US 199 CORRIDOR PLAN

October 2022

JOSEPHINE COUNTY

OREGON DEPARTMENT OF TRANSPORTATION

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Cover image source: Oregon Department of Transportation

CHAPTER 1 : : : : : : : : : : : : : : : :

PROJECT INTRODUCTION & BACKGROUND

PURPOSE & GOALS

The overall guiding principle for the US 199 Corridor Plan is to reduce crash risk and provide convenient access for all road users in support of residents as well as the local, regional, and state economy.

The Corridor Plan was initiated by the Oregon Department of Transportation (ODOT) based on a recommendation from the 2020 Josephine County Transportation System Plan (TSP), and the corridor's crash history and limited multimodal facilities.

US 199 is a rural state highway that runs generally northeast to southwest, connecting Interstate 5 in Grants Pass, Oregon, to US 101 in California. It is part of the National Highway System, a federally-designated truck route, and an Oregon Highway Plan freight route.

The study corridor extends along US 199 from the Applegate River, just west of Grants Pass, to the California border, excluding the City of Cave Junction, and is approximately 35 miles long. Land uses within the study area include unincorporated rural communities—Wilderville, Wonder, Selma, Kerby, and O'Brien—and rural Josephine County.

The corridor serves a variety of users, including local residents, freight, regional travelers between southern Oregon and the Pacific Coast, and recreational traffic accessing local destinations or traveling through the corridor.

Guiding Principle

Reduce crash risk and provide convenient access for all road users in support of residents as well as the local, regional, and state economy.

General Objectives

- Reassess transportation deficiencies identified in the Josephine County TSP related to safety, operations, and people walking and biking
- Develop cost-effective solutions to reduce crash risk and improve access for all road users
- Provide a policy framework for US 199's performance

Goals

The following goals from the Josephine County TSP were identified as relevant to achieving the goals of the Corridor Plan, with safety noted as the highest priority when conflicts arise:

- Communication, Collaboration, and Coordination
- Safety
- Mobility
- Connectivity
- Community and Economic Vitality
- Environmental Sustainability
- Strategic Investment
- Land Use and Transportation Integration

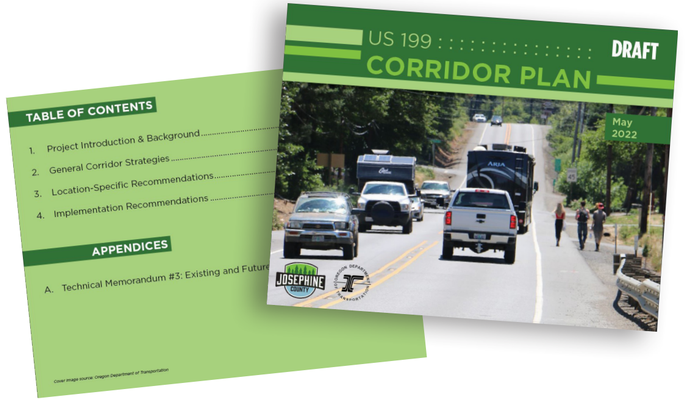
The full Goals and Objectives can be found in Appendix A: Technical Memorandum #1: Goals and Policy Review.

Photo source: ODOT

HOW THE PLAN IS ORGANIZED

The plan includes four chapters and five appendices.

- **Chapter 1** provides background information about the project, including the project purpose and goals; the plan development process, including the public input process; and an overview of corridor issues that the team identified. Chapter 1 also provides an overview of how to interpret the plan's recommendations.
- **Chapter 2** summarizes general corridor strategies that are applicable at different context zones within the corridor.
- **Chapter 3** presents the location-specific recommendations with maps, summarizing key issues and a range of treatments for each identified segment.
- **Chapter 4** presents systemic and policy recommendations that apply throughout the corridor.



PLAN DEVELOPMENT

The project team went through a series of steps to develop the Corridor Plan, as shown in the graphic below.

After establishing goals and performing a baseline assessment incorporating land uses, demographics, environmental considerations, public transportation services (transit), bicycle and pedestrian facilities, bridges, and highway designations along the corridor, the team assessed current and future transportation system conditions, including traffic operations and safety performance.

This assessment, combined with input from the public, allowed the project team to understand corridor needs, which varied based on context (rural vs. unincorporated community, for example). The team developed location-specific countermeasures, systemic strategies, and policies to address the issues identified, including crash patterns and the corridor's general safety performance.

PUBLIC INPUT

The project team relied heavily on the community's local knowledge and experience of the corridor throughout the planning process. The team reached out to the local community by meeting regularly with a Project Advisory Committee (PAC) made up of local stakeholders and holding two virtual public open houses.

The PAC met three times during plan development to discuss and provide input on:

- Corridor needs
- Draft recommendations
- The Draft Corridor Plan

The two virtual public open houses garnered hundreds of comments at two critical project steps:

- Corridor needs and draft recommendations
- Draft Corridor Plan

This public involvement process shaped the plan by confirming and augmenting the team's understanding of the known issues and context-appropriate solutions for the project corridor.

PLAN DEVELOPMENT SCHEDULE

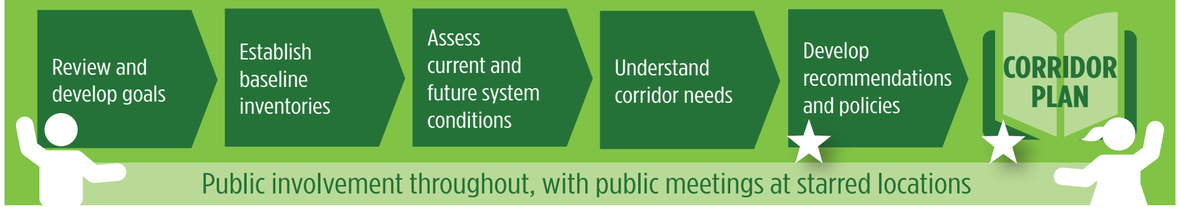


Photo source: ODOT

OVERVIEW OF ISSUES

To support the plan's guiding principle of **reducing crash risk and providing convenient access**, the team evaluated the corridor's operations and safety. The detailed analyses can be found in Appendix B (Baseline Inventories) and Appendix C (Transportation System Conditions). They found that a rural two-lane highway adequately accommodates the existing and proposed (2040) traffic volumes along the corridor.

Based on intersection turning movement volumes, the team found that side-street delay exceeds 18 seconds during the peak hour. Side-street delay is largely determined by US 199 through volume, which is relatively consistent during the weekday PM peak hour for much of the corridor.

Through the walking, biking, and transit analyses, the team noted the lack of dedicated facilities along the corridor, resulting in a qualitative multimodal assessment (QMA) rating of Fair to Poor for people walking and taking transit. For people biking, a level of traffic stress (LTS) analysis indicated that most of the corridor is rated LTS 3, meaning that it is uncomfortable for most adult bicyclists. The ODOT Statewide Bicycle and Pedestrian Safety Risk Assessment indicated that the Kerby community has the highest bicyclist safety risk on the study corridor.

The team analyzed the available reported crash data to understand safety performance and concerns along the corridor. A crash analysis using ODOT's reported data showed there were 417 reported crashes from 2014 to 2019.* Of these, 41 were fatal and severe injury crashes. Figure 1 presents the number of crashes by severity per year. The project team considered all reported crashes but focused on reducing fatal and severe crashes.

In addition to looking at crash types and patterns, the team performed several crash screenings to understand patterns along different segments of the corridor. Location-specific crash trends and information are presented in Chapter 3; the following information summarizes corridor-wide patterns and screenings.

The team screened the corridor using equivalent property damage only (EPDO) scores to identify locations with the highest crash frequency and severity. EPDO scores for each location are based on crash frequency and severity, with fatal and severe crashes receiving a higher weight than property-damage-only crashes. More information can be found in Appendix C: Technical Memorandum #3: Existing and Future Conditions Analyses.

The EPDO analysis results shown in Figure 2 reveal that the northern section of the corridor, north of Cave Junction, generally has higher EPDO scores than the section to the south. Other locations with higher EPDO scores include tight curves, locations near passing lanes, and transition zones in/out of towns, particularly Kerby, Cave Junction, Selma, and O'Brien. These scores helped the project team identify priority locations for projects.

ODOT data show there were 417 reported crashes from 2014 to 2019. Of these, there were 41 total fatal and severe injury crashes.*

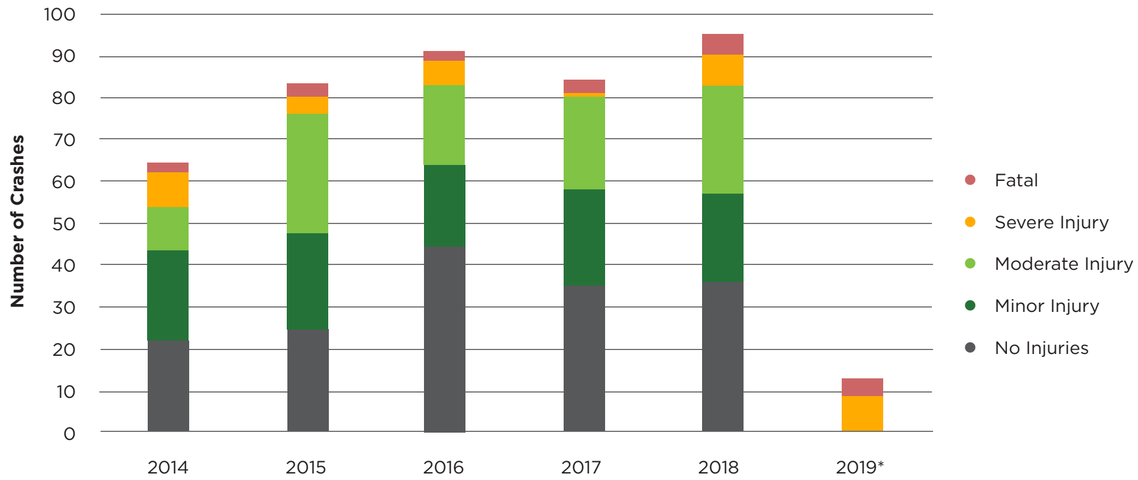
*2019 data were preliminary and included only fatal/severe crashes. The project team also considered anecdotal (newspaper articles, etc.) fatal 2020 and 2021 crashes when developing recommendations.

The crash rate analysis normalizes the number of crashes based on the exposure of vehicles (the traffic volume). By considering the crash rate, the team can identify areas with a higher number of crashes in comparison to the number of users. The detailed methodology for the crash rate analysis is presented in Appendix B: Technical Memorandum #2 (Baseline Inventories) and Appendix C: Technical Memorandum #3 (Transportation System Conditions).

The results of this analysis reveal similar trends to the EPDO analysis. However, several segments in the lower-vehicle-volume area south of Cave Junction have crash rates in the top 20 percent of the study area.

Similar to the EPDO results, this screening shows that tighter curves, segments near passing lanes, towns, and transition zones have higher crash rates. The fact that these locations are identified through both the EPDO and crash rate screening reinforces the importance of prioritizing recommendations and systemic treatments to address these characteristics.

Figure 1: Corridor Crash Data, 2014–2019



Source: ODOT reported crash data

**2019 data were preliminary and only included fatal/severe crashes*

Figure 2: Equivalent Property Damage Only Analysis Results

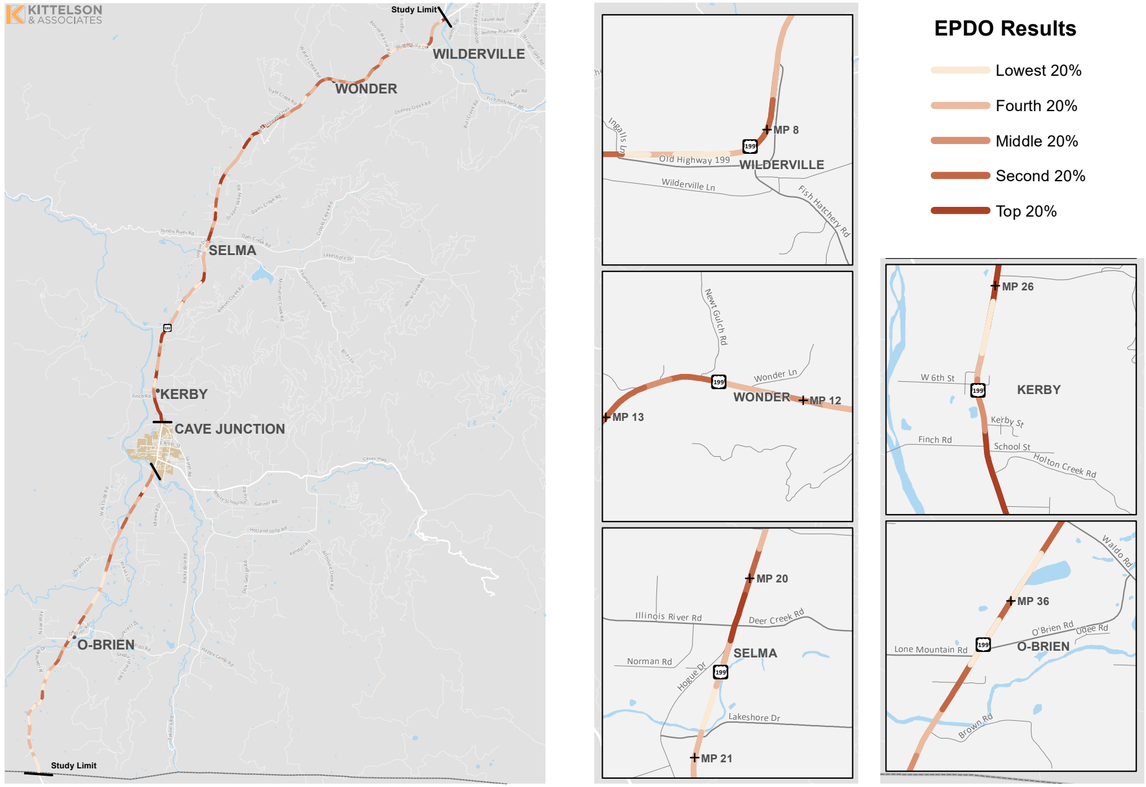


Photo source: ODOT

Other findings identified through the safety analysis

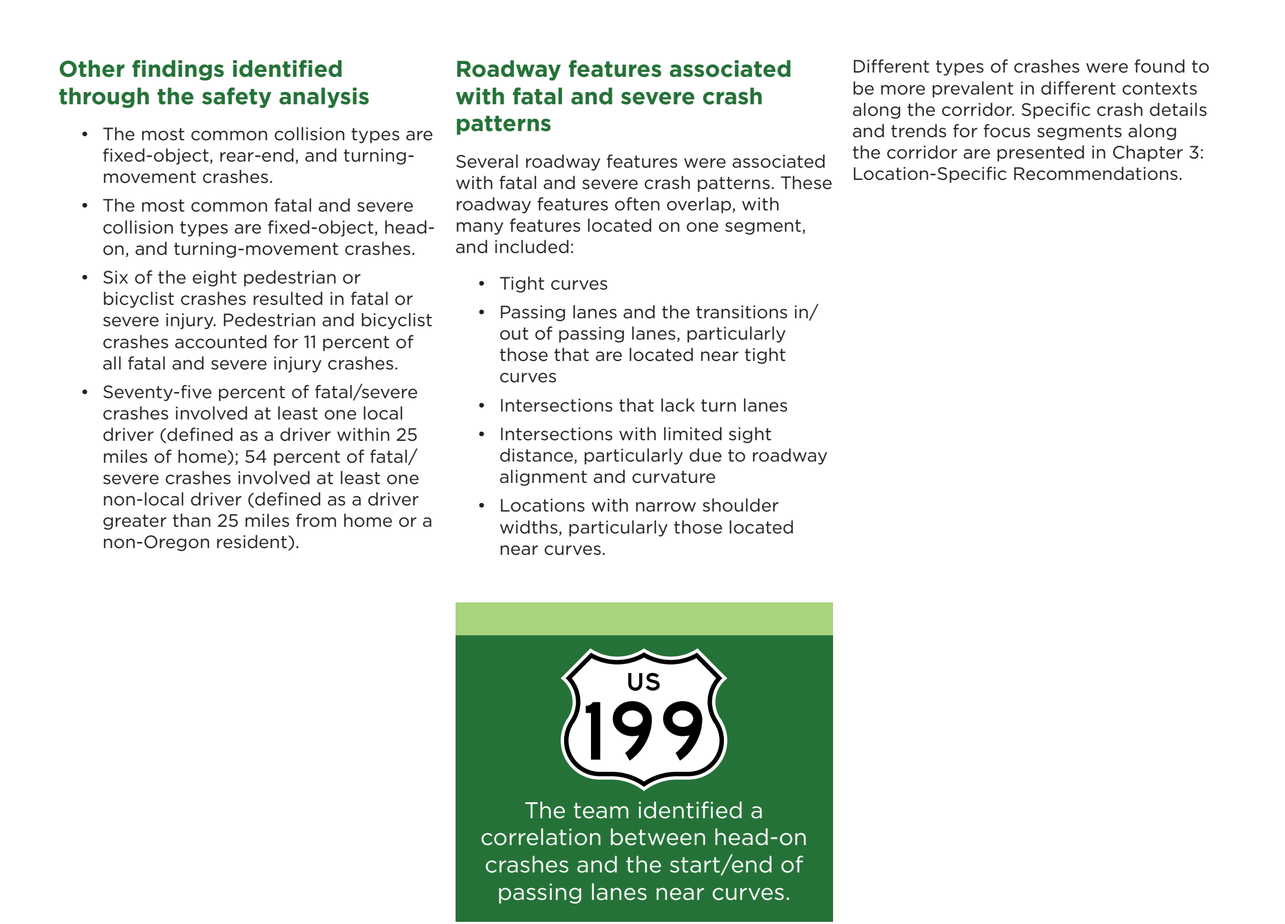
- The most common collision types are fixed-object, rear-end, and turning-movement crashes.
- The most common fatal and severe collision types are fixed-object, head-on, and turning-movement crashes.
- Six of the eight pedestrian or bicyclist crashes resulted in fatal or severe injury. Pedestrian and bicyclist crashes accounted for 11 percent of all fatal and severe injury crashes.
- Seventy-five percent of fatal/severe crashes involved at least one local driver (defined as a driver within 25 miles of home); 54 percent of fatal/severe crashes involved at least one non-local driver (defined as a driver greater than 25 miles from home or a non-Oregon resident).

Roadway features associated with fatal and severe crash patterns

Several roadway features were associated with fatal and severe crash patterns. These roadway features often overlap, with many features located on one segment, and included:

- Tight curves
- Passing lanes and the transitions in/out of passing lanes, particularly those that are located near tight curves
- Intersections that lack turn lanes
- Intersections with limited sight distance, particularly due to roadway alignment and curvature
- Locations with narrow shoulder widths, particularly those located near curves.

Different types of crashes were found to be more prevalent in different contexts along the corridor. Specific crash details and trends for focus segments along the corridor are presented in Chapter 3: Location-Specific Recommendations.



The team identified a correlation between head-on crashes and the start/end of passing lanes near curves.

Photo source: ODOT

CHAPTER 2 : : : : : : : : : : : : : : : : :
GENERAL CORRIDOR STRATEGIES

The project team identifies a number of broad strategies, which include a mixture of maintenance practices, low-cost signage and striping recommendations, and larger capital improvement projects, to address the safety and mobility needs identified for the US 199 study corridor. Many of these strategies are applicable at numerous locations. This section presents the broad strategies that should be considered based on the unique context of each location. These strategies should be applied to all locations where applicable on the corridor and should be used to develop projects at locations that may not be directly addressed through Location-Specific Recommendations in Chapter 3. Additional detail, including the specific types of treatments applicable within each strategy, can be round in Appendix D: Technical Memorandum #4.

Many of the strategies discussed are already present in much of the corridor and are included for consideration because there may be additional locations where they would be beneficial, need increased maintenance frequency to replace damaged or missing items (such as signage and pavement markings), or may need consideration for implementation beyond the standard application (such as increasing the frequency of signage or delineators).

Context Zones

The US 199 study corridor passes through various environments such as rural forested lands and small unincorporated communities; these changing environments are referred to as 'context zones.' Understanding the context zones within the study corridor presents the opportunity to implement systemic transportation solutions or context zone-specific strategies where they are appropriate. For example, a set of solutions may be appropriate in transition areas to a community but not necessarily in rural areas.

The project team defined the following context zones for the US 199 study corridor for use in identifying strategies that are applicable to different locations:

- Rural highway
- Passing lanes
- Curves
- Unincorporated communities (i.e., Wilderville, Wonder, Selma, Kerby, and O'Brien)
- Transition areas between rural segments and unincorporated communities
- Rural development outside of unincorporated communities
- Intersections

Figure 3 shows the location of the context zones on the corridor and should be used to correlate the strategies in the following sections to specific locations. Intersections are not shown on the figure because the strategies apply to the many intersections and driveways along the corridor. Context zones do not mean that each area reflects the

same characteristics. For example, the unincorporated communities are each unique; Kerby is more developed than smaller communities such as Wonder and Wilderville. However, consistent treatments such as gateway signage along the corridor will provide visual cues to drivers that they are entering an area where they need to be more alert for potential conflicts at driveways or with people walking and bicycling. The treatments applicable within each context zone may vary, but the general strategies applied to each area should be consistent.

Many of these context zones overlap at locations. The context zones are not mutually exclusive. For example, several of the curves also contain passing lanes, and key intersections are located within each of the other context zones. In other areas, passing lanes may pass through areas or rural development or transition areas. The following sections discuss strategies appropriate for each context zone, beginning with strategies that are appropriate throughout the general corridor. The context zones used for this project are intended to help with implementation of treatments and are not ODOT Blueprint for Urban Design (BUD) context classifications.

CORRIDOR-WIDE STRATEGIES

This section describes general strategies that could be applicable throughout the US 199 study corridor. The existing cross-section of US 199 generally has two- to four-foot wide shoulders, limited curve and intersection delineation, and few facilities for people walking and biking. These corridor-wide strategies are intended to improve safety performance for motorized users on US 199 by increasing the ability of a user to recover after leaving a lane, reducing the risk of hitting an object after leaving a lane, reducing the severity of a crash by reducing speed, and increasing awareness of potential conflicts such as driveways and intersections. The strategies may enhance the quality of service and reduce crash risk for non-motorized users who access transit, bike, walk along, or cross US 199.

Strategies

The general strategies are applicable at many locations throughout the corridor. While there are sections of the corridor where these may be lower priority (such as locations with wider shoulders or fewer crashes), these are presented as corridor-wide options because of their prevalence. Appendix C (Technical Memorandum #3) provides maps illustrating the location of roadway features and may be used to guide the implementation of these treatments, in addition to the context areas shown in Figure 3.

Many of the countermeasures are already in practice, but signage, delineators, recessed pavement markings, and striping require ongoing maintenance. The recommended strategies could result in increasing the frequency of maintenance activities at some locations to continuously provide the needed messages to drivers. The overall goal is to increase and maintain the visibility of the changing roadway features and elements along the study corridor. This emphasis on maintenance and consistent monitoring of countermeasures is because of the frequency and severity of observed crashes.

Corridor-Wide Strategies:

- Reduce speed and crash severity
- Delineate the corridor and increase maintenance activities as needed to maintain delineation, signage, and pavement markings
- Provide opportunity for recovery after lane departure.
- Reduce intersection conflicts.
- Support multimodal users (people walking, biking, and taking transit).
- Increase intersection visibility / awareness.

Figure 3: Context Zones on US 199


Photo source: ODOT

STRATEGIES FOR PASSING LANES

The analyses identified a correlation between severe and fatal crashes and the presence of passing lanes. Crashes were reported within passing lanes as well as at the transitions in/out of passing lanes.

The project team identified several locations with driveways present within the passing lanes or the transition areas. Driveways within passing lanes have additional potential conflicts due to the increased number of lanes and the higher speeds.

Vehicles often increase speed at the end of passing lanes to complete a passing maneuver before the end of the lane; drivers of these vehicles may not be aware if another vehicle is attempting to decelerate and turn at a driveway.

Strategies for Passing Lanes:

- Reduce conflicts through passing lanes
- Evaluate passing lane termini
- Manage speeds through passing lanes
- Evaluate the benefit of additional opportunities to pass slower vehicles in rural areas
- Evaluate passing lane and curve relationship

STRATEGIES FOR CURVES

The existing and future conditions analyses identified a correlation between severe and fatal crashes and the presence of horizontal curves. The crash types reported within the curves varied, with roadway departure and head-on crashes being some of the most common among severe crashes.

The project team also noted many of the curves are located in constrained areas with limited shoulder width. In addition, passing lanes are located within some of the curves. In some locations, passing lanes terminate shortly prior to horizontal curves, leaving vehicles with limited distance to slow in advance of the curve; head-on crashes were reported at some of these locations.

Strategies for Curves:

- Increase opportunity for recovery/ provide opportunity for recovery after lane departure.
- Improve awareness of upcoming curves. Prioritize curves for low-cost systemic treatments.
- Promote lane discipline to encourage drivers to stay in their lanes.
- Reduce crash severity after roadway departure.
- Reduce speeds through curves.
- Reduce conflicts and improve visibility at intersections and access points.
- Reduce the potential risk of head-on crashes in/near curves.

STRATEGIES FOR UNINCORPORATED COMMUNITIES

Five unincorporated communities are located within the US 199 study corridor: Wonder, Wilderville, Selma, Kerby, and O'Brien. These five communities have a higher density of residential development, and many have retail establishments, restaurants, schools, or other destinations. With the increase in potential conflicts and the increase in multimodal users in these areas, slower speeds are appropriate in these areas compared to other corridor segments and context zones. The speed limit drops in many of the communities. The majority of the pedestrian and bicycle crashes reported along the corridor occurred within or near these areas.

Strategies for Unincorporated Communities:

- Define community limits.
- Reinforce context and speed changes.
- Provide facilities for people walking and biking along and across the highway. Prioritize at key destinations (medical facilities, grocery stores, colleges, campgrounds, post office, etc.) and transit stops.
- Consider median treatments and turn lanes.
- Evaluate private driveways for delineation and possible consolidation opportunities.
- Evaluate intersections within the communities to identify opportunities to reduce speeds and reduce potential conflicts.

STRATEGIES FOR TRANSITIONS AREAS (RURAL TO URBAN)

Transition areas are located between the rural, higher speed roadways and the unincorporated communities, such as Kerby or Selma. In these areas, vehicles are slowing or speeding up as they approach or exit the communities. Transition areas typically exhibit higher speeds than the communities but continue to have potential conflicts such as driveways and more people walking and biking.

Strategies for Transition Areas:

- Increase awareness of context and speed changes with gateway features and a change in roadway environment.
- Encourage slower speeds.

STRATEGIES FOR RURAL DEVELOPMENT

Several areas of rural development are located within the corridor. These areas have a cluster of destinations that create some of the same conditions present in the unincorporated communities: increased conflicts and people walking and biking along and across US 199. These areas may not have the same decrease in posted speed limits that communities have and may not have clearly defined limits.

Strategies for Rural Development:

- Increase awareness of context and speed changes.
- Provide facilities for people walking and biking.
- Evaluate private driveways for delineation and possible consolidation opportunities

STRATEGIES FOR INTERSECTIONS AND DRIVEWAYS

Intersections and driveways are frequent along the US 199 study corridor. The public roads provide access to many destinations in the region. Many of these intersections and driveways are not well delineated and this makes it difficult for drivers to see and be aware of potential conflicts. Some intersections are located within curves, which may create sight distance challenges or not meet driver expectations of encountering vehicles turning to and from US 199. At intersections without turn lanes or deceleration lanes the speed differential between through and turning traffic increases crash risk and crash severity of potential crashes.

Strategies for Intersections and Driveways:

- Improve awareness of intersections and driveways.
- Evaluate access management opportunities.
- Improve sight distance at intersections and driveways.
- Provide opportunities to safely transition to and from turning speeds at intersections and major driveways.

STRATEGIES FOR CHANGING DRIVER BEHAVIOR

A comprehensive approach to reducing fatal and severe crashes must extend beyond physical roadway projects to include safety strategies, such as Josephine County policy changes supported by education and enforcement programs. Together, these safety strategies work towards changing the driving culture along the US 199 corridor.

Educational outreach efforts supported by increased enforcement should be used in conjunction with the infrastructure changes to encourage safe travel behavior. Targeted educational and enforcement campaigns should encourage changing driving behaviors as typically associated with fatal and severe crashes, such as speeding, and impaired, distracted, and reckless driving.

ODOT does not have the ability to mandate or fund additional law enforcement along the corridor, but the following strategies should be considered for improving education and enforcement to change driving behavior along US 199.

Strategies for Education:

- Designate one or more people to lead the educational outreach efforts along the corridor.
- Identify funding sources such as grants or local funds to sustain the outreach program.
- Develop a Safety Communications Calendar, identifying key messages to align with dates or seasons when risky driving behaviors may be highest risk.
- Share the messages with the community through a variety of methods such as flyers, signs, radio advertisements, and tabling at local events.
- Work with local governments and school districts to sponsor education campaigns that promote safe driving behaviors along the US 199 Corridor.

Strategies for Enforcement:

- Identify additional funding sources for targeted enforcement along the corridor.
- Identify driving behaviors to target based on reported crash data and Oregon State Police (OSP) observations along the corridor.
- Identify and continually review to update priority locations for enforcement within the corridor.
- Develop a communication plan for coordination between OSP, ODOT maintenance staff, and other stakeholders to share observations regarding behaviors and key locations to target.
- Develop a community program for citizens to report unsafe driving behaviors along the corridor. Share this information with law enforcement to help with targeted enforcement at priority locations and for priority behaviors.

Photo source: ODOT

CHAPTER 3 : : : : : : : : : : : : : : : : :

LOCATION-SPECIFIC RECOMMENDATIONS

This chapter provides background information and location-specific recommendations for different corridor segments.[1] The project sheets include:

- Background information
- Project recommendations
- Project considerations and challenges
- Cost estimates and crash reduction factors for each recommended treatment

The project team set priorities based on their analysis and review of issues and risks at each location. Segments with more crashes and a higher number of fatal and severe injury crashes were identified as higher priority.

Segments are grouped into three tiers based on relative priority within the study area. These tiers are intended to be flexible and may change as needs change over time. In addition to considering segment priority, cost should be a consideration in choosing which projects to implement first. In locations where low- and high-cost treatments are identified to address the same need, the low- cost treatments may be implemented first; the location should be monitored to determine whether the high cost treatment is needed if crash patterns continue.

TIER 1	TIER 2	TIER 3
High Priority	**Medium Priority**	**Low Priority**

The team developed planning-level cost estimates by referencing unit costs and the cost of similar projects in similar locations. Substantial environmental impacts and right-of-way are not included in the planning-level cost estimates. Context and constraints may impact the cost of each treatment. A refined cost estimate will be developed through the design process for each project.

The key segments presented in the project sheets cover most but not all of the corridor. The systemic strategies provided in Chapter 2 should be applied for the areas outside those shown on the project sheets, based on the appropriate context zone.

1 Inclusion of an improvement in this corridor plan does not represent a commitment by ODOT to fund, allow, or construct the Project. Projects on the State of Oregon Transportation System that are contained in the corridor plan are not considered "planned" projects until they are programmed into the Statewide Transportation Improvement Program (STIP). As such, Projects proposed in the plan that are located on a State system cannot be considered as mitigation for future development or land use actions until they are programmed into an adopted STIP or ODOT provides a letter indicating that the Project is "reasonably likely" to be funded in the STIP. State Highway Projects that are programmed to be constructed may have to be altered or canceled at a later time to meet changing budgets or unanticipated conditions such as environmental constraints.

SEGMENT 1:
RIVERBANKS ROAD

Milepoint: 6.9 - 7.3

Length: 0.38 miles

Posted Speed: 55 mph

Project Priority: Tier I

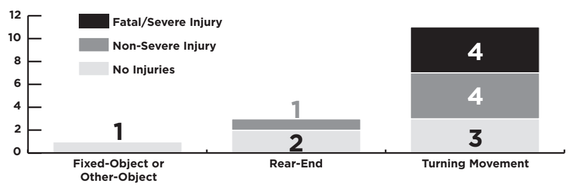
SEGMENT DESCRIPTION:

- Corridor transitions from Grants Pass (4-lane) to a rural environment (2-lane)
- Includes the intersection with Riverbanks Road/OR260 (a 3-leg stop-controlled intersection with a channelized right-turn lane from Riverbanks Road, a southbound right-turn lane from US 199 onto Riverbanks Road, and a northbound left-turn lane from US 199 onto Riverbanks Road) and an unmarked transit stop.

REPORTED CRASH STATISTICS

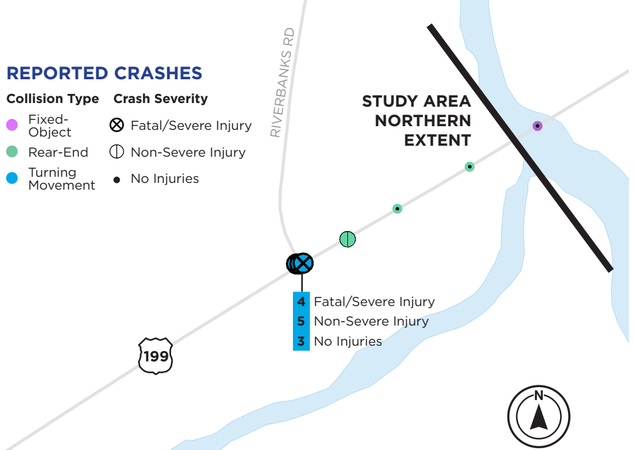
Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
0	4	1	4	6	15



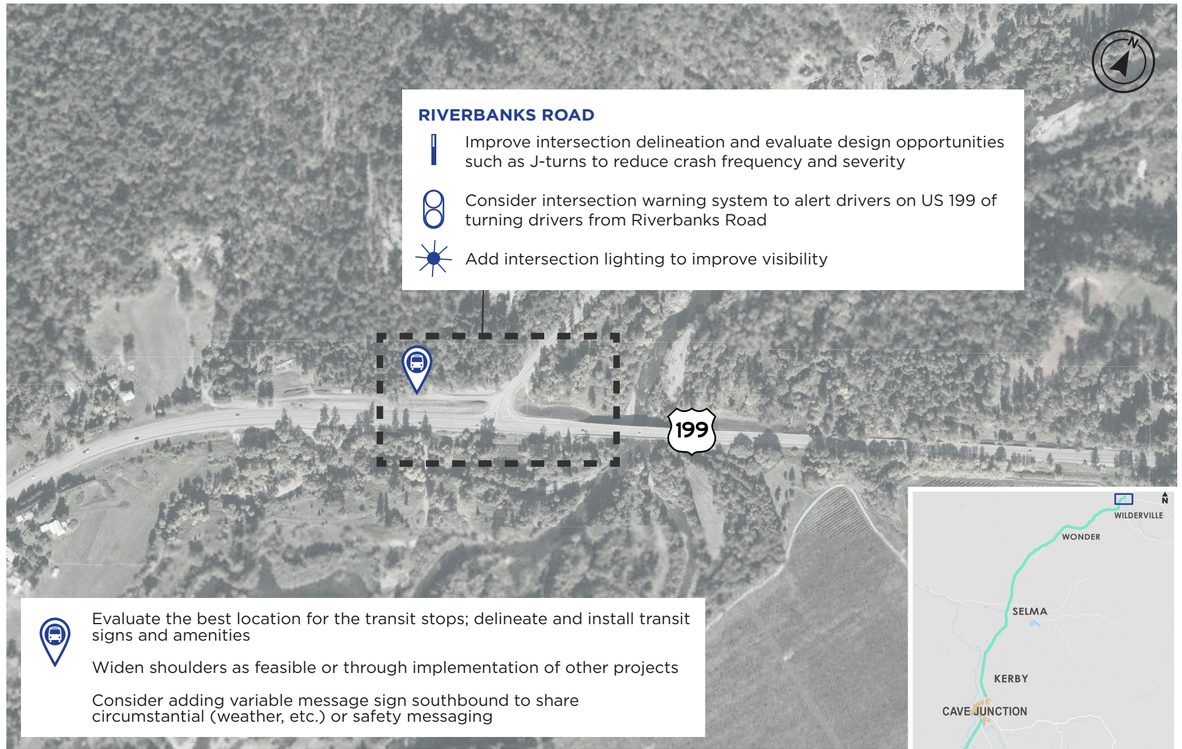
PROJECT CONSIDERATIONS AND CHALLENGES

- Treatments such as roundabouts would help slow traffic, which have been shown to reduce turning movement crashes.
- Proximity to the Applegate River and bridge creates an environmental and cost challenge for consideration in the intersection evaluation.



Treatment	Crash Reduction Factor	Cost Estimate
Add intersection lighting	31-38% for nighttime crashes	$150,000 per intersection
Add actuated intersection warning system	29% for all crashes	$400,000 per system
Evaluate the best location for the transit stops: delineate and install transit signs and amenities	N/A	Varies
Improve intersection delineation and evaluate design opportunities such as J-turns or roundabouts to reduce the crash frequency and severity	34% for all crashes (J-Turn) 19-82% for all crashes	$1,000,000 per J-Turn $5 - $8 million (roundabout)
Widen shoulders	3-18% for all crashes	Approximately $1,000,000 per mile per side of road

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 1:
RIVERBANKS ROAD

SEGMENT 2:
WILDERVILLE

Milepoint:	Length:	Posted Speed:	Project Priority:
7.3 – 9.8	2.5 miles	55 mph	Tier II

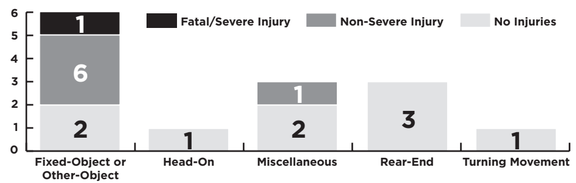
SEGMENT DESCRIPTION:

- Unincorporated community of Wilderville with a higher concentration of driveways and intersections
- Minimal driveway point delineation
- Curve lacks warning signs and chevrons

KEY CRASH STATISTICS

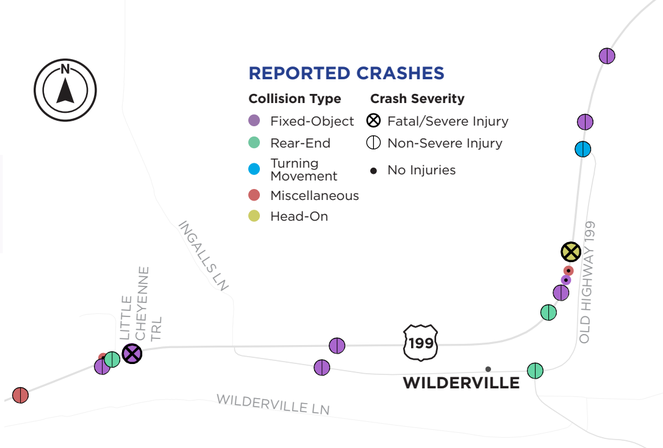
Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
1	1	7	4	4	17



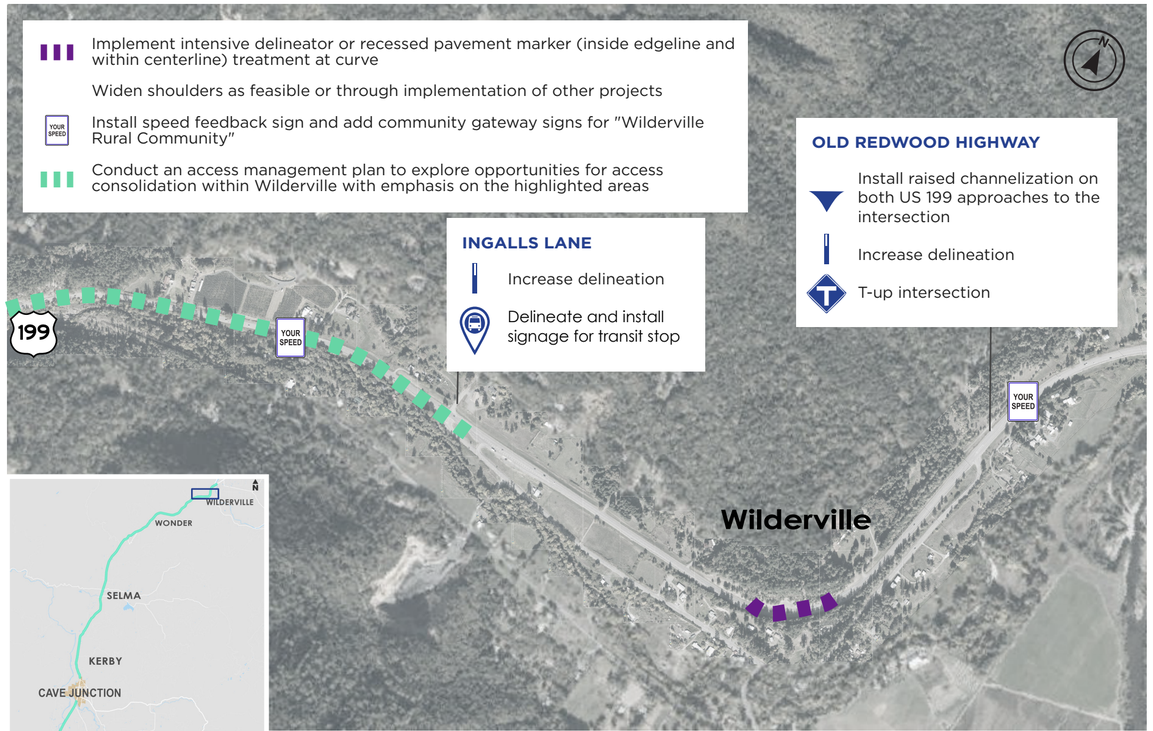
PROJECT CONSIDERATIONS AND CHALLENGES

- Evaluate median barrier in the vicinity of the curve to reduce head-on crashes. Median barriers have a crash reduction factor of -24% (increase) to 43% (decrease) for all crashes;
  - Adding a median barrier would require roadway widening and may increase the risk for fixed object crashes but should reduce the risk for head-on crashes
- Creating awareness that drivers are entering a community increases the expectation for slowed, stopped, or turning vehicles and people walking and biking



Treatment	Crash Reduction Factor	Cost Estimate
Add speed feedback signs at the entrances to Wilderville	5-7% for all crashes	$100,000 per sign
Delineate and sign transit stop	N/A	Varies
Access evaluation	Varies based on driveway density	Varies
Implement delineators and recessed pavement markers	post-mounted delineators: 0-30%; recessed pavement markers: 15% (night time crashes)	post-mounted delineators: varies; recessed pavement markers: $2,000 per mile assuming 1 set of markers per 40
Improve intersection delineation	N/A	Varies
Install median divider	43% to -24%	$175,000 per 1000 ft plus any widening and new pavement required
Community gateway signage	N/A	Varies

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 2:
WILDERVILLE

SEGMENT 3:
WILDERVILLE TO WONDER

Milepoint: 9.8 – 12.4

Length: 2.6 miles

Posted Speed: 55 mph

Project Priority: Tier II

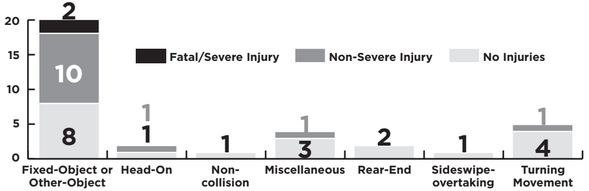
SEGMENT DESCRIPTION:

- Rural with a series of curves and several driveways and key intersections:
  - Elliot Creek Road
  - Round Prairie Road
- Includes a northbound passing lane

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
1	3	9	6	16	35



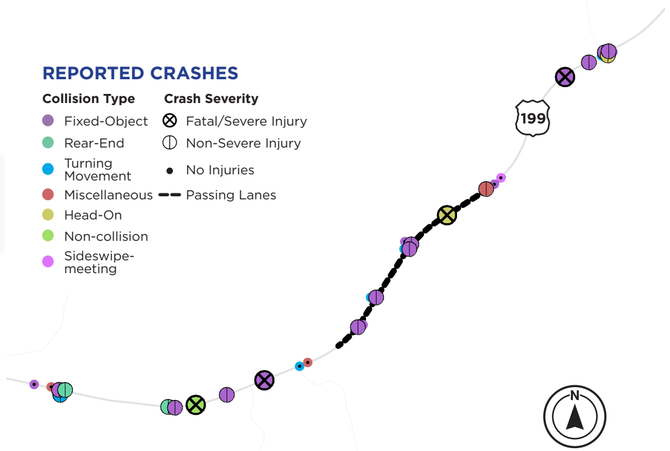
PROJECT CONSIDERATIONS AND CHALLENGES

- Projects to increase recovery opportunities with wider pavement and increase intersection awareness and visibility at Round Prairie Road will need to consider impacts to the nearby creeks and existing bridge structures that may increase costs. Near-term projects should include those with minimal impacts such as actuated intersection warning systems. Longer-term solutions with greater impacts may be considered if crashes continue.
- Widening shoulders would increase recoverable area to help reduce roadway departure as well as intersection-related crashes.

REPORTED CRASHES

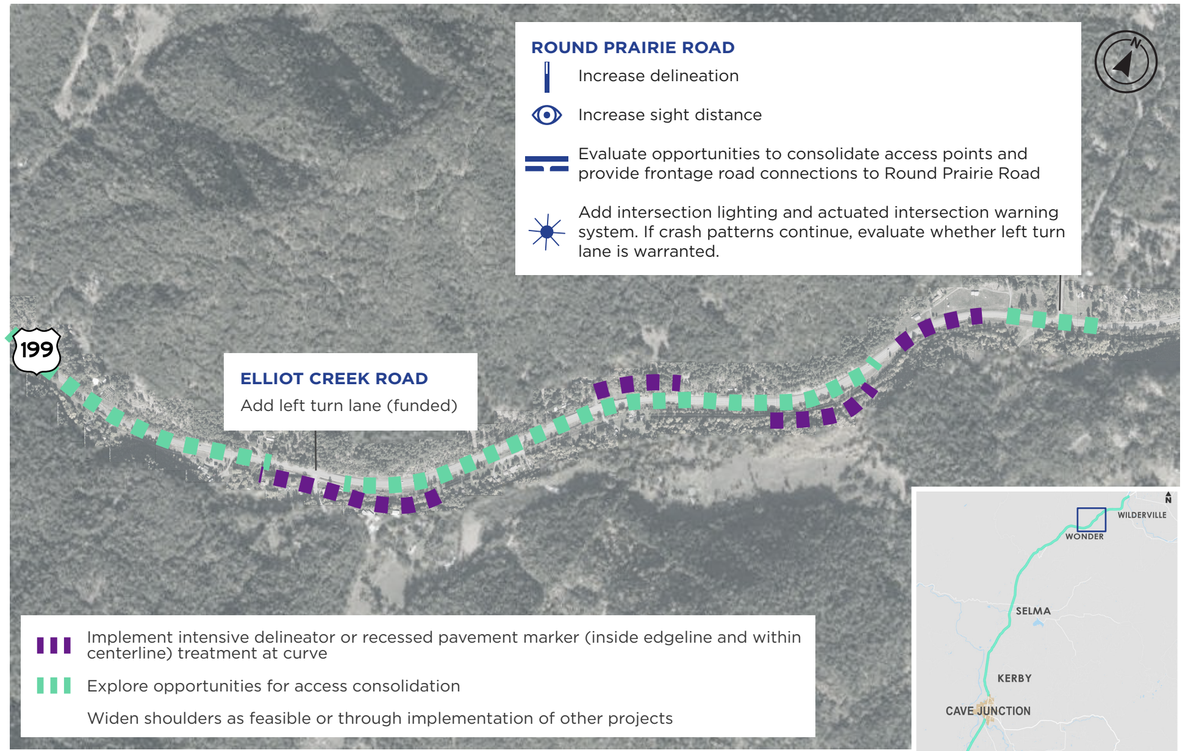
Collision Type
- Fixed-Object
- Rear-End
- Turning Movement
- Miscellaneous
- Head-On
- Non-collision
- Sideswipe-meeting

Crash Severity
- Fatal/Severe Injury
- Non-Severe Injury
- No Injuries
- Passing Lanes



Treatment	Crash Reduction Factor	Cost Estimate
Access evaluation	Varies based on driveway density	Varies
Install actuated intersection warning system	29% for all crashes	$400,000 per system
Install intersection lighting	31-38% for nighttime crashes	$150,000 per intersection
Install left turn lane	33-58%	$1M - $1.5M
Implement intensive delineator or recessed pavement markers at curves	post-mounted delineators: 0-30%; recessed pavement markers: 15% (night time crashes)	post-mounted delineators: varies; recessed pavement markers: $2,000 per mile assuming 1 set of markers per 40
Improve intersection delineation	N/A	Varies
Improve sight distance	11-56% for all injury crashes	Varies
Widen shoulders	3-18% for all crashes	Approximately $1,000,000 per mile per side of road

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 3:
WILDERVILLE TO WONDER

SEGMENT 4: **WONDER**

Milepoint: 11.9 – 13.1

Length: 1.2 miles

Posted Speed: 55 mph

Project Priority: Tier III

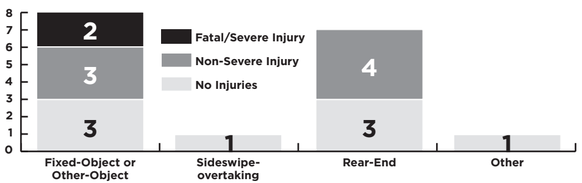
SEGMENT DESCRIPTION:

- Unincorporated community of Wonder, where most businesses and services have access points onto US 199.
- Waters Creek Road serves several residences and provides access to Waters Creek Trailhead.
  - The intersection of US 199/Waters Creek Road is skewed with potential sight distance constraints associated with the embankment just east of the intersection.

KEY CRASH STATISTICS

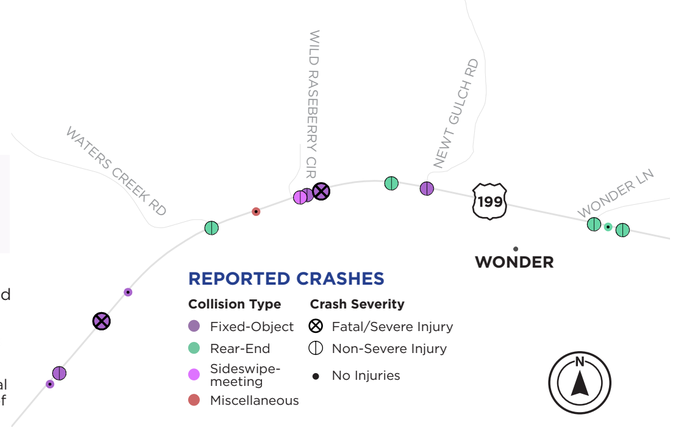
Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
2	0	4	4	7	17



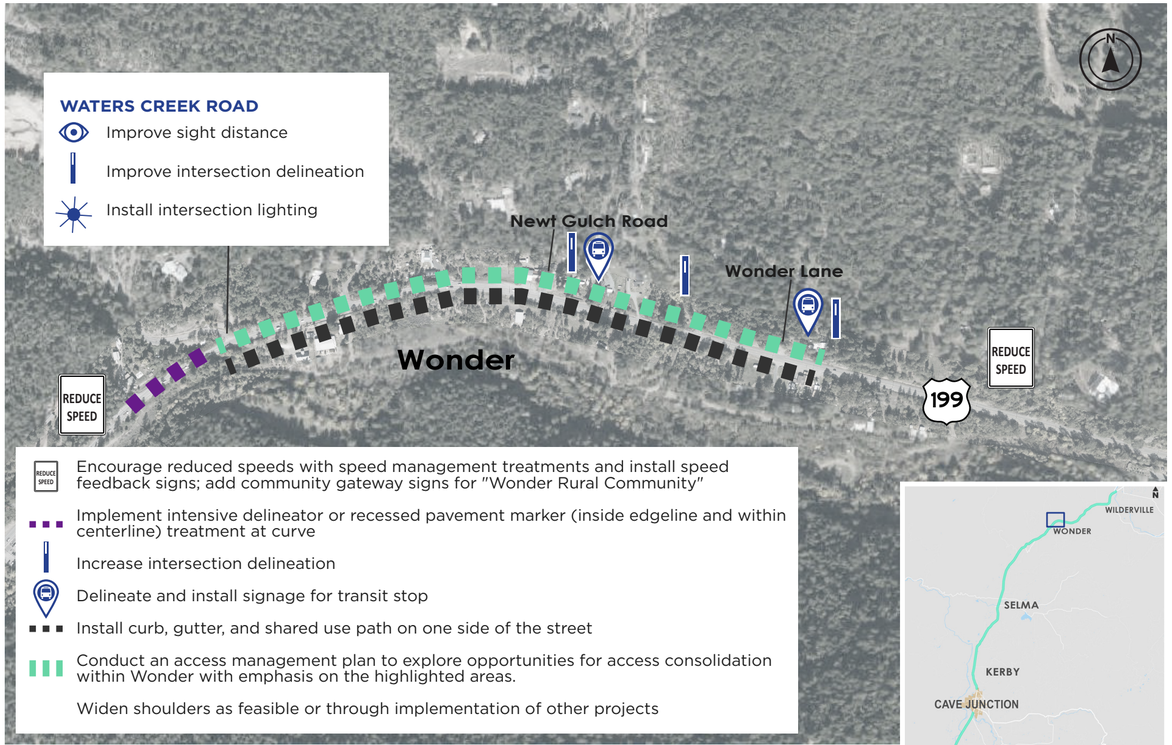
PROJECT CONSIDERATIONS AND CHALLENGES

- Many of the recommendations focus on slowing traffic and providing visual cues to drivers that they are entering a community and need to be more alert for potential conflicts at driveways and with people walking and biking. Slowing traffic helps reduce crash risk and reduce the severity of crashes when they do occur.



Treatment	Crash Reduction Factor	Cost Estimate
Install community gateway signage	N/A	Varies
Install intersection lighting	31-38% for nighttime crashes	$150,000 per intersection
Install speed management treatments and install speed feedback signs	5-7% for all crashes (speed feedback sign)	$100,000 per speed feedback sign
Delineate and sign transit stop	N/A	
Explore opportunities for access consolidation	Varies based on driveway density	
Implement intensive delineator or recessed pavement marker at curve	post-mounted delineators: 0-30%; recessed pavement markers: 15% (night time crashes)	post-mounted delineators: varies; recessed pavement markers: $2,000 per mile assuming 1 set of markers per 40
Improve intersection delineation	N/A	Varies
Improve sight distance	11-56% for all injury crashes	Varies
Install curb, gutter, and shared use path on one side of the street	20% for pedestrian crashes (adding sidewalks)	$1,000,000 per mile (one side)
Widen shoulders	3-18% for all crashes	Approximately $1,000,000 per mile per side of road

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 4: **WONDER**

SEGMENT 5:
WONDER TO HAYES HILL

Milepoint: 13.9 - 14.9

Length: x.xx miles

Posted Speed: 55 mph

Project Priority: Tier III

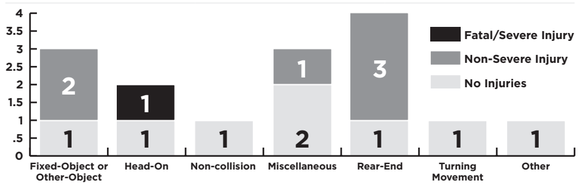
SEGMENT DESCRIPTION:

- Rural with several curves and key intersections:
  - Butcherknife Road (skewed and large undelineated area acts as bus stop pull-out and unofficial deceleration lane)
  - Hayes Hill Road (skewed)
- Slate Creek parallels the roadway for much of the segment, creating a narrow roadway cross-section with guardrails for long stretches of the segment
- Just south of this segment, the road widens for a southbound passing lane

REPORTED CRASH STATISTICS

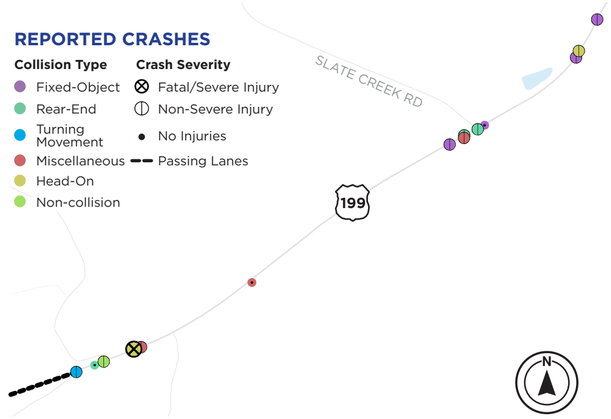
Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
1	0	4	6	4	15



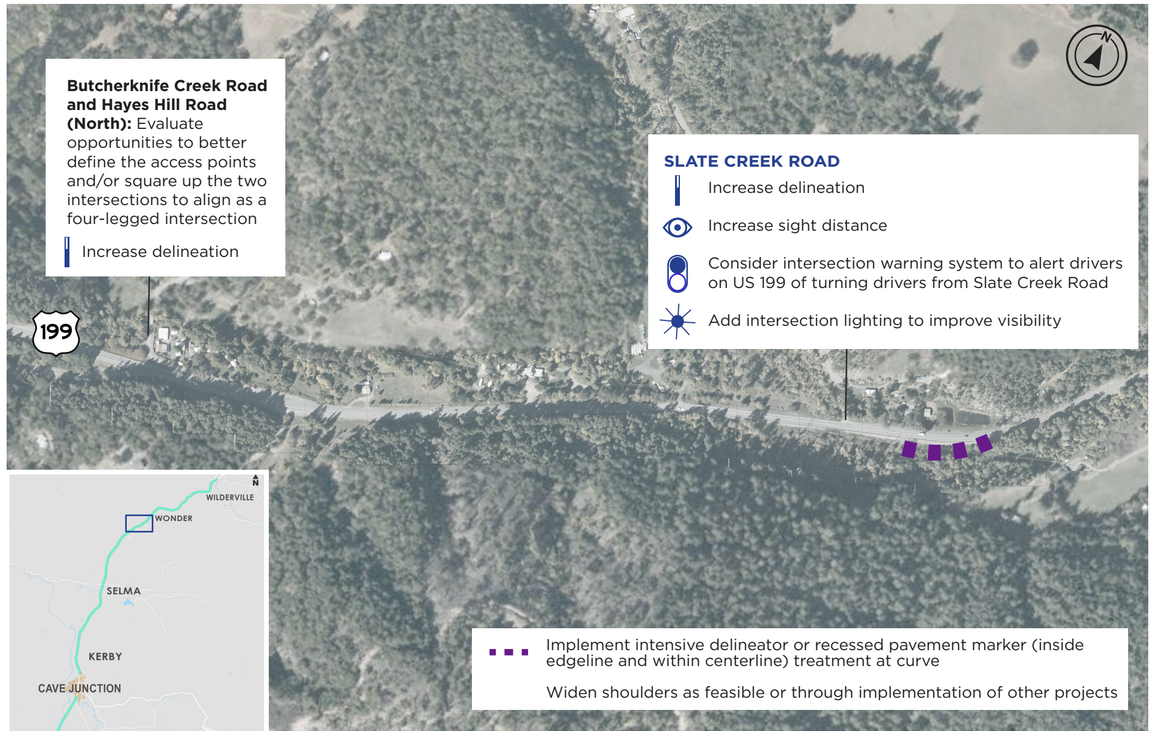
PROJECT CONSIDERATIONS AND CHALLENGES

- Topography is a constraint for projects in this area
- Lower cost projects may include intersection ahead signs, intersection delineation, and providing more clarity for how the wide shoulder just north of Butcherknife Road should be used by better delineating the transit pull out area and providing signing and striping to delineate a right turn lane.
- Consider adding signage that indicates that there is a passing lane ahead.
- Lighting treatments will require Josephine County to enter into an IGA with ODOT to install and maintain intersection lighting.
- Transit stops will require Josephine Community Transit to coordinate with ODOT to locate, install and maintain stops, signs and amenities.



Treatment	Crash Reduction Factor	Cost Estimate
Add intersection lighting	31-38% for nighttime crashes	$150,000 per intersection
Add actuated intersection warning system	29% for all crashes	$400,000 per system
Implement intensive delineator or recessed pavement marker at curve	15% for nighttime crashes	$2,000 per mile assuming 1 set of markers per 40'
Improve intersection delineation	N/A	Varies
Improve intersection sight distance	11-56% for all injury crashes	Varies
Realign Butcherknife Creek Road and Hayes Hill (skewed intersections)	35%	Varies
Widen shoulders	3-18% for all crashes	Approximately $1,000,000 per mile per side of road

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 5:
WONDER TO HAYES HILL

SEGMENT 6:
NEAR HAYES HILL SUMMIT

Milepoint: 14.9 – 16.4

Length: 1.5 miles

Posted Speed: 55 mph

Project Priority: Tier I

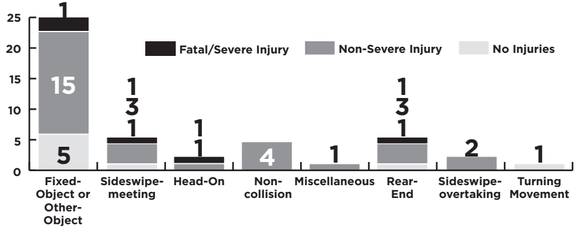
SEGMENT DESCRIPTION:

- Rural with horizontal curves, vertical grade, and narrow shoulders
- Passing lanes in both directions
- Includes the southern intersection with Hayes Hill Road (skewed)

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

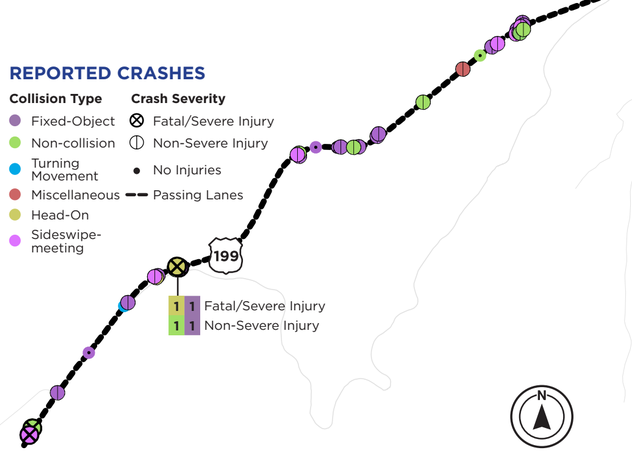
Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
0	5	13	15	8	42



PROJECT CONSIDERATIONS AND CHALLENGES

- Topography is a constraint for projects in this area. Lower cost signage treatments can be used to create awareness of curves and encourage slower speeds within existing constraints.
- Throughout the full study corridor, a correlation of crashes and the end/beginning of passing lanes was identified. Minimizing conflicts (intersections, driveways, proximity to curves – such as the Hayes Hill Road intersection and the first northbound curve) at these locations may help reduce crashes. Modifying passing lane length to minimize conflicts will need to be further evaluated by ODOT to make sure sufficient passing lane length is provided.

REPORTED CRASHES



Treatment	Crash Reduction Factor	Cost Estimate
Add dynamic curve warning signs	5% for all crashes	$100,000 per sign
Add speed feedback signs	5-7% for all crashes	$100,000 per sign
Delineate driveways	N/A	Varies
Evaluate ability to end passing lane earlier	N/A	Varies
Implement intensive delineator or recessed pavement marker at curves	15% for nighttime crashes	$2,000 per mile assuming 1 set of markers per 40'
Install guardrail per ODOT's clear zone project plans (MP 15)	44-47% for run off the road crashes	$80,000 per 1000 ft (one side) plus any shoulder improvements or widening needed
Reduce intersection skew	Varies by skew angle	$400,000; varies based on amount of reconstruction needed
Widen shoulders	3-18% for all crashes	Approximately $1,000,000 per mile per side of road

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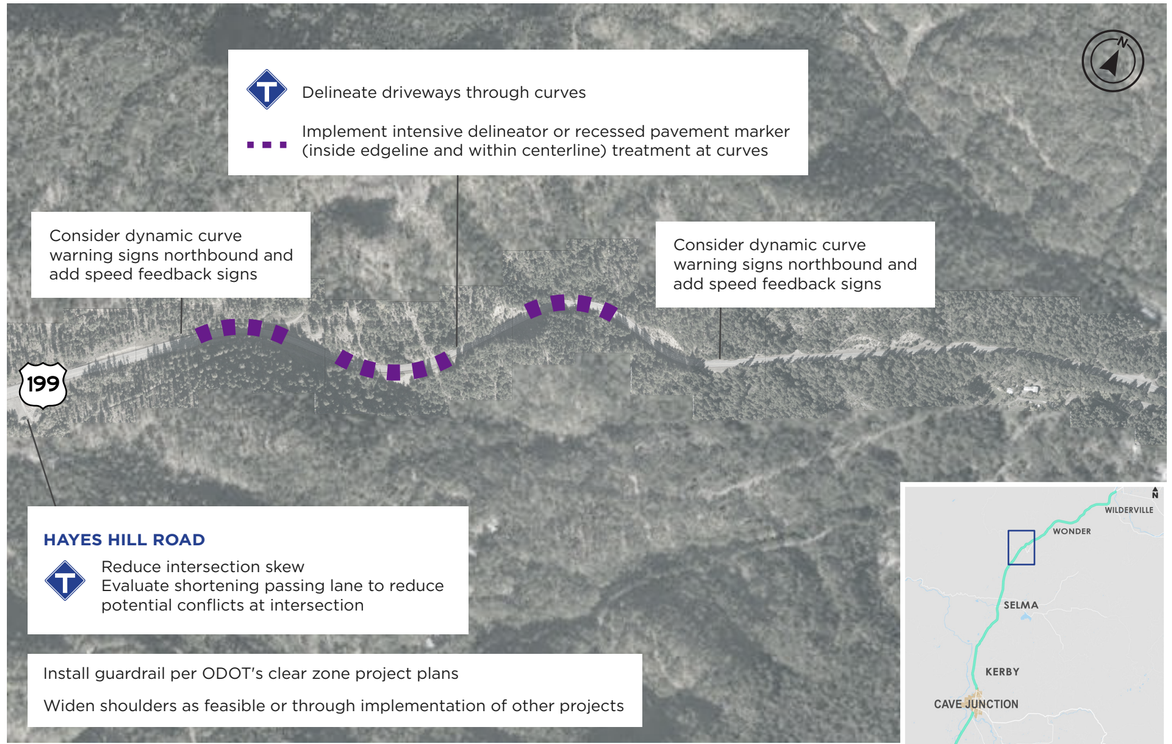


SEGMENT 6:
NEAR HAYES HILL SUMMIT

SEGMENT 7:
NEAR DRAPER VALLEY ROAD

Milepoint: 17.5 – 18.1

Length: 0.6 miles

Posted Speed: 55 mph

Project Priority: Tier II

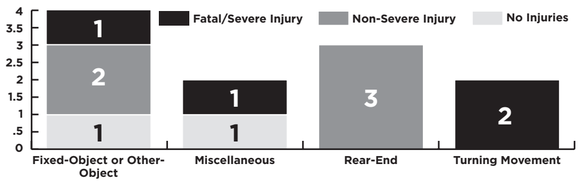
SEGMENT DESCRIPTION:

- Rural segment with narrow shoulders
- Includes the intersection with Draper Valley Road and several major driveways, including the access to Fort Hay Ranch

KEY CRASH STATISTICS

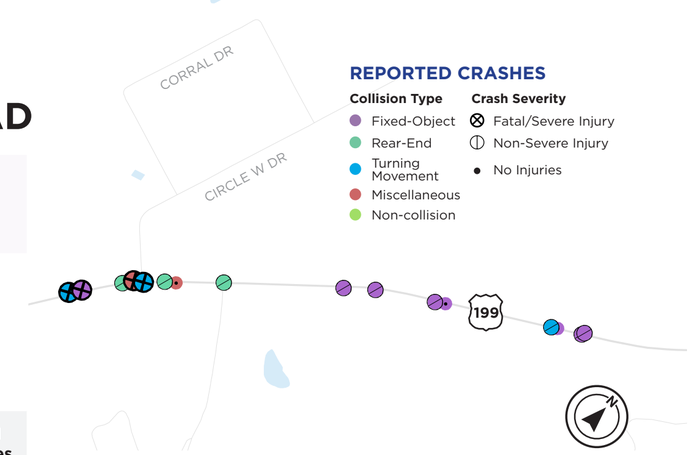
Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
0	4	2	3	2	11



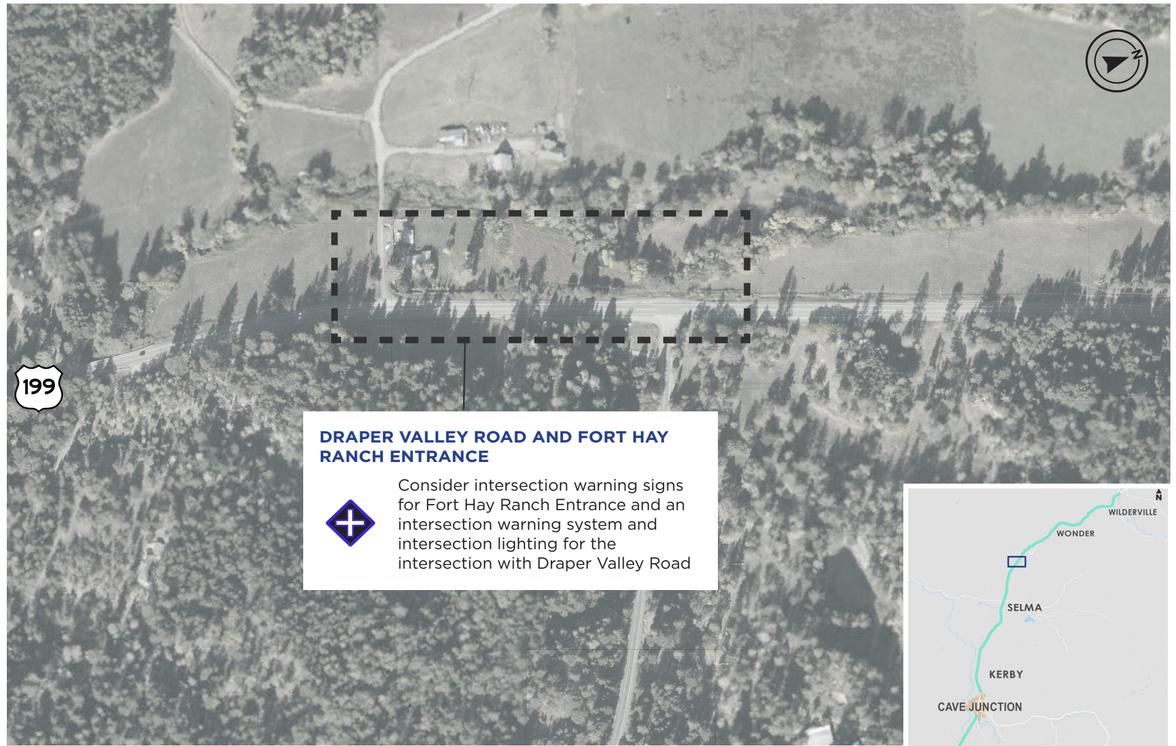
PROJECT CONSIDERATIONS AND CHALLENGES

- Shoulder widening, particularly south of Draper Valley Road, would increase recovery area to help reduce both rear-end crashes and fixed-object crashes.
- Intersection warning signage and actuated intersection warning systems can be used as near-term treatments at Draper Valley Road and Fort Hay Ranch. If crash patterns continued, turn lanes and medians may be considered.
- Several animal crashes were reported just south of the Fort Hay Ranch driveway, (Anderson Creek corridor). If crash patterns continue, animal crossing warning signs may be considered.
- Lighting treatments will require Josephine County to enter into anintergovernmental agreement (IGA) with ODOT to install and maintain intersection lighting.

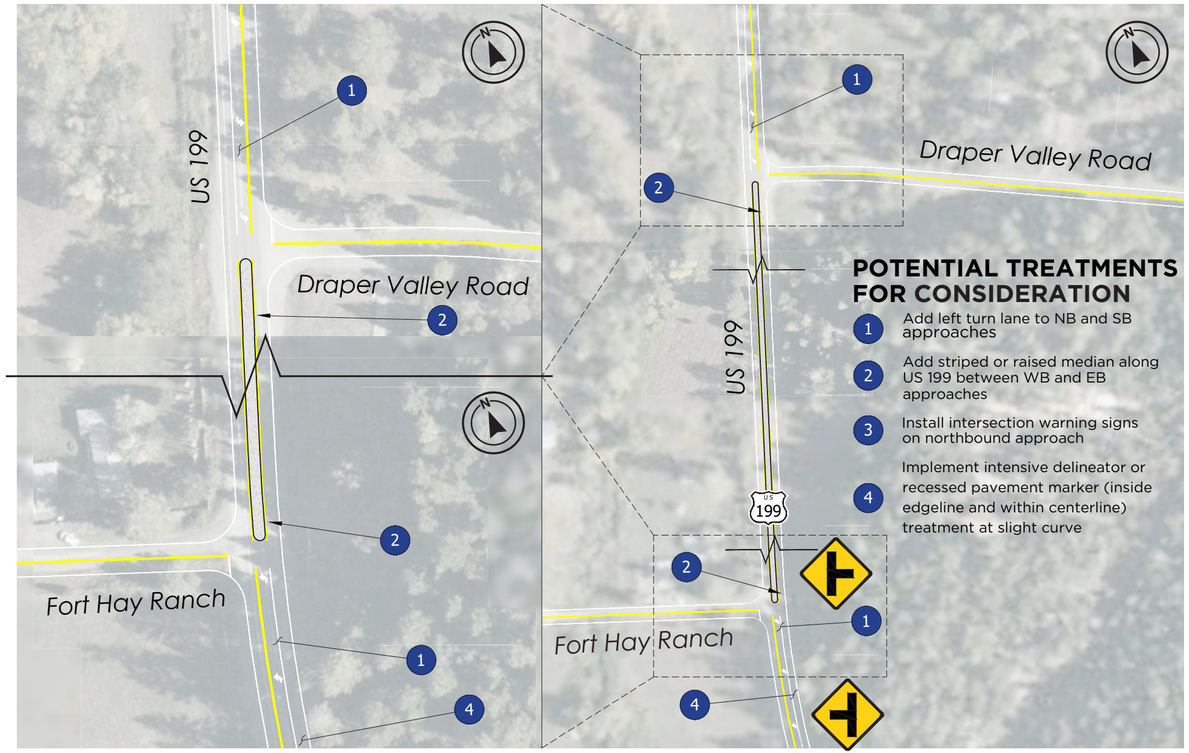


Treatment	Crash Reduction Factor	Cost Estimate
Add intersection lighting	31-38% for nighttime crashes	$150,000 per intersection
Add median	43% to -24%	$175,000 per 1000 ft plus any widening and new pavement required
Add turn lanes	33-58%	$1M - $1.5M
Add actuated intersection warning systems	29%	$400,000
Add intersection warning signs	N/A	Varies
Implement intensive delineator or recessed pavement marker at curves	15% for nighttime crashes	$2,000 per mile assuming 1 set of markers per 40’

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 7:
NEAR DRAPER VALLEY ROAD



FORT HAY RANCH & DRAPER VALLEY ROAD

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SEGMENT 8:
NORTH OF SELMA

Milepoint: 18.4 – 19.3

Length: 0.9 miles

Posted Speed: 55 mph
(transitions to 45 mph just south of this segment)

Project Priority: Tier II

SEGMENT DESCRIPTION:

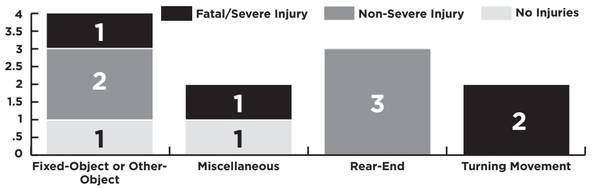
- Northern transition into Selma with more frequent driveways than rural areas
- Key intersections: Hidden Creek Road and Clear Creek Road

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

- 43% of the crashes (6) occurred during non-daylight conditions.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
0	4	2	3	2	11



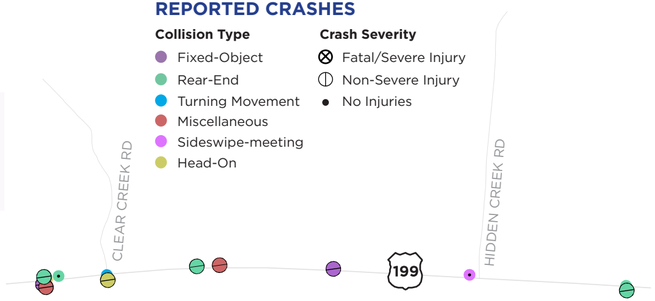
PROJECT CONSIDERATIONS AND CHALLENGES

- Reducing speeds through this segment will help reduce all crash types; with the implementation of treatments, conduct periodic speed studies to see if a lower speed limited is warranted to help reduce all crash types.
- Evaluate the opportunity to move the speed limit transition to north of Hidden Creek Road.

REPORTED CRASHES

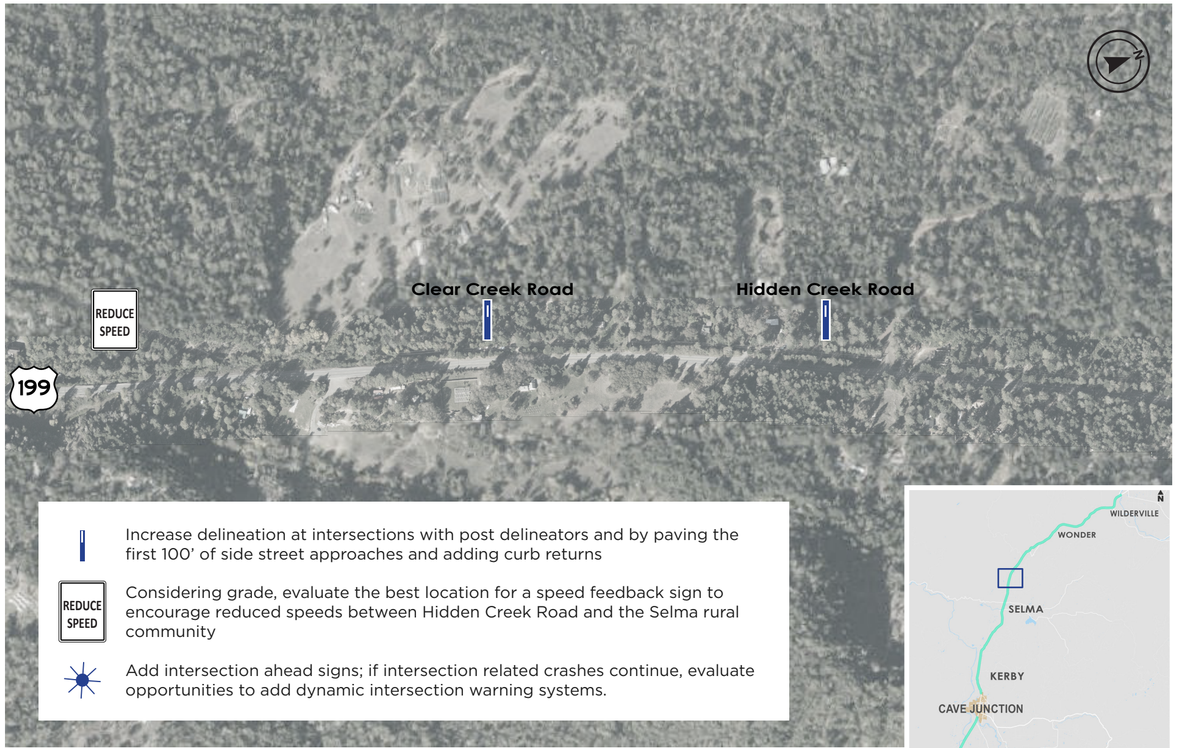
Collision Type
- Fixed-Object
- Rear-End
- Turning Movement
- Miscellaneous
- Sideswipe-meeting
- Head-On

Crash Severity
- Fatal/Severe Injury
- Non-Severe Injury
- No Injuries



Treatment	Crash Reduction Factor	Cost Estimate
Add intersection ahead signs	N/A	Varies
Add speed feedback signs	5-7% for all crashes	$100,000 per sign
Add actuated intersection warning system	29% for all crashes	$400,000 per system
Improve intersection delineation by paving the first 100' of the approaches and adding curb returns	N/A	Varies

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 8:
NORTH OF SELMA

SEGMENT 9: **SELMA**

Milepoint:	Length:	Posted Speed:	Project Priority:
19.3 – 20.9	1.6 miles	45 mph	Tier II

SEGMENT DESCRIPTION:

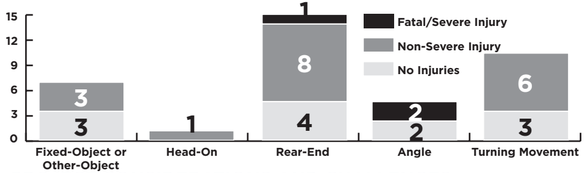
- Travels through the unincorporated community of Selma, where most businesses and services have driveways onto US 199 and there is a higher concentration of residential driveways.
- There is rural development north of Selma, near the intersections of US 199 with Draper Valley Road and Squaw Mountain Road.
- Deer Creek Road has a flashing overhead beacon in the core of Selma. Transit stops are located just north of the intersection.
- Designated Safety Corridor begins from MP 20.67 south

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

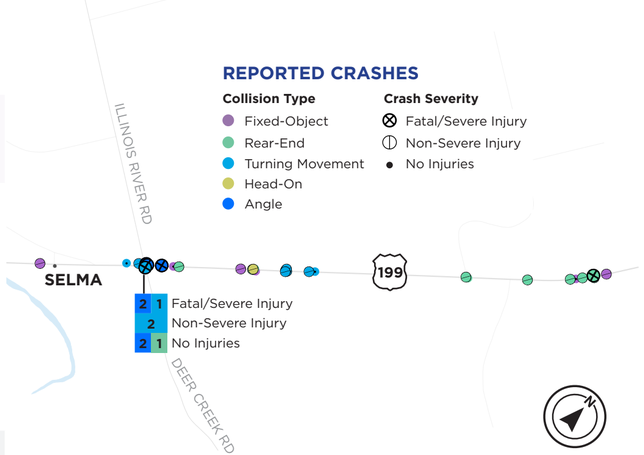
- One of the fatal angle crashes was a bicyclist crash (bicyclist struck by a vehicle)

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
1	2	8	10	12	33



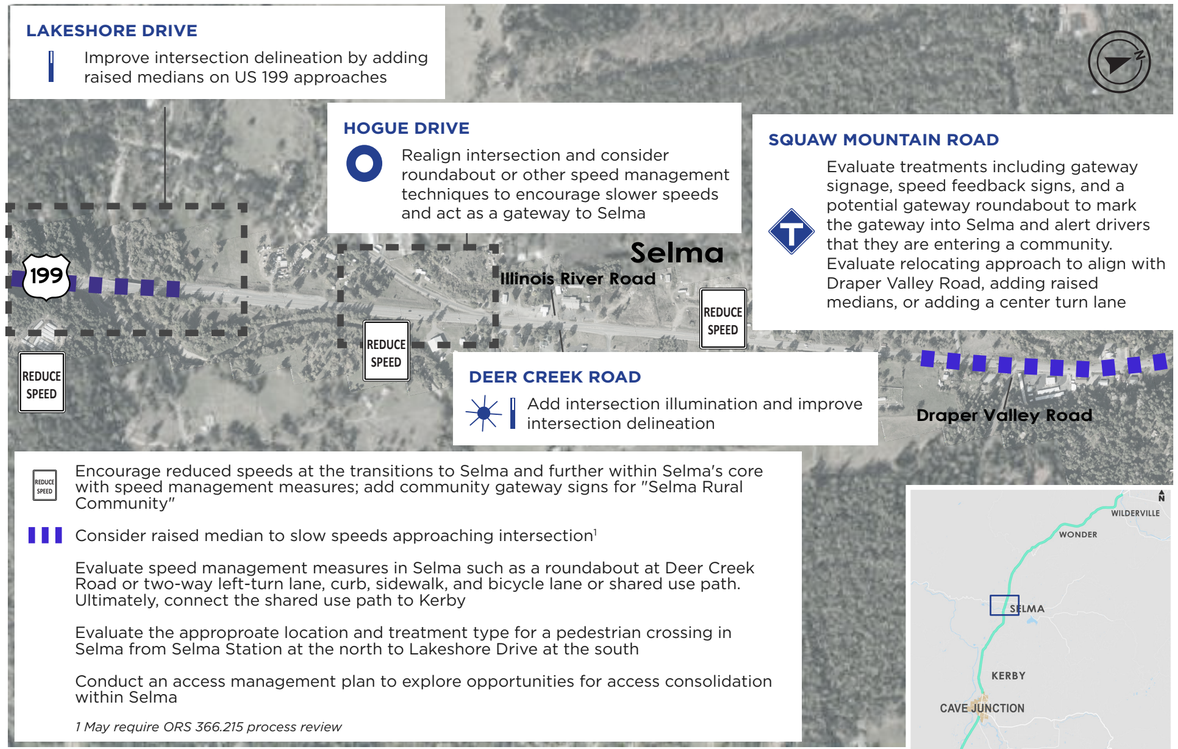
PROJECT CONSIDERATIONS AND CHALLENGES

- Creating awareness that drivers are entering a community is key to increasing the expectation for slowed, stopped, or turning vehicles and people walking and biking. Roundabouts are a potential treatment that can serve as gateways and help reduce speeds.
- Providing curb, gutter, sidewalk and bike lanes or a shared-use path will create a more urban context, encouraging slower speeds and providing walking and biking facilities. As a second phase, extend the shared-use path to Kerby to provide complete multimodal facilities between Selma and Cave Junction. Center turn lanes can help further reduce crashes by removing slowing/stopped vehicles from the through lanes.
- Lighting treatments will require Josephine County to enter into an IGA with ODOT to install and maintain intersection lighting.
- Reducing speeds through this segment will help reduce all crash types; with the implementation of treatments, conduct periodic speed studies to see if a lower speed limited is warranted to help reduce all crash types.

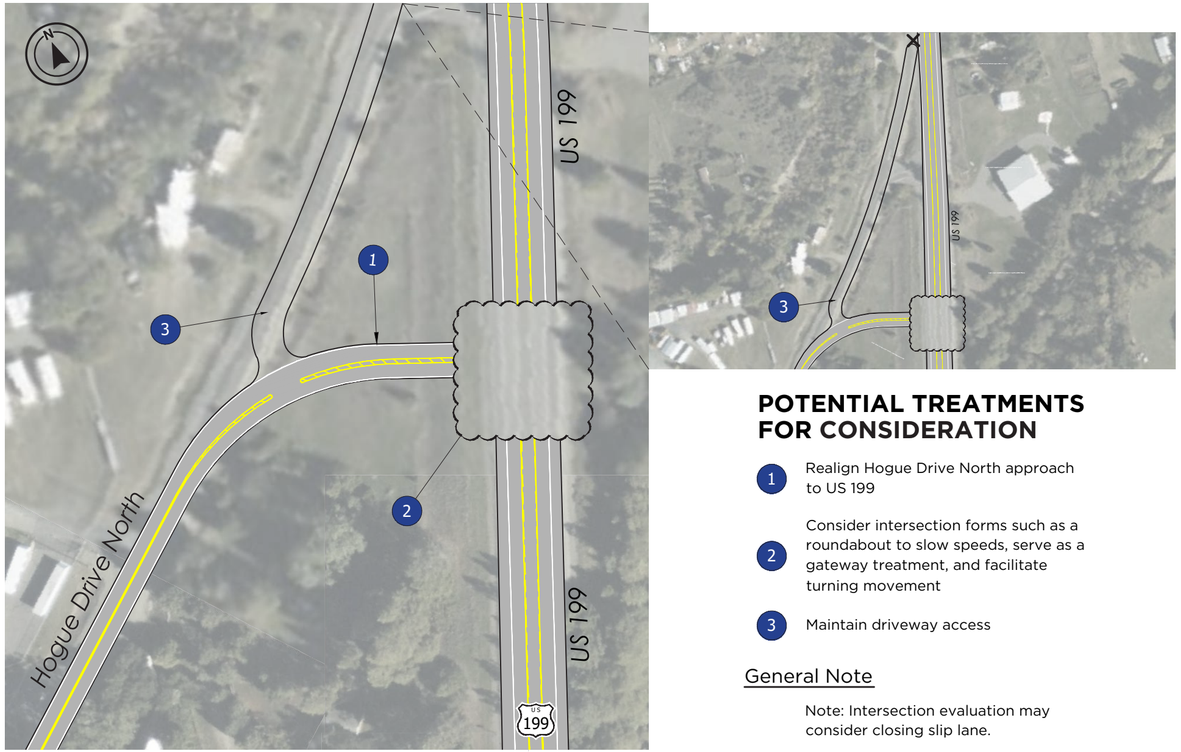


Treatment	Crash Reduction Factor	Cost Estimate
Add center-turn lane	N/A	Varies
Add intersection lighting	31-38% for nighttime crashes	$150,000 per intersection
Add speed feedback signs	5-7% for all crashes	$100,000 per sign
Curb, sidewalk, and bike lanes	20% for pedestrian crashes (adding sidewalks) Also encourages slower speeds	$1,000,000 per mile (one side)
Gateway roundabout or signage	19-82% for all crash types (roundabout) Also encourages slower speeds	$5 - $8M
Improve intersection delineation and visibility by adding splitter islands and enhanced signage	20 – 30%	Varies
Install pedestrian crossing	10-56% for Rectangular Rapid Flashing Beacon	$120,000 (RRFB)

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 9: **SELMA**



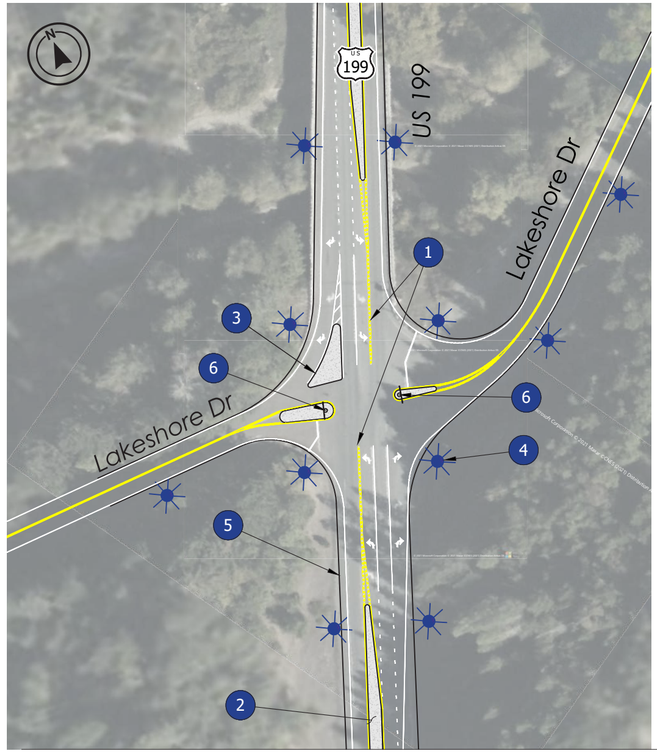
POTENTIAL TREATMENTS FOR CONSIDERATION

1. Realign Hogue Drive North approach to US 199
2. Consider intersection forms such as a roundabout to slow speeds, serve as a gateway treatment, and facilitate turning movement
3. Maintain driveway access

General Note

Note: Intersection evaluation may consider closing slip lane.

HOGUE DRIVE NORTH



POTENTIAL TREATMENTS FOR CONSIDERATION

1. Consider centerline traffic separators on NB and SB approaches
2. Consider raised medians on approaches
3. Consider right turn island on SB approach
4. Consider intersection lighting
5. Consider curbing on each approach
6. Consider splitter island and left side stop sign

General Note

Consider the treatments shown to improve intersection visibility and awareness. Project design should evaluate intersection configuration, including the need for the existing southbound right-turn lane and facilities for bicyclists and pedestrians.

LAKESHORE DRIVE

SEGMENT 10: **SOUTH OF SELMA**

Milepoint:	Length:	Posted Speed:	Project Priority:
20.9 - 22.9	2.0 miles	55 mph	Tier I

SEGMENT DESCRIPTION:

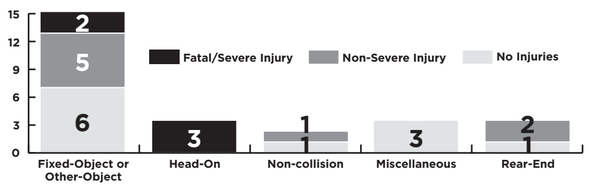
- Rural section with curves
- Southbound passing lane from Lakeshore Drive to just north of Turnagain Drive
- Key intersections: Hogue Drive and Wildpark Lane
- Entire segment is within the designated Safety Corridor

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

- 42% of the crashes (ten) occurred during non-daylight conditions.

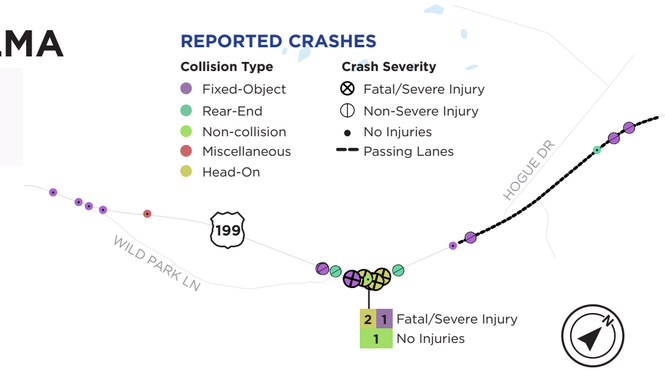
Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
3	2	4	4	11	24



PROJECT CONSIDERATIONS AND CHALLENGES

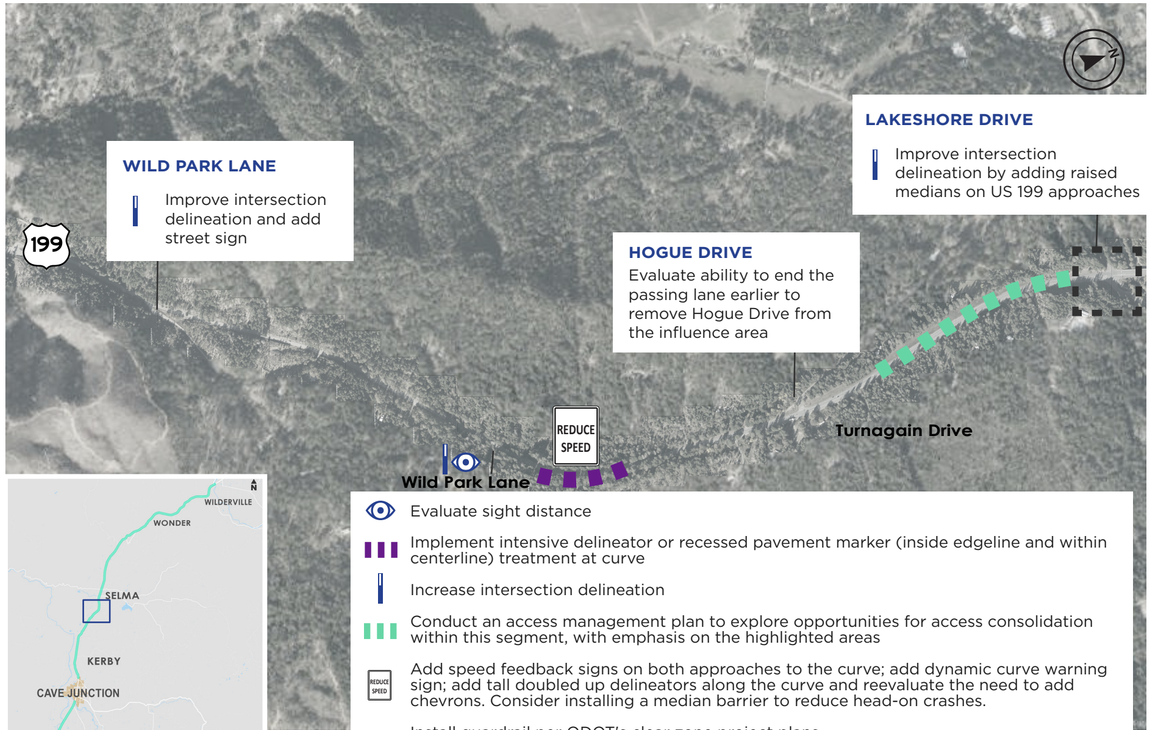
- The 5 fatal/severe crashes occurred within 250 feet on the curve north of Wild Park Lane. This curve does not currently have chevrons. Speed feedback signs, delineators, and recessed pavement markers can improve driver awareness of this curve for low-cost.
- Evaluate median barrier in the vicinity of the curve to reduce head-on crashes. Median barriers have a crash reduction factor of -24% (increase) to 43% (decrease) for all crashes;
  - Adding a median barrier would require roadway widening and may increase the risk for fixed object crashes but should reduce the risk for head-on crashes

REPORTED CRASHES



Treatment	Crash Reduction Factor	Cost Estimate
Access evaluation	Varies based on driveway density	Varies
Add speed feedback signs	5-7% for all crashes	$100,000 per sign
Add street sign	N/A	Varies
Evaluate ability to end passing lane earlier	N/A	Varies
Implement intensive delineator or recessed pavement marker at curves	15% for nighttime crashes	$2,000 per mile assuming 1 set of markers per 40’
Improve intersection delineation	N/A	Varies
Improve sight distance	11-56% for all injury crashes	Varies
Install guardrail per ODOT’s clear zone project plans	44-47% for run off the road crashes	$80,000 per 1000 ft (one side)Plus any shoulder improvements or widening needed
Add dynamic curve warning signs	5% for all crashes	$100,000 per sign
Install median barrier	43% to -24%	$175,000 per 1000 ft plus any widening and new pavement required

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 10: **SOUTH OF SELMA**

SEGMENT 11:
NEAR REEVES CREEK ROAD

Milepoint: 23.7 – 24.7
Length: 1.0 miles
Posted Speed: 55 mph
Project Priority: Tier I

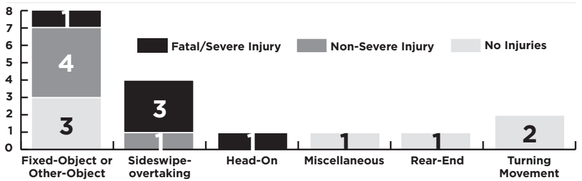
SEGMENT DESCRIPTION:

- Rural section with curves
- Key intersections: Reeves Creek Road
- Entire segment is within the designated Safety Corridor

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
4	1	4	1	7	17



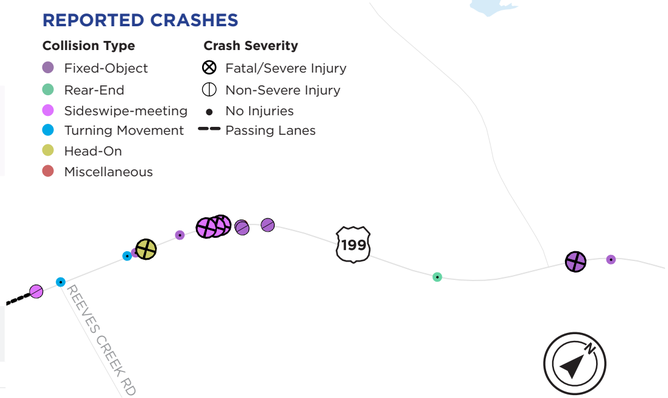
PROJECT CONSIDERATIONS AND CHALLENGES

- Several fatal/severe crashes occurred just north of Reeves Creek Road ,where the northbound passing lane ends at the approach to a horizontal curve. In addition, the intersection with Reeves Creek Road is present, and the highway width is constrained by the bridge, limiting recovery opportunities. Signage and actuated warning systems can help alert drives of the ending passing lane, approaching curve, and intersection conflicts. An evaluation of the passing lane will also determine if there is an opportunity to shorten the passing lane, further separating the conflicts, while still providing adequate opportunities for passing. If crash patterns continue, turn lanes and wider shoulders may be considered. These treatments would likely require bridge widening over the creek.
- Evaluate median barrier in the vicinity of the curve to reduce head-on crashes. Median barriers have a crash reduction factor of -24% (increase) to 43% (decrease) for all crashes;
  - Adding a median barrier would require roadway widening and may increase the risk for fixed object crashes but should reduce the risk for head-on crashes

REPORTED CRASHES

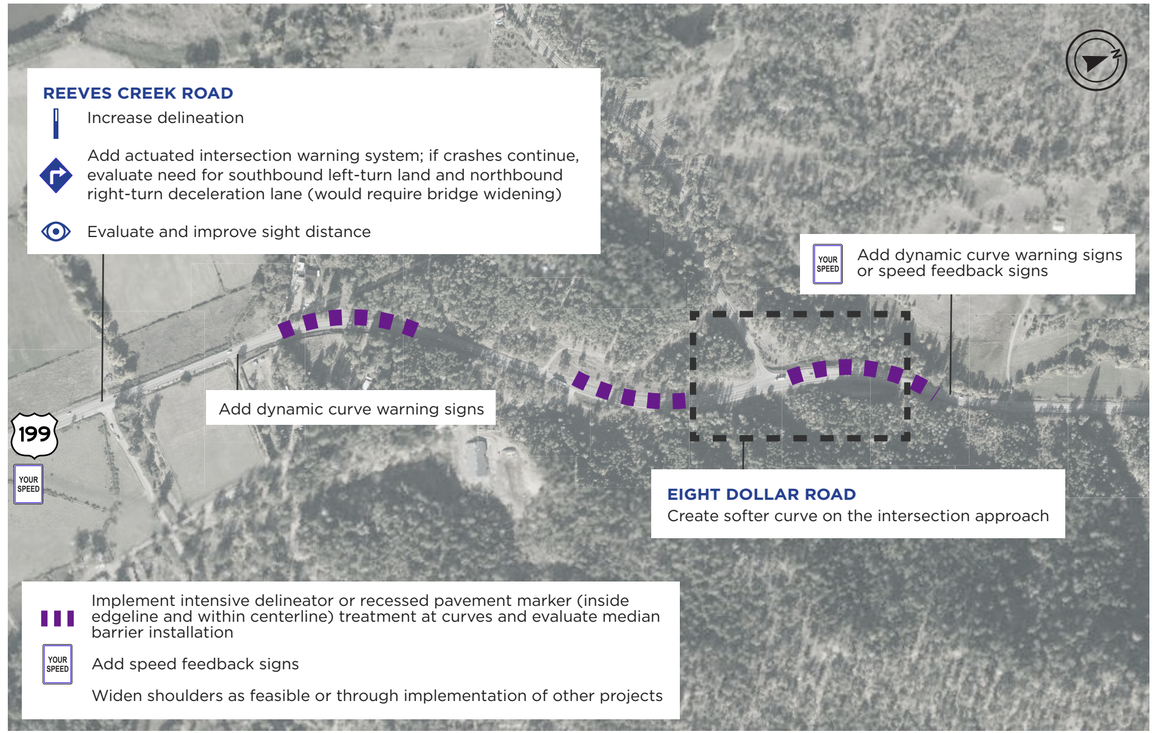
Collision Type
- Fixed-Object
- Rear-End
- Sideswipe-meeting
- Turning Movement
- Head-On
- Miscellaneous

Crash Severity
- Fatal/Severe Injury
- Non-Severe Injury
- No Injuries
- Passing Lanes

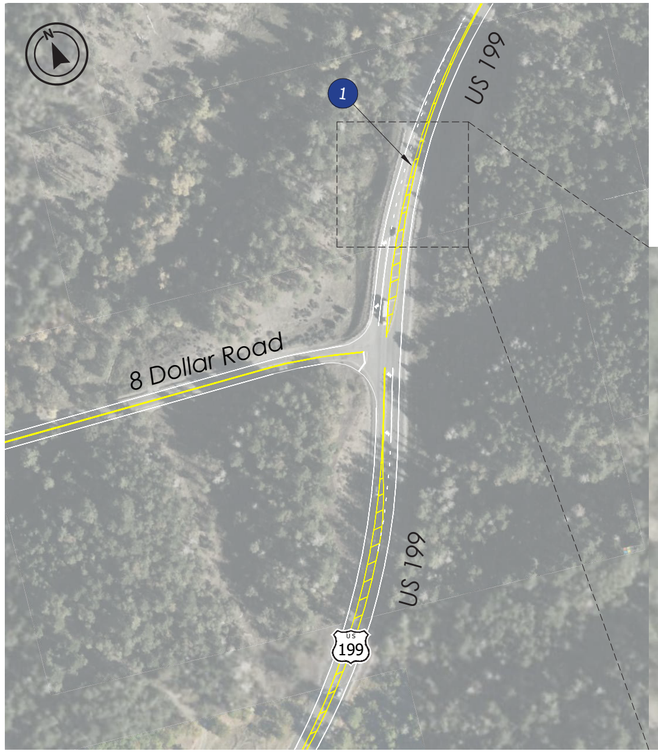


Treatment	Crash Reduction Factor	Cost Estimate
Add actuated intersection warning system	29% for all crashes	$400,000 per system
Add dynamic curve warning signs	5% for all crashes	$100,000 per sign
Add speed feedback signs	5-7% for all crashes	$100,000 per sign
Add turn lanes	33-58%	$1M - $1.5M
Eight Dollar Road restriping	N/A	Varies
Implement intensive delineator or recessed pavement marker at curves	15% for nighttime crashes	$2,000 per mile assuming 1 set of markers per 40'
Improve intersection delineation	N/A	Varies
Improve sight distance	11-56% for all injury crashes	Varies
Add dynamic curve warning signs	5% for all crashes	$100,000 per sign
Install median barrier	43% to -24%	$175,000 per 1000 ft plus any widening and new pavement required

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 11:
NEAR REEVES CREEK ROAD



POTENTIAL TREATMENTS FOR CONSIDERATION

1. Restripe compound curve to provide appropriate radii and lane widths for through movements in both directions
2. Improve intersection sight distance to the south

8 DOLLAR ROAD

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SEGMENT 12: **NORTH OF KERBY**

Milepoint: 24.7 – 26.2

Length: 1.5 miles

Posted Speed: 55 mph north of Kerby Mainline Road, 50 mph south of Kerby Mainline Road

Project Priority: Tier II

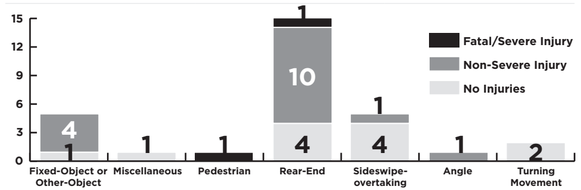
SEGMENT DESCRIPTION:

- Northern transition into Kerby
- More frequent driveways than rural areas
- Northbound and southbound passing lanes
- Key intersection: Kerby Mainline Road
- Entire segment is within the designated Safety Corridor

REPORTED CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

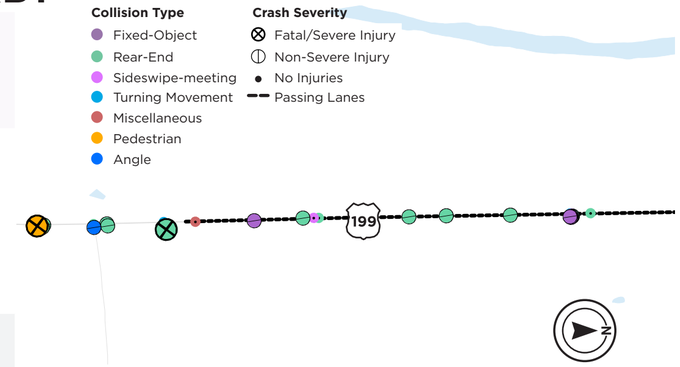
Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
0	2	8	8	12	30



PROJECT CONSIDERATIONS AND CHALLENGES

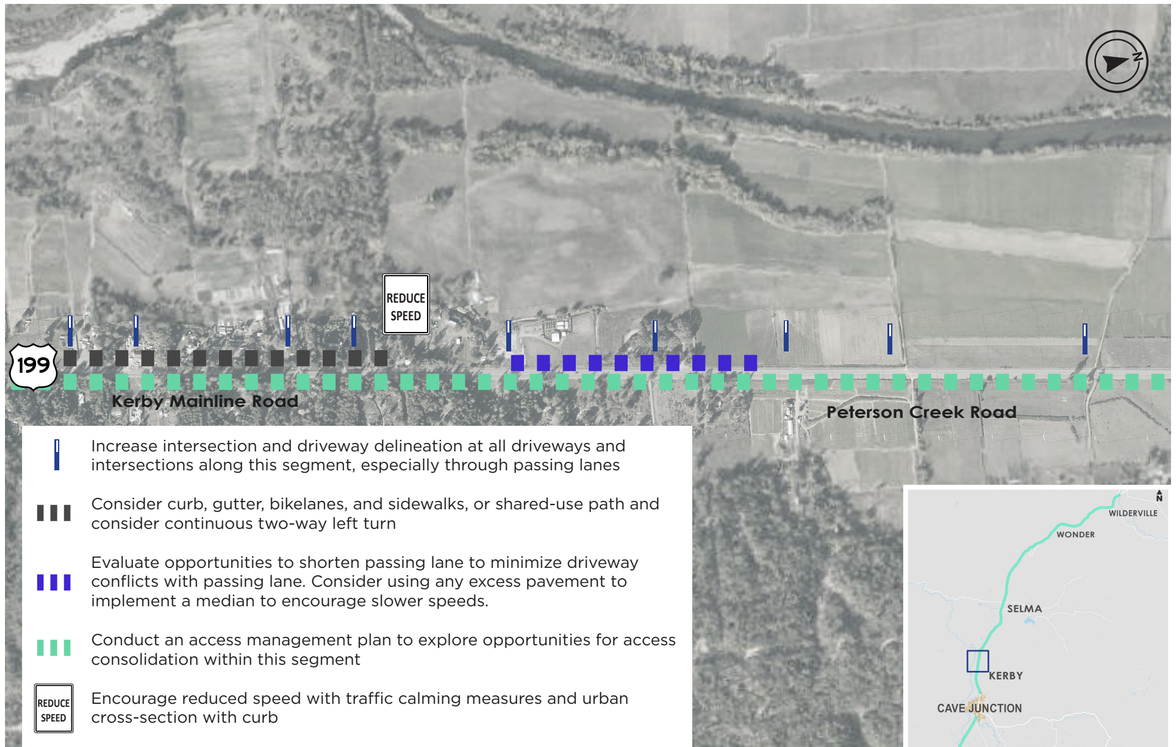
- The majority of crashes along this segment were related to interactions at intersections and driveways with the highway. Slowing speeds and increasing driver awareness of intersections and driveways through better delineation and signage are low-cost ways to reduce crash risk.
- Access management can also be an effective way to reduce the number of conflict points on the segment, minimizing potential crash risk.
- Adding a curb, gutter, pedestrian and bicycle facilities, and two-way left-turn lane will change the corridor context.
- A gateway roundabout or other gateway treatments and speed feedback signs can be effective ways to reduce speeds and increase driver awareness to the changing context.
- Reducing speeds through this segment will help reduce all crash types; with the implementation of treatments, conduct periodic speed studies to see if a lower speed limited is warranted to help reduce all crash types.

REPORTED CRASHES



Treatment	Crash Reduction Factor	Cost Estimate
Develop Access Management Plan	Varies based on driveway density	Varies
Add speed feedback signs	5 – 7%	$100,000 per sign
Curb, sidewalk, and bike lanes	20% for pedestrian crashes (adding sidewalks) Also encourages slower speeds	$1,000,000 per mile (one side)
Evaluate ability to end northbound passing lane earlier	N/A	Varies
Implement gateway roundabout or other treatments	19-82% for all crash types for roundabout Also encourages slower speeds	$5 - $8M
Improve intersection delineation	N/A	Varies

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 12: **NORTH OF KERBY**

SEGMENT 13: **KERBY**

Milepoint:	Length:	Posted Speed:	Project Priority:
26.2 – 27.7	1.5 miles	40 mph	Tier I

SEGMENT DESCRIPTION:

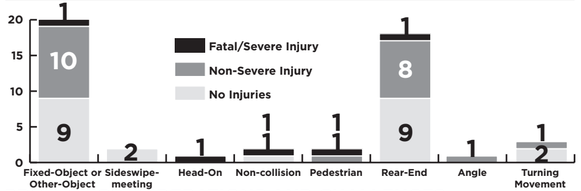
- Travels through the Kerby, where there is a higher concentration of driveways and people walking and biking
- Destinations on both sides of the road
- Key intersections: School Street, Holton Creek Road
- Entire segment is within the designated Safety Corridor (ends at MP 27.69)

REPORTED CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

- One non-severe injury fixed object crash involved a bicyclist

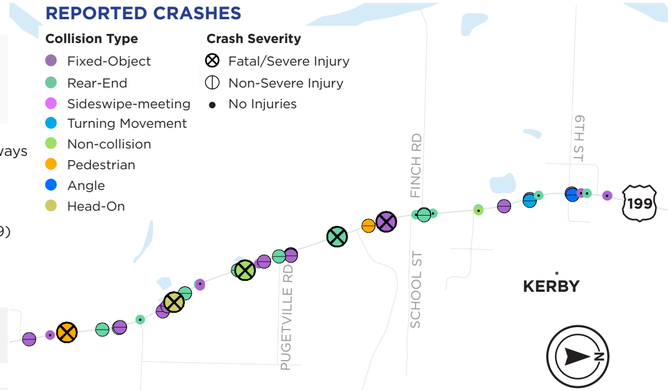
Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
3	2	14	7	23	49



REPORTED CRASHES

Collision Type
- Fixed-Object
- Rear-End
- Sideswipe-meeting
- Turning Movement
- Non-collision
- Pedestrian
- Angle
- Head-On

Crash Severity
- Fatal/Severe Injury
- Non-Severe Injury
- No Injuries

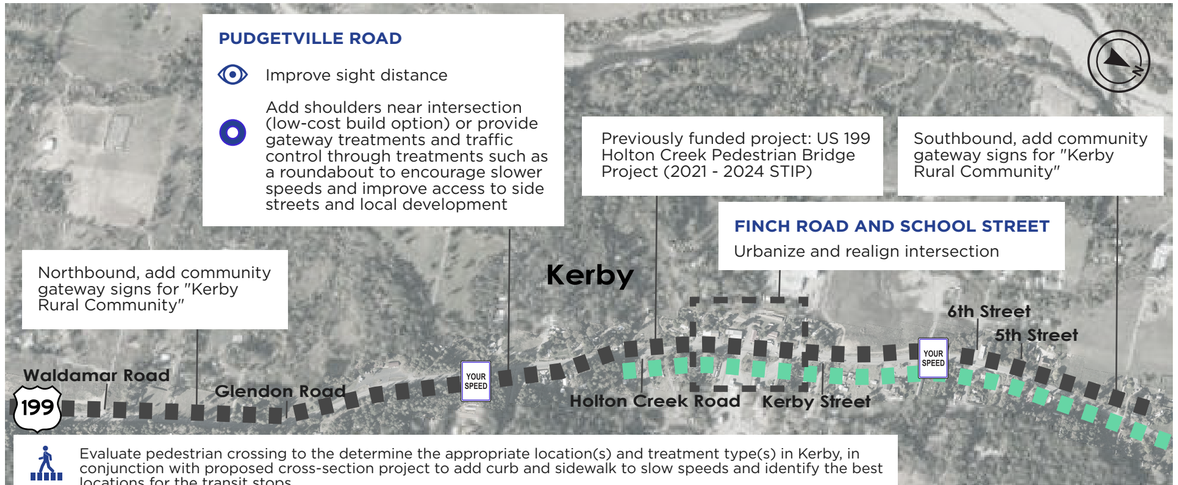


PROJECT CONSIDERATIONS AND CHALLENGES

- Providing curb, gutter, sidewalk and bike lanes or a shared use will provide a greater understanding that drivers are in a community (encouraging slower speeds) and provide facilities for people walking and biking.
- A center turn lane helps separate slowing and stopped traffic from through traffic, reducing potential conflicts.
- A shared use path may be appropriate in areas with fewer access points like the transition between Kerby and Cave Junction. Facilities on both sides of the road are more appropriate in areas such as Kerby with destinations on both sides of the road and more frequent driveways.
- Pedestrian crossings are needed to provide connections between destinations on both sides of US 199, especially near 6th Street and School Street.
- Reducing speeds through the community can help reduce severity of all crashes, and the recommended treatments can help reduce speeds. ODOT should evaluate the opportunity to further reduce the posted speed in Kerby, in conjunction with the implementation of the treatments, by conducting periodic speed studies to see if a lower speed limit is warranted.

Treatment	Crash Reduction Factor	Cost Estimate
Develop Access Management Plan	Varies based on driveway density	Varies
Widen shoulders	3-18% for all crashes	Approximately $1,000,000 per mile per side of road
Curb, sidewalk, and bike lanes	20% for pedestrian crashes (adding sidewalks) Also encourages slower speeds	$1,000,000 per mile (one side)
Implement gateway roundabout and treatments	19-82% for all crash types (roundabout) Also encourages slower speeds	$5 - $8M
Improve intersection delineation	N/A	Varies
Improve sight distance	11-56% for all injury crashes	Varies
Evaluate the best locations for and type of pedestrian crossing	10-56% for Rectangular Rapid Flashing Beacon	$120,000 (RRFB)
Add speed feedback signs	5-7% for all crashes	$100,000 per sign
Urbanize and realign intersection	Varies by skew angle	$400,000; varies based on amount of reconstruction needed

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



Evaluate pedestrian crossing to the determine the appropriate location(s) and treatment type(s) in Kerby, in conjunction with proposed cross-section project to add curb and sidewalk to slow speeds and identify the best locations for the transit stops

Increase access delineation for all access points, especially those north of Kerby Street

North of Holton Creek Road: install curb, gutter, and shared use path or sidewalks and bike lanes and two-way left-turn lane; south of Holton Creek Road: add shared use path connecting south to Cave Junction; consider pedestrian-scale lighting. In a second phase of the project, consider extending the two-way left turn lane to Cave Junction.

Conduct an access management plan to explore opportunities for access consolidation within Kerby, especially at the highlighted areas

REDUCE SPEED

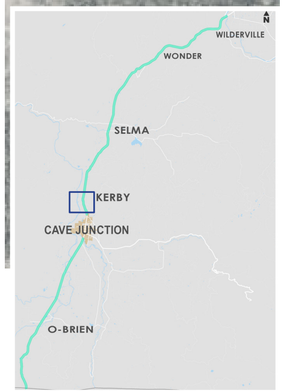
Encourage reduced speeds with traffic calming measures such as curb, gutter, and sidewalk, and install speed feedback signs on both ends of Kerby

YOUR SPEED

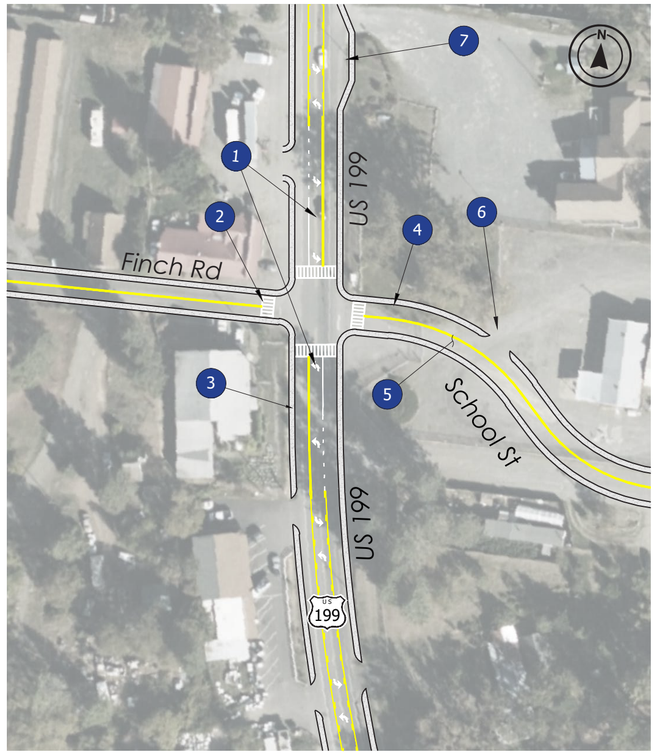
Install speed feedback sign

Widen shoulders as feasible or through implementation of other projects

Consider adding variable message sign northbound to share circumstantial (weather, etc.) or safety messaging.



SEGMENT 13: **KERBY**



POTENTIAL TREATMENTS FOR CONSIDERATION

1. Add left turn lanes on NB and SB approaches

   Note: Project development should consider trade-offs between left-turn lanes and adding pedestrian refuge islands.

2. Install crosswalks on each approach
3. Add sidewalks on either side of each approach
4. Add curbing on each approach
5. Realign West approach
6. Consolidate driveways along the NB side
7. Add transit stop

KERBY

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SEGMENT 14:
SOUTH OF CAVE JUNCTION

Milepoint: 29.1 – 32.8

Length: 3.7 miles

Posted Speed: 45 mph north of Burch Drive, 55 mph south of Burch Drive

Project Priority: Tier II

SEGMENT DESCRIPTION:

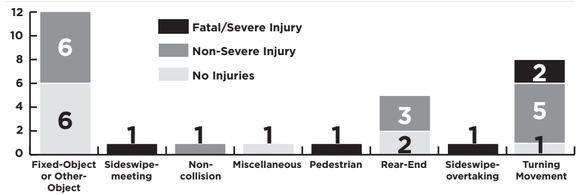
- Southern transition into the City of Cave Junction, serving a rural residential area with more driveways on the northern end, becoming more rural to the south
- Several intersections on the north end of the segment: Illinois River Forks State Park entrance and Rockydale Road
- Several intersections on the south side of the segment: Burch Drive, Ken Rose Lane, and West Side Road.

REPORTED CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

- 47% of the crashes (14) occurred during non-daylight conditions.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
1	4	9	6	10	30



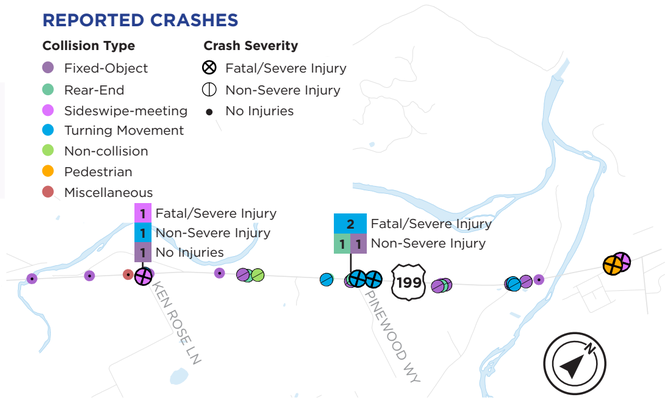
PROJECT CONSIDERATIONS AND CHALLENGES

- There are multiple intersections and driveways on the north end of the segment near Rockydale Road, which create conflict points. A roundabout in this area would encourage slower speeds and reduce crashes.
- Fatal and severe crashes were reported near Pinewood Lane. A roundabout near Burch Drive would help slow speeds through this segment.
- Speed feedback signs can also help reduce speeds and reduce crash severity.

REPORTED CRASHES

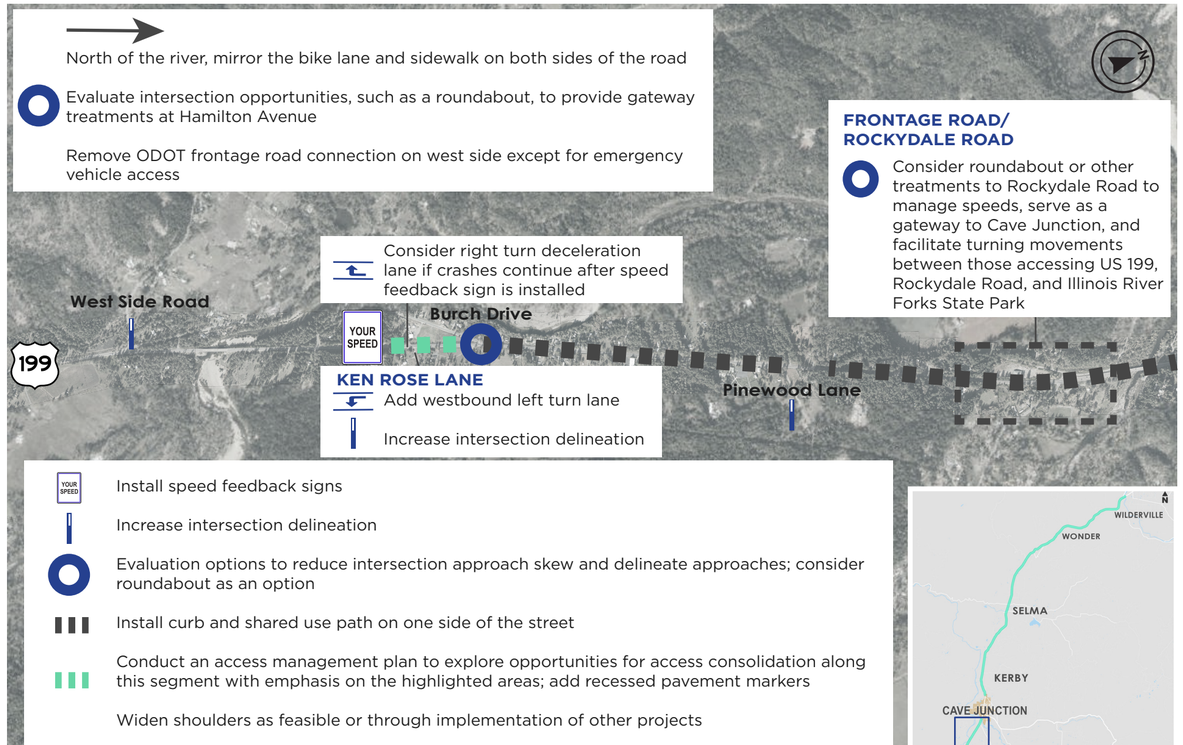
Collision Type
- Fixed-Object
- Rear-End
- Sideswipe-meeting
- Turning Movement
- Non-collision
- Pedestrian
- Miscellaneous

Crash Severity
- Fatal/Severe Injury
- Non-Severe Injury
- No Injuries



Treatment	Crash Reduction Factor	Cost Estimate
Access evaluation	Varies based on driveway density	Varies
Add actuated intersection warning system	29% for all crashes	$400,000 per system
Add turn lanes	33-58%	$1M - $1.5M
Curb and shared use path	20% for pedestrian crashes (adding sidewalks)	$1,000,000 per mile (one side)
Implement gateway roundabout or treatments	19-82% for all crash types (roundabout) Also encourages slower speed	$5 - $8M
Implement intensive delineator or recessed pavement markers	15% for nighttime crashes	$2,000 per mile assuming 1 set of markers per 40'
Improve intersection delineation	N/A	Varies
Reduce intersection skew	Varies by skew angle	$400,000; varies based on amount of reconstruction needed
Add speed feedback signs	5-7% for all crashes	$100,000 per sign

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 14:
SOUTH OF CAVE JUNCTION

SEGMENT 15: **NEAR ILLINOIS VALLEY AIRPORT**

Milepoint: 32.9 – 33.8

Length: 0.9 miles

Posted Speed: 55 mph

Project Priority: Tier III

SEGMENT DESCRIPTION:

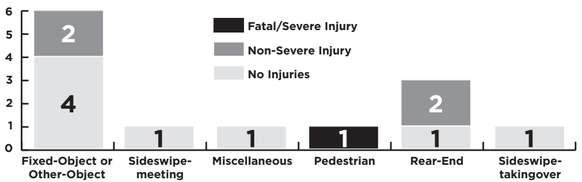
- Rural development, around the Illinois Valley Airport, with some intersections and driveways

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

- The fatal crash was a pedestrian fatality.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
1	0	1	3	8	13



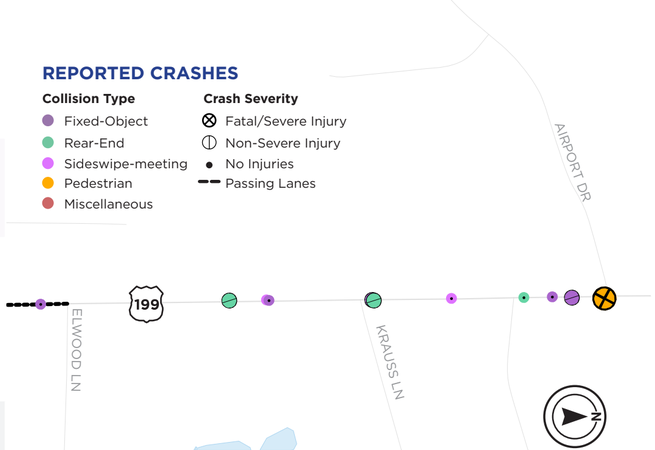
PROJECT CONSIDERATIONS AND CHALLENGES

- This segment has a mix of crashes associated with intersections/ driveways and those associated with rural high-speed facilities. Slowing speeds and increasing driver awareness of intersections and driveways through better delineation and signage are low-cost ways to improve safety.
- Reducing speeds can help reduce severity of all crashes, and the recommended treatments can help reduce speeds. ODOT should evaluate the opportunity to further reduce the posted speed, in conjunction with the implementation of the treatments, by conducting periodic speed studies to see if a lower speed limit is warranted.
- Access management can also be an effective way to reduce the number of conflict points on the segment.

REPORTED CRASHES

Collision Type
- Fixed-Object
- Rear-End
- Sideswipe-meeting
- Pedestrian
- Miscellaneous

Crash Severity
- Fatal/Severe Injury
- Non-Severe Injury
- No Injuries
- Passing Lanes



Treatment	Crash Reduction Factor	Cost Estimate
Access evaluation	Varies based on driveway density	Varies
Curb, sidewalk, and bike lanes	20% for pedestrian crashes (adding sidewalks) Also encourages slower speeds by changing the context	$1,000,000 per mile (one side)
Add speed feedback signs	5-7% for all crashes	$100,000 per sign

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.

SEGMENT 15:
NEAR ILLINOIS VALLEY AIRPORT

SEGMENT 16: **O'BRIEN**

Milepoint: 35.5 – 37.0

Length: 1.5 miles

Posted Speed: 50 mph

Project Priority: Tier III

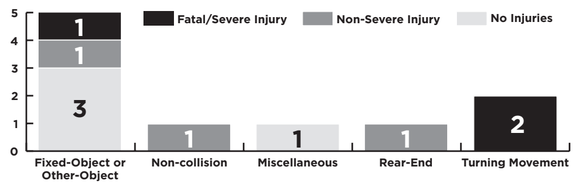
SEGMENT DESCRIPTION:

- Travels through the unincorporated community of O'Brien, where many businesses and residents have driveways onto US 199
- Key intersections: Waldo Road, O'Brien Street, Brown Road, and Primrose Lane.

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
0	3	2	1	4	10



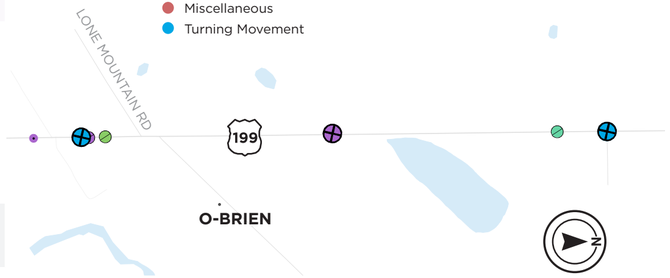
PROJECT CONSIDERATIONS AND CHALLENGES

- Providing curb, gutter, sidewalk and bike lanes or a shared use will provide a greater understanding that drivers are in a community and provide facilities for people walking and biking.
- Reducing speeds through the community can help reduce crash severity. ODOT should evaluate the opportunity to further reduce the speed limit within O'Brien with the implementation of traffic calming recommendations by conducting periodic speed studies to see if a lower speed limit is warranted.
- Creating intersection awareness at Waldo Road through intersection delineation and lighting can help drivers anticipate turning vehicles onto and from Waldo Road. Alternatively, using Waldo Road as a gateway roundabout location can reduce speeds and improve safety.
- Lighting treatments will require Josephine County to enter into an IGA with ODOT to install and maintain intersection lighting.

REPORTED CRASHES

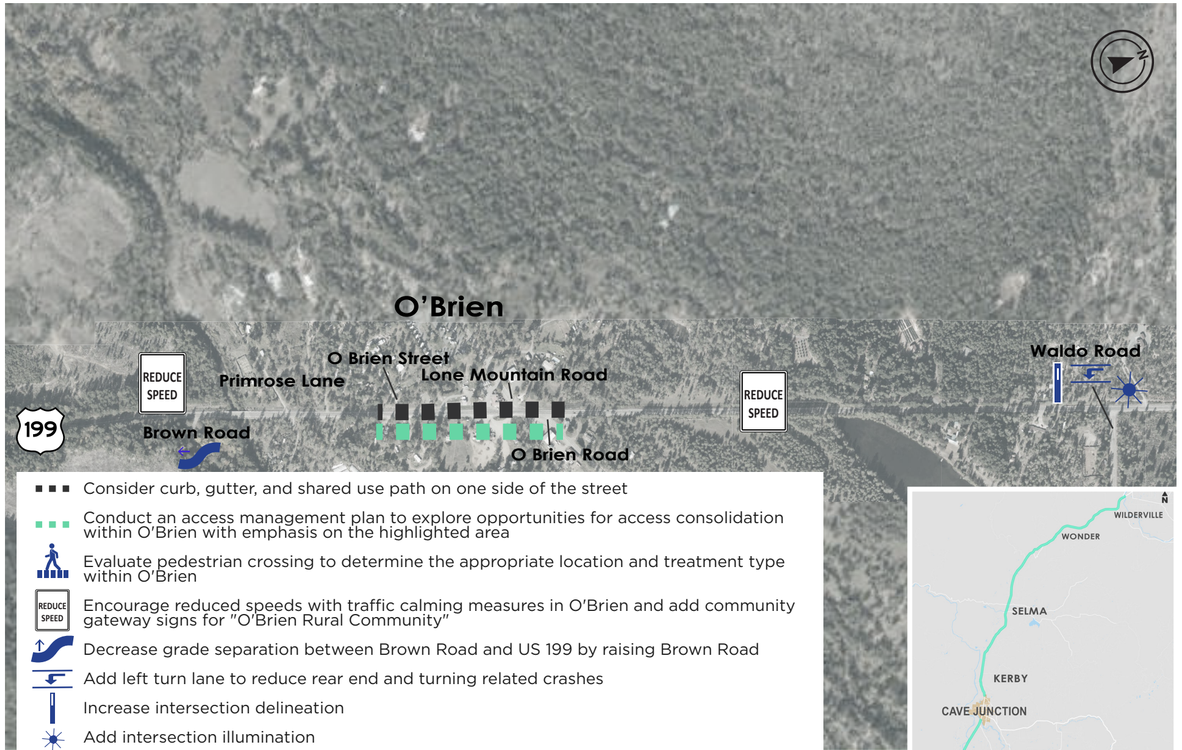
Collision Type
- Fixed-Object
- Rear-End
- Non-collision
- Miscellaneous
- Turning Movement

Crash Severity
- Fatal/Severe Injury
- Non-Severe Injury
- No Injuries



Treatment	Crash Reduction Factor	Cost Estimate
Access evaluation	Varies based on driveway density	Varies
Add intersection lighting	31-38% for nighttime crashes	$150,000 per intersection
Install pedestrian crossing	10-56% for Rectangular Rapid Flashing Beacon	$120,000 (RRFB)
Add turn lanes	33-58%	$1M - $1.5M
Curb, sidewalk, and bike lanes	20% for pedestrian crashes (adding sidewalks)	$1,000,000 per mile (one side)
Decrease grade separation between US 199 and side street	N/A	Varies
Implement gateway roundabout	19-82% for all crash types	$5 - $8M
Gateway signs	N/A	Varies
Improve intersection delineation	N/A	Varies
Add speed feedback signs	5-7% for all crashes	$100,000 per sign

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 16: **O'BRIEN**

SEGMENT 17:
SOUTH OF O'BRIEN

Milepoint: 37.6 – 41.6

Length: 4.0 miles

Posted Speed: 55 mph

Project Priority: Tier III

SEGMENT DESCRIPTION:

- Rural with curves
- Some rural development in the southern section

KEY CRASH STATISTICS

Includes reported crashes of all severity between 2015 – 2018 and fatal/severe crashes in 2019.

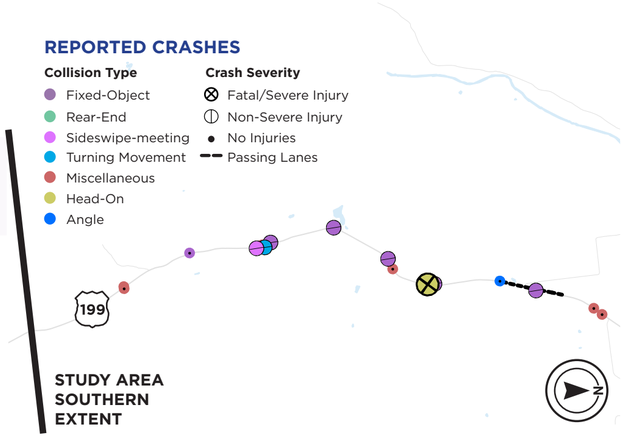
- 54% of the crashes (13) occurred during non-daylight conditions.

Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	Total Crashes
1	0	7	0	10	18

PROJECT CONSIDERATIONS AND CHALLENGES

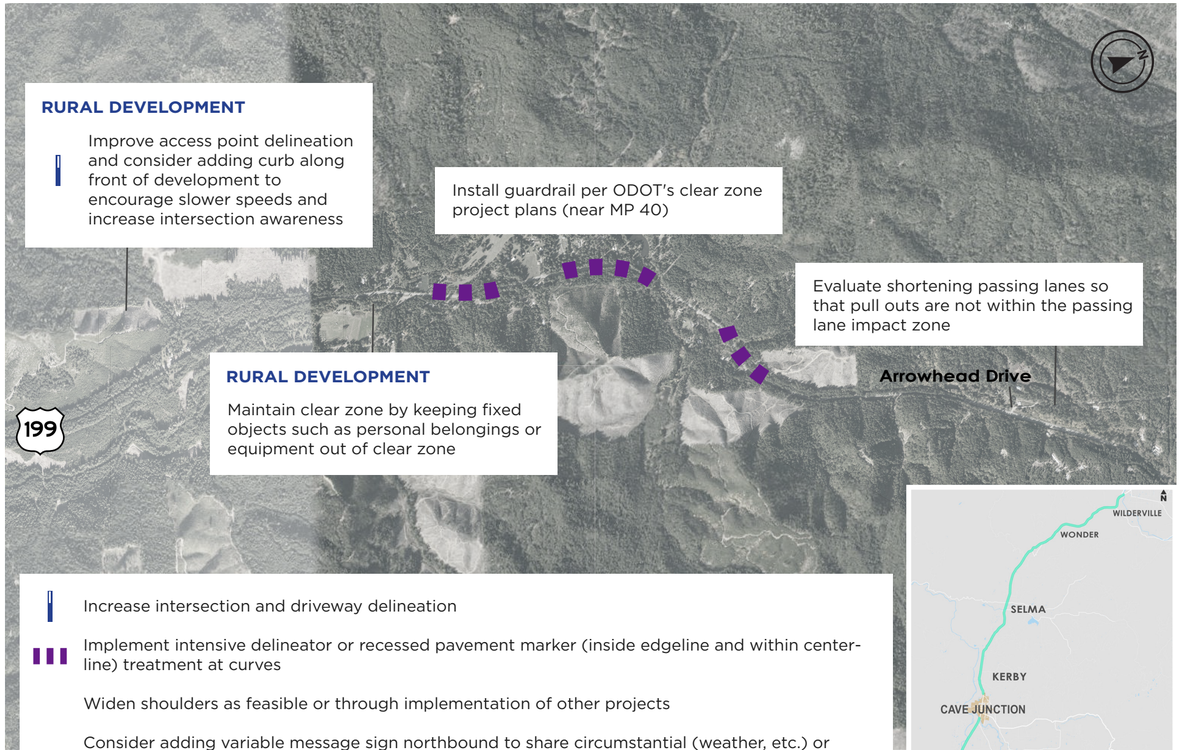
- Crashes are dispersed along the segment. Systemic treatments such as recessed pavement markers along curves and driveway delineation can help drivers stay in the lane and anticipate potential conflicts.
- Evaluation of shortening the passing lane should consider whether conflicts with pull-outs and intersections can be minimized while still providing adequate passing opportunities.

REPORTED CRASHES



Treatment	Crash Reduction Factor	Cost Estimate
Evaluate ability to end passing lane earlier	N/A	Varies
Implement intensive delineator or recessed pavement marker at curves	15% for nighttime crashes	$2,000 per mile assuming 1 set of markers per 40'
Improve access delineation and consider adding curb along development	N/A	Varies
Improve intersection delineation	N/A	Varies
Install guardrail per ODOT's clear zone project plans (MP 40)	44-47% for run off the road crashes	$80,000 per 1000 ft (one side) Plus any shoulder improvements or widening needed
Maintain clear zone	38% for all crashes	Varies

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.



SEGMENT 17:
SOUTH OF O'BRIEN

Photo source: ODOT

CHAPTER 4 : : : : : : : : : : : : : : : :
IMPLEMENTATION RECOMMENDATIONS

Projects may be implemented through various funding sources and mechanisms. Some of those funding sources may apply to larger location-specific projects while others would apply to systemic projects that address large sections of the corridor with low-cost treatments. To provide guidance on implementation, this section identifies potential project groupings:

- Policy Recommendations
- Education
- Enforcement Programs
- Systemic Signing Projects
- Systemic Pavement and Striping Projects
- Intelligent Transportation System (ITS) Projects
- Pedestrian and Bicycle Projects
- Capital Projects

POLICY RECOMMENDATIONS

The US 199 Corridor Plan is consistent with and implements the policies in the Oregon Highway Plan. Corridor Plan development was also guided by Josephine County transportation goals from the recently updated TSP, with stated policy objectives specific to improving safety and access within the study area. Once adopted - as a facility plan amending the Oregon Highway Plan and as a refinement to the Josephine County TSP - the Corridor Plan will guide future decisions and improvements on US 199. The following are policies related to US 199 planning and future improvements.

The County and ODOT will work cooperatively to implement location-specific recommendations for different corridor segments along US 199, consistent with the US 199 Corridor Plan. The County will also work with ODOT to identify future grant funding for planning pilot projects to reduce speeds and enhance safety in the unincorporated rural communities of Kerby, Selma, and O'Brian.

Through these long-range planning projects, the County will explore updating policy and development requirements around placemaking, land use and design, multi-modal access, and streetscape enhancements outside of the highway right-of-way.

In locations that are not directly addressed in the US 199 Corridor Plan, future project development will be guided by systemic, corridor-wide strategies that are based on the applicable context zone as described in the plan.

Through the refinement planning and design phase of planned capital projects, the County and ODOT will coordinate with affected parties to balance mobility and access needs along the corridor and help minimize impacts due to right of way acquisition.

Through future land use permitting and approvals, the County will seek opportunities to provide alternate access to US 199, consolidate existing access points, and improve access onto the highway from parcels fronting the highway, consistent with the US 199 Corridor Plan.

The County will ensure that future land use decisions are consistent with and implement US 199 Corridor Plan safety objectives.

EDUCATION

Educational campaigns should be focused on encouraging safe driving behaviors along the corridor. These campaigns may take many forms, targeting US 199 roadway users. Key components of the program should include the following:

- Educational campaigns need a champion(s) to lead the efforts and coordinate outreach across multiple stakeholders. This requires additional resources and funding to sustain over time. Grants may be available for initiating such programs, but agencies with successful outreach programs dedicate local funding to the program.
- Partnerships with multiple stakeholders have been most successful in changing driver behavior in other communities. Partnerships increase the number of stakeholders with ownership in the program and help spread the word quickly across a broader audience. Key stakeholders in the US 199 corridor may include ODOT, Josephine County staff and Board of Commissioners, schools, key businesses and employers, law enforcement, first responders, and local residents.
- Review data on a regular basis to identify and update priority behaviors and locations to target outreach.
- Develop a Safety Communications Calendar, aligning key messages with months or seasons when behavior may be highest risk. Consider following NHTSA's (National Highway Traffic Safety Administration) calendar and targeting key messages during months when national campaigns are occurring as well.
- Use multiple outreach methods to reach all corridor users, including local residents, freight traffic, and recreational traffic passing through the corridor. This may include:
  - Signage and billboards to share information directly within the corridor
  - Providing posters or yard signs to local schools, businesses, and residents
  - Outreach through transit agencies with messaging on buses and distributing flyers to riders
  - Sending mailers to local businesses and residents
  - Social media outreach allows for targeting specific user groups with messages regarding specific behaviors
  - Radio and television advertisements
  - Tabling at community events
  - Incentivizing people to change behavior with a pledge or campaign with prizes

EXAMPLE OUTREACH PROGRAMS

Several counties in Oregon, notably Clackamas, Lane, and Deschutes counties have implemented successful transportation safety outreach campaigns that may be helpful to learn from. For example, Clackamas County implements positive messaging and has a dedicated staff member focused on changing transportation safety culture in the county.

Examples of outreach programs and educational signs

ENFORCEMENT

Enforcement efforts should be used in conjunction with outreach methods to encourage safe driving behavior. Key components to increase effective enforcement may consider:

- Improving coordination and communication between law enforcement and other stakeholders along the corridor.
  - Recurring meetings among Oregon State Police, County Sheriff, first responders, and maintenance staff to share observations and discuss recent severe crash characteristics. By coordinating and sharing observations, the multi-jurisdictional team can develop strategies.
  - Review crash data regularly to identify priority behaviors, locations, and times for enforcement.
  - Sharing observations can also lead to targeted enforcement at specific locations where unsafe behaviors have been observed most frequently.
  - Develop a community program for citizens to report unsafe driving behaviors along the corridor. These anecdotal reports may assist law enforcement with identifying priority locations and behaviors for enforcement.
- Continue to monitor guidance regarding automated speed enforcement on a state and local level. Currently, some local agencies within Oregon have implemented automated enforcement primarily in urban areas.
- Increase funding for additional enforcement on the US 199 corridor. Identify potential grant opportunities or local funding options to increase enforcement.

PRIORITIES FOR EDUCATION CAMPAIGNS AND ENFORCEMENT

SYSTEMIC SIGNING TREATMENTS

Low-cost systemic sign related treatments can be applied along the entire corridor or at relevant locations along the corridor. The following provides each treatment, the applications and considerations, cost estimates, and associated crash reduction factors.

Treatment		Considerations/Application	Cost Estimate	Crash Reduction Factor
Speed feedback signs		Entrance to each unincorporated community; prior to tight curves	$100,000 per sign	5-7% for all crashes
Intersection delineation & side street signage		All intersections absent of intersection street signs	$500 per intersection	N/A
Add signage identifying upcoming passing and pull-out opportunities, as well as the end of passing opportunities		Between each passing lane opportunity; prior to pull-outs	$1,00 per sign	N/A
Curve delineation		Install chevrons where warranted. For curves without chevrons: install post mounted delineators, with spacing decreasing to visually indicate an approach to the curve, and install recessed pavement markers inside of striping.	$2,000 per mile assuming 1 set of markers per 40'	15% for night-time crashes
Community gateway signs		Add "Welcome to [community name]" at the entrance to each unincorporated community	Varies based on type of sign	32% for all crash types for gateway monuments
Transit signs		Add signs at transit stops along the corridor	$1,00 per sign	N/A
Actuated intersection warning system		At key intersections as identified in project sheets where sight distance is a concern	$400,000 per system	29% for all crashes
Maintenance: replace signs necessary to provide appropriate messaging and to maintain reflectivity		As needed along roadway	Varies	Varies based on sign type

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.

SYSTEMIC PAVEMENT AND STRIPING TREATMENTS

Low-cost systemic pavement related countermeasures can be applied at relevant locations along the entire corridor. These treatments would be especially appropriate to implement at the same time as a repaving project. The following provides each treatment, the applications and considerations, cost estimates, and associated crash reduction factors.

Treatment		Considerations/Application	Cost Estimate	Crash Reduction Factor
Add the following treatments:				
Add advisory markings in lane		Add "curve" prior to curves and "speed limit XX" at any speed limit reduction along the corridor	N/A	65% for all crashes
Wider edgeline (6")		Along entire roadway, prioritized at curves	$5,000 per 1000 ft (both sides)	17% for all crashes
Safety edge		Along entire roadway, prioritized at curves	$86,000 per 1000 ft	5-15% for all crashes
Shoulder rumble strips		Along entire corridor	$4,000 per mile (both sides)	16-42% for run off the road crashes
Maintain the following existing countermeasures:				
Recessed pavement markers		Along entire corridor. Intense treatment with decreased spacing inside striping at curves.	$2,000 per mile assuming 1 set per 40 feet	15% for night-time crashes
Centerline rumble strips		Along entire corridor	$3,000 per mile	9-45% for all injury crashes

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.

PEDESTRIAN AND BICYCLE TREATMENTS

Bicycle and pedestrian treatments should be added in the unincorporated communities along the corridor. The following provides each treatment, the applications and considerations, cost estimates, and associated crash reduction factors.

Treatment		Considerations/ Application	Cost Estimate	Crash Reduction Factor
Shared-use path alignment study		Kerby to Cave Junction	$300,000 (study)	Varies
Pedestrian crossing		In rural communities, especially at key pedestrian generators and at transit stops	$120,000 (RRFB)	10-56% for rectangular rapid flashing beacon
Install pedestrian scale lighting		In rural communities and at crossings	$50,000 - $100,000 depending on the power source	42% for night-time pedestrian and bicycle crashes
Add sidewalks, bicycle facilities, curb, gutter, and traffic calming features like landscaping		Rural communities	$1,000,000 per mile (sidewalks)	20% for pedestrian crashes for addition of sidewalks
Gateway roundabouts		At the entrance to each rural community	$5,000,000 - $8,000,000	19-82% for all crash types
Install pedestrian refuge island		In conjunction with pedestrian crossings	$50,000 plus any widening and curb ramps needed	26-31% for pedestrian crashes

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.

INTELLIGENT TRANSPORTATION SYSTEM (ITS) TREATMENTS

Systemic ITS-related countermeasures can be applied at relevant locations along the corridor. The following provides each treatment, the applications and considerations, cost estimates, and associated crash reduction factors. These can be implemented as one ITS project or individually at specific locations.

Treatment		Considerations/Application	Cost Estimate	Crash Reduction Factor
Speed feedback signs		Entrance to each unincorporated community; prior to tight curves	$100,000 per sign	5-7% for all crash types
Variable message signs		Evaluate the best location for these signs. Potential locations include: • Southbound, south of Grants Pass • Northbound, north of Cave Junction • Southbound, south of Cave Junction • Northbound, near the California border These signs should share any relevant information (weather, maintenance, or crash related) or educational campaigns		Varies
Lighting		At key intersections, as indicated on project segment sheets	$150,000 per intersection	31 – 38% for night-time crashes
Actuated intersection warning systems		At key intersections as identified in project sheets	$400,000 per system	29% for all crashes
Dynamic feedback signs on curves		Prior to curves with documented crash history	$100,000 per sign	5% for all crashes

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.

CAPITAL PROJECTS

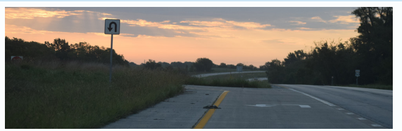
Many of the recommendations include larger construction projects that will involve additional design and securing funding to implement. These projects may take years to design and fund; therefore, planning for capital projects should start well in advance of anticipated construction and need.

The following general considerations will be involved in implementing many of these projects:

- **IDENTIFYING FUNDING MECHANISMS:** Securing funding to design and construct a project is an essential step in the process. Many of the funding mechanisms are competitive grant processes that will require applying for funding.
- **COORDINATING WITH AGENCIES AND STAKEHOLDERS:** ODOT will need to coordinate internally and externally. Internally, many departments may be engaged to provide input on various aspects of the project such as right-of-way, access management, environmental, roadway design, freight, etc. Externally, ODOT is likely to coordinate with Josephine County, particularly if the project involves an intersection with a County road.
- **COORDINATING WITH THE FREIGHT INDUSTRY:** US 199 is a designated Reduction Review Route (RRR), which prohibits modifications to the roadway that would reduce freight vehicle-carrying capacity. Coordination with the freight industry will confirm project compliance of this requirement (ORS 366.215 and OAR Chapter 731, Division 12 designate the requirements for reviewing Reduction of Vehicle-carrying Capacity (RVC) on a designated Reduction Review Route (RRR).)
- **ADDITIONAL PROJECT DEVELOPMENT AND DESIGN:** Most of the All Roads Transportation Safety (ARTS) and Capital Improvement projects recommended will require a project development process that results in refining the project in greater detail than can be done at a corridor plan scale. This process can take months or years to complete.
- **IDENTIFYING POTENTIAL RIGHT-OF-WAY IMPACTS:** During project development, right-of-way will be reviewed to determine potential impacts and needs for additional right-of-way.
- **PUBLIC OUTREACH FOR ACCESS MANAGEMENT:** In several locations, the US 199 Corridor Plan recommends reviewing opportunities to consolidate access points. In reviewing these locations, ODOT must follow the OAR Chapter 731, Division 51[1] procedures, standards, and approval criteria that govern highway access management and approach permitting.
- **IDENTIFYING POTENTIAL LAND USE IMPACTS:** US 199 Corridor Plan projects may impact adjacent land uses through changes in access, right-of-way acquisition (where necessary), or impacts to the built environment. Similarly, the projects have the potential to affect local mobility, access, and parking availability that in turn may impact commuting patterns, access to businesses, commercial vehicle travel, and ADA facilities. Potential project impacts must be evaluated.
- **REVIEWING COUNTY OVERLAY ZONE REQUIREMENTS:** US 199 Corridor Plan projects must comply with overlay zone requirements, such as:
  - Flood Hazard Overlay (RLDC Chapter 19.69A) applies to all flood hazard areas within the County. US 199 Corridor Plan projects must not increase flood levels.
  - Airport Overlay (RLDC Chapter 19.69D) applies to areas designated around the Illinois Valley Airport. US 199 Corridor Plan projects are subject to height and lighting restrictions.

1 OAR 734-051, https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3317

CAPITAL PROJECTS

Treatment		Considerations/ Application	Cost Estimate	Crash Reduction Factor
Install roundabout		Applicable to all crash types	$5 - $8 million	19-82%
Reduce intersection skew		Applicable to all crash types	$400,000 varies based on amount of reconstruction needed	CRF varies by skew angle
Install left-turn lanes on major roads at stop-controlled intersections		Applicable to all crash types	$1 - $1.5 million	33-58%
Install J-Turn		Applicable to all crash types	$1,000,000 per J-Turn	34% CRF
Add curb, gutter, and sidewalks (context and character changes to encourage slower speeds)		Applicable to all crash types Sidewalks: applicable crash types: pedestrian crashes; 20%	$1,000,000 per mile (one side)	N/A

Cost estimates are planning level costs and do not account for substantial right-of-way or environmental work. A refined cost estimate would be developed during project design.

Treatment		Considerations/ Application	Cost Estimate	Crash Reduction Factor
Install median barrier		Applicable to all crash types	$175,000 per 1000 ft plus any widening and new pavement required	-24 to 43% CRF
Install passing lanes or climbing lane on rural two-lane roadway *A passing lane study is necessary to determine appropriate locations for new passing lanes.*		Applicable to all crash types	$1,825,000 per mile plus any significant right-of-way or earthwork	25-35%
Install new guardrail		Applicable to run off the road crashes	$80,000 per 1000 ft (one side) plus any shoulder improvements or widening needed	44-47%
Close, consolidate, or relocate driveways (Access Management)		Applicable to all crash types	Cost varies	CRF varies based on driveway density
Widen shoulders Note: Widen gravel shoulder is also beneficial and may be more cost effective.		Applicable to all crash types	$1,000,000 per mile for 4 ft widening on one side of the road plus any right-of-way needed or significant earthwork	3 – 18%

Photo source: ODOT

https://www.oregon.gov/odot/projects/pages/project-details.aspx?project=R3-P006

OREGON DEPARTMENT OF TRANSPORTATION

JOSEPHINE COUNTY