need better transportation options in our rural county.	9/20/2024 6:59 AM
17	I see pedestrians nearly get hit by vehicles every day ESPECIALLY at the intersection of Wilcox and Coronado by safeway. The pedestrians are using the crosswalks and waiting for the light to signal them to cross. Vehicles, especially turing at that intersection, do NOT pay attention at all. The vehicle accidents	9/19/2024 8:16 PM

	in this town are at an extreme high and makes most of us nervous to drive or even walk anywhere.	
18	8th Street and 8th Avenue intersection needs a stoplight.	9/19/2024 3:34 PM
19	I have watched people blatantly break the law with a cop present and nothing was done, what are the priorities of law enforcement in this town	9/19/2024 1:21 PM
20	Bring back the red light cameras please	9/19/2024 6:57 AM
21	The road conditions in and around Hereford and Sierra Vista have cost me thousands of dollars on my vehicles. I have had to replace tires and rims and alignments on the 4 wheel vehicles, as well as swing arm and wheel bearings on the motorcycle.	9/19/2024 4:59 AM
22	Not enforcing no U turns	9/18/2024 5:17 PM
23	I live off 82 , many side roads with no turn lanes , many buses picking up on this road, 55mph might be a better speed , eighteen wheelers doing 65 and 70 . Many deaths and accidents on this stretch of road. Over grown brush needs to be addressed after monsoon	9/18/2024 12:03 PM
24	One of the biggest threats to our safety on the roads is the sheriff’s department getting involved in high speed chases with suspected load cars.	9/17/2024 11:36 PM
25	Mandatory driving test/eye sight test every year after 70 to keep your drivers license. Including out of town drivers here for more than 2 weeks at time.	9/17/2024 4:05 PM
26	need full time employees to fill all potholes in county	9/16/2024 11:06 AM
27	The roads by Fry’s and Valero are terrible and have been for several years. They should have been fixed a long time ago	9/16/2024 6:59 AM
28	Intersections of 90 and 92 in Sierra Vista have got to be some of the worst in the state.	9/16/2024 4:51 AM
29	NA	9/15/2024 9:24 PM
30	I've also had several close calls trying to cross at Coronado and Fry Blvd. Cars and even a School Bus #99 are turning left from Fry Blvd. to Martin Luther King when I have the "walk" light to cross. Left turns only on green arrow off Fry Blvd would solve this problem.	9/15/2024 8:28 PM
31	Drivers in this state are among the worst I have encountered, especially younger ones. People don't understand how to merge onto the highway. The situation isn't helped by the fact that there are no 'yield' signs posted on the on ramps, oncoming traffic often thinks it has the right of way. The police on the interstate are also little help when accidents occur, they simply fail/refuse to direct traffic on I-10 and let it backup for miles when there's an accident rather than get it moving. Have never seen this anywhere else I've lived, in the summer it's criminal to do this to people. Younger drivers simply don't seem to know the rules of the road, lots of aggressive and / or ignorant behavior.	9/15/2024 12:59 PM
32	Our current Mayor used road repairs as one of his campaign promises back in the 2022 Election. I won’t waste my vote next time.	9/15/2024 11:33 AM
33	Sierra Vista by Walmart on 90 all the way past Food City. I've live here since the 80's and these sections of hwy 90 have been a terrible accident waiting to happen for many years. This is where you need to fix the road!	9/15/2024 6:23 AM
34	There’s way too many issues that need to be addressed in the roadways here in this town.	9/14/2024 5:45 PM
35	DPS is no where to be found. From 90-92 to 90-80 junction tail gating and passing in no passing zones. I10 from Tucson going east to state line is a disaster. Between road quality and semi trucks doing 50 in the fast lane for several miles. DPS doesn’t do shit. As far as the city of Sierra Vista goes. Everyone crashes into each other because they fuck off on their phones, run red lights, or make wide turns. City roads are absolute dog shit and need to be resurfaced.	9/14/2024 3:56 PM
36	Hwy 92 south bound and Fry Blvd intersection as well as hwy 90 near target/Fry's/food City SERIOUSLY needs repair. I've had my wheel jerked by the "ruts" and damage to the roadway leaving me concerned for mine and others safety when driving through those areas. Especially dangerous for motorcyclists.	9/14/2024 7:15 AM
37	Roads are so bad on parts of 90 coming into SV and bypass that my car shimmies and I will often change lanes into a smoother lane.	9/14/2024 5:07 AM

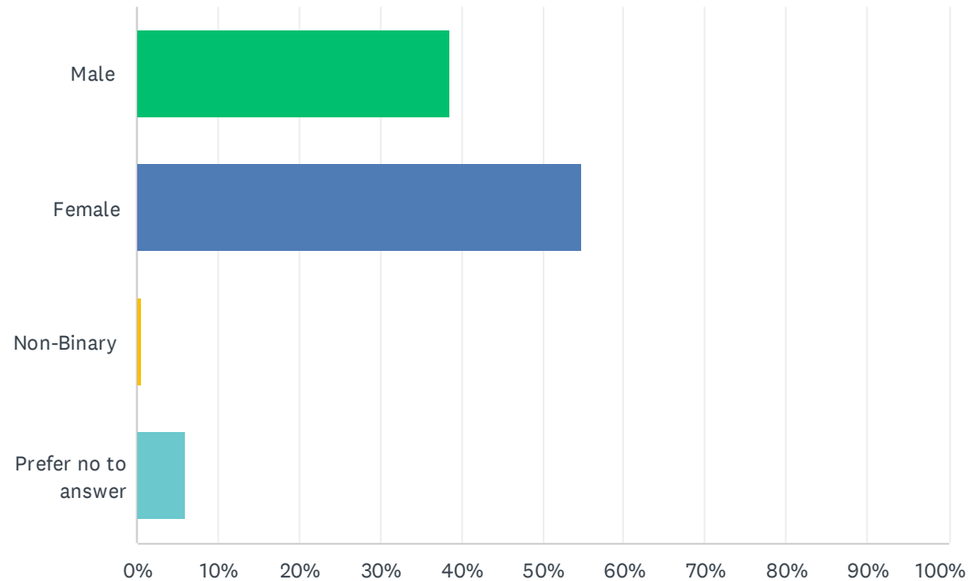
38	Need to have more cops dedicated to addressing the unsafe driving habits during rush hour times. Drivers in Sierra Vista are getting way worse all the time!	9/13/2024 9:39 PM
39	In Sierra vista would like a better maintenance on vegetation on streets which can sometimes obstruct visibility on intersections and cleanness on street as I have seen a lot of debris which do not help cyclist and motorcyclists staying safe.	9/13/2024 6:32 PM
40	I'm very disappointed that there seems to be no option to add a turning lane for Stump Canyon Road. The amount of people who pass over the double yellow line to get around turning vehicles, at a blind corner no less, is shocking. Someone is going to be seriously hurt some day.	9/13/2024 6:18 PM
41	The drivers on the roads between bisbee and SV tailgate, pass dangerously, and speed	9/13/2024 3:23 PM
42	Homeowners building concrete temp walls, brick walls, gates, rock barriers, bird/animal barriers on city easement, boulders in driveway so you can't pull to the side of the road on Golf Links Rd near Town and country. There should be a sidewalk on the city easement instead of homeowner barriers that are a hazard for Mail delivery, first responders, and vehicles needing to pull to the side of the road. Road and city easement isn't enforced on Golf Links Rd as homeowners have built walls right to the curb edge.	9/13/2024 2:58 PM
43	In the short amount of roads, lit speed limit signs like the speed radar generators showing your speed may address visual.	9/13/2024 1:05 PM
44	Cherokee has a large number of recreational pedestrians. The speed limit is 35, but cars drive it at high rates of speed. Need to add speed bumps or stop lights.	9/13/2024 12:47 PM
45	Again, the lights need to be set to change when cars are farther from the intersection. And setting the lights so every light you come to is turning red is a HUGE waste of gas, and $$ for us drivers. Try syncing the lights to the speed limit. Genius	9/12/2024 10:03 PM
46	Not info law information to enforce speedy on hwy 90.Roads are full of potholes and are bumpy and uneven	9/12/2024 5:18 PM
47	The huge increase in traffic at the intersection of 92 and BST, due to the new school, is causing a congestion issue. A new development of 300+ homes is going to add to that. Congestion and a 55 mph speed limit are going to result in more accidents. There have already been a few. One was a five car chain reaction.	9/12/2024 4:24 PM
48	People are tailgating on highway 92 frequently. It's totally unsafe. One accident per day, on average.	9/12/2024 2:18 PM
49	Road maintenance (or lack of) is the #1 issue.	9/12/2024 2:07 PM
50	I see unsafe passing, and high speed driving on Charleston, and 80 between Tombstone and Bisbee, and drivers do not yield or look at the 90 - 80 junction.	9/12/2024 12:43 PM
51	Get more DPS enforcement presence on both 82 and 83. Do not allow wide loads on 82 and 83. Minimize semi-truck traffic on 82. Get 83 between Sonoita and Elgin Rd in proper repair and regular maintenance.	9/12/2024 10:57 AM
52	Fry near Target needs to be repaved, like, yesterday, especially since that road leads to the hospital. It's a danger to have to wreck your car if you work that direction and travel that road multiple times a day. I actually can't believe that project isn't on the list.	9/12/2024 9:47 AM
53	Az90/AZ92 intersection needs desperate replacing. It have become a major safety risk to the public and the broken up road way damages vehicles and can/will cause motorcycles and bicycle riders to loose control. Also folk continuously making u-turn to Ben though posted not to.	9/12/2024 7:31 AM
54	Police, sheriff's dept. need to not only enforce traffic laws, but obey them.	9/11/2024 9:56 PM
55	Some people are driving 10-15 mph slower than posted speed limit in both lanes which backs up traffic and aggravates others. There has been something posted by the city on social media but nothing is being done to change the behavior. I have never seen so many rocks in the middle of intersections, turn lanes, and side of roads. Doesn't the city have a street sweeper? This is not safe and causes vehicle damage.	9/11/2024 8:43 PM
56	The overall aggressive behavior of the drivers here is alarming.	9/11/2024 7:57 PM

57	Red light runners or people in the middle the intersection blocking the road to turn left	9/11/2024 7:31 PM
58	State Route 90 at the intersection of 92/90 is so dangerous. From 92 down to the intersection of Guilo Cesare. It’s an absolute disaster and should be addressed immediately.	9/11/2024 7:07 PM
59	The #1 scariest thing we see isn’t speeding but passing very close to no passing zones. A head on collision of two vehicles going 45-65+ is a death sentence. Installing passing lanes would allow drivers to wait til there is a safe space to pass without risking other drivers lives.	9/11/2024 7:01 PM
60	Hwy 90 and hwy 92 by our food stores in terrible condition. Many of our roads are in terrible and need repair	9/11/2024 1:49 PM
61	The lights at Julio Cesar and Charleston and fighting colt drive need left turn only on light signal	9/11/2024 1:27 PM
62	The idea that paint alone is safety is absurd. We need thoroughfare deviders between traffic.	9/10/2024 11:21 PM
63	Drivers passing other vehicles at high speed on curves, oncoming traffic etc. See this constantly	9/10/2024 7:37 PM
64	I believe you all need to work on straighting the I-10 through Benson all the ups,down and turns are causing tons of accidents even by professional drivers.	9/10/2024 12:25 PM
65	Filling in the gaps to fully connect sidewalks and bike paths would be really helpful. I mostly walk or bike to get around and would feel much safer if I didn't have to suddenly walk on the shoulder or merge with traffic on my bicycle.	9/10/2024 11:46 AM
66	Lack of funding for the PD and SO!	9/10/2024 10:41 AM
67	Speeding on S Carmichael Ave. West End	9/6/2024 2:49 PM
68	Review the center medians ref entering/exiting businesses. Some poorly maintained, some don't allow room to move timely to a (short) turning lane, almost causing rear endings.	9/6/2024 1:57 PM
69	The cops need to crack down on these a holes that ride your bumper no matter how fast you are going. They pass when they want regardless of the lane markings. They are angry bullies and need to have their license revoked. 75% are in pickup trucks.	9/6/2024 2:30 AM
70	My concern is Hwy. 82 from Nogales to Hwy 90 intersection. Both the designation as a scenic highway and the high truck usage is very dangerous. Signs discouraging truck use is ineffective. Drivers enjoying the scenic qualities of the highway do not mix well with the heavy truck use. The speed limit between Hwy 82 and Hwy 83 junction and Hwy 90 is excessive in consideration of truck and tourist traffic. Hwy 82 is not a designed truck route.	9/5/2024 9:49 AM
71	Shoulders on roads are not being keep clear of trees and brush which then push bicycles to encroach on the road more often. Bicyclists should be discouraged from riding on road with no shoulders, low curve visibility, Hwy 83 is very dangerous for bicyclists.	9/4/2024 8:54 PM
72	County needs to fix pot holes.	9/4/2024 6:50 PM
73	My 3 major concerns are checked in #4 above.	9/4/2024 5:32 PM
74	The shoulders and roadways of all the highways into to SV are in very poor condition. These force cyclists from the shoulder, into road. Dangerous for the cyclists and irritating to drivers.	8/29/2024 7:16 AM
75	Intersection of 20th and Hwy 70 (Walgreens). Always congested and dangerous when trying to turn into Safeway parking/shopping especially when making a left hand turn on the intersection from Hwy 70 to 20th. There's not much road between Hwy 70 and the Safeway lot turnoff. Was victim of road rage in this area where female backtracked and followed me into Home Depot parking lot and jumped out of her truck to attack me. I saw her in time and did not exit my vehicle but backed away from her and drove off.	8/28/2024 12:26 PM
76	Prevent santa cruz county officials from stealing highway funds.	8/21/2024 12:25 PM

77	The turn light at the i90 and i10 intersection coming from the dead end of 90 to turn left to get onto i10 into Benson is sooo slow! People run the light because they think it's no calibrated properly. Benson specifically needs better painted lines throughout town, and potholes need to be addressed because people swerve to miss them.	8/21/2024 10:13 AM

Q12 What is your gender?

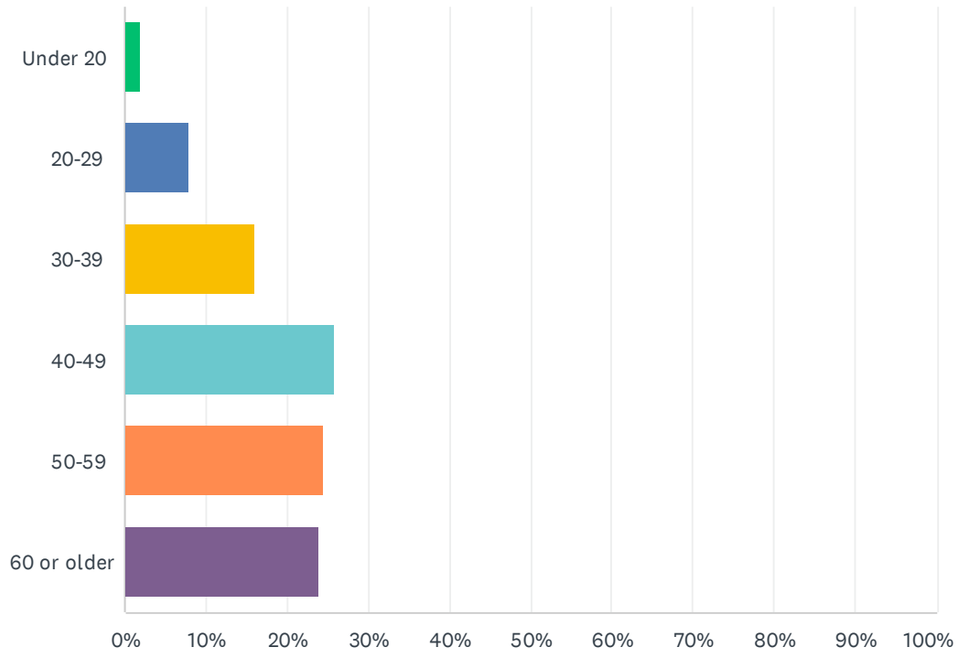
Answered: 153 Skipped: 108



ANSWER CHOICES	RESPONSES	
Male	38.56%	59
Female	54.90%	84
Non-Binary	0.65%	1
Prefer no to answer	5.88%	9
TOTAL		153

Q13 What is your age range?

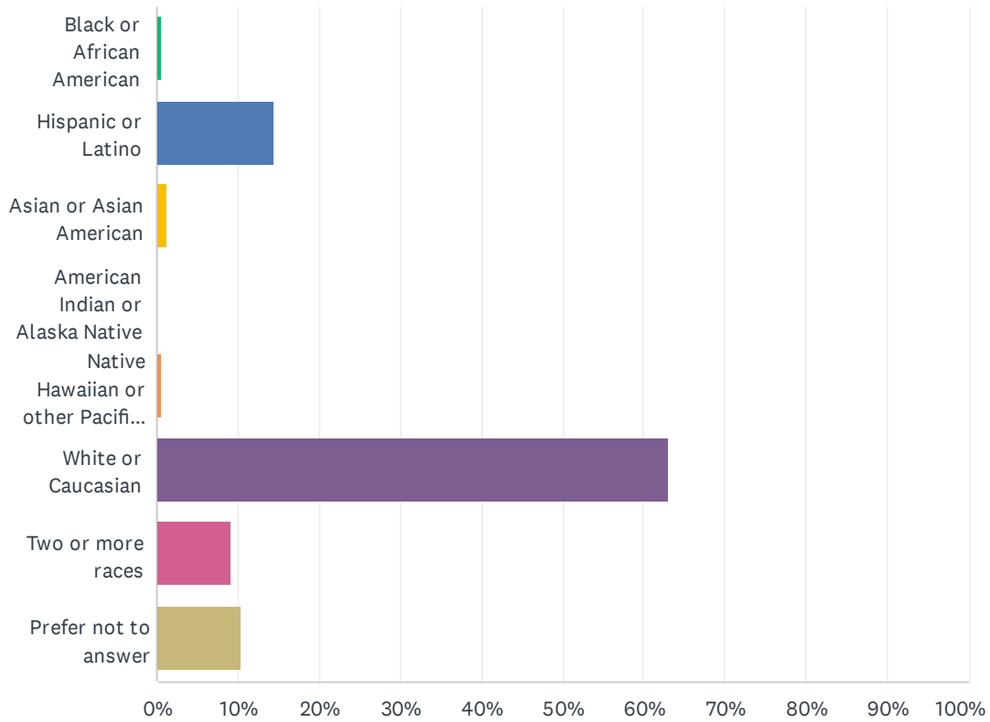
Answered: 151 Skipped: 110



ANSWER CHOICES	RESPONSES	
Under 20	1.99%	3
20-29	7.95%	12
30-39	15.89%	24
40-49	25.83%	39
50-59	24.50%	37
60 or older	23.84%	36
TOTAL		151

Q14 Describe your ethnicity/race.

Answered: 152 Skipped: 109



ANSWER CHOICES	RESPONSES	
Black or African American	0.66%	1
Hispanic or Latino	14.47%	22
Asian or Asian American	1.32%	2
American Indian or Alaska Native	0.00%	0
Native Hawaiian or other Pacific Islander	0.66%	1
White or Caucasian	63.16%	96
Two or more races	9.21%	14
Prefer not to answer	10.53%	16
TOTAL		152