

STATE OF OREGON

INTEROFFICE MEMO

Department of Transportation Transportation Development Division

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Date: June 14, 2018

**TO: Don Morehouse, Region 3 Planning
Dick Converse, RVCOG**

**FROM: Joseph Meek III PE, PTOE, PTP, Transportation Analyst
Transportation Planning Analysis Unit**

SUBJECT: Draft: Rogue River TSP Technical Memorandum #7 Solutions

This memo proposes transportation improvements to address Rogue River's transportation system deficiencies shown in Technical Memorandum #6. This analysis includes alternatives for motorized and non-motorized travel modes. Many alternatives include a range of options addressing deficiencies at various cost points. Suggested revisions to roadway functional classification system are also included.

Functional Class Revision

Street functional classification is part of how streets work together to make a network. Principal arterials provide long distance connections between large populous areas with high volumes and high speeds. Interstate 5 is the only principal arterial in Rogue River. Minor arterials primarily serve longer trips with in a city and typically connect principal arterials with collectors. Pine Street and OR99 are examples of minor arterials. Arterials minimize direct property access and have low driveway densities. Arterials offer the most direct routes for walking and bicycling, but facilities are needed to separate them from high speed vehicular traffic.

Collectors connect local streets to arterials and balance travel needs with property access. Collectors will have slower speeds, lower volumes, and greater driveway densities than arterials. Third Street and Broadway Streets are example of a collector. Minor collectors have noticeably shorter lengths than a major collector and will carry lesser volumes. With lower auto traffic volumes and speeds there is lower levels of stress for pedestrians and bicyclists. However, separate facilities are still needed. With higher driveway density there are more points of jeopardy of a collision with a vehicle.

Local streets prioritize local access over travel speed or distance. Driveway densities are highest on local streets. Local streets will have the lowest speeds and volumes, providing low-stress walking and bicycling. Separate bicycle facilities are usually not needed, but there is still a need for pedestrian facilities.

While existing city functional classifications are close to federal/ODOT functional classifications, this TSP update should make them compliant. The only change is to split the “Urban Collector” classification into “Urban Major Collector” and “Urban Minor Collector.” This is needed for federal and state reporting and streamlining Federal Aid System roadway funding. This is occurring for TSP updates across the state. In addition, city design standard classifications in Municipal Code Section 16.20.120 should also be updated. The recommended roadway classification changes for the City of Rogue River are shown below in Table 1. Table 2 shows proposed classifications for new roadways from the Connectivity section, starting on page 82.

Table 1: Proposed Functional Classification Changes

Existing Roadway ¹	Existing Classification	Proposed Classification
3 rd Street	Urban Minor Collector	Urban Major Collector
East Main Street	Urban Collector	Urban Minor Arterial
West Main Street	Urban Collector	Urban Minor Arterial
West Evans Creek Road	Urban Minor Collector	Urban Major Collector
2 nd Street	Urban Minor Collector	Local
Cedar Street	Urban Minor Collector	Local
Oak Street	Local	Urban Minor Collector
Broadway Street	Urban Minor Collector	Urban Major Collector
Robbins Avenue	Local	Urban Minor Collector

¹Applies to entire length of roadway segment

Table 2: Classifications Applied to Future Roadways

Proposed Roadway ^{1,2}	Proposed Classification
Scenic Drive (C7)	Urban Minor Collector
Blue Ridge Drive over Ward Creek (C4)	Urban Major Collector
3 rd Street over Evans Creek ³ (C2)	Urban Major Collector
7 th Street over Evans Creek (C2)	Urban Minor Collector
Street parallel to East Evans Creek Road (C5)	Urban Minor Collector
Broadway Street extension (C6)	Urban Major Collector
Gardiner Street for pedestrians and bicyclists (C6)	Local
7 th Street from Pine Street to Broadway Street (C7)	Urban Major Collector
Other 7 th Street additions (C7)	Urban Minor Collector

¹Applies to whole length of roadway if limits not specified.

²Reference to specific connectivity option shown in parentheses.

³Third Street needs to be realigned to a continuous alignment at Oak Street.

Alternatives

Alternatives were developed to address existing and future deficiencies of Rogue River. The alternatives are numbered as the deficiencies were in Tech Memo 6 (i.e. Bicycle, Connectivity, Operational/Safety, etc.). This allows for a deficiency to be associated with its potential solution in the alternative phase. Except for Pavement, there are multiple alternatives covering a variety of solutions and cost points. Some alternatives require other alternatives to be chosen or may affect other intersections. Some alternatives have been dropped or combined through analysis, thus some values are skipped.

Each solution type is led by a summary table listing alternatives. This table includes a short description, 2040 analysis result (if applicable), cost estimate and responsible agency or party. Following each table, detailed sections for each alternative follow. These sections include a restatement of the deficiency from Tech Memo 6, a description including maps/diagrams as appropriate, benefits, a cost estimate, and potential impacts.

The benefits section includes results of any operational analysis. This includes qualitative multimodal assessment methodology for pedestrians and transit, level of traffic stress for bicycles, volume-to-capacity analysis, and crash reduction factors. See Appendix A for individual analysis for each alternative as applicable. General qualitative benefits, such as safety and comfort, were added as needed.

Cost estimates used 2007 unit costs from ODOT's Traffic –Roadway Section. Estimates were augmented by various ODOT and local staff in active transportation, transit, bridge, roadway, and traffic disciplines, helping to broaden the scope of alternatives applicable in a multimodal TSP. As necessary, unit cost estimates were raised to 2017 dollars using the 2018 National Highway Construction Cost Index (NHCCI).

The final cost estimates in this memorandum include general cost allowances for project contingencies, preliminary engineering, construction engineering, mobilization and temporary traffic control. The cost estimates do not include: right-of-way, permitting, drainage improvements, water quality, surface grinding/other surface preparations beyond what is listed, or any environmental mitigation. Many of these are unknowns at this time. See Appendix B for individual cost worksheets for alternatives and the master cost estimate spreadsheet.

The key considerations and impacts section cover items to be put into perspective for each alternative. This includes potential environmental or riparian impacts, right-of-way considerations, parking impacts, and modal impacts. As applicable, there may be notes regarding potential conflicts with or requirements for alternatives.

Pedestrians

The choice of pedestrian improvement should be carefully considered. In lower speed areas a sidewalk may be applicable, as bicyclists are able to share the vehicular lane. With sidewalks, the need for drainage should be considered. If a city decides upon sidewalks and later adds bicycle lanes, existing sidewalks would likely need to be destroyed and thus create a cost of new sidewalks along with bicycle lanes unless sidewalks were placed in their ultimate location initially. Sidepath and shoulder options

were included to provide improvements at least on one side of a roadway and/or to limit construction costs and right-of-way impacts. Street lighting options were added were needed to supplement the options and improve safety of vehicles and pedestrians in these sections. Table 3 shows the pedestrian alternatives and options.

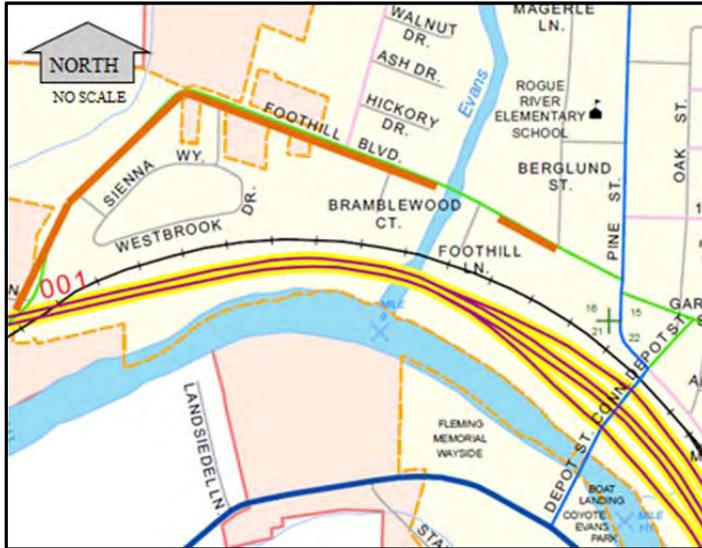
Table 3: Pedestrian Alternatives & Options

Option	Description	2040 Rating	Estimate	Agency
P1 West Main St/Foothills Blvd, Pine St - City Limits				
A	6' sidewalk	Fair	\$1,182,000	City
B	10' sidepath	Very Good	\$378,000	
C	Buffered paved shoulders	Fair	\$3,682,000	
P2 East Main Street, Rogue Ln - N River Rd				
A	6' sidewalk	Fair	\$1,091,000	City
B	10' sidepath	Very Good	\$27,000	
P3 Pine Street/E Evans, Short St - Creek View Ln - high school				
A	6' sidewalk	Fair	\$754,000	City/ County
B	10' sidepath	Very Good	\$768,000	
P4-6 Marked Crosswalks, school, mall, City Hall				
A	Crosswalk markings	Good	\$108,000	City
B	Pedestrian-activated beacon	Very Good	\$225,000	
C	Pedestrian refuge	Very Good	\$100,000	
P7 North River Road Curb, Main St - UGB				
A	6' sidewalk	Fair	\$618,000	City
B	Street lighting	Very Good	\$122,000	
C	Pedestrian refuge	Very Good	\$289,000	
D	6' sidewalk/10' sidepath	Very Good	\$667,000	
E	Buffered paved shoulder	Fair	\$6,240,000	
P8 Classick Drive, Depot St - N River Rd				
A	6' sidewalk	Fair	\$740,000	City
B	10' sidepath	Very Good	\$352,000	
C	Street lighting	Very Good	\$67,000	
P9 3rd Street, Oak St - City Limits				
A	6' sidewalk	Fair	\$1,547,000	City
B	10' sidepath	Very Good	\$384,000	
C	Street lighting	Very Good	\$24,000	
P10 Pine Street Downtown, Depot St - E Main St				
A	6' sidewalk	Fair	\$130,000	City
B	Crosswalk markings	Good	\$105,000	
P11 Wards Creek Road, E Main St - City Limits				
A	6' sidewalk	Fair	\$439,000	City
B	10' sidepath	Very Good	\$96,000	
C	Buffered paved shoulder	Fair	\$936,000	

P1 West Main Street/Foothill Boulevard

Deficiency: West Main Street has sidewalk to the west of Pine Street for a block (not by football field) and a striped walking path on the north side road shoulder extending to East Evans Creek Road. The sidewalk should be continued west on Foothill Blvd to the city limits. This section of roadway has a posted speed of 25-45mph. The 2040 ADT for this street is projected to be 6500 near the school, but 1700 on Foothill Boulevard.

Vicinity Map



Improvement Option A: Build six foot sidewalks

Description: Six foot sidewalks would be built from Pine Street to the city limits along West Main Street and Foothill Boulevard. Add ADA ramps as needed on corners.

Benefits: This sidewalk will provide a designated place for pedestrians traveling on this street, improving comfort and safety separated from vehicular traffic. This will create non-automobile connections to the new development on the western edge of the city along Foothill Boulevard. The sidewalks will help protect pedestrians from vehicles veering out of their lane. This improves this street from poor to fair.

Preliminary Cost Estimate: \$1,182,000

Key Considerations/Impacts: This option will require additional right-of-way, a consideration. The street width that exists will not facilitate this option and Project B3. With twelve foot travel lanes there will not be any detrimental effects to the vehicular traffic. Pedestrians would be much safer traveling on a full six foot sidewalk and having the protection of a curb. Bicycle deficiencies are not improved.

Improvement Option B: Create 10' sidepath

Description: A 10' sidepath would be built from Pine Street to the city limits along West Main Street and Foothill Boulevard.

Benefits: A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. This option would require less right-of-way than Option A. This improves this street from poor to very good.

Preliminary Cost Estimate: \$378,000

Key Considerations/Impacts: Right-of-way will be a consideration, requiring property impacts as the current street width will not accommodate this option. If origin and destination of a walking trip both exist opposite of the path, then extra crossings will expose pedestrians to vehicle traffic. Buffer types and widths need to be considered where the path crosses private accesses. Pedestrians and bicyclists would be safer traveling on a sidepath. Design considerations should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

Improvement Option C: Create buffered paved shoulders

Description: Add a seven foot paved shoulders and a two foot buffer from Pine Street to the city limits along West Main Street and Foothill Boulevard.

Benefits: Buffered Paved Shoulders would give a space for bicyclists and pedestrians, similar to current striped pathways already in Rogue River, but with increased separation from motor vehicles. This improves this street from poor to fair.

Preliminary Cost Estimate: \$3,682,000

Key Considerations/Impacts: This option will require additional right-of-way. The shoulder will not have bicycle designations to stop vehicles from parking in them; special no parking signs will be needed for the length of the improvement. Buffer types and widths need to be considered where the path crosses private accesses. Buffered Paved Shoulders are not exclusive for pedestrians and bicyclists, vehicles can be in that space too.

Notes: This is in the same area as Project B3. Project B3 Option A or B will require Project P1 Option A for the pedestrian mode. If Option B is chosen, then that will supplant B3 Option A/B and save the costs of those options.

P2 East Main Street

Deficiency: East Main Street needs sidewalk facilities on the south side from Rogue Lane to N River Road. This section of roadway has a posted speed of 25mph. The 2040 ADT for this street is projected to be 9800.

Vicinity Map



Improvement Option A: Build six foot sidewalks.

Description: Build a six foot sidewalk would be built for 170 feet. Install ADA ramps where needed.

Benefits: This sidewalk will provide a designated place for pedestrians traveling on this street, improving comfort and safety separated from vehicular traffic. Providing sidewalks should help pedestrians traveling on this street or going to the mall area, as well as create a non-automobile connection. The sidewalks will help protect pedestrians from vehicles veering out of their lane. This improves this street from poor to fair.

Preliminary Cost Estimate: \$1,091,000

Key Considerations/Impacts: This option will require additional right-of-way, a consideration. Project is likely to use curb that exists at this time. With twelve foot travel lanes there will not be any detrimental effects to the vehicular traffic. Pedestrians would be much safer traveling on a full six foot sidewalk and having the protection of a curb. Bicycle deficiencies are not improved.

Improvement Option B: Create 10' sidepath

Description: A ten foot sidepath would be built for 170 feet.

Benefits: Providing a sidepath should help pedestrians traveling on this street or going to the post office. Pedestrians will have a safe space to walk away from traffic. A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. This improves this street from poor to very good.

Preliminary Cost Estimate: \$27,000

Key Considerations/Impacts: Right-of-way will be a consideration, requiring property impacts as the current street width will not accommodate this option. Buffer types and widths need to be considered where the path crosses private accesses. Pedestrians and bicyclists would be safer traveling on a sidepath. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Notes: This project is near P11 and P7. The option chosen for P7 should be considered here. Sidewalk or sidepath from P7 could be continued here. One should consider if ever wanting to place a roundabout here; it affects what shape the sidewalk should be in.

P3 Pine Street/E Evans

Deficiency: From 300 feet north of Short Street, sidewalk only exists on the west side of Pine Street to Creek View Lane. From Creek View Lane north, there are no sidewalk facilities on Pine Street/ East Evans Creek Road, access to the middle school and high school. This section of roadway has a posted speed of 25-45mph, even in the school zone. The 2040 ADT for this street is projected to be 3500.

Vicinity Map



Improvement Option A: Build six foot sidewalks.

Description: Build a six foot sidewalk would be built from beginning of roadway north to middle school.

Benefits: This sidewalk will provide a designated place for pedestrians traveling on this street, improving comfort and safety separated from vehicular traffic. Providing sidewalks should help pedestrians traveling on this street or going to the middle school. The sidewalks will help protect pedestrians from vehicles veering out of their lane. On the Pine Street section the sidewalks were rated fair, further up on East Evans Creek Road the pedestrian facilities were rated very poor. This option would bring the pedestrian facilities up to fair.

Preliminary Cost Estimate: \$754,000

Key Considerations/Impacts: Right-of-way will be a consideration, requiring property impacts as the current street width will not accommodate this option. In some areas this may also require retaining walls. Utility poles on the west side of the street may be an issue. It is advised to leave the travel lane widths at 12 feet. Pedestrians would be much safer traveling on a full six foot sidewalk and having the protection of a curb. Bicycle deficiencies up to the middle school are not improved.

Improvement Option B: Create 10' sidepath

Description: A ten foot sidepath would be built from beginning of roadway north to middle school.

Benefits: Providing a sidepath should help pedestrians traveling on this street or going to the middle school. Pedestrians will have a safe space to walk away from traffic. A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. On the Pine Street section the sidewalks were rated fair, further up on East Evans Creek Road the pedestrian facilities were rated very poor. This option would bring the pedestrian facilities up to very good.

Preliminary Cost Estimate: \$768,000

Key Considerations/Impacts: Right-of-way will be a consideration, requiring property impacts as the current street width will not accommodate this option.. In some areas this may also require retaining walls. Pedestrians and bicyclists would be safer traveling on a sidepath. The east side is chosen as it will not interfere with utility poles and have fewer slope issues. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Notes: This is in the same area as Project B2.

P4-6 Marked Crosswalks

Deficiency: Drivers are not observing and properly yielding to pedestrians at marked crosswalks. Frequently, stops are not happening near the elementary school (P4 other than signalized crossing), with an 2040 ADT of 8000. Legal stops are also not happening at Main Street/N River Road (P5 near shopping area), with a 2040 ADT of 9800. Stops are also not occurring at Broadway (P6 near 1st Street), with a 2040 ADT of 3000. There is a need for continental mid-block crossings. These roadways have a posted speed of 25mph, with the exception of the school zone.

Improvement Option A: Install continental crosswalks and signing

Description: Continental crosswalks and related signing would be added to all three locations.

Benefits: The continental crosswalk is more visually recognized from vehicle drivers, so expectation for pedestrians is increased making yielding more likely. The crosswalks and signing will improve pedestrian safety. This option is rated good for pedestrians. A continental crosswalk has a Crash Reduction Factor (CRF) of 0.15.

Preliminary Cost Estimate: \$108,000 (\$36,000 for each site)

Key Considerations/Impacts: This will make the crossing locations more obvious to drivers so that they will yield to pedestrians when needed.

Improvement Option B: Install pedestrian-activated beacon and crosswalk

Description: Install a pedestrian-activated beacon that is used at mid-block crossings in addition to continental crosswalks. .

Benefits: The continental crosswalk is more visually recognized from vehicle drivers, so expectation for pedestrians is increased making yielding more likely. The activated beacon gives extra visibility for higher traffic locations which increases the yielding rate beyond Option A. This option is rated very good for pedestrians. A continental crosswalk has a Crash Reduction Factor (CRF) of 0.15. A pedestrian beacon has a CRF of 0.55.

Preliminary Cost Estimate: \$225,000 (\$75,000 for each site)

Key Considerations/Impacts: This will make the crossing locations more obvious to drivers so that they will yield to pedestrians when needed. This option is likely more relevant to higher volume locations such as in Project P4 and P5.

Improvement Option C: Install pedestrian refuge island with beacon and crosswalk

Description: Install a refuge island at mid-block crossings along with a pedestrian activated beacons and continental crosswalk striping

Benefits: The continental crosswalk is more visually recognized from vehicle drivers, so expectation for pedestrians is increased making yielding more likely. The activated beacon and refuge combination gives extra visibility for higher traffic locations which increases the yielding rate beyond Option A or B. The refuge island shortens the crossing distance and allows pedestrians to cross one direction at a time with will improve safety. This option is rated very good for pedestrians. A pedestrian refuge has a Crash Reduction Factor (CRF) of 0.31. A pedestrian Beacon has a CRF of 0.55.

Preliminary Cost Estimate: \$100,000

Key Considerations/Impacts: This will give pedestrians and bicyclists a safe place to cross. This will make the crossing locations more obvious to drivers so that they will yield to pedestrians when needed. This option is only relevant to Project P5 based on street width and projected volumes.

Notes: Project P4 in same location as Project B1.

P4 School Option A or B



P5 East Main /Mall Option A, B, or C. This is the only location eligible for Option C.



P6 City Hall
Option A or B



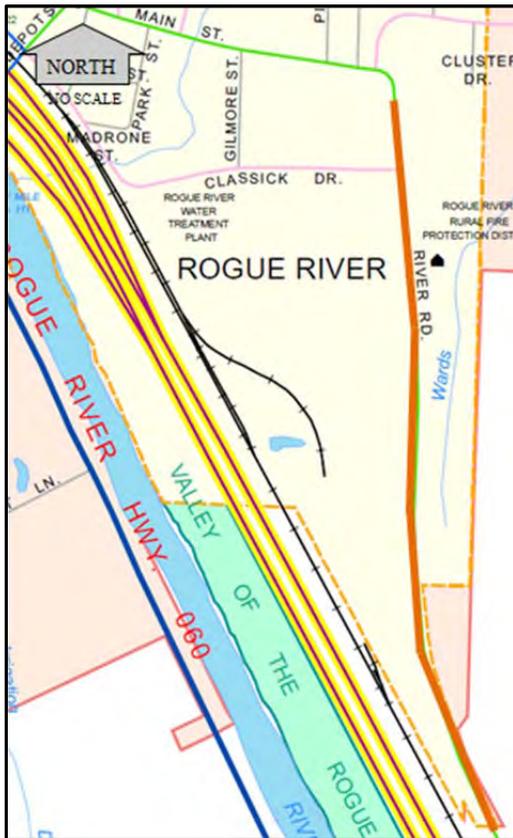
P6 City Hall



P7 North River Road

Deficiency: North River Road has a sidewalk on the east side from Wards Creek Road to a bit past Classick Drive. There is curbing for much of this distance on the west side, but no sidewalk. There is also a lack of lighting, especially for crosswalks. Note that there is a lack of ADA ramps, including at crosswalks. There is an attraction, Mountain of the Rogue Mt Bike trailhead that is just outside of the UGB. This recreational facility should have a defined access with a path or sidewalk into town. This section of roadway has a posted speed of 25-45mph. The 2040 ADT for this street is projected to be between 3500 and 3100.

Vicinity Map



Improvement Option A: Build sidewalks & ADA ramps

Description: Six-foot sidewalks would be built on the west side of North River Road from East Main Street to Classick Drive and then both sides to the UGB.

Benefits: This sidewalk will provide a designated place for pedestrians traveling on this street which will improve comfort and safety separated from vehicular traffic. This option is rated fair for pedestrians.

Preliminary Cost Estimate: \$618,000

Key Considerations/Impacts: Right-of-way will be a consideration, requiring property impacts. The curb in place will likely be utilized. This option should be coordinated with P2 sidewalk construction on East Main Street to avoid leaving a gap in the mall area. With eleven foot travel lanes there will be small effects to vehicular traffic. Bicyclist needs are still not met.

Improvement Option B: Add street lighting

Description: Install street lighting from East Main Street to the UGB, illuminating pedestrians, bicyclists, and vehicles turning in and out of driveways.

Benefits: This will help all modes to be more visual to each other at night, improving safety. This will give urban-area type clues to drivers, which will have them more likely to expect bicyclists and pedestrians as well as turning vehicles. This should slow some vehicles that don't realize they are coming into town. This option is rated very good for pedestrians. Adding street lighting has a Crash Reduction Factor (CRF) of 0.28 for a street and 0.38 for an intersection.

Preliminary Cost Estimate: \$122,000

Key Considerations/Impacts: Utility lines on the west side of the street should be considered.

Improvement Option C: Improve pedestrian crossings

Description: Install pedestrian refuge islands, advance signing, pedestrian activated beacons ADA-standard ramps will also be installed. This option is rated very good for pedestrians.

Benefits: The activated beacons and refuge combination gives maximum visibility for higher traffic locations, increasing yielding rate. A refuge island shortens crossing distance and allows for crossing one direction at a time. ADA-ramps allow crossings to be accessible for all users. This option is rated very good for pedestrians. A pedestrian refuge has a Crash Reduction Factor (CRF) of 0.31. A pedestrian Beacon has a CRF of 0.55. Crosswalks and advance warning signs have a CRF of 0.37.

Preliminary Cost Estimate: \$289,000

Key Considerations/Impacts: Vehicular traffic traveling into town will be more likely to see signing or a beacon. Pedestrians crossing the street would be much safer with one of these improvements. Bicyclist needs are still not met with this solution.

Improvement Option D: Create sidewalk and sidepath

Description: A six foot sidewalk would be built on the west side of North River Road from East Main Street to Classick Drive. A ten foot sidepath would be built from Classick Drive to the city limits.

Benefits: A sidewalk and sidepath would give a comfortable separated space for bicyclists and pedestrians which will maximize use. The sidewalk and the sidepath fit the environment they are placed in. This option is rated very good for pedestrians.

Preliminary Cost Estimate: \$667,000

Key Considerations/Impacts: The sidepath would use the space currently taken by truck parking so extra right-of-way needs will be minimized. Attention should be paid to avoid interference with utility poles. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Improvement Option E: Create buffered paved shoulders

Description: Add a seven foot paved shoulders and a two foot buffer.

Benefits: Buffered Paved Shoulders would give a space for bicyclists and pedestrians, unless vehicles park in the shoulder. This option is rated fair for pedestrians.

Preliminary Cost Estimate: \$6,240,000

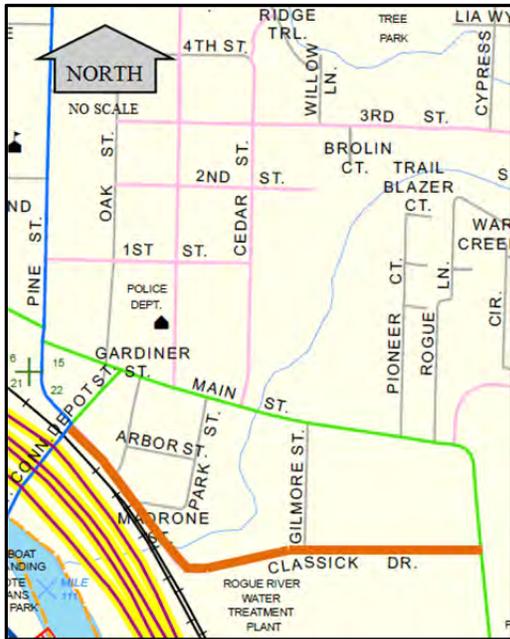
Key Considerations/Impacts: This option will require additional right-of-way. The shoulder will not have bicycle designations to stop vehicles from parking in them; special no parking signs will be needed for the length of the improvement. Buffer types and widths need to be considered where the path crosses private accesses. Buffered Paved Shoulders are not exclusive for pedestrians and bicyclists, vehicles can be in that space too.

Notes: Continental crosswalks may be considered at midblock crossings. This is the same location as B7. Option A is related to P2 Option A as sidewalks should be connected between East Main Street and North River Road without leaving a gap, if sidewalks are chosen. The UGB/city limits are 1400 feet north of the entrance to the Mountain of the Rogue trailhead, so there will be a facility gap unless Jackson County fills this in. Jackson County may see a sidepath as appropriate to fill this gap.

P8 Classick Drive

Deficiency: Classick Drive was built by the mill as a truck route. Therefore, it lacks sidewalks and lighting on much of it. Some sections have businesses, such as a coffee shop or US Post Office that would attract pedestrians. Some sections of Classick Drive have parking for large trucks. This truck parking area should be defined and planned with alternate paths where it is desired to have the sidewalk closed. This section of roadway has a posted speed of 25mph. The 2040 ADT for this street is projected to be between 2300 and 800.

Vicinity Map



Improvement Option A: Build six foot sidewalks.

Description: Six foot sidewalks would be built on both sides of Classick Drive from Pine Street to North River Road. This will add ADA ramps where needed.

Benefits: The sidewalks will provide a designated place for pedestrians traveling on this street, improving comfort and safety with separation from vehicular traffic. This option would improve the pedestrian facilities to fair.

Preliminary Cost Estimate: \$740,000

Key Considerations/Impacts: Right-of-way might be a consideration, requiring property impacts. Truck parking would be impacted if sidewalk replaced the parking area. Bicyclist needs are still not met.

Improvement Option B: Create 10' sidepath

Description: A ten foot sidepath would be built on the north side of Classick Drive from Pine Street to North River Road.

Benefits: A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. The truck parking could continue to exist on the south side of the street. This option would improve the pedestrian facilities to very good.

Preliminary Cost Estimate: \$352,000

Key Considerations/Impacts: The sidepath would use space currently used as truck parking so extra right-of-way needs will be minimized. Attention should be paid to avoid interference with utility poles. Bicyclist needs are still not met. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Improvement Option C: Add street lighting

Description: Install street lighting from Pine Street to North River Road, illuminating all modes

Benefits: This will help all modes to be more visual to each other at night which will improve safety. This will give urban-area type clues to drivers, which will have them more likely to expect bicyclists and pedestrians as well as turning vehicles. This should slow some vehicles that don't realize they are coming into town. This option would improve the pedestrian facilities to very good. Adding street lighting has a Crash Reduction Factor (CRF) of 0.28 for a street and 0.38 for an intersection.

Preliminary Cost Estimate: \$67,000

Key Considerations/Impacts:

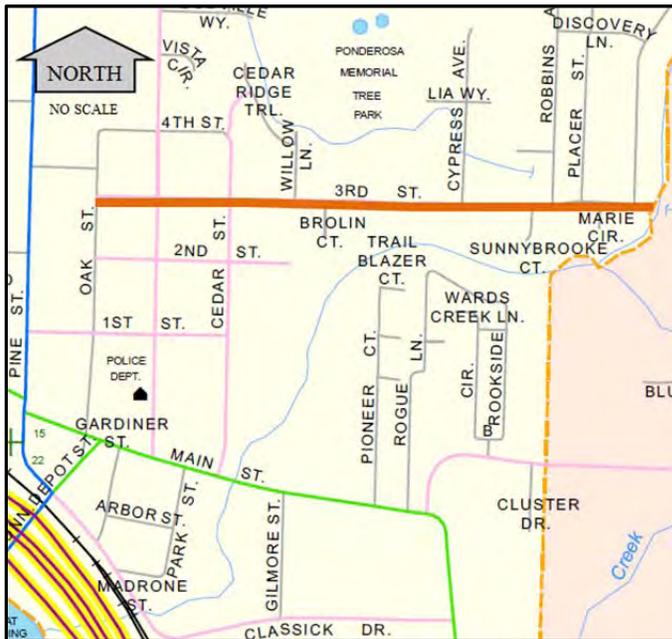
Considerations/Impacts: Utility lines should be investigated. This option may be less relevant if Classick Drive is restricted at the Pine/Depot Street intersection. Bicyclist needs are still not met.

Notes: Classick Drive also involves Project BR2.

P9 3rd Street

Deficiency: There should be sidewalks on both sides of 3rd Street. Striped paths lack a raised curb and any physical or lateral separation from traffic. Garbage carts block the path, rather than in driveways. This section of roadway has a posted speed of 25mph.

Vicinity Map



Improvement Option A: Build six foot sidewalks

Description: Six foot sidewalks would be built for the entire length of 3rd Street. Will also add ADA ramps where needed.

Benefits: This sidewalk will provide a designated place for pedestrians traveling on this street, improving comfort and safety separated from vehicular traffic. This will create non-automobile connections across town. The sidewalks will help protect pedestrians from vehicles veering out of their lane. This option would improve the pedestrian facilities to fair.

Preliminary Cost Estimate: \$1,547,000

Key Considerations/Impacts: This option will require additional right-of-way as , a current street width will not accommodate this option. In some areas this may also require retaining walls. Pedestrians would be much safer traveling on a full six foot sidewalk and having the protection of a curb. Bicycle deficiencies are not improved.

Improvement Option B: Create 10' sidepath

Description: A ten foot sidepath would be built for the entire length of 3rd Street.

Benefits: A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. This option would require less right-of-way than Option A. This option would improve the pedestrian facilities to very good.

Preliminary Cost Estimate: \$384,000

Key Considerations/Impacts: Right-of-way will be a consideration as the current street width will not accommodate this option. In some areas this may also require retaining walls. If a pedestrians origin and destination both exist on the opposite side of the path, then extra crossings will be required. Buffer types and widths need to be considered where the path crosses private accesses. Pedestrians and bicyclists would be safer traveling on a sidepath. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Improvement Option C: Add street lighting

Description: Install street lighting from Cedar Street to Oak Street, illuminating pedestrians, bicyclists, and vehicles turning in and out of driveways.

Benefits: This will help all modes to be more visual to each other at night, improving safety. This option would improve the pedestrian facilities to very good. Adding street lighting has a Crash Reduction Factor (CRF) of 0.28 for a street and 0.38 for an intersection.

Preliminary Cost Estimate: \$24,000

Key Considerations/Impacts: Existing utility poles should be considered for locations.

P10 Pine Street Downtown

Deficiency: There are no sidewalks on the north side of Pine Street from Depot Street to East Main Street and south side for a portion of that distance. This leads up to the intersection of Pine Street and Depot Street that needs crosswalks on the stopped legs, not to include the leg that crosses the railroad tracks. This section of roadway has a posted speed of 25mph. The 2040 ADT for this street is projected to be 8200.

Vicinity Map



Improvement Option A: Build six foot sidewalks

Description: Six foot sidewalks would be built from Depot Street to East Main Street on both sides of Pine Street.

Benefits: This sidewalk will provide a designated place for pedestrians traveling on this street, improving comfort and safety with separation from vehicular traffic. This will also define driveway locations for businesses, improving safety. This option would provide needed pedestrian facilities, but would remain at fair.

Preliminary Cost Estimate: \$130,000

Key Considerations/Impacts: Right-of-way may be a consideration, requiring property impacts. Bicyclist needs are still not met.

Improvement Option B: Install crosswalks at Pine/Depot Street

Description: Install crosswalk markings for the stopped approaches of Pine/Depot/Classick intersection (north, east and west legs).

Benefits: This should help pedestrians crossing this intersection by marking a crosswalk that is visible to drivers, increasing yielding rate. This option would improve the pedestrian facilities from fair to good. A crosswalk has a Crash Reduction Factor (CRF) of 0.37.

Preliminary Cost Estimate: \$105,000

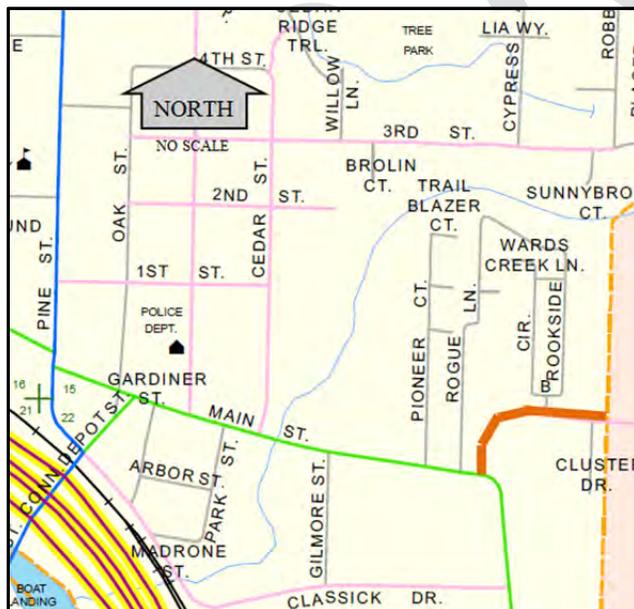
Key Considerations/Impacts: Continental Crosswalks are recommended for installation at mid-block locations. This will not detract from vehicular needs, but make the crossing locations more obvious to drivers. This option will need to be modified for crossing distance or number of stopped approaches if the intersection is modified as in Project OS4.

Notes: Related to Project OS4.

P11 Wards Creek Road

Deficiency: Wider shoulders are an improvement; there needs to be sidewalks around the mall area to the city limits. There should be sidewalks from the mall to the assisted living area and mobile homes. This section of roadway has a posted speed of 25mph. The 2040 ADT for this street is projected to be 1300.

Vicinity Map



Improvement Option A: Build six foot sidewalks

Description: Six foot sidewalks would be built from East Main Street to the city limits.

Benefits: This sidewalk will provide a designated place for pedestrians traveling on this street, improving comfort and safety separated from vehicular traffic. This will create non-automobile connections to the new development on the western edge of the city

along Wards Creek Road. The sidewalks will help protect pedestrians from vehicles veering out of their lane. This option would improve the pedestrian facilities to fair.

Preliminary Cost Estimate: \$439,000

Key Considerations/Impacts: This option will require additional right-of-way, a consideration. The street width that exists will not facilitate this option. With twelve foot travel lanes there will not be any detrimental effects to the vehicular traffic. Pedestrians would be much safer traveling on a full six foot sidewalk and having the protection of a curb. Bicycle deficiencies are not improved.

Improvement Option B: Create 10' sidepath

Description: A ten foot sidepath would be built from East Main Street to the city limits.

Benefits: A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. This option would require less right-of-way than Option A. This option would improve the pedestrian facilities to very good.

Preliminary Cost Estimate: \$96,000

Key Considerations/Impacts: Right-of-way will be a consideration, requiring property impacts. Street width that exists will not facilitate this option. If the origin and destination of the trip both exist on the opposite of the path, then extra crossings will expose pedestrians to vehicle traffic. Buffer types and widths need to be considered where the path crosses private accesses. With twelve foot travel lanes there will not be any detrimental effects to the vehicular traffic. Pedestrians and bicyclists would be safer traveling on a sidepath. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Improvement Option C: Create buffered paved shoulders

Description: Add a seven foot paved shoulders and a two foot buffer.

Benefits: Buffered Paved Shoulders would give a space for bicyclists and pedestrians, unless vehicles park in the shoulder. This option would improve the pedestrian facilities to fair.

Preliminary Cost Estimate: \$936,000

Key Considerations/Impacts This option will require additional right-of-way. The shoulder will not have bicycle designations to stop vehicles from parking in them; special no parking signs will be needed for the length of the improvement. Buffer types and widths need to be considered where the path crosses private accesses. Buffered paved shoulders are not exclusive for pedestrians and bicyclists, vehicles can be in that space too.

Notes: Grade should be a consideration. A rest point midway up the hill for wheelchairs and elderly could be considered.

Safe Routes To School (Project P12)

Project P12 was created to cover beyond the Pedestrian or Bicycle sections. As noted in Technical Memorandum #6 and shown in the vicinity map, Safe Routes to Schools (SRTS) area covers generally the entire city.

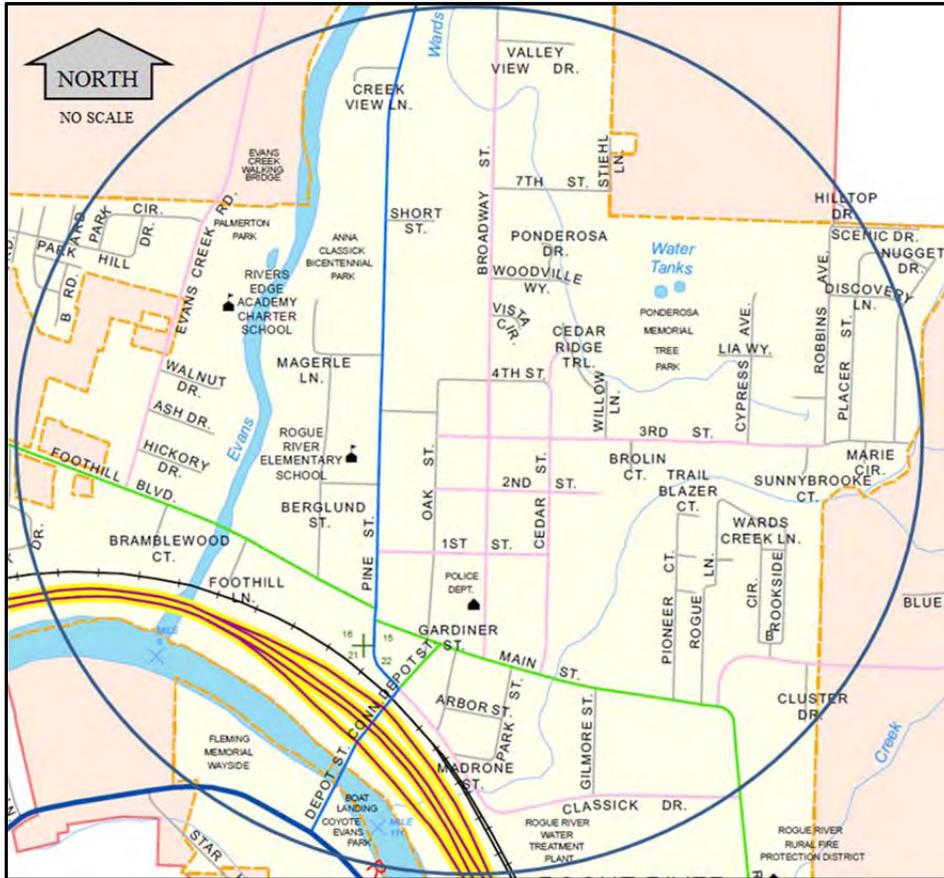
Table 4: Safe Routes to School

Option	Description	Estimate	Agency
Sidewalk			
A	West Evans Creek Rd south of Palmerton	\$624,000	SRTS/ City
B	1st St: Broadway to Cedar St	\$166,000	
C	2nd St Cedar to Ward Creek	\$80,000	
D	Berglund St	\$332,000	
E	Oak St	\$456,000	
F	Cedar St	\$629,000	
G	Robbins Ave	\$153,000	
H	Park St	\$370,000	
I	Gardiner St	\$243,000	
J	4th St off of Berglund St	\$173,000	
Advisory Shoulder			
D	Berglund St	\$85,000	SRTS/ City
E	Oak St	\$118,000	
F	Cedar St	\$207,000	
Sidepath			
M	West Evans Crk Rd north of Palmerton	\$240,000	SRTS/ City
Buffered Paved Shoulder			
M	West Evans Crk Rd north of Palmerton	\$2,340,000	SRTS/ City
Buffered Bicycle lane			
P	Pine St: Depot - E Main St	\$417,000	SRTS/ City

P12 Safe Routes to School

Deficiency: Priority should be given to providing sidewalks, or equivalent, within a ½ mile walk to the middle or elementary school, not covered in other projects. Suggestion lists of locations are below each option. Everything inside the circle on the vicinity map is generally within a ½ mile of the elementary school.

Vicinity Map



Improvement Sidewalk Option: Build six foot sidewalks.

Description: The sidewalks would be built as shown below.

Benefits: Sidewalks provide a designated place for pedestrians, improving comfort and safety. This will create non-automobile connections to schools.

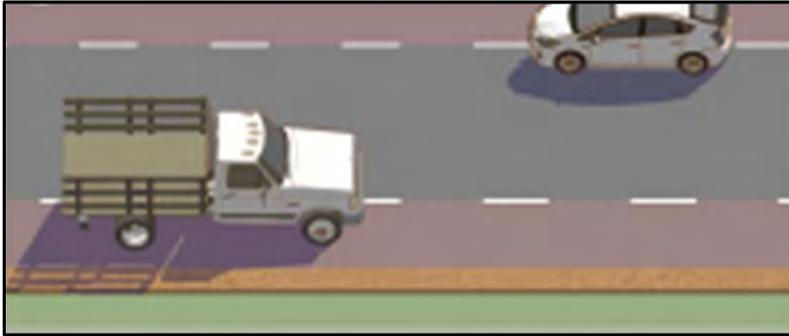
Project listing with Preliminary Cost Estimate:

Sidewalk Option	Estimate
a: West Evans Creek Rd south of Palmerton	\$624,000
b: 1st St: Broadway to Cedar St	\$166,000
c: 2nd St Cedar to Ward Creek	\$80,000
d: Berglund St	\$332,000
e: Oak St	\$456,000
f: Cedar St	\$629,000
g: Robbins Ave	\$153,000
h: Park St	\$370,000
i: Gardiner St	\$243,000
j: 4th St off of Berglund St	\$173,000

Key Considerations/Impacts: Some of these options may require additional right-of-way. Pedestrians would be safer traveling on a full six foot sidewalk and the protection of a curb. Utility pole locations may be an issue for some options.

Improvement Advisory Shoulder Option: Create Advisory Shoulders

Description: Turn a two lane roadway into a one lane with six foot Advisory Shoulders.



Benefits: Advisory Shoulders would give a space for bicyclists and pedestrians, until two vehicles meet. This option would require less right-of-way than most options.

Identified Project & Preliminary Cost Estimate:

Advisory Shoulder Option	Estimate
d: Berglund St	\$85,000
e: Oak St	\$118,000
f: Cedar St	\$207,000

Key Considerations/Impacts: This option will not require additional right-of-way, a consideration. The street will only serve one vehicle direction at a time as there is only one lane. When two vehicles meet they will pull into the pedestrian and bicycle space as shown. Advisory Shoulders are not exclusive for pedestrians and bicyclists, vehicles can be in that space too. If a school bus has to pull over into the advisory shoulder it must wait for a space vacant of pedestrians and bicyclists as they have priority. An approved “Request for Experiment” is required from FHWA before installation of this option. The advisory shoulder can be pigmented to a different color to better separate the advisory shoulders from the single travel lane. Parking is not allowed in the advisory shoulders, at all times.

Improvement Sidepath Option: Create 10’ sidepath

Description: A ten foot sidepath would be built on West Evans Road north through Palmerton Park.

Benefits: A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. This option would require less right-of-way than other options.

Preliminary Cost Estimate: \$240,000

Key Considerations/Impacts: This option will require additional right-of-way, a consideration. The street widths that exist will likely not facilitate this improvement. Buffer types and widths need to be considered where the path crosses private accesses. Pedestrians and bicyclists would be safer traveling on a sidepath. Sidepaths save expenses in the form of ADA ramps, curb, and the combination of sidewalks and bicycle lanes.

Improvement Buffered Paved Shoulder Option: Create Buffered Paved Shoulders

Description: Add a seven foot paved shoulders and a two foot buffer to West Evans Creek Road north through Palmerton Park.

Benefits: Buffered Paved Shoulders would give a space for bicyclists and pedestrians, unless vehicles park in the shoulder.

Preliminary Cost Estimate: \$2,340,000

Key Considerations/Impacts: This option will require additional right-of-way. The shoulder will not have bicycle designations to stop vehicles from parking in them; special no parking signs will be needed for the length of the improvement. Buffer types and widths need to be considered where the path crosses private accesses. Buffered Paved Shoulders are not exclusive for pedestrians and bicyclists, vehicles can be in that space too.

Improvement Bicycle Lane Option: Create bicycle lanes

Description: Add a six foot paved lane and a two foot buffer to Pine Street from Depot Street to East Main Street.

Benefits: Bicycle lanes would give a space for bicyclists, not allowing vehicles to park in the designated lanes

Preliminary Cost Estimate: \$417,000

Key Considerations/Impacts: This option will require additional right-of-way, a consideration. The shoulder will not have bicycle designations to stop vehicles from parking in them.

Notes: Bicycle lanes will need to be built when sidewalks are provided. Sidepaths do provide for both modes: pedestrians and bicyclists.

Bicycle

Similar to pedestrian alternatives, a variety of options offer a mix of vehicle separation widths from a standard bike lane to a separated sidepath. Table 5 shows bicycle alternatives and options.

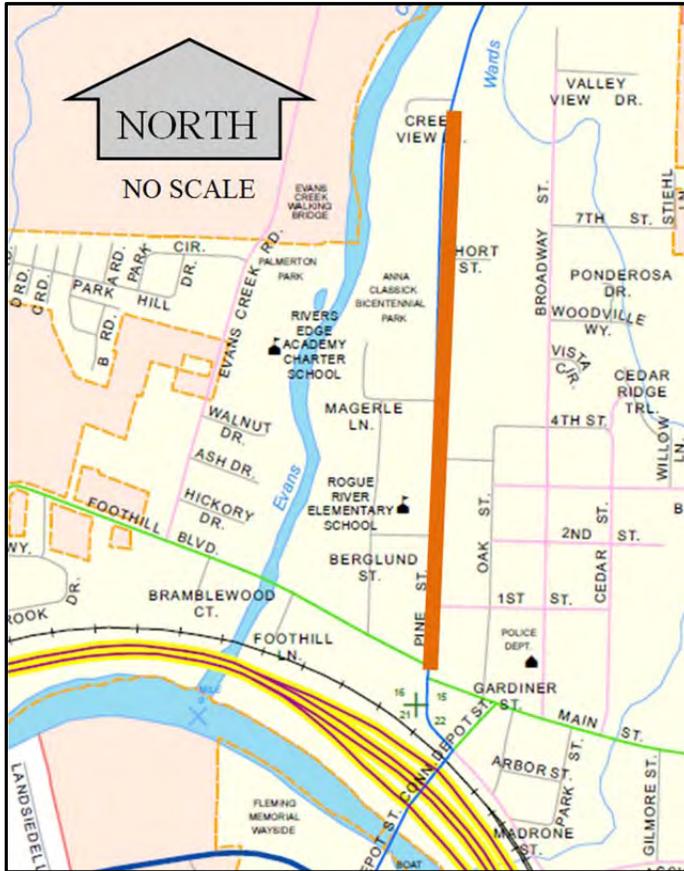
Table 5: Bicycle Alternatives & Options

Option	Description	2040 LTS	Estimate	Agency
B1 Pine St, E Main St - City Limits				
A	5' bike lane	LTS 2	\$5,000	City
B	6' bike lane	LTS 2	\$35,000	
C	10' sidepath	LTS 1	\$48,000	
B2 East Evans Creek Rd, City Limits - high school				
A	6' bike lane	LTS 3	\$465,000	County
B	8' buffered bike lane	LTS 3	\$2,913,000	
C	10' sidepath	LTS 1	\$782,000	
B3 West Main St/Foothills Blvd, Pine St - City Limits				
A	6' bike lane	LTS 3	\$1,646,000	City
B	8' buffered bike lane	LTS 2	\$2,094,000	
C	8' sidepath	LTS 1	\$385,000	
B4 East Main St, Pine St – N River Rd				
A	6' bike lane	LTS 2	\$24,000	City
B	Sharrow markings	LTS 4	\$5,000	
B5 Broadway Street North, 1st St – end of street				
A	6' bike lane	LTS 2	\$35,000	City
B	8' buffered bike lane	LTS 2	\$95,000	
B6 Broadway Street South, E Main St - 1st St				
A	6' lane	LTS 2	\$7,000	City
B	8' buffered bike lane	LTS 2	\$18,000	
B7 North River Road, E Main St - City Limits				
A	6' bike lane	LTS 3	\$3,453,000	City
B	8' buffered bike lane	LTS 3	\$4,903,000	
B8 3rd Street, Pine St – City Limits				
A	6' bike lane	LTS 2	\$1,441,000	City
B	8' buffered bike lane	LTS 2	\$2,629,000	
C	10' sidepath	LTS 1	\$528,000	
D	Sharrow markings	LTS 3	\$121,000	
B9 OR99, City Limits - City Limits				
A	10' Sidepath	LTS 1	\$720,000	ODOT
B	8' buffered bike lane	LTS 4	\$6,263,000	

B1 Pine Street

Deficiency: There are no bicycle lanes on Pine Street, from Main Street to East Evans Creek Road. Pine Street has paved shoulders running along both sides of Pine Street, beyond the elementary school and into suburban area until it turns into East Evans Creek Road. This section of roadway has a posted speed of 25mph, with the exception of the school zone. The 2040 ADT for this street is projected to be 2500. While LTS 2 is sufficient for most users, LTS 1 is preferred for sections at least within a half-mile of an elementary or middle school.

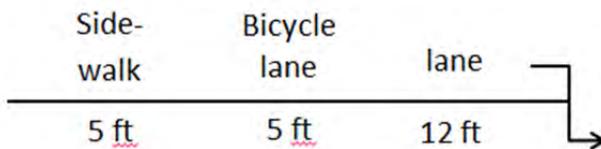
Vicinity Map



Improvement Option A: Convert paved shoulders to bicycle lanes.

Description: The five foot shoulders on Pine Street will be converted into five foot bicycle lanes, from Main Street to East Evans Creek Road. Bicycle lane markings need to be added to convert the shoulder into a bicycle lane.

Roadway Cross-section



Benefits: Conversion to a bicycle lane will create a dedicated space to improve stress, level of comfort, and safety of bicyclists of all ages. The LTS of this option remains at LTS 2. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

Preliminary Cost Estimate: \$5,000

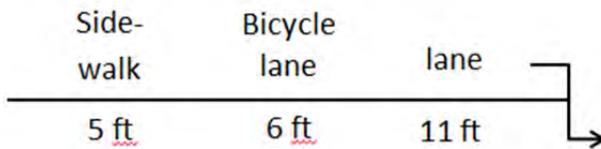
Key Considerations/Impacts: This option will prohibit parking along Pine Street. Reducing lane width to eleven feet will not have any significant impacts to vehicular

capacity or operation. A five foot bicycle lane is not desirable on the street of an elementary school. Impacts to pedestrians are unchanged as the buffering width between the sidewalk and travel lane remains the same for the sections where the sidewalk exists south of Creek View Lane.

Improvement Option B: Create full six foot bicycle lanes.

Description: On Pine Street, six foot bicycle lanes will be built from Main Street to East Evans Creek Road. The vehicle travel lanes will be narrowed by a foot and bicycle lanes will widen by a foot.

Roadway Cross-section



Benefits: Wider sections are needed to improve stress, level of comfort, and safety of bicyclists of all ages. The LTS of this option remains at LTS 2. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

Preliminary Cost Estimate: \$35,000

Key Considerations/Impacts: This option will prohibit parking on Pine Street. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. A six foot bicycle lane is desirable on the street an elementary school is located. A six foot bicycle lane increases the buffering width slightly for pedestrians by providing a one foot larger space between pedestrians and vehicles.

Improvement Option C: Add a sidepath

Description: Add a 10’ sidepath from East Main Street to East Evans Creek Road

Roadway Cross-section

<u>Sidepath</u>	<u>Buffer landscape</u>	<u>Possible parking</u>	<u>Lane</u>	<u>Lane</u>	<u>Shoulder</u>
10 ft	0-3 ft	10 ft	11 ft	11 ft	3 ft

Benefits: A sidepath offers a separate facility from the roadway for both pedestrians and bicyclists. This improves the overall safety and level of comfort. A sidepath is safer for users by providing a buffered landscape strip between vehicles. This improves the LTS rating from LTS 2 to LTS 1 and is the only option to reduce the stress rating.

Preliminary Cost Estimate: \$48,000

Key Considerations/Impacts: The expanded right-of-way needs will be a large consideration. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Notes: Option C is the only one that improves LTS rating.

B2 East Evans Creek Road

Deficiency: The paved shoulder on East Evans Creek Road and past the middle school and high school is only about four feet wide in most places. While potentially inviting, it is functionally too narrow for safe bicycle riding and has a LTS 4 rating as a result. This section of roadway has a posted speed of 45mph. In regard to a middle school being on the street, an LTS 1 rating is preferred.

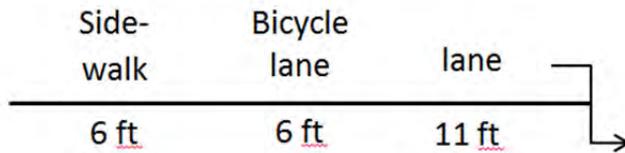
Vicinity Map



Improvement Option A: Add six foot bicycle lanes

Description: Restripe the roadway with ten foot travel lanes and six foot bicycle lanes. The bicycle lanes would be widened to six feet, considering the middle school on this roadway. The travel lanes are reduced to eleven feet wide.

Roadway Cross Section



Benefits: This will increase the shoulder area from four feet to six feet which will be designated as bicycle lanes. This will provide a designated space for bicyclists. This improves the LTS rating from 4 to 3. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

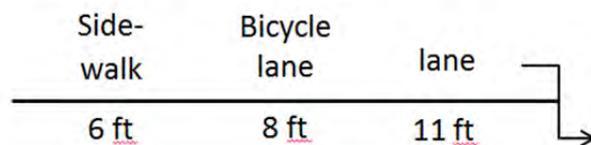
Preliminary Cost Estimate: \$465,000

Key Considerations/Impacts: Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation.

Improvement Option B: Add eight foot buffered bicycle lanes

Description: Widen the roadway with buffered eight-foot bicycle lanes. The bicycle lanes would be six feet wide with a two foot buffering space.

Roadway Cross Section



Benefits: This will create a more comfortable experience over the standard bicycle lanes in Option A. The buffer will give additional separation between bicyclists and vehicles. This extra space will be necessary especially for any middle school students bicycling to/from school. This increased width gives a safer space where traffic speeds increase. This improves the LTS rating from LTS 4 to LTS 3. A buffered bicycle lane has a Crash Reduction Factor (CRF) of 0.47.

Preliminary Cost Estimate: \$2,913,000

Key Considerations/Impacts: The extra right-of-way required for this option will be a large consideration. In some areas retaining walls may be required, especially on the west side of the roadway. There is potential for utility conflicts such as the overhead power lines. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation.

Improvement Option C: Add a 10' sidepath

Description: The shoulder will be widened on the east side for an eight foot sidepath to serve bicyclists and pedestrians. A barrier (such as a guard rail) and two feet shy distance will be placed between the sidepath and the roadway.

Roadway Cross Section



Benefits: This will create a separated more comfortable space than the other two options with the maximum stress reduction. A separated space will allow maximized use of the facility for students and other bicyclists and pedestrians and provide a much safer space. The elevation of the sidepath can be investigated as to its placement at roadway height or above/below. The separation in elevation itself may add protection to bicyclists and pedestrians. This significantly improves the LTS rating from LTS 4 to LTS 1. This increases the width the greatest and gives the safest space where traffic speeds increase.

Preliminary Cost Estimate: \$782,000

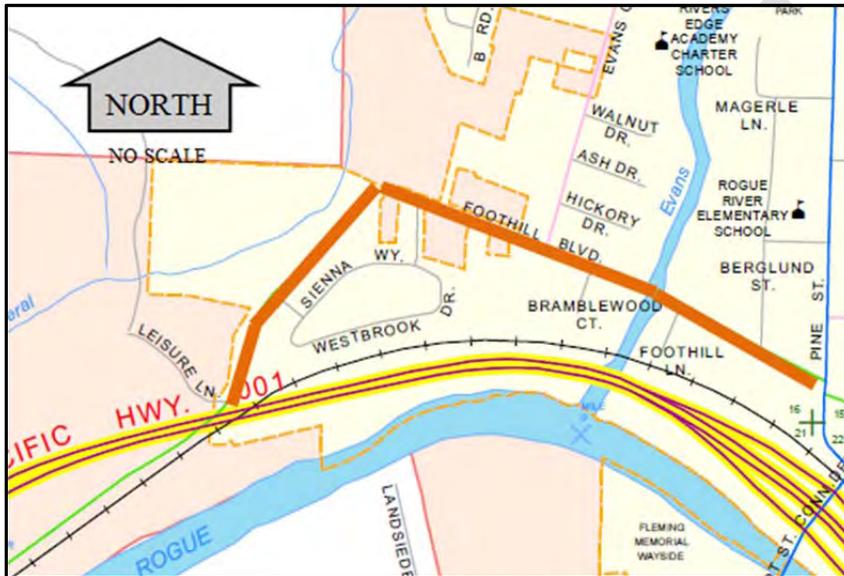
Key Considerations/Impacts: The extra right-of-way required will be a large consideration to add a path and necessary barriers, but potentially less than required in Option B. The path will cross private driveways, so barrier/buffer types and placement must be considered to avoid sight distance issues. The eight foot path is a minimum width for two bicyclists passing each other, so the path could be wider in certain locations. The east side is chosen as it will not interfere with utility poles and will have fewer slope issues. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Notes: Same area as Project P3. Option C covers both bicyclists and pedestrians, so a separate sidepath option under P3 is not necessary. Sidewalk does not currently exist that is shown on the roadway cross sections.

B3 West Main Street/Foothill Boulevard

Deficiency: West Main Street has paved shoulders that could be used as bicycle facilities, although it is too narrow. In some locations east of West Evans Creek Road, there is no sidewalk and a section of the pavement is striped to substitute for a combination walking path/possible bike lane. This section of roadway has a posted speed of 25 to 45mph. The 2040 ADT for this street is projected to be 1700. The road cross section and shoulder space narrows on Foothill Boulevard, west of West Evans Creek Road as it approaches the Urban Growth Boundary.

Vicinity Map



Improvement Option A: Add six foot bicycle lanes

Description: The paved shoulders would be widened and converted to six foot bicycle lanes from Pine Street to the new development on Westbrook Drive.

Roadway Cross-section



Benefits: Bicycle lanes will give a designated space, increasing use and comfort. The LTS remains at LTS 3. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

Preliminary Cost Estimate: \$1,646,000

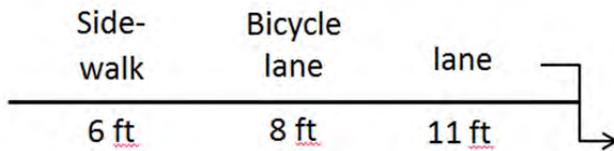
Key Considerations/Impacts: The expanded right-of-way will be a large consideration with property impacts. Street width that exists will not facilitate this option. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Bicyclists would be much safer traveling in a full six foot travel lane.

Pedestrian deficiencies are not addressed, so a separate pedestrian sidewalk project will be required.

Improvement Option B: Add eight foot buffered bicycle lanes

Description: The paved shoulders would be widened and converted to eight foot buffered bicycle lanes from Pine Street to the new development on Westbrook Drive. The bicycle lanes would be six feet with a two foot buffer.

Roadway Cross-section



Benefits: This will give an improved more comfortable semi-separated bicycle space than in Option A. This increased width gives a safer space where traffic speeds increase. This option should see more use than a standard bicycle lane shown in Option A. The LTS remains at LTS 2. A buffered bicycle lane has a Crash Reduction Factor (CRF) of 0.47.

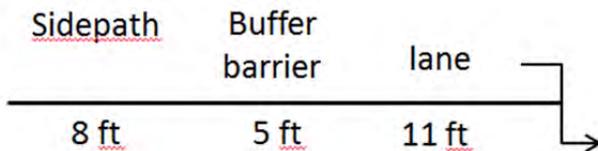
Preliminary Cost Estimate: \$2,094,000

Key Considerations/Impacts: The expanded right-of-way will be a large consideration, requiring property impacts to a greater degree than in Option A. Street width that exists will not facilitate this option. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian deficiencies are not addressed, so a separate pedestrian sidewalk project will be required.

Improvement Option C: Add a 10' sidepath

Description: The shoulder will be widened on one side for an eight foot sidepath to serve bicyclists and pedestrians. A barrier (such as a guard rail) and two feet shy distance will be placed between the sidepath and the roadway.

Roadway Cross Section



Benefits: This will create a separated more comfortable space than the other two options with the maximum stress reduction. A separated space will allow maximized use of the facility for bicyclists and pedestrians and provide a much safer space. This significantly

improves the LTS rating from LTS 3 to LTS 1. This gives the safest space where traffic speeds increase.

Preliminary Cost Estimate: \$385,000

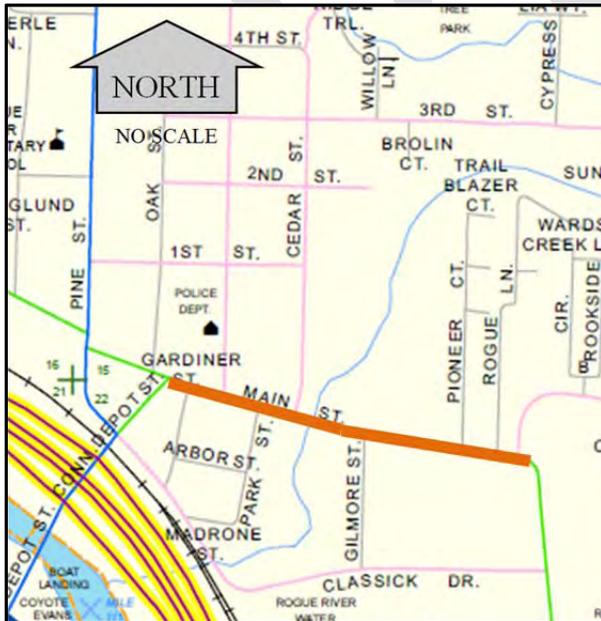
Key Considerations/Impacts: The extra right-of-way required will be a large consideration to add a path and necessary barriers, but potentially less than required in Option B. The path will cross private driveways, so barrier/buffer types and placement must be considered to avoid sight distance issues. The eight foot path is a minimum width for two bicyclists passing each other, so the path could be wider in certain locations. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Notes: Compatible with P1 Option A. Option A & B are supplanted by P1 Option B (sidepath). Sidewalk does not currently exist that is shown on the roadway cross sections.

B4 East Main Street

Deficiency: East Main Street needs to create bicycle lanes or show shared path markings for vehicles and bicycles from Ward Creek west to Pine Street. This section of roadway has a posted speed of 25mph. The 2040 ADT for this street is projected to be 9800. East Main Street east of Ward Creek to North River Road has a wider shoulder on the north side to Wards Creek Road that could be converted into a four to six foot bicycle lane.

Vicinity Map



Improvement Option A: Create six foot bicycle lanes

Description: The existing parking would be converted into six foot bicycle lanes.

Roadway Cross-section (west and east of bridge)



Benefits: Designated bicycle lanes would improve bicyclist safety and comfort. This creates an LTS rating of 2. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

Preliminary Cost Estimate: \$24,000

Key Considerations/Impacts: On-street parking is lost. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian sidewalks are not affected.

Improvement Option B: Shared Lane Markings (Sharrows)

Description: Signs and symbols on the pavement are needed showing the travel lanes are shared with bicyclists. The roadway cross sections stay the same.

Benefits: This should help drivers recognize and expect bicyclists traveling on this street. The LTS remains at LTS 4, still uncomfortable for a majority of users.. This is the most effective solution at the Ward Creek Bridge if it is not modified or replaced. Option A could be selected for the section east of the bridge.

Preliminary Cost Estimate: \$5,000

Key Considerations/Impacts: On-street parking is not lost. Vehicles and bicyclists will be sharing the travel lanes. Vehicles may be impacted as a bicycle will likely be traveling at a slower speed. Shared lanes are not as comfortable for bicyclists as standard bike lanes shown in Option A because of potential “dooring” affects from parked vehicles or from closely following vehicles. Pedestrian sidewalks are not affected.

B5 Broadway Street North

Deficiency: Broadway Street north of 1st Street needs to have bicycle lanes. This section of roadway has a posted speed of 25mph.

Vicinity Map



Improvement Option A: Create six foot bicycle lanes.

Description: Six foot bicycle lanes would be striped from 1st Street to the end of Broadway Street.

Roadway Cross-Section

Side-walk	Diagonal Parking	Bicycle lane	Lane	Lane	Bicycle lane	Diagonal parking	Side-walk
5 ft	13 ft	6 ft	11 ft	11 ft	6 ft	13 ft	5 ft

Benefits: A designated bicycle lane would improve safety and comfort for bicyclists. The LTS rating remains at LTS 2. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

Preliminary Cost Estimate: \$35,000

Key Considerations/Impacts: Diagonal parking could be preserved (at 13 foot width) as the paved street surface is wide enough for 11’ travel lanes and six foot bicycle lanes. Broadway Street’s width narrows to the north. There may be interference/safety impacts between backing vehicles and bicyclists as visibility is restricted. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian sidewalks are not affected.

Improvement Option B: Create nine foot buffered bicycle lanes

Description: six foot bicycle lanes with three feet of buffering, for a total of nine feet, would be striped from 1st Street to the end of Broadway Street. There would be six foot bicycle lanes and three foot buffers.

Roadway Cross-Section

Side-walk	Parallel Parking	Bicycle lane	Lane	Lane	Bicycle lane	Parallel parking	Side-walk
5 ft	10 ft	9 ft	11 ft	11 ft	9 ft	10 ft	5 ft

Benefits: A buffered bicycle lane would give extra separation between bicyclists and vehicles which will improve safety, maximize use of the facility, and improve comfort over Option A. The LTS rating remains at LTS 2. A buffered bicycle lane has a Crash Reduction Factor (CRF) of 0.47.

Preliminary Cost Estimate: \$95,000

Key Considerations/Impacts: Diagonal parking would be converted into parallel parking to accommodate the buffer spaces. Parallel parking would trade off backing issues with bicyclists with potential “dooring” impacts. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian sidewalks are not affected.

B6 Broadway Street South

Deficiency: Broadway Street south of 1st Street to Main Street needs to have bicycle lanes on both sides of the street and is a LTS 3 section. This section of roadway has a posted speed of 25mph. The 2040 ADT for this street is projected to be 3000.

Vicinity Map



Improvement Option A: Create six foot bicycle lanes

Description: Six foot bicycle lanes would be striped from 1st Street to East Main Street.

Roadway Cross-section

Side-walk	Diagonal Parking	Bicycle lane	Lane	Lane	Diagonal parking	Bicycle lane	Side-walk
5 ft	13 ft	6 ft	11 ft	11 ft	13 ft	6 ft	5 ft

Benefits: A designated bicycle lane would improve safety and comfort for bicyclists. The LTS ranking improves from LTS 3 to LTS 2. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

Preliminary Cost Estimate: \$7,000

Key Considerations/Impacts: Diagonal parking could be preserved (at 13 foot width) as the paved street surface is wide enough for 11’ travel lanes and six foot bicycle lanes. There may be interference/safety impacts between backing vehicles and bicyclists as visibility is restricted. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation.

Improvement Option B: Create nine foot buffered bicycle lanes

Description: Nine foot buffered bicycle lanes would be striped from 1st Street to East Main Street. There would be six foot bicycle lanes and three foot buffers.

Roadway Cross-section

Side-walk	Parallel Parking	Bicycle lane	Lane	Lane	Diagonal parking	Bicycle lane	Side-walk
5 ft	10 ft	9 ft	11 ft	11 ft	10 ft	9 ft	5 ft

Benefits: A buffered bicycle lane would give extra separation between bicyclists and vehicles which will improve safety, maximize use of the facility, and improve comfort over Option A. The LTS ranking improves from LTS 3 to LTS 2. A buffered bicycle lane has a Crash Reduction Factor (CRF) of 0.47.

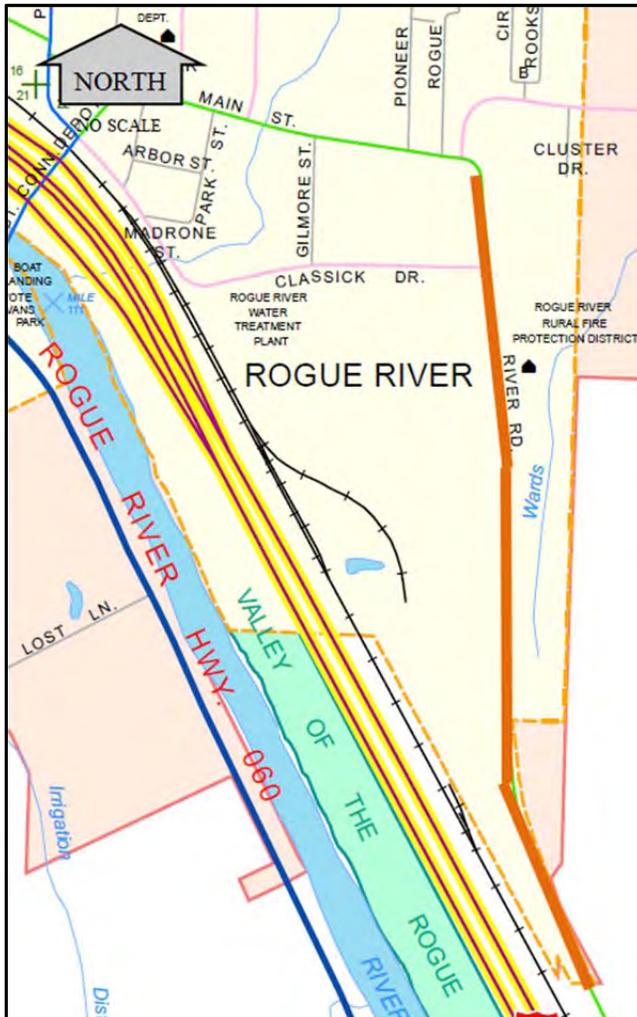
Preliminary Cost Estimate: \$18,000

Key Considerations/Impacts: Diagonal parking would be converted into parallel parking to accommodate the buffer spaces. This will decrease the number of parking spaces. Parallel parking would trade off backing issues with bicyclists with potential “dooring” impacts. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian sidewalks are not affected.

B7 North River Road

Deficiency: North River Road from East Main Street and south of Classick Drive could use bicycle lanes given the auto speed limit in this LTS 3 section instead of a wider paved shoulder that allows for unnecessary parking. This section of roadway has a posted speed of 25-45mph. The 2040 ADT for this street is projected to be 3500, and 3100 south of Classick Drive. It would be good to work with the county to connect the Mountain of the Rogue Mountain Bike trail and invite those that use this recreational facility to come into town on a bicycle.

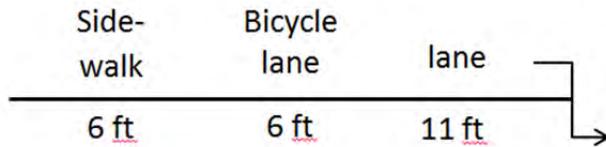
Vicinity Map



Improvement Option A: Convert or create paved shoulders to bicycle lanes

Description: The paved shoulders would be converted and designated as six foot bicycle lanes from East Main south to the urban growth boundary/city limits. Where there are not shoulders the bicycle lanes will be created.

Roadway Cross-section



Benefits: A designated bicycle lane will improve the safety and comfort of bicyclists. The LTS rating remains LTS 3. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

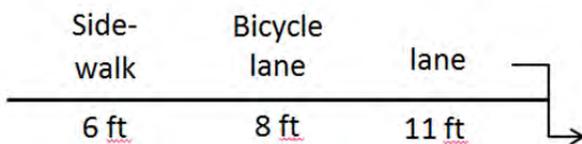
Preliminary Cost Estimate: \$3,453,000

Key Considerations/Impacts: Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian sidewalks, or lack thereof, are not affected.

Improvement Option B: Create eight foot buffered bicycle lanes

Description: The paved shoulders would be converted to buffered bicycle lanes from East Main to the UGB/city limits. Buffered bicycle lanes should be built where shoulders do not suffice. This would be a combination of a six foot bicycle lane with a two foot buffer.

Roadway Cross-section



Benefits: A buffered bike lane would further improve safety and comfort over Option A by increasing the separation from vehicles. This is especially important because of the higher speed traffic on this road segment. The LTS rating remains at LTS 3. A buffered bicycle lane has a Crash Reduction Factor (CRF) of 0.47.

Preliminary Cost Estimate: \$4,903,000

Key Considerations/Impacts: The major impact would be no street parking allowed on this segment, however, most of the uses have off-street parking locations which will minimize the loss. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian sidewalks, or lack thereof, are not affected.

Notes: The UGB/city limits are 2000 feet north of the entrance to the Mountain of the Rogue trailhead, so there will be a facility gap unless Jackson County fills this in. Sidewalk does not currently exist that is shown on the roadway cross sections.

B8 3rd Street

Deficiency: 3rd Street is missing necessary bicycle facilities given the collector-level classification. This section of roadway has a posted speed of 25mph.

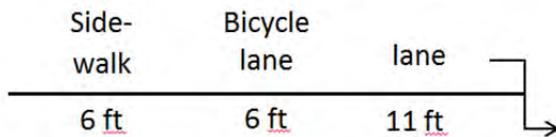
Vicinity Map



Improvement Option A: Add bicycle lanes

Description: Six foot designated bicycle lanes would be added to 3rd Street.

Roadway Cross-section



Benefits: Bicycle lanes would improve the overall safety and comfort for bicyclists by giving them a designated space to travel in. This improves the LTS ranking to LTS 2. A bicycle lane has a Crash Reduction Factor (CRF) of 0.36.

Preliminary Cost Estimate: \$1,441,000

Key Considerations/Impacts: The expanded street width will be a consideration, possibly requiring property impacts as the existing pavement width varies from 30-35 feet. Any on-street parking on the east end of 3rd Street would be eliminated with this option. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian deficiencies are not affected, but the “striped path” space is converted to bike lanes, so a pedestrian improvement will be needed.

Improvement Option B: Add eight foot buffered bicycle lanes

Description: Six foot bicycle lanes with two foot buffers would be added to all of 3rd Street.

Roadway Cross-section



Benefits: Buffered bicycle lanes would increase the comfort of bicyclists by increasing separation from vehicles over a standard bicycle lane in Option A. This improves the LTS ranking to LTS 2. A buffered bicycle lane has a Crash Reduction Factor (CRF) of 0.47.

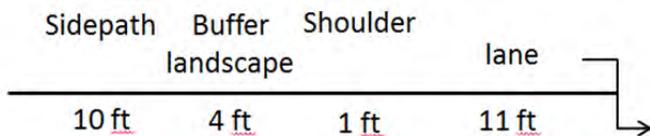
Preliminary Cost Estimate: \$2,629,000

Key Considerations/Impacts: The expanded right-of-way will be a large consideration, requiring property impacts greater than in Option A. The cost will also be greater than option A. Any on-street parking on the east end of 3rd Street would be eliminated with this option. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian deficiencies are not improved; the “striped path” space is converted to bike lanes, so a pedestrian improvement will be needed.

Improvement Option C: Create a 10’ sidepath

Description: Add a ten foot sidepath should be built on one side of 3rd Street.

Roadway Cross-section



Benefits: There are no restriping costs, the lane lines stay as they exist now. A sidepath would provide a separated space from the roadway for both bicycles and pedestrians. This will provide the maximum comfort and use of the facility. This improves the LTS ranking to LTS 1.

Preliminary Cost Estimate: \$528,000

Key Considerations/Impacts: The expanded right-of-way will be a consideration, potentially requiring property impacts. The sidepath may have will benefit bicyclist and pedestrians both. No extra pedestrian project is necessary on 3rd as this option provides

for both the bicycle and pedestrian modes. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Improvement Option D: Shared Lanes Markings (Sharrows)

Description: Add shared lane markings to 3rd Street. There is no change in roadway cross-section.

Benefits: Shared-lane markings should help drivers look out for and expect bicyclists traveling on the street. This creates an LTS 3 ranking.

Preliminary Cost Estimate: \$121,000

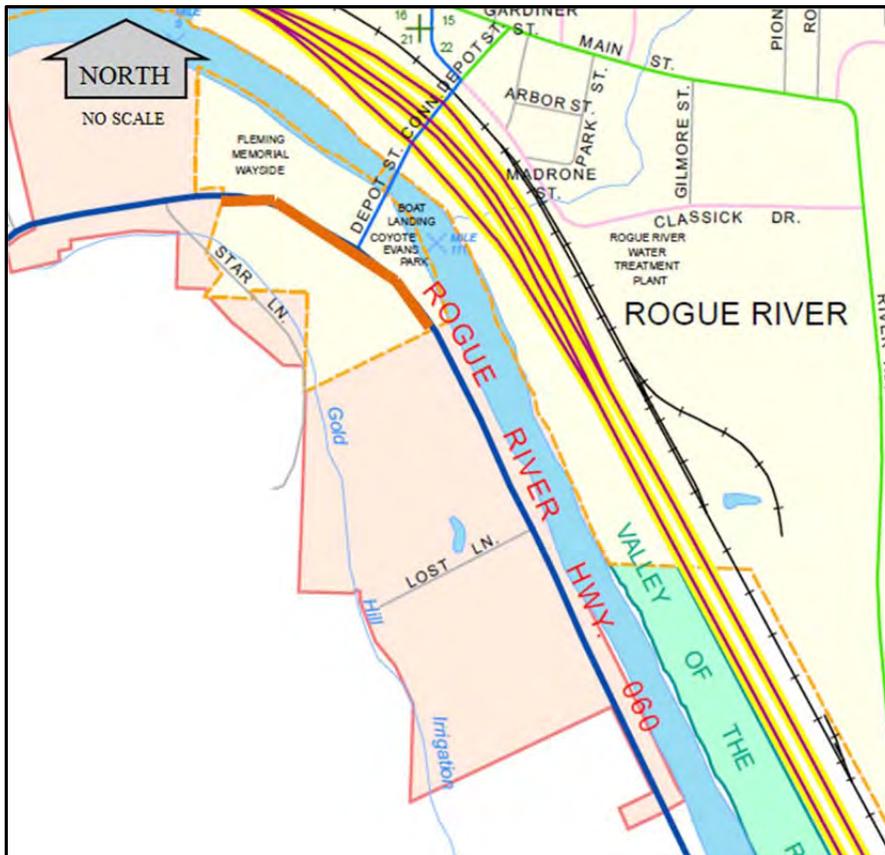
Key Considerations/Impacts: Additional street lighting is strongly advised with this option with the mixed traffic conditions. Vehicles will need to watch for bicyclists and slow to the speed they are traveling. Bicyclists will be put in greater danger and stress traveling with motorized vehicles, even up the hills. This will impair vehicular movements. Pedestrian deficiencies are not affected other than the “striped path” sections can be used for pedestrians only.

Notes: Slopes create some sections that are so narrow that any option will require property acquisition and construction. Option A and B will require additional pedestrian projects to be done concurrently, see Project P9. Sidewalk does not currently exist that is shown on the roadway cross sections.

B9 OR99

Deficiency: With the high volume of vehicles using OR99, there should be improved bicycle facilities. The bicyclists need to feel safe in this public environment. This should be on both sides of OR99 within the Urban Growth Boundary of Rogue River. There is basically just shoulders on this high speed, high volume facility. This section of roadway has a posted speed of 30mph, but goes up outside the city limits. The 2040 ADT for this street is projected to be 8300 north of Depot Street and 4200 to the south.

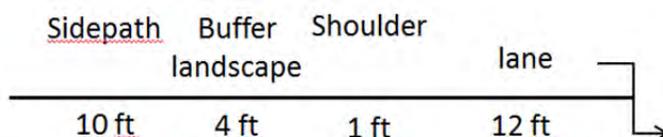
Vicinity Map



Improvement Option A: Create a 10' sidepath

Description: A 10' sidepath would be built on one side of OR99 within the Rogue River UGB. Buffer space could vary depending upon available ROW.

Roadway Cross-section



Benefits: A sidepath would create a separate space from vehicles for both bicyclists and pedestrians. This will maximize safety, comfort and use of the facility. This also works

well with a proposed Rogue River Greenway path route along OR99. This improves the LTS rating to an LTS 1.

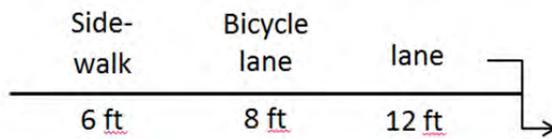
Preliminary Cost Estimate: \$720,000

Key Considerations/Impacts: There may be environmental issues to address. Improvement would be on one side of OR99, likely the river side due to property, utility poles, and ROW considerations. The expanded roadway corridor may require additional property impacts. Within the urban portions of Rogue River where the path crosses private accesses additional considerations for sight distance and visibility to path users need to be taken into account. Pedestrians would be much safer traveling in a sidepath. Design consideration should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps).

Improvement Option B: Create eight foot buffered bicycle lanes

Description: Six foot bicycle lanes with two foot buffers would be added on both sides of OR99 within the Rogue River UGB.

Roadway Cross-section



Benefits: Buffered bike lanes would give increased comfort over a standard bike lane or the existing paved shoulders by providing additional buffering space between bicyclists and vehicles. If the shoulders are widened outside the UGB on OR99, then the shoulders will transition well into this buffered bicycle lane (where OR99 is in the city limits). This creates an LTS 4 rating. A buffered bicycle lane has a Crash Reduction Factor (CRF) of 0.47.

Preliminary Cost Estimate: \$6,263,000

Key Considerations/Impacts: Buffered bike lanes will not provide as much separation in Option A which could deter users. This facility will be closer to high speed vehicles, but have fewer ROW and environmental issues. The expanded width may require property impacts. Pedestrian deficiencies are not affected. Sidewalk does not currently exist that is shown on the roadway cross sections.

Transit

The transit alternatives in Table 6 address the long-term needs of Rogue River and the existing Rogue Valley Commuter service provided by Josephine County Transit (JCT).

Table 6: Transit Alternatives & Options

Option	Description	Rating	Estimate	Agency
T1 Infrequent Transit				
A	On-demand service	Good	\$179,000	City
B	Fixed route circulator	Fair	\$418,000	
T2 Stop placement				
A	Ray's Food Place	Fair	\$23,000	JCT
B	Umpqua Bank	Fair	\$23,000	
C	Current location	Good	\$0	

T1 Infrequent Transit

Deficiency: An internal city public transit circulator or dial –a-ride on demand service is needed. One hub could be the stop for the Rogue Valley Commuter line between Grants Pass and Medford. There is a lack of service for those without a personal vehicle across all ages and demographics.

Improvement Option A: On-demand service

Description: Add an on-demand “dial-a-ride” service that is not restricted to any age group, user class, or trip priority. A person arranges a pickup and a destination over the phone. Rates are less than a taxi and usually a short (shuttle-type) bus.

Benefits: There is no fixed route and is not focused on older citizens. On-demand service, in contrast to a fixed route, may reduce the “last mile” distance to/from transit at the origin and destination. This reduces expenditures when demand or ridership does not exist. This is a good initial start to bus service and helps identify potential users and destinations when a city transit service is in place. This option would improve transit services to good.

Preliminary Cost Estimate: \$179,000 per year

Key Considerations/Impacts: On-demand service requires use of dispatch services to coordinate and schedule the rides. Specialized software/phone applications can minimize dispatch costs and waiting time. This bus must be equipped to handle at least two mobility devices if state or federal funds are used to purchase the vehicle. This bus should also have a bicycle rack to accommodate bicyclists. This service should be less expensive for operation and maintenance than Option B.

Improvement Option B: A fixed circulating bus route

Description: Add a fixed circulating bus route through the city serving most major destinations and within reasonable walking distance of most residential areas. Stops

could be fixed or on a pick-up/drop off anywhere type basis along the route. Equipment can vary from smaller van-based shuttle buses to larger vehicles.

Benefits: Fixed services offer repeatability and dependability of service and do not require reservations as with on-demand service. Frequency could change depending on demand. This could also serve as the basis for creating other routes as demand increases. This option would improve transit services to fair.

Preliminary Cost Estimate: \$418,000 per year

Key Considerations/Impacts: Items to be determined: stops, routes, frequency, schedule, drivers, start time, last route time, and storage of bus. This bus must be equipped to handle at least two mobility devices if state or federal funds are used to purchase the vehicle. This bus should also have a bicycle rack to accommodate bicyclists. The Americans with Disabilities Act (ADA) requires that fixed route transit also must have a complimentary paratransit service. This paratransit service must start when the service begins and cover the same service hours and days as the fixed route service. A full-fledged bus route will be significantly more expensive than Option A to operate or to maintain.

Notes: Estimates based on weekday service with 12 hours a day. On-demand service required to use the same service hours/days as fixed route.

T2 Stop placement

Deficiency: The Rogue Valley Commuter line is already noting the I-5 interchange congestion and would prefer a stop closer to the ramps. Alternatives should be considered where the commuter bus can stop but does not have to exit Rogue River using the Depot Street interchange.

Driving from the exit to the south before the Depot Street exit on I5 is four minutes to the Depot Street exit. To take the exit before that and avoid the congestion of the Depot Street exit is eight minutes driving up N River Road. If traffic seems to make a four minute difference then it would make sense for the Rogue Valley Commuter bus to use the exit to the south. There will still be a railroad crossing on Twin Bridge Road.

Driving from the community center and through the Depot Street exit on I5 is eight minutes to the Grants Pass exit. It does not seem advisable to travel on Foothills Drive to avoid the Depot Street interchange.

Improvement Option A: Change stop location to Ray's Food Place

Vicinity Map



Description: The Rogue Valley Commuter Line stop would be moved to Rays' Food Place located at 506 East Main Street .

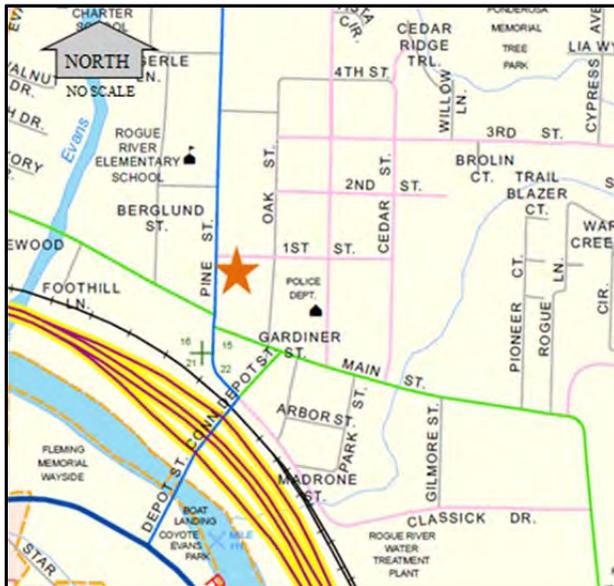
Benefits: This should serve the community well as it is on the east side of town and could be constructed to be more easily accessed by a bus. This option would create fair transit services.

Preliminary Cost Estimate: \$23,000

Key Considerations/Impacts: This is more at the east end of town, not as central. This does not include any or agreement for a sheltered stop placement.

Improvement Option B: Change stop location to Umpqua Bank

Vicinity Map Option B



Description: The Rogue Valley Commuter Line stop would be moved to parking lot of Umpqua Bank located at 110 Pine Street. This location has been an old Greyhound bus stop in the past.

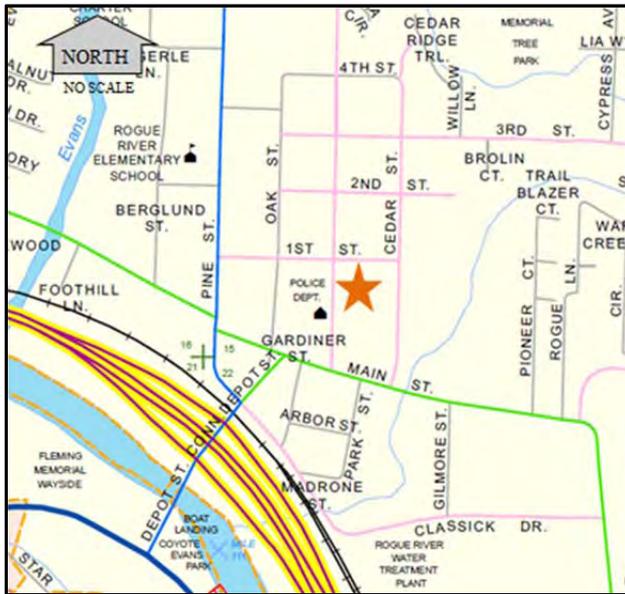
Benefits: This should serve the community well as it is west of a central location and could be constructed to be easily accessed by a bus. This option is closer to the private assisted living business. This option would create fair transit services.

Preliminary Cost Estimate: \$23,000

Key Considerations/Impacts: Parking may be affected. This does not include any agreement for a stop or shelter placement.

Improvement Option C: Stay with Rogue River Community Center

Vicinity Map Option C



Description: Leave stop location in existing location.

This location is central and easily accessed by a bus.

Benefits: This should serve the community well as it is central and more easily accessed by a bus. This option would keep good transit services.

Preliminary Cost Estimate: \$0

Key Considerations/Impacts: No notice to give about changes of stop location.

Operations and Safety

The operation and safety alternatives are shown in Table 7. These address the deficiencies in a number of ways including restricting and the rerouting traffic flows in the downtown area. Some alternatives create issues at other intersections and include mitigation for those impacts. There are significant issues surrounding the close proximity of the interchange and the downtown intersections. Except for relatively minor improvements on the I-5 off-ramps, any considerations for revamping the interchange area are too detailed and expensive for a TSP and have been bundled in a recommendation for a refinement study.

Table 7: Operations and Safety Alternatives and Options

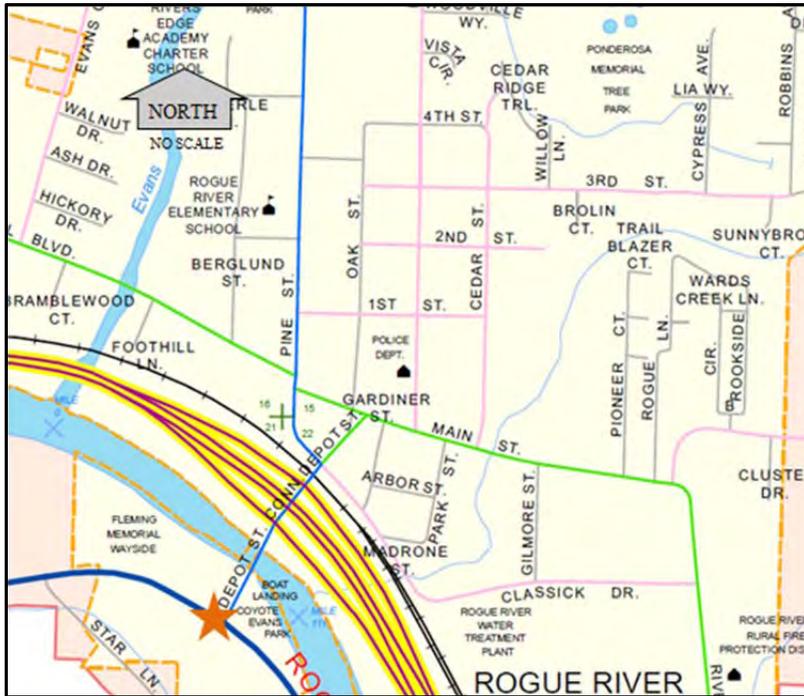
Option	Description	2040 V/C	CRF ¹	Estimate	Agency
OS2 Depot Street and OR99					
A	Add SB left turn lane	0.67	0.47	\$300,000	ODOT
OS3 Depot St and E Main St					
A	Move Depot St NB left	0.36	n/a	\$23,000	City
B	Close NB Oak St access	0.37	0.13	\$35,000	
C	Close Oak St	0.37	0.25	\$19,000	
D	Depot St NB one-way /roundabout	0.35	0.47	\$270,000	
E	All-way stop	1.24	0.75	\$36,000	
F	Close Depot St	0.30	0.25	\$1,619,000	
OS4 Depot St and Pine St/Classick Dr Intersection					
A	Close Classick Dr	0.70	0.25	\$9,000	City
B	Close Depot St /roundabout	0.46	0.25	\$246,000	
C	Classick Dr right in only	0.63	0.47	\$5,000	
D	Depot & Oak St NB one-way	0.70	0.47	\$10,000	
E	Pine, Depot, & Classick one-way	0.53	0.47	\$13,000	
F	Pine St through movement	0.54	0.47	\$14,000	
OS5 Depot Street and SB I-5					
A	Extend SB off-ramp	n/a	0.41	\$103,000	ODOT
B	Extend SB off-ramp, widen bridge	n/a	0.41	\$4,386,000	
C	Increase SB queue storage	n/a	n/a	\$309,000	
E	Interchange refinement study	n/a	n/a	\$750,000	
OS7 Depot Street and NB I-5					
A	Extend NB off-ramp	n/a	0.41	\$1,026,000	ODOT
B	Widen NB off-ramp	0.86	0.27	\$619,000	
OS8 Main St and Pine S					
A	Align W Main St and E Main St	1.08	n/a	\$1,344,000	City
B	SE corner channelization island	1.14	n/a	\$100,000	
C	Compact roundabout	0.59	0.88	\$250,000	
D	Pine St SB/Depot St NB one-ways	0.50	0.47	\$1,010,000	

¹Crash reduction factors (CRF) shows the percent reduction (in decimal form) in crashes that might be expected after implementing the improvement.

OS2 Depot Street and OR99

Deficiency: This intersection will have a significant southeast bound left turning queue on OR99 that may not be expected by southbound drivers. This may lead to an increased amount of rear-end collisions. Vehicles waiting to turn will not have anywhere to go as there will be queues propagating back from the interchange. There will be a 275 foot south eastbound left turning queue in the peak hour of 2040. Not having a turn bay may increase rear-end collisions.

Vicinity Map



Improvement Option: Add left turn lane

Description: Build a left turn lane for the eastbound left turn from OR99 to Depot Street.

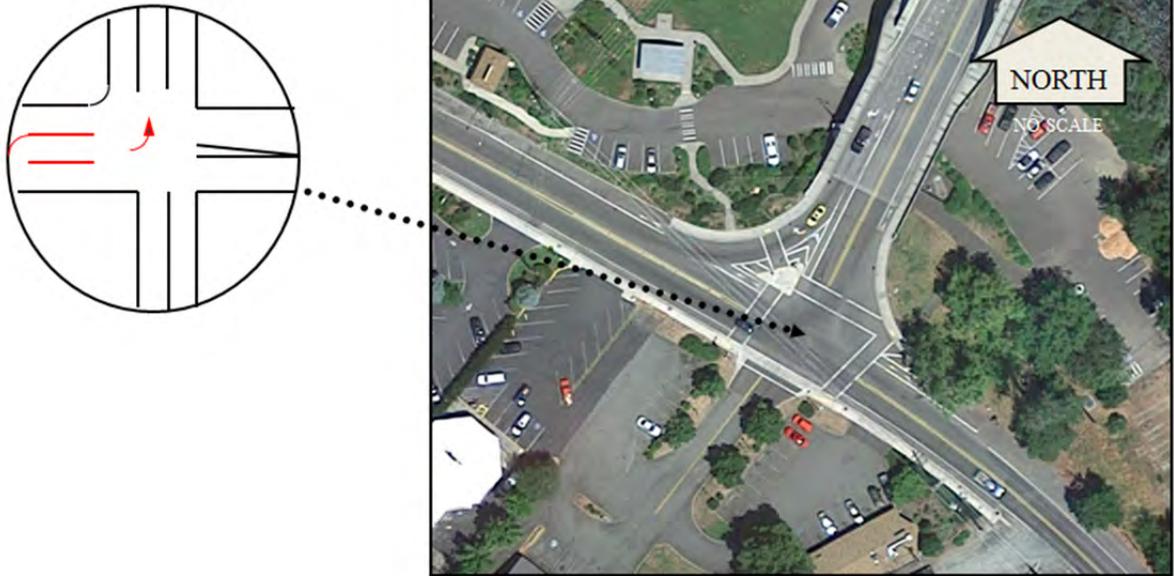
Benefits: Allows for storage and deceleration distance and avoids potential rear-end collisions if a longer queue is present. This improvement is for safety. The v/c ratio becomes 0.67, below the 0.85 standard. The Crash Reduction Factor (CRF) for adding a left turn lane on a four leg intersection is 0.47.

Preliminary Cost Estimate: \$300,000

Key Considerations/Impacts: The new turn lane may require additional right-of-way which will affect adjacent properties. Adding a turn lane will widen the west crosswalk by 12' increasing the pedestrian exposure to traffic. There may be additional impacts from driveway access on the south side of OR99 if current center median is extended west. There is currently a barrier on OR99 making the driveway into Skunk Rx a right in/out access. Skunk Rx does share a parking lot and an access with Rogue River Press. This gives them access to the full movement intersection of Depot Street and OR99. The

new turn lane is limited to 200 feet due to the Best Western at the Rogue needing access. The southern access will become a right in/out due to the new turn lane. The northern access of the Best Western at the Rogue will have full access.

Intersection Diagram

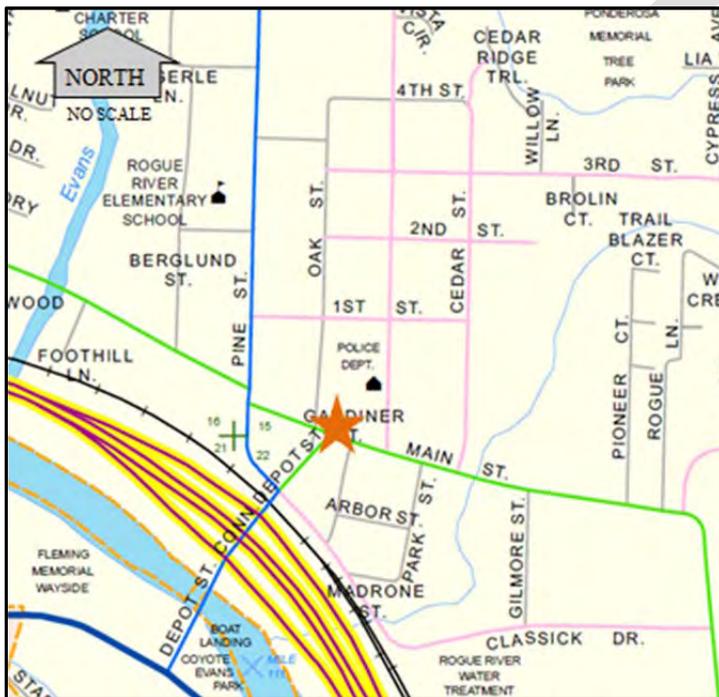


DRAFT

OS3 Depot Street and Main Street

Deficiency: Intersection operation will likely be affected by queuing extending from the adjacent Main & Pine Street and Pine & Depot Street intersections. There will be congestion with slowing speeds on a daily basis. The overall capacity here is low as the intersection is in a non-standard configuration. Intersection alignment should be investigated. As configured, the northbound movement is indirect and goes through two closely spaced intersections. Both intersection functional areas overlap, leading to increased chance of conflicts, collisions, and pedestrian crash. Drivers too-focused on maneuvering through the intersection might not see a pedestrian. This intersections ADT/C ratio is high at 10.36. Preliminary Signal Warrants (PSW's) were not met for this intersection.

Vicinity Map



Improvement Option A: Move Depot Street northbound left lane left of tree

Description: The northbound left/through lane will be moved left of the tree. The through movement would be a straight northbound movement this way, not requiring multiple turns. The southernmost crosswalk is moved north and crosses from in front of Subway to what is now the tree in the pork chop island. The current left turn lane becomes an expanded sidewalk with a crossing to the park restrooms.

Benefits: Allows for straight operation for through movements. This increases safety for pedestrians and bicyclists. Depot Street drivers approaching Main Street now get to encounter a crosswalk and then take a right turn onto E Main Street when permissible. These steps are now separated and easier one at a time. The right turning traffic does not have to look for pedestrians on either of the two crosswalks it currently crosses. This pulls parking out of the middle of the intersection on the east side and puts parking spots

where they are safer, outside the intersection. The curb and sidewalk will reduce occurrence of drivers driving the wrong direction on this short section of roadway. The intersection is more standard and appropriate in size. There is no reduction in the 0.36 V/C with this option, the intersection becomes safer and reduces delay. The Crash Reduction Factor (CRF) for moving a left turn lane on a four leg intersection is not known.

Preliminary Cost Estimate: \$23,000

Key Considerations/Impacts: Some parking spots may be relocated. Parking in the southbound direction may be removed to allow room for through traffic.

Improvement Option B: Close northbound Oak Street access

Description: The northbound lane of Oak Street would be closed to Depot and Main Street.

Benefits: This eliminates the northbound through movement along with the eastbound left and westbound right movements. The Crash Reduction Factor (CRF) for removing an approach of a four leg intersection is 0.25. Only half of that should be used as only half of the approach is removed.

Preliminary Cost Estimate: \$35,000

Key Considerations/Impacts: Drivers no longer have the option to proceed east from that intersection. Could be combined with Option A. May create out-of-direction travel for drivers wishing to travel north on Oak Street. Current pedestrian and parking issues not addressed in this option. The V/C ratio rises slightly from 0.36 to 0.37.

Improvement Option C: Close Oak Street

Description: Close Oak Street in both directions and install curb and sidewalk.

Benefits: This eliminates the northbound through movement along with all other turns to and from the north Oak Street leg. This makes intersection alignment not as much of an issue converting it into a “T” intersection. Could create a couple additional parking spots on Main Street in addition to potential parking would be created behind the sidewalk. A curb extension for the NW corner would be added in increase pedestrian visibility. This simplifies an intersection that is too large and poorly aligned. This is much safer for pedestrians walking on the north side of the intersection. The V/C ratio rises slightly from 0.36 to 0.37. The Crash Reduction Factor (CRF) for removing an approach of a four leg intersection is 0.25.

Preliminary Cost Estimate: \$19,000

Key Considerations/Impacts: Drivers no longer have the option to proceed north from that intersection. Could be combined with Option A. May create a net increase parking spots.

Improvement Option D: Convert Depot Street to northbound one-way

Description: Depot Street becomes a one-way northbound street from Classic Drive to East Main Street.

Benefits: This allows the through traffic that would have been on the right side of the tree to be on the left. Northbound traffic is left of the tree; the northbound right turn lane is retained. This increases safety for pedestrians and bicyclists. Depot Street drivers approaching Main Street now get to encounter a crosswalk and then take a right turn onto E Main Street when permissible. These steps are now separated and easier one at a time. The right turning traffic does not have to look for pedestrians on either of the two crosswalks it currently crosses. This pulls parking out of the middle of the intersection on the east side and puts parking spots where they are safer, outside the intersection. The curb and sidewalk will reduce occurrence of drivers driving the wrong direction on this short section of roadway. The intersection is more standard with an improved alignment and appropriate in size. The Depot Street and East Main Street intersection V/C ratio lowers slightly from 0.36 to 0.35. The Depot Street and Pine Street intersection V/C ratio also lowers from 0.72 to 0.68. The Crash Reduction Factor (CRF) for converting to a two-way street to a one-way street is 0.47.

Preliminary Cost Estimate: \$270,000

Key Considerations/Impacts: Drivers wishing to travel south would need to relocate to Pine Street, most currently do that movement. This retains most of the parking spots along Depot Street. This could combine with Option A. This option must be done concurrently with OS4 Option D. The East Main Street and Pine Street intersection V/C ratio rises from 1.08 to 1.39 and now meets preliminary signal warrants which will also require OS8 Option C (Pine/Main roundabout) . A Pine/East Main Street roundabout with bypass lane on the east to north will have a worst leg showing a V/C ratio of 0.68 and LOS C.

Improvement Option F: Close Depot Street

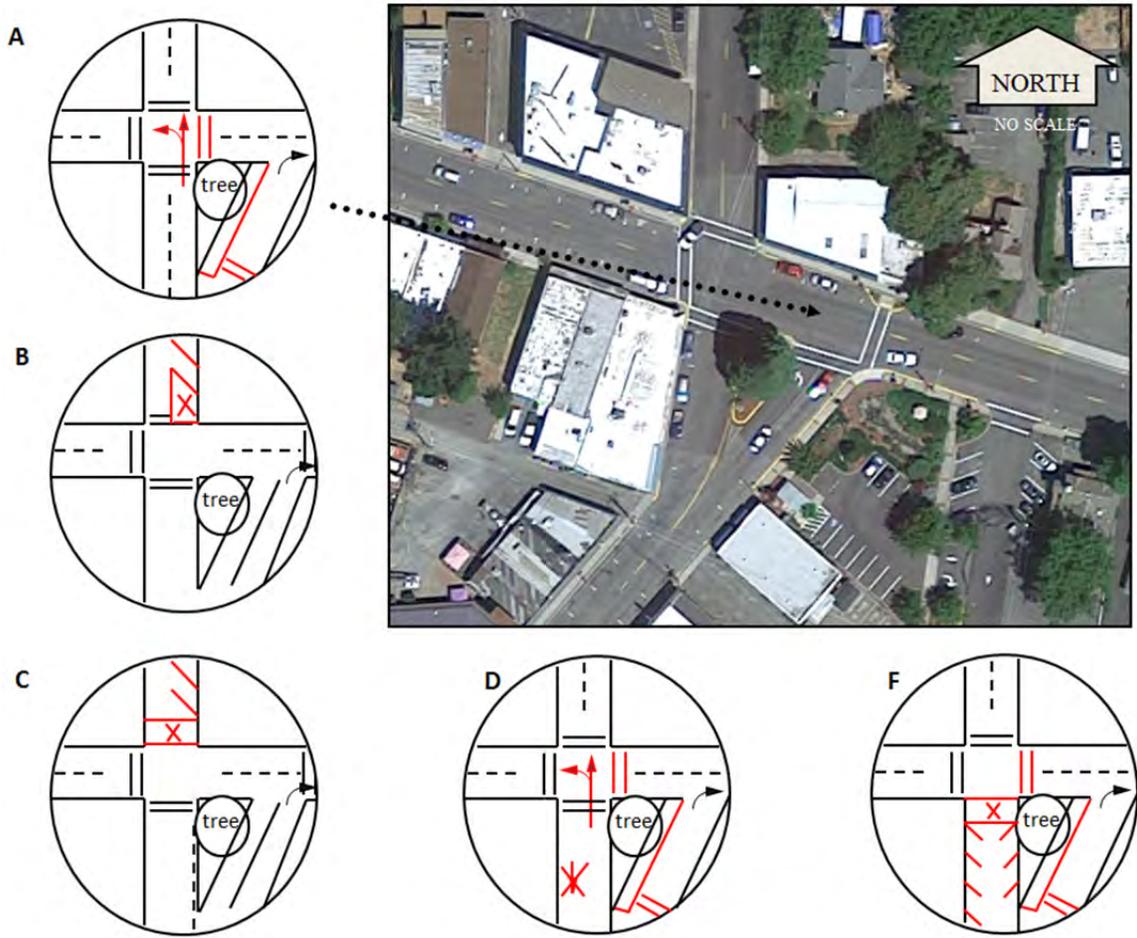
Description: Depot Street would be converted into a local access/parking street between Classick Drive and East Main Streets. Depot (OR99 to railroad tracks) and Pine Street become the through movement, with only a right off onto Classick Drive for movement to the southwest. Access to Depot Street (Classick Drive to East Main Street) could be obtained from Classick Drive (in only) and would exit via the old northbound right turn lane (right out only). The intersection would be a “T” intersection with Oak Street. The east crosswalk at Depot would be moved west to be adjacent to Oak Street. Traffic bumps and other calming measures could be used to discourage any through traffic.

Benefits: The East Main Street intersection with Oak Street would be simplified and would make it safer and easier for all modes to traverse. The parking that is currently inside the intersection would be to the outside making it a standard expected configuration. The parking conversion could potentially add street parking for visitors. The Depot Street and East Main Street intersection V/C ratio lowers from 0.36 to 0.30. The Depot Street and Pine Street intersection V/C ratio also lowers from 0.72 to 0.67. The Crash Reduction Factor (CRF) for removing an approach of a four leg intersection is 0.25.

Preliminary Cost Estimate: \$1,619,000

Key Considerations/Impacts: Could increase parking on Depot with conversion to diagonal. Could increase out of direction travel and put more volume through the Pine/Main Street intersection. The East Main Street and Pine Street intersection V/C ratio rises from 1.08 to 1.91 and now meets preliminary signal warrants. Adding a signal and left turn bays to this location will reduce the V/C ratio to 0.85. This would be a large skewed intersection that would suffer from alignment issues. This would take away parking on East Main Street and Pine Street. This would likely require the relocation of the business on the southeast corner, as well as the parking lot on the northwest corner.

Intersection Diagrams



OS4 Depot Street and Pine Streets/Classick Drive Intersection

Deficiency: This intersection functions differently as it is a three-way stop at a four-way intersection. The intersection of Depot Street with Pine Street and Classick Drive is too close to railroad tracks and to the I-5 northbound ramp terminal intersection. The functional area, which includes distance traveled during reaction, deceleration, and maneuvering time plus distance for queue storage, overlaps between the two. Functional area overlaps create too much for a driver to process at once which can lead to an increased rate of crashes.

Vicinity Map



Improvement Option A: Close Classick Drive

Description: Classick Drive will be closed for all movements at the Pine/Depot Street intersection.

Benefits: This simplifies an intersection by removing turn movements that are generally over capacity and have long delays. The Depot Street and Pine Street intersection V/C ratio lowers from 0.72 to 0.70. The Crash Reduction Factor (CRF) for removing an approach of a four leg intersection is 0.25.

Preliminary Cost Estimate: \$9,000

Key Considerations/Impacts: May create some parking spots at the stub end of Classick Drive. This provides a safer pedestrian walkway without a street crossing on this leg. Trucks would have to use the interchange to the south, at Twin Bridges Road.

Improvement Option B: Close Depot Street

Description: The north leg of Depot Street will be closed to all movements at the Pine/Depot Street intersection.

Benefits: This changes the through movement to be Pine Street. This simplifies an intersection by removing turn movements that are generally over capacity and have long delays. The Depot Street and Pine Street intersection V/C ratio lowers from 0.72 to 0.61. The Crash Reduction Factor (CRF) for removing an approach of a four leg intersection is 0.25.

Preliminary Cost Estimate: \$246,000

Key Considerations/Impacts: Drivers no longer have the option to proceed northeast on Depot Street which could increase out-of-direction travel and add more volume to the Pine/Main Street intersection. This provides a safer pedestrian walkway without a street crossing on this leg. This does cause the V/C to slightly rise at Pine and East Main Street, 1.08 to 1.18, so Project OS8-C (Pine/Main roundabout) is also required. With OS8-C a roundabout at Pine & Main Streets becomes LOS C and a V/C of 0.72.

Improvement Option C: Classick Drive right-in only

Description: Classick Drive becomes a right-in only. Classick Drive becomes a one way street away from this intersection to the end of Classick Drive at North River Road.

Benefits: This northbound right turn movement is not stopped unless yielding to a pedestrian. There is no interruption or delay from cars entering the intersection from Classick Drive. The Depot Street and Pine Street intersection V/C ratio lowers from 0.72 to 0.63. A CRF of 0.47 should be applied to Classick Drive due to it becoming a one-way street.

Preliminary Cost Estimate: \$5,000

Key Considerations/Impacts: Drivers no longer have the option to drive west on Classick Drive, creating some out of direction travel and potentially add more volume to the Pine/Main Street intersection. This will help trucks keep their current stop and route, including exiting via North River Road to the next interchange. The pedestrian conflict on this leg still exists, but is reduced as eastbound volume is removed. This will also give pedestrians crossing midblock only one direction and one point of risk on the one lane of Classick Drive.

Improvement Option D: Depot and Oak Street northbound one-way

Description: Depot Street and Oak Street would become northbound one-way streets from Classick Drive to the end of Oak Street.

Benefits: This allows the through traffic that would have been on the wrong side of the tree to be in what is now the oncoming lane. Alignment is resolved. Traffic progresses with fewer movements at the intersection. This will also help with the traffic around the

elementary school. The Depot Street and Pine Street intersection V/C ratio lowers from 0.72 to 0.70. A Crash Reduction Factor (CRF) of 0.47 should be applied to Depot Street and Oak Street due to it becoming a one-way street.

Preliminary Cost Estimate: \$10,000

Key Considerations/Impacts: Southbound drivers would need to travel on Broadway Street or Pine Street, most do at this time because of the operational difficulties at this intersection. This will also give pedestrians crossing midblock only one direction and one point of risk on the one lane of a one way street. This option retains most of the parking spots. This must be done concurrently with OS3 Option D.

Improvement Option E: Pine, Depot, and Classick Drive one-way

Description: Pine Street becomes a southbound one-way street. Depot Street becomes a one-way northbound street. Classick Drive becomes a one way southbound street.

Benefits: This will result in safer operation for pedestrians, bicyclists, and vehicles by simplifying movements at the intersections. This orientation will be a far better operation and flow of traffic. The Depot Street and Pine Street intersection V/C ratio lowers from 0.72 to 0.53. A Crash Reduction Factor (CRF) of 0.47 should be applied to Pine, Depot, and Classick Drive due to becoming one-way streets.

Preliminary Cost Estimate: \$13,000

Key Considerations/Impacts: May increase the amount of parking. This will help trucks keep their current stop and route, including exiting via North River Road to the next interchange. This will also give pedestrians crossing midblock only one direction and one point of risk on the one lane of these one way streets. This may increase out-of-direction travel. This will improve operations at the Pine/Main Street intersection, V/C lowers from 1.08 to 1.04. The Depot and East Main Street intersection V/C climbs to 0.64.

Improvement Option F: Pine Street through movement

Description: The through movement is realigned to be to/from Pine/Depot streets. Classick Drive becomes a right in only. Depot Street becomes a right only. Classick Drive and Depot Street become one way eastbound and northbound streets till they end.

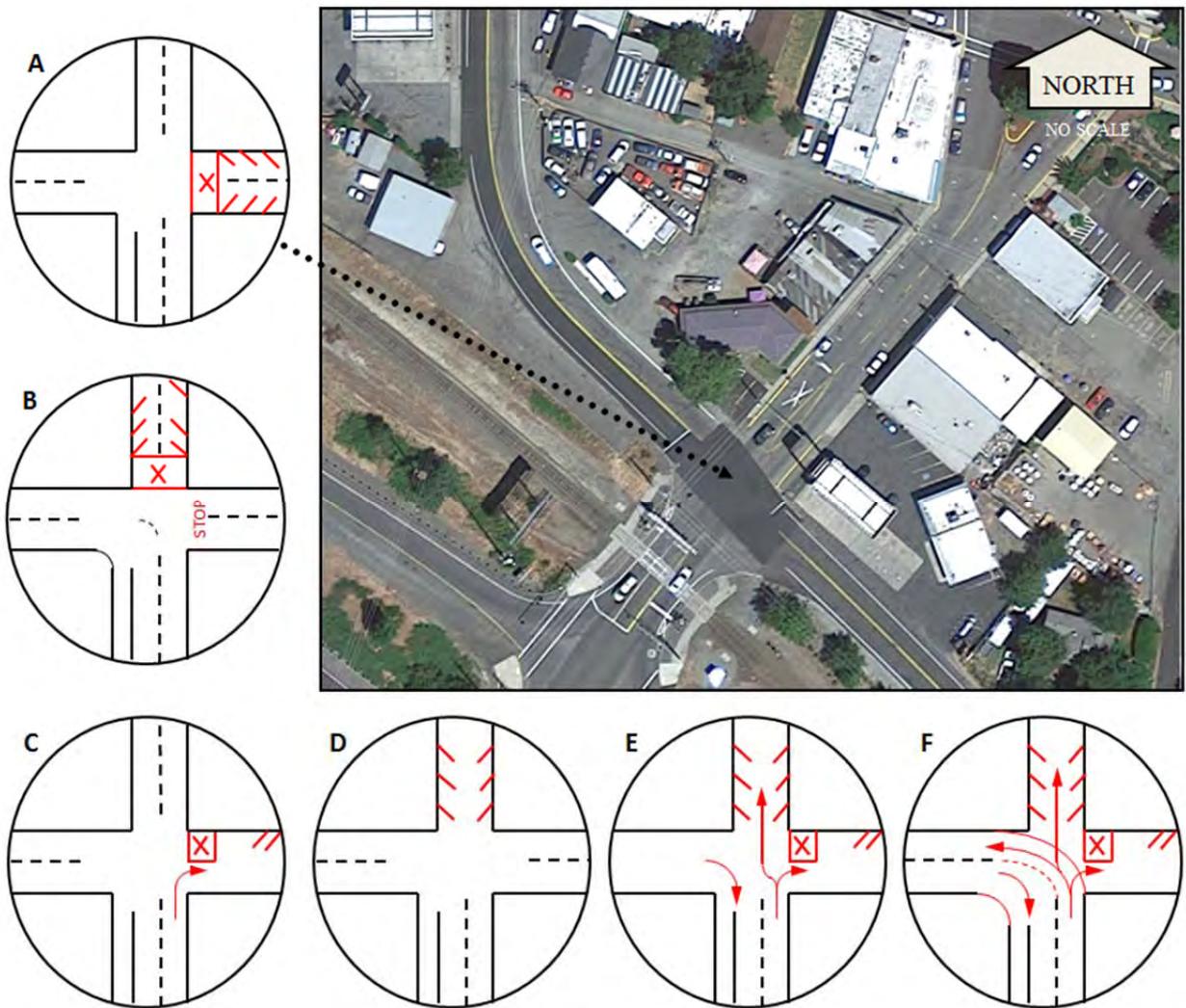
Benefits: The west and south legs of the intersection becomes a through move with a couple of optional right turns. This will result in better operation. Pedestrian and bicycle movements will become safer as less turning conflicts are present. This should reduce queues and delays at this location. The Depot Street and Pine Street intersection V/C ratio lowers from 0.72 to 0.54. A Crash Reduction Factor (CRF) of 0.47 should be applied to Depot Street and Classick Drive due to becoming one-way streets.

Preliminary Cost Estimate: \$ 14,000

Key Considerations/Impacts: May create some parking. This option makes the intersection more difficult to cross as the SW corner is not accessible. Pedestrians will need to travel out- of- direction and use the sidewalk on the east side of Depot and cross back over at the I-5 southbound ramp terminal. This will also give pedestrians crossing midblock only less risk on streets that are no longer the through movement.

This will help trucks keep their current stop and route on Classick Drive, including exiting via North River Road to the next interchange.

Intersection Diagrams



OS5 Depot Street and SB I-5

Deficiency: This signalized intersection will have queues in both directions on Depot Street radiating from the closely spaced nearby intersections. These queues are evident under existing conditions and will get worse. There will be an unreasonable delay due to queuing on all legs, especially on the exit ramp. This intersection will exceed the standard of 0.85 in 2038; in 2040 this intersection will have a V/C of 0.87 and have an ADT/C ratio of 9.10.

Vicinity Map



Improvement Option A: Extend I-5 southbound off-ramp

Description: Extend the southbound I-5 off-ramp 100 feet, just short of the Evans Creek bridge.

Benefits: This moves the deceleration zone back, could potentially increase the sight distance to queued vehicles and allows for a larger queue storage area. A Crash Reduction Factor (CRF) of 0.41 should be applied for the ramp being lengthened.

Preliminary Cost Estimate: \$103,000

Key Considerations/Impacts: The extended ramp could require additional right-of-way.

Improvement Option B: Extend I-5 southbound off-ramp & widen Evans Creek bridge

Description: Extend the southbound I-5 off-ramp across to the north side of the Evans Creek bridge.

Benefits: This moves the off-ramp to a straighter I-5 section which will improve sight distance to the diverge area. The deceleration zone is also moved back which will allow for a larger queue storage area. A Crash Reduction Factor (CRF) of 0.41 should be applied for the ramp being lengthened.

Preliminary Cost Estimate: \$4,386,000

Key Considerations/Impacts: The extended ramp could require additional right-of-way. The widened bridge structure could create bank and waterway impacts. Not all bridge types are widenable.

Improvement Option C: Increase southbound queue storage

Description: The existing turn lanes on the southbound off-ramp will be extended 300 up the ramp to increase the storage capacity

Benefits: This allows for up to twice the queue storage length, this should minimize queues extending into the deceleration portion of the ramp.

Preliminary Cost Estimate: \$309,000

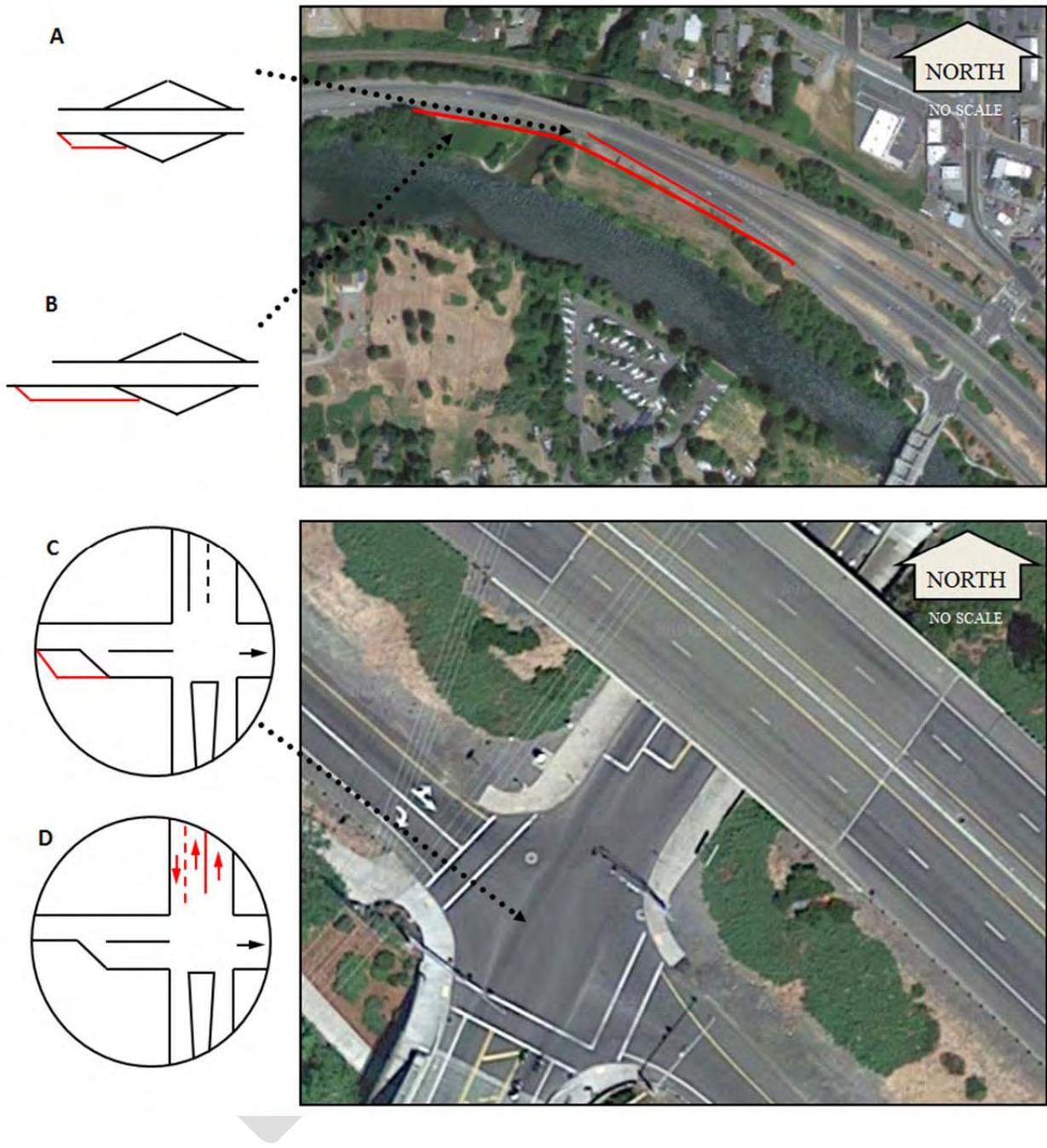
Key Considerations/Impacts: Lengthening the turn bays may require additional right-of-way which will have property impacts. Potential river bank or Rogue River Greenway impacts with the widened roadway.

Improvement Option E: Interchange refinement study

Description: A separate refinement plan or updated IAMP will be required to investigate more intensive changes to the interchange area.

Preliminary Cost Estimate: \$750,000

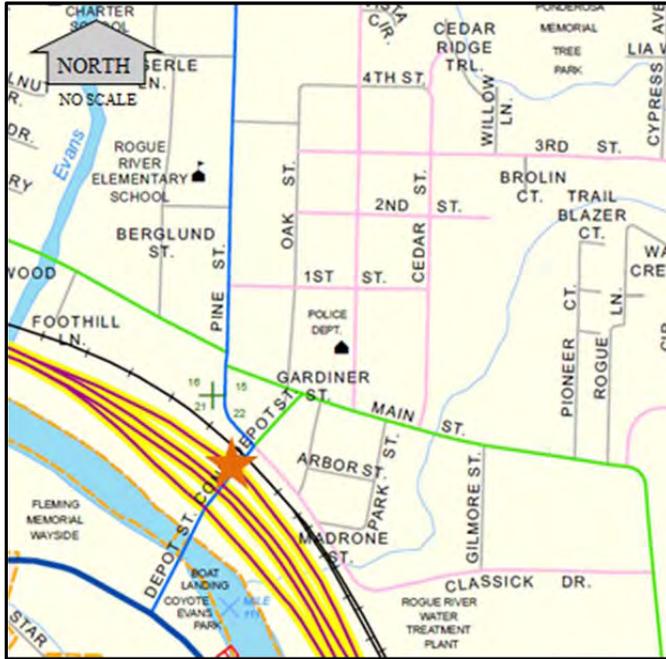
Intersection Diagrams



OS7 Depot Street and NB I-5

Deficiency: This signalized intersection will have queues in both directions on Depot Street radiating from closely spaced nearby intersections. These queues are evident today under existing conditions and will get worse in the future. There will be unreasonable delay and queues on all legs, especially the exit ramp. In 2040 this intersection will be at standard with a V/C of 0.85 and also have an ADT/C ratio of 10.36.

Vicinity Map



Improvement Option A: Extend I-5 northbound off-ramp

Description: Extend the I-5 northbound off-ramp 1000 feet

Benefits: This moves the ramp deceleration zone back and allows for a larger queue storage area. This will not increase the v/c ratio. A Crash Reduction Factor (CRF) of 0.41 should be applied for the ramp being lengthened.

Preliminary Cost Estimate: \$1,026,000

Key Considerations/Impacts: The extended ramp may require additional right-of-way which will have property impacts. Advertising billboards may need to be moved.

Improvement Option B: Widen 1-5 northbound off-ramp

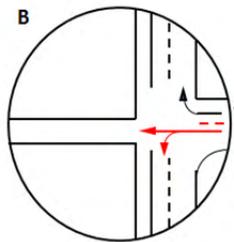
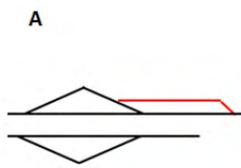
Description: The northbound off-ramp will be widened to accommodate two 600 foot turn lanes extended up the ramp to increase the storage capacity. This will be just short of Ward Creek. One lane will be a right turn only; the other lane will be for through and left turn movements.

Benefits: This allows for up to twice the queue storage length. This option essentially does not increase the v/c ratio, with a v/c ratio of 0.86. A Crash Reduction Factor (CRF) of 0.27 should be applied for adding a right turn lane.

Preliminary Cost Estimate: \$619,000

Key Considerations/Impacts: The widened ramp may require additional right-of-way however the railroad is adjacent to this location, so widening in that direction might not be best. Widening in the other direction may require retaining walls to accommodate widening the ramp. The turning radii may be a concern for longer vehicles. This option could be combined with Option A to maximize turn lane storage especially when a train is passing through the Depot Street crossing.

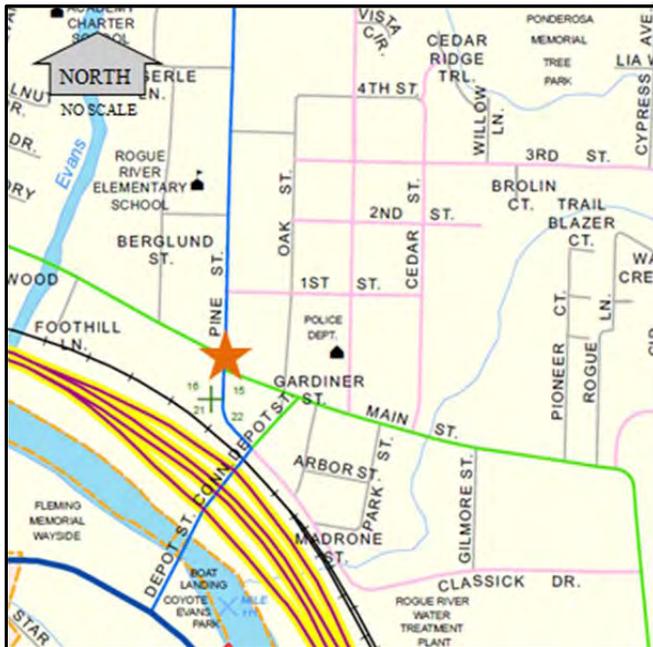
Intersection Diagrams



OS8 Main Street and Pine Street

Deficiency: Intersection operation will likely be affected by queuing extending from the adjacent Main & Pine Street and Pine & Depot Street intersections. There will be congestion with slowing speeds on a daily basis. The overall capacity here is low as the intersection is in a non-standard configuration. The skewed alignment of this intersection should be investigated. As configured, the east and westbound movements are relatively indirect as the east and west legs are offset. Drivers too-focused on maneuvering through the intersection might not see a pedestrian. In 2035 this intersection exceeds standard of 0.95 V/C and is at a V/C ratio of 1.00 in 2037. In 2040 this intersection should be over capacity with a V/C ratio of 1.08 and an ADT/C ratio of 12.94. Preliminary Signal Warrants (PSW's) were not met at this intersection.

Vicinity Map



Improvement Option A: Align West Main Street and East Main Street

Description: The through movements of West Main and East Main Street should be aligned removing the skew. The through movements would both be straight movements and would make the intersection safer and more efficient.

Benefits: Allows for straight operation for through movements with less delay. Making this intersection more compact will make it easier to see who drove up first (for all-way stop operation) to the intersection or if someone is walking in the crosswalk. This increases safety for pedestrians and bicyclists. The v/c is not affected by this option and remains at 1.08.

Preliminary Cost Estimate: \$1,344,000

Key Considerations/Impacts: The realigned Main Street legs will require additional right-of-way which will have property impacts. Some parking spots may be lost. This

may require the take of a building. This needs to be combined with another alternative to address congestion at this location.

Improvement Option B: Add SE corner channelization island

Description: Create a right turn channelization island (like the NW corner) in the southeast corner of the intersection.

Benefits: Tire marks on the pavement indicate that the high approach skew makes the northbound right turn difficult. Adding the island will increase the turn radius and make it easier to accommodate larger vehicles. The V/C ratio increases to 1.14.

Preliminary Cost Estimate: \$100,000

Key Considerations/Impacts: Adding this island will require substantial additional right-of-way which is a large impact. The island will increase the overall pedestrian crossing but the island will give a refuge between the through and right turn movements. This needs to be combined with another alternative to address congestion at this location.

Improvement Option C: Convert to a compact roundabout

Description: Convert the intersection into a compact roundabout at this intersection.

Benefits: A compact roundabout would give equal priority to all legs which will minimize queues. Bicycle traffic could use the sidewalks or share the lane as traffic speeds will be slow. Pedestrian crossings will be kept short which will improve safety and visibility. Main Street would be the same priority as Pine Street. This will improve the intersection operation and safety. As well as a safety improvement the operations improved. The worst leg of this roundabout is on the east leg, with a LOS of C (all others at LOS B) and a v/c ratio of 0.59 (all others below 0.49). The overall intersection control delay is 11.87, with a LOS of B. A Crash Reduction Factor (CRF) of 0.88 should be applied for a roundabout.

Preliminary Cost Estimate: \$250,000

Key Considerations/Impacts: Some additional right-of-way will be required for north and east legs which will have property impacts. All entering legs would then be yield controlled. Fewer takes of property than with fully fixing alignment and skew.

Improvement Option D: Pine Street southbound one-way (Depot Street, northbound one-way)

Description: This simplifies intersection in that there are fewer approaches. Fewer points of entry is safer for pedestrians.

Benefits: Intersection is easier to keep track of with fewer operations. The studied intersection of East Main Street and Pine Street has an improved V/C from 1.08 to 1.06 and meets preliminary signal warrants. As a signal this intersection has a V/C of 0.44.

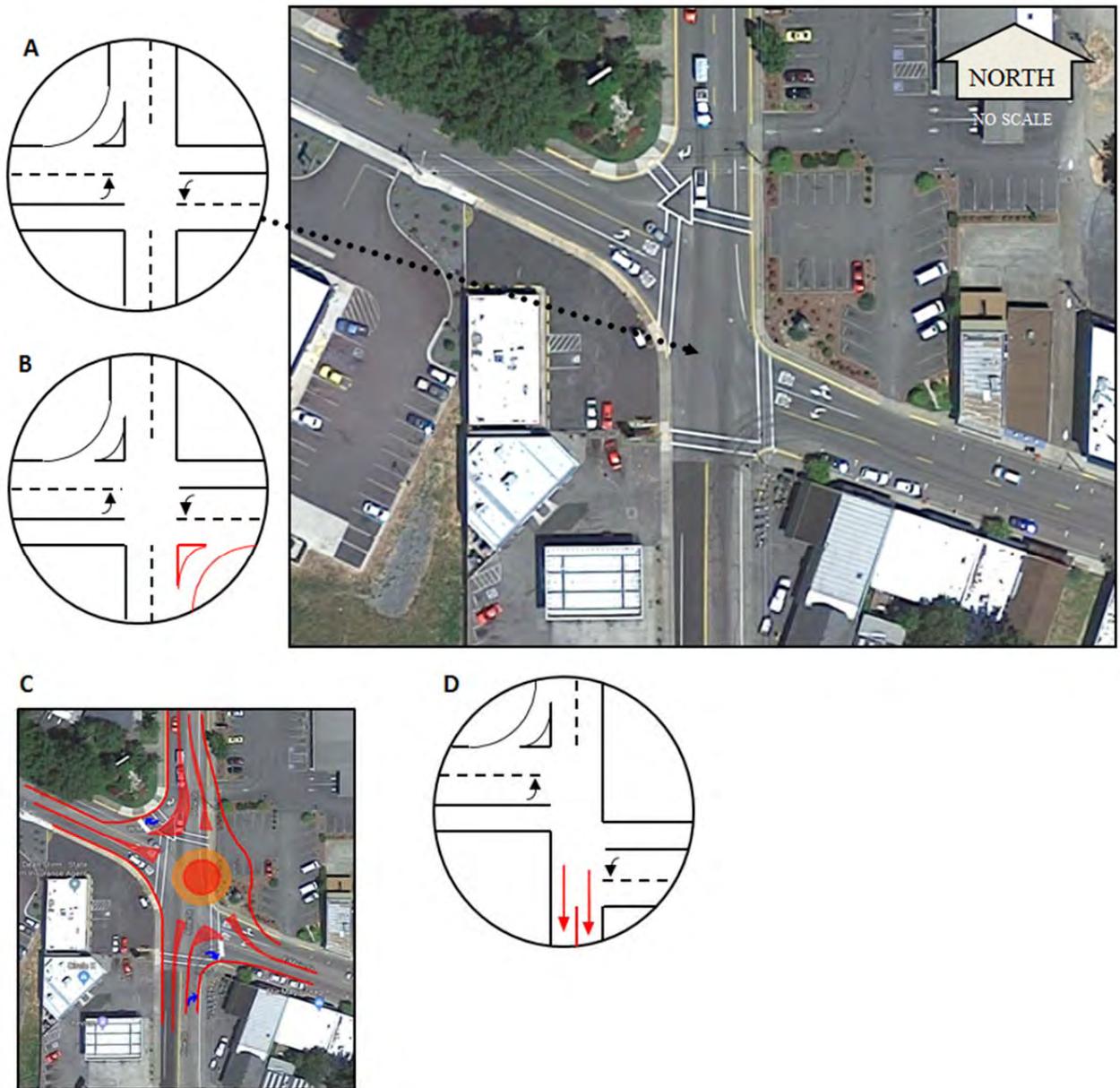
As a side benefit, the intersection of Depot Street and Pine Street has a V/C that improves from 0.72 to 0.50. A Crash Reduction Factor (CRF) of 0.47 should be applied to Pine and Depot Streets due to becoming one-way streets.

Preliminary Cost Estimate: \$1,010,000

Key Considerations/Impacts: May create more use of E Main Street. More eastbound right turns would occur at East Main Street and Depot Street. The V/C ratio of East Main Street and Depot Street rose from 0.36 to 0.87, but did not meet preliminary signal warrants.

Notes: Changes here will affect Depot Street intersections

Intersection Diagrams



Connectivity

Connectivity is an issue for the City of Rogue River. There are issues with how the city has grown and natural barriers: creeks, rivers, and other elements of nature. They may be manmade but under other jurisdictions: railroads, highways, or powerlines. There is a need to expand the existing network to reduce traffic on existing major streets. Table 8 shows connectivity alternatives. The alternatives generally reflect street segments that combine to create a route, but are in shorter segments for better likelihood of funding.

Table 8: Connectivity Alternatives and Options

Option	Description	Estimate	Agency
C2 Connectivity Over Evans Creek			
A	3rd St	\$7,325,000	City
B	7 th St	\$15,088,000	
C	Near high school	\$8,851,000	County
C4 3rd Street Extension to East			
A	Blue Ridge Dr	\$4,353,000	City/ County/ Developer
B	East of Blue Ridge Dr	\$9,748,000	
C5 Grow with a Grid			
A	Roadway parallel west of W Evans Crk Rd	\$8,652,000	City/ Developer
C6 Broadway Extension			
A	Extend Broadway St to Classick Dr	\$1,274,000	City
B	Extend Broadway St to Classick Dr/Depot St	\$1,649,000	
C7 7th Street Extensions			
A	West Evans Creek Rd to B or C St	\$4,879,000	County/ Developer
B	Broadway St west to Pine St	\$2,158,000	City
C	Broadway St east to Scenic Dr	\$9,735,000	City/County/ Developer
D	Scenic Dr east to Tenney Dr	\$8,118,000	

C2 Connectivity Over Evans Creek

Deficiency: Connections are needed across Evans Creek at different locations for modes that include vehicles and perhaps one for just bicycle/pedestrians. Possible locations are 3rd Street, 7th Street, and further north. This will cut down out of direction travel and reduce travel and burden on the intersection of Main and Pine Street. This creek is a limiting factor in terms of day to day travel and emergency alternative routes.

Improvement Option A: Add 3rd Street extension and new Evans Creek structure

Description: Add an extension of 3rd Street. This extension would also include a new bridge structure over Evans Creek. The extension would be approximately 50' wide to accommodate two 11' travel lanes, six foot sidewalks, and eight foot buffered bicycle lanes.

Vicinity Map



Benefits: This would ease the vehicular demand placed on the West Main Street bridge and the Pine Street & West Main Street intersection. The V/C ratio of Pine Street & West Main Street improves from 1.08 to 0.92. The V/C ratio of Foothill Boulevard and West Evans Creek Road improves from 0.28 to 0.19. A bridge here will be the greatest help in creating parallel connectivity for all modes in the form of a continuous east-west street that fully serves the city. Locating a bridge here would provide emergency alternate routes and better response time. This will also provide designated comfortable places for pedestrians and bicycles to use to avoid mixing directly with vehicular traffic.

Preliminary Cost Estimate: \$7,325,000

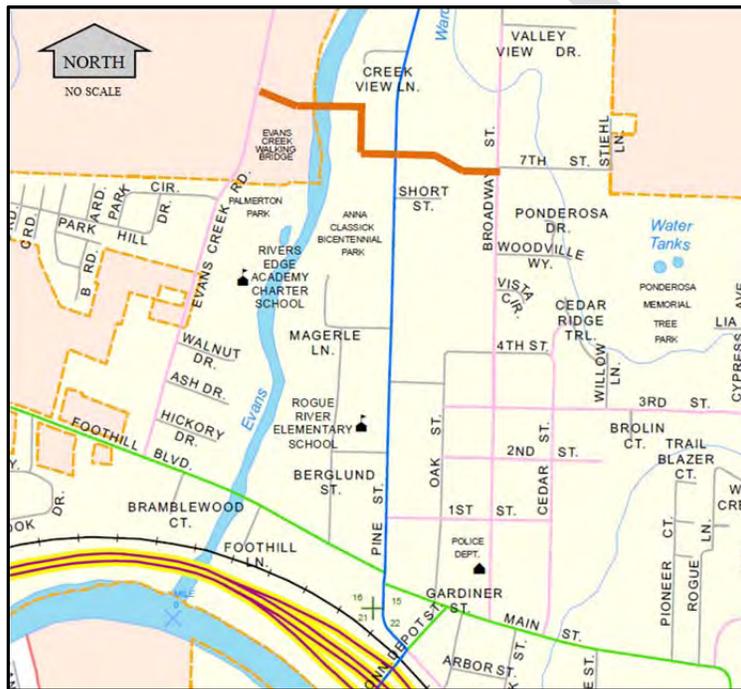
Key Considerations/Impacts: The bridge will impact the banks and potentially the waterway so fish passage, and floodway considerations need to be taken into account.

Right-of-way will be a large consideration, requiring property impacts. The 3rd Street route will require linear impacts along the edge of the elementary school field property. Vehicles, bicyclists, and pedestrians will be able to use the bridge across Evans Creek. The lighter demand on the Main Street and Pine Street intersection will benefit all modes. This connectivity creation will be a benefit to the community and to the middle and high school. 3rd Street may be the most fiscally responsible location for reasons of transportation need and due to the smaller cost elevate the structure out of a smaller flood plain.

Improvement Option B: Add 7th Street extension and new Evans Creek structure

Description: Add an extension of 7th Street from Pine Street to West Evans Creek Road. This extension would also include a new bridge structure over Evans Creek. The extension would be approximately 50' wide to accommodate two 11' travel lanes, six foot sidewalks, and eight foot buffered bicycle lanes.

Vicinity Map



Benefits: This would ease the vehicular demand placed on the West Main Street bridge and the Pine Street & West Main Street intersection but to a lesser degree than Option A as it is further away. The V/C ratio of Pine Street & West Main Street improves from 1.08 to 1.08. The V/C ratio of Foothill Boulevard and West Evans Creek Road improves from 0.28 to 0.24. A bridge at this location would help to provide emergency alternate routes and may provide a better response time and reduce out-of-direction travel for all modes. This will also provide designated comfortable places for pedestrians and bicycles to use to avoid mixing directly with vehicular traffic. This may actually cost significantly more to elevate the structure out of the flood plain.

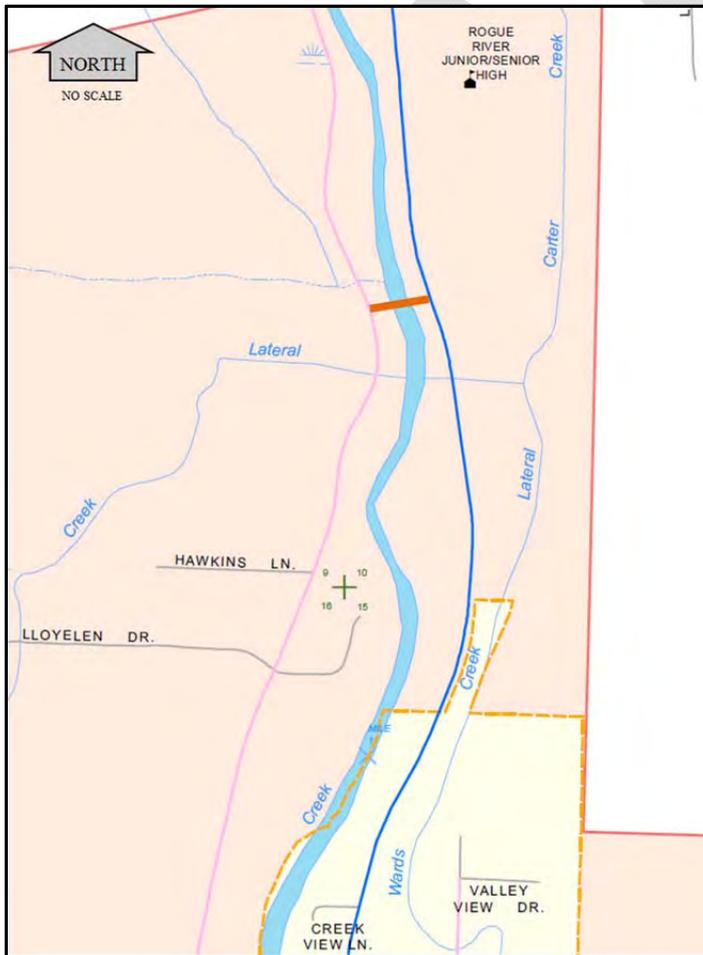
Preliminary Cost Estimate: \$15,088,000

Key Considerations/Impacts: The bridge will impact the banks and potentially the waterway so fish passage, and floodway considerations need to be taken into account. This connection is in the same general location as the Palmerton Park pedestrian structure, so there may be some duplication of what the city provides and maintains. Right-of-way will be a large consideration, requiring property impacts. The estimate does not include the probability of needing to raise or relocate the powerlines. Vehicles, bicyclists, and pedestrians will be able to use the bridge across Evans Creek. The lighter demand on the Main Street and Pine Street intersection will benefit all modes. This connectivity creation will be a benefit to the community and to the middle and high school.

Improvement Option C: Build new roadway connection with Evans Creek structure

Description: Add a connection between East and West Evans Creek Roads south of the middle/high school. This extension would also include a new bridge structure over Evans Creek. The extension would be approximately 50' wide to accommodate two 11' travel lanes, six foot sidewalks, and eight foot buffered bicycle lanes.

Vicinity Map



Benefits: This may aid the school in bus routing and those that walk or bicycle to the middle school. This will also provide designated comfortable places for pedestrians and bicycles to use to avoid mixing directly with vehicular traffic.

Preliminary Cost Estimate: \$8,851,000

Key Considerations/Impacts: The bridge will impact the banks and potentially the waterway so fish passage, and floodway considerations need to be taken into account. Right-of-way will be a large consideration, requiring property impacts but this could be minimized depending on the specific location. The estimate does not include the probability of needing to raise or relocate the powerlines. This connection is outside of city limits but inside the UGB so there would be a need to coordinate with Jackson County.

Notes: C3 and C9 have been combined into C2.

C4 3rd Street Extension to East

Deficiency: Ward Creek is a barrier to getting to the east part of town. There are a cluster of developments to the south of Ward Creek that will prevent east to west connections. 3rd Street should be extended east across Ward Creek and connect with Wards Creek Road. This connection over Ward Creek will create an alternate crossing.

Improvement Option A: Extend 3rd Street to connect to Wards Creek Road

Description: Extend 3rd Street from Nugget Drive to Blue Ridge Drive, bridging over Ward Creek. Blue Ridge Drive already exists from Ward Creek to Wards Creek Road. The extension would be approximately 50' wide to accommodate two 11' travel lanes, six foot sidewalks, and eight foot buffered bicycle lanes.

Vicinity Map



Benefits: This would ease vehicular demand on East Main Street by creating an alternate route using 3rd Street. This connection will improve connectivity for all modes along with creating alternate paths for emergencies and alternate routes for emergency vehicles. This creates connectivity the city needs for the least amount of cost and creates a starting point for development.

Preliminary Cost Estimate: \$4,353,000

Key Considerations/Impacts: The bridge will impact the banks and potentially the waterway so fish passage may be a consideration. Right-of-way will be a large consideration, requiring property impacts. This improvement will likely depend on a developer.

Improvement Option B: Extend 3rd Street to Wards Creek Road east of Blue Ridge Drive

Description: Extend 3rd Street from Nugget Drive to Wards Creek Road, bridging over Ward Creek. The extension would be approximately 50' wide to accommodate two 11' travel lanes, six foot sidewalks, and eight foot buffered bicycle lanes. Option B would be approximately 2000' to the east of Blue Ridge Drive.

Vicinity Map



Benefits: This would ease vehicular demand placed on East Main Street, creating an alternate route using 3rd Street. This location will improve connectivity for all modes along with creating alternate routes for emergency vehicles. This also creates connectivity and the city provides a large amount of roadway for easy development.

Preliminary Cost Estimate: \$9,748,000

Key Considerations/Impacts: The bridge will impact the banks and potentially the waterway so fish passage may be a consideration. Right-of-way will be a large consideration, requiring property impacts. This improvement will likely depend on a developer.

Notes: P5, PV3, P11, P7, P2, and B7 are in this section. These bridge options are estimated with the same bridge width of 50 feet. This allows for eleven foot travel lanes, eight foot buffered bicycle lanes, and six foot sidewalks. A grid system could be developed between 3rd Street/Scenic Drive and Tenney Drive and Burbridge Drive. 3rd Street needs to be modified to a continuous alignment at Oak Street

C5 Grow with a Grid

Deficiency: There is a lack of a grid network on the west side of W Evans Creek Road without a parallel road to W Evans Creek Road. This shows a needed alternate route for emergencies and development.

Improvement Option: Build roadway parallel to West Evans Creek Road

Description: Build a parallel roadway approximately 600' to the west of West Evans Creek Road. This route could potentially start near the intersection of Westbrook Drive and Foothill Boulevard, connect into the existing F and B Streets and extend to Road 36-4-16. This roadway would have two 12' travel lanes, six foot bike lanes, and six foot sidewalks.

Vicinity Map



Benefits: This will improve connectivity for all modes and could potentially decrease demand on West Evans Creek Road. This would also add a second local route for emergency vehicles.

Preliminary Cost Estimate: \$8,652,000 based on 2400' feet of new roadway

Key Considerations/Impacts: Right-of-way will be a large consideration, requiring property impacts. The manufactured home park may be a barrier and/or income/diversity environmental justice issue for a connection south of Park Circle. This improvement is likely developer-based.

Notes: Could be a connection with C3 Option B at 7th Street.

C6 Broadway Extension

Deficiency: Broadway could extend south of East Main Street by making a four way intersection and utilizing the Park Street alignment. The Classick /Madrone Street intersection should also need to be realigned to eliminate the skewed intersection alignment at Classick Drive.

Improvement Option A: Extend Broadway Street to Classick Drive

Description: Broadway Street would be extended from East Main Street, following the Park Street alignment to Classick Drive. A four-leg intersection will be created at Broadway Street and East Main Street. This extension would have two 11' travel lanes, six foot sidewalks, and eight foot buffered bike lanes.

Vicinity Map



Benefits: This would make this a more direct connection for all modes from East Main to Classick Drive. This could encourage development of this area south of East Main Street. This would be the best access to land that could be rezoned for several purposes from commercial, to mixed use, to a public property. This option offers redevelopment of downtown core and additional downtown parking. Depot and Main Street have retail and business developments that could expand to the area inside of Gardiner Street, Madrone Street, and Park Street over time.

Preliminary Cost Estimate: \$1,274,000

Key Considerations/Impacts: This option would create additional on-street parking downtown. The extended street will require additional right-of-way which will be a large consideration, requiring property impacts.

Improvement Option B: Extend Broadway Street to Classick Drive and Depot Street

Description: Extend Broadway Street as a one-way street south of East Main Street, onto the Park Street alignment to Classick Drive. A right turn only feeds into Classick Drive heading southeast. Depot Street would be a one way from Classick Drive to East Main Street. Classick Drive would only have a northwest bound right turn that would not have to stop as it will be the only lane feeding the now one-way Depot Street. A four-leg intersection will be created at Broadway Street and East Main Street. This extension would have one 11' travel lane, six foot sidewalks, and eight foot buffered bike lanes. There would also be parking on either side of Broadway Street and Park Street. Gardiner Street would become a pedestrian and bicycle only street with farmers markets or similar events held here.

Vicinity Map & Intersection Diagram



Benefits: This could encourage development of this area south of East Main Street and Gardiner Street. This would be the best access to land that could be rezoned for several purposes from commercial, to mixed use, to light industrial. This option offers redevelopment of downtown core and additional downtown parking. Depot and Main Street have retail and business developments that could expand to the area inside of Gardiner Street, Madrone Street, and Park Street over time. Park Street could be closed where it connects to East Main Street.

Preliminary Cost Estimate: \$1,649,000

Key Considerations/Impacts: This option would create additional on-street parking downtown. The extended street will require additional right-of-way which will be a large consideration, requiring property impacts.

C7 7th Street Extensions

Deficiency: 7th Street should be extended in both directions, past Ponderosa Park to Tenney Drive (use Scenic Drive), past Evans Creek.

Improvement Option A: Extend 7th Street west from West Evans Creek Road to B or C Street off of Park Hill Drive

Description: 7th Street would be extended west from West Evans Creek Road to B or C Street off of Park Hill Drive. This extension would include two 12' travel lanes; six foot sidewalks, and six foot bike lanes.

Vicinity Map



Benefits: This would create connections and an alternate route for all modes. This would ease the vehicular demand placed on East Main Street. This creates alternate routes for emergency vehicles and improves emergency response times. This extension allows for a very good connection into developable lands, adding to the financial base of the city and for future connectivity via a roadway from C Street south to Foothill Boulevard.

Preliminary Cost Estimate: \$4,879,000

Key Considerations/Impacts: The extended street will require additional right-of-way which will be a large consideration, requiring property impacts. This will be a large boost to residential development in Rogue River. Most connectivity benefits will not be completely realized until most of the sections are in place.

Improvement Option B: Extend 7th Street from Broadway Street to Pine Street

Description: Extend 7th Street from Broadway Street west to Pine Street. This extension would include two 12' travel lanes; six foot sidewalks, and six foot bike lanes.

Vicinity Map



Benefits: This would create connections and an alternate route for all modes. This would ease the vehicular demand placed on East Main Street. This creates alternate routes for emergency vehicles and improves emergency response times.

Preliminary Cost Estimate: \$2,158,000

Key Considerations/Impacts: This could create parking. The extended street will require additional right-of-way, a large consideration requiring property impacts. Most of the connectivity benefits will not be completely realized until most of the sections are in place. This option is most logical to start with until a bridge is built across Evans Creek. This creates a grid or connection from Broadway Street to Pine Street, possibly lessening the traffic that uses Main Street at the intersections of these streets.

Improvement Option C: Extend 7th Street from Broadway Street east to Scenic Drive

Description: 7th Street would be extended east from Broadway Street to Scenic Drive. This extension would include two 12' travel lanes; six foot sidewalks, and six foot bike lanes. Due to grade this may curve around or near the water tank.

Vicinity Map



Benefits: This would create connections and an alternate route for all modes. This would ease the vehicular demand placed on E Main. This creates alternate routes for emergency vehicles and improves emergency response times.

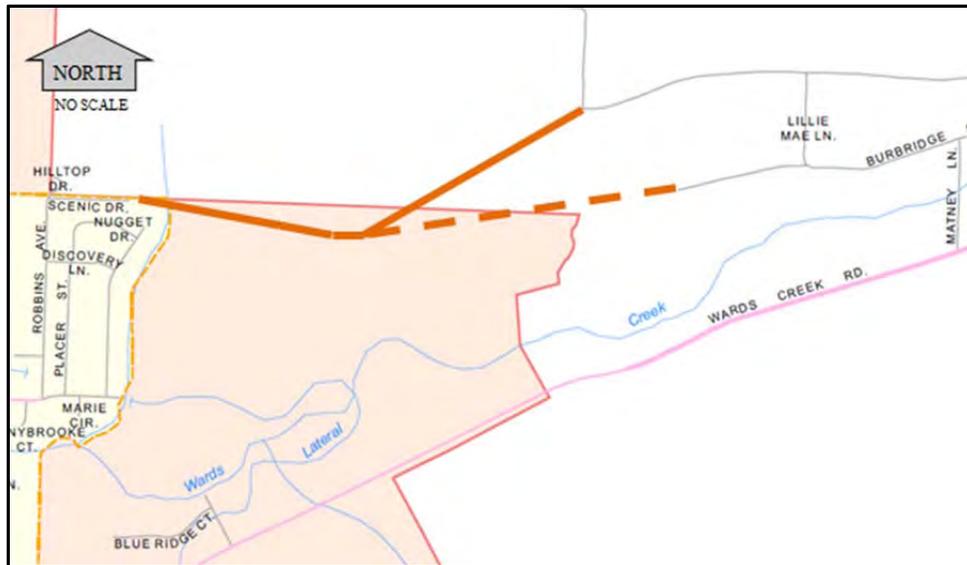
Preliminary Cost Estimate: \$9,735,000

Key Considerations/Impacts: The extended street will require additional right-of-way which will be a large consideration, requiring property impacts. Most of the connectivity benefits will not be completely realized until most of the sections are in place. Right-of-way will be a large consideration, requiring property impacts. Grades will be involved, so this may also require retaining walls in some areas.

Improvement Option D: Extend 7th Street from Scenic Drive east to Tenney Drive

Description: 7th Street would be extended east from Scenic Drive to Tenney Drive or Burbridge Drive. This route will utilize the Scenic Drive alignment and then stay near the tree line.

Vicinity Map



Benefits: This would create connections and an alternate route for all modes. This would ease the vehicular demand placed on E Main. This creates alternate routes for emergency vehicles and improves emergency response times.

Preliminary Cost Estimate: \$8,118,000

Key Considerations/Impacts: The extended street will require additional right-of-way, a large consideration requiring property impacts. Most of the connectivity benefits will not be completely realized until most of the sections are in place. Right-of-way will be a large consideration, requiring property impacts.

Notes: C2 Option B would also be required to make 7th Street a complete route to the west and should be lined up with future route in Option A. Option A is also related to C5. Options B, C, and D required for a complete route to the east of Pine Street.

C10 Code Updates

Deficiency: Future city code should require connectivity or two points of entry into a development from different streets. Entry points to be reviewed for connectivity and safety.

Improvement Option A: Don't allow self-centered developments

Description: Prohibit cul-de-sac style developments in the future. Create grid-style connectivity by connecting to more than one intersection or roadway location.

Benefits: This would help reduce excess miles traveled for all modes and time in emergency responses, and overall congestion.

Key Considerations/Impacts: It is hoped that this requirement will lead to more connectivity and facilities for all modes.

Improvement Option B: Require developments to not place homes at the end of a roadway stub

Description: Allow for future connectivity by not placing homes or other structures at the end of a roadway stub.

Benefits: This would enable the possibility of a future extension of that roadway.

Key Considerations/Impacts: It is hoped that this requirement will lead to more connectivity and facilities for all modes over time by not precluding potential locations. Better connectivity creates alternate routes for emergency vehicles and better response times.

Bridge

The ODOT 2016 Bridge Conditions Report states that area bridges are in fair condition and classified as “Not Deficient.” Also, the Bridge Sufficiency Rating map in Tech Memo #2 showed bridges in the study area to be in the range of 58.9 to 93, greater than the poor condition threshold of 45. However, the I-5 bridges over Depot Street, Evans Creek, and Foothill Boulevard are noted to be seismically vulnerable and have “ballpark” retrofit estimates shown for each site in Table 9. The Depot Street Bridge over the Rogue River is noted as seismically resilient, not requiring retrofits.

The Main Street Bridge across Ward Creek is not deficient, but in part functionally outdated as it requires bicycles and vehicles to share a lane on the structure. Even if there were bicycle lanes on Main Street, bicyclists would still need to share the vehicular lane at the narrow bridge. The Classick Drive Bridge over Ward Creek is also functionally obsolete, narrow without sidewalks or bicycle lanes. Multiple alternatives are presented for these two locations in Table 9.

Table 9: Bridge Alternatives and Options

Option	Description	Estimate	Agency
BR1 Main Street Wards Creek, too narrow			
A	Shared lane markings	\$1,000	City
B	Parallel ped/bicycle bridge	\$203,000	
BR2 Classick Drive Wards Creek, too narrow			
A	Shared lane markings	\$1,000	City
B	Parallel pedestrian/bicycle bridge	\$91,000	
D	Replace structure	\$438,000	
BR3 I-5 Depot Street, seismically vulnerable			
BR3	Overcrossing retrofit	\$4,900,000	ODOT
BR4 I-5 Evans Creek, seismically vulnerable			
BR4	Overcrossing retrofit	\$14,200,000	ODOT
BR5 I-5 Evans Creek, seismically vulnerable			
BR5	Overcrossing retrofit	\$26,000,000	ODOT

BR1 Main Street and BR2 Classick Drive over Wards Creek

Improvement Option BR1A: Main Street bridge across Ward Creek: Add shared lane markings

Vicinity Map



Description: Add shared lane markings and signs approaching the bridge. The Main Street bridge across Ward Creek is in part functionally outdated as it requires bicycles and vehicles to share a lane on the structure.

Benefits: Shared lane markings and signs will help inform drivers that bicyclists will be entering the roadway and expected to be present in their lane regardless of bicycle facility improvements on either side of the structure.

Preliminary Cost Estimate: \$1,000

Key Considerations/Impacts: The bicycle mode is not changed as they still need to use the sidewalk or share the lane currently, but vehicles are made aware of their existence. The bridge has already been improved with slight widening of the sidewalks on the bridge.

Improvement Option BR1B: Main Street bridge across Ward Creek: Build parallel pedestrian/bicycle bridge

Description: Build a minimum 8' wide parallel structure to Main Street for bicycle and pedestrian use only over Ward Creek. The Main Street bridge across Ward Creek is in part functionally outdated as it requires bicycles and vehicles to share a lane on the structure.

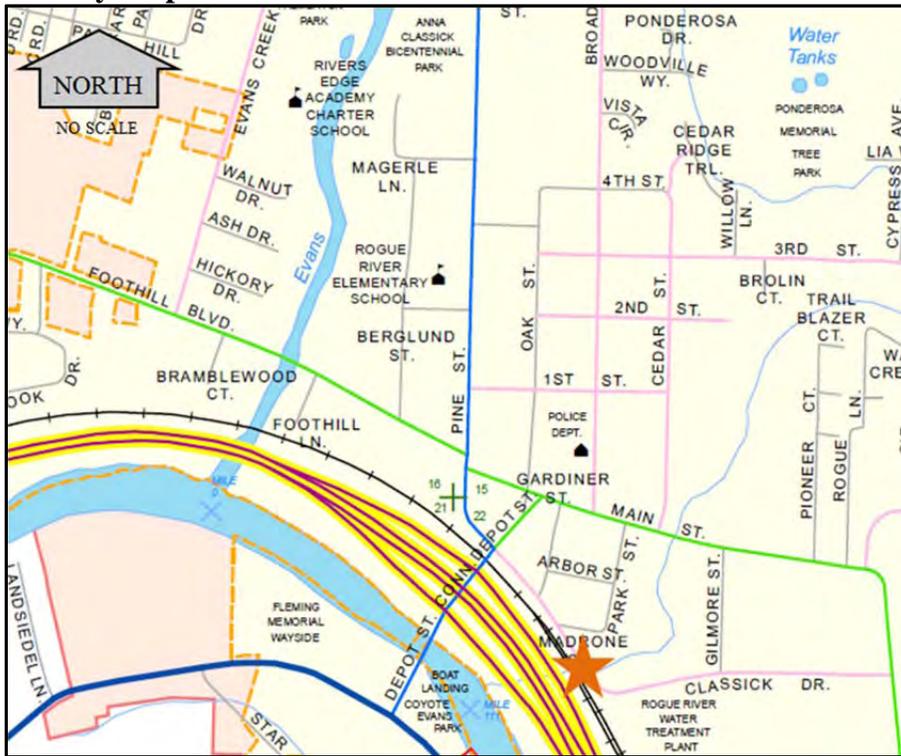
Benefits: This would give pedestrians and bicyclists their own separated location away from motor vehicle traffic which will improve comfort, safety and use. Younger and less confident riders would prefer a separated location instead of having to mix with vehicles or pedestrians.

Preliminary Cost Estimate: \$203,000

Key Considerations/Impacts: Pedestrians would be relatively unchanged as they could still use the sidewalks. More confident and stress-tolerant bicyclists may still continue to use the vehicle lanes as the structure is short. Additional right of way will be required, impacting adjacent properties. Bridge construction will impact the banks and may have fish passage considerations.

Improvement Option BR2A: Classick Drive bridge across Ward Creek: Add shared lane markings

Vicinity Map



Description: Add shared lane markings and signs approaching the bridge. The Classick Drive bridge across Ward Creek is in part functionally outdated as it requires pedestrians, bicyclists, and motorists to share a lane on the structure.

Benefits: Shared lane markings will help inform drivers that bicyclists will be entering the roadway and are expected to be present in their lane regardless of the ultimate bicycle facility improvements on each side of the structure.

Preliminary Cost Estimate: \$1,000

Key Considerations/Impacts: The bicycle mode is not generally impacted as they still share the lane with vehicles. No pedestrian facilities exist nor added in this option, so pedestrians still must share the roadway.

Improvement Project BR2B: Classick Drive bridge across Ward Creek: Build parallel pedestrian/bicycle bridge

Description: Build a minimum 10' wide parallel structure to Classick Drive for bicycle and pedestrian use only over Ward Creek. The Classick Drive bridge across Ward Creek is in part functionally outdated as it requires pedestrians, bicyclists, and motorists to share a lane on the structure. There should be a similar bridge paralleling this bridge to provide crossing for pedestrians and bicyclists.

Benefits: This would give pedestrians and bicyclists their own separated location away from motor vehicle traffic which will improve comfort and safety at this pinch point.

Preliminary Cost Estimate: \$91,000

Key Considerations/Impacts: Full benefit of the new structure will not be realized until bike and pedestrian facilities are built along Classick Drive. Additional right of way will be required, impacting adjacent properties. Bridge construction will impact the banks and may have fish passage considerations.

Improvement Option BR2D: Classick Drive bridge across Ward Creek: Replace structure

Description: Replace the existing structure with a new approximately 50' wide structure. This would include two 11' travel lanes, six foot sidewalks and six foot bicycle lanes. The Classic Drive bridge across Ward Creek is in part functionally outdated as it requires all modes to share a lane on the structure.

Benefits: This would give pedestrians and bicyclists their own designated spaces to safely cross the creek separated from vehicular traffic. This would improve comfort and safety at this existing pinch point. A new bridge would provide for better vehicular, pedestrian, and bicycle access to North River Road. This would allow for heavier freight traffic on the truck route to Rogue River's heavy industrial zone with room for expansion.

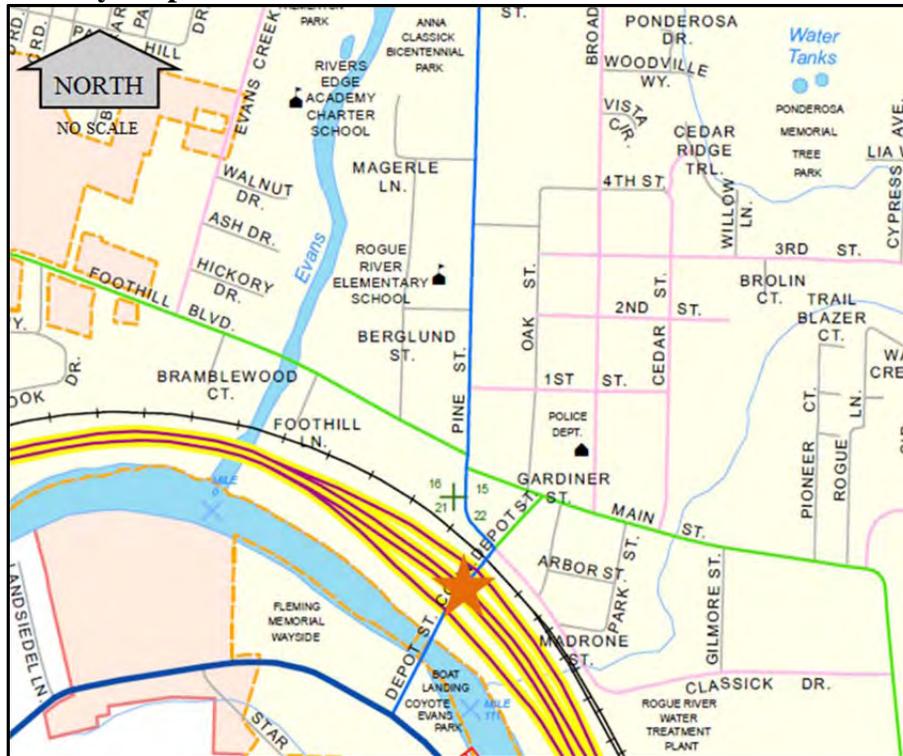
Preliminary Cost Estimate: \$438,000

Key Considerations/Impacts: Full benefit of the new structure will not be realized until bike and pedestrian facilities are built along Classick Drive. Additional right of way will be required, impacting adjacent properties. Bridge construction will impact the banks and may have fish passage considerations. Roadway needs to remain open during construction to preserve truck route function which will increase staging costs and time.

BR3 to BR5 I-5 Overcrossings

Improvement Option BR3: I-5 Depot St overcrossing retrofit

Vicinity Map



Description: Retrofit bridge to address seismic vulnerability. General design parameters should be investigated as part of an Interchange Area Management Plan (IAMP) or a separate refinement plan.

Preliminary Cost Estimate: \$4,900,000

Notes: Requires IAMP, refinement plan, and/or special engineering study to determine general and refined design details. May be more cost effective to replace but it will take an engineering study to determine.

Improvement Option BR4: I-5/Evans Creek overcrossing retrofit

Vicinity Map



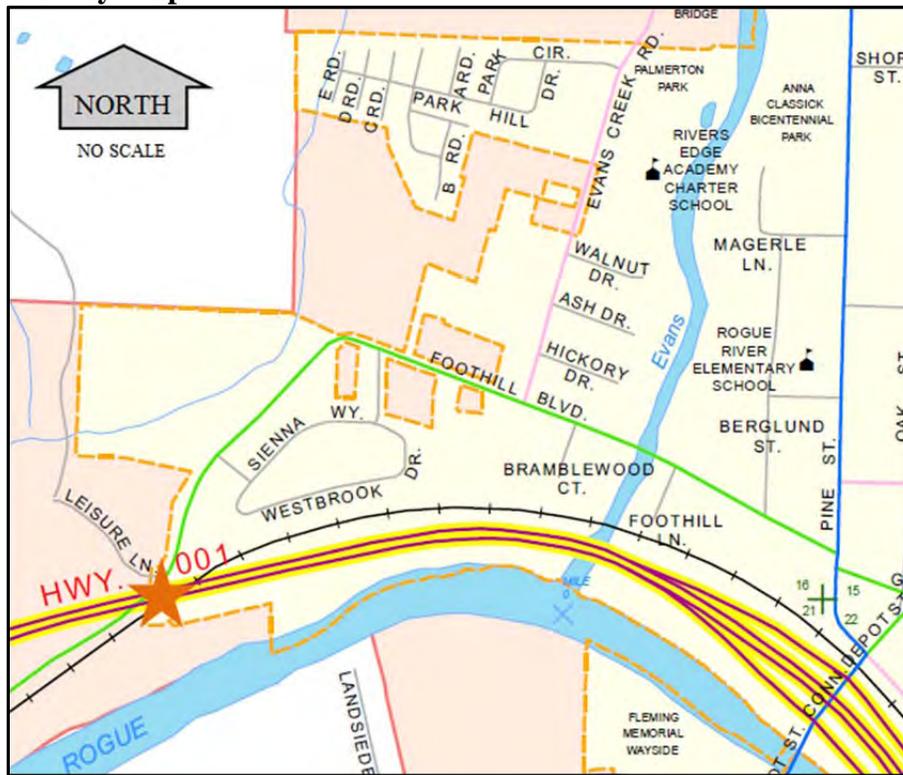
Description: Retrofit bridge to address seismic vulnerability. General design parameters should be investigated as part of an Interchange Area Management Plan (IAMP), a separate refinement plan.

Preliminary Cost Estimate: \$14,200,000

Key Considerations/Impacts: Requires IAMP, refinement plan, and/or special engineering study to determine general and refined design details. May be more cost effective to replace but it will take an engineering study to determine.

Improvement Option BR5: I-5/Foothills Blvd overcrossing retrofit

Vicinity Map



Description: Retrofit bridge to address seismic vulnerability. General design parameters should be investigated as part of an Interchange Area Management Plan (IAMP), a separate refinement plan and/or a special engineering study.

Preliminary Cost Estimate: \$26,000,000

Key Considerations/Impacts: Requires IAMP, refinement plan, and/or special engineering study to determine general and refined design details. May be more cost effective to replace but it will take an engineering study to determine.

Notes: Seismic retrofit estimates are based on a generic structure from Region 3 Bridge Section and are only preliminary estimates.

Pavement Conditions

Pavement condition itself is an issue for creating connectivity. The condition of a roadway is a symbol of a community's health. OR99 is in fair condition; it is expected that some areas of OR99 will need a 2" resurface or chip seal in the 20-year horizon (likely in 5-10). The streets of Rogue River are overall in good condition and suggested improvements are based on information received from the City. Table 10 shows pavement alternatives.

Table 10: Pavement Alternatives

Option	Description	Estimate	Agency
PV1 Broadway Street Resurfacing			
PV1	Crack seal treatment	\$66,000	City
PV2 Depot Street Resurfacing			
PV2	Crack seal and seal coat	\$27,000	City/ODOT
PV3 Wards Creek Road Resurfacing			
PV3	Crack seal/Seal coat	\$90,000	City
PV4 Foothill Boulevard Resurfacing			
PV4	Crack seal	\$36,000	City
PV5 OR99 Overlay			
PV5	Resurface with an overlay	\$1,330,000	ODOT

Improvement Project PV1: Broadway Street Resurfacing

Vicinity Map



Description: Resurface Broadway Street with a crack seal treatment. This is 50% done.

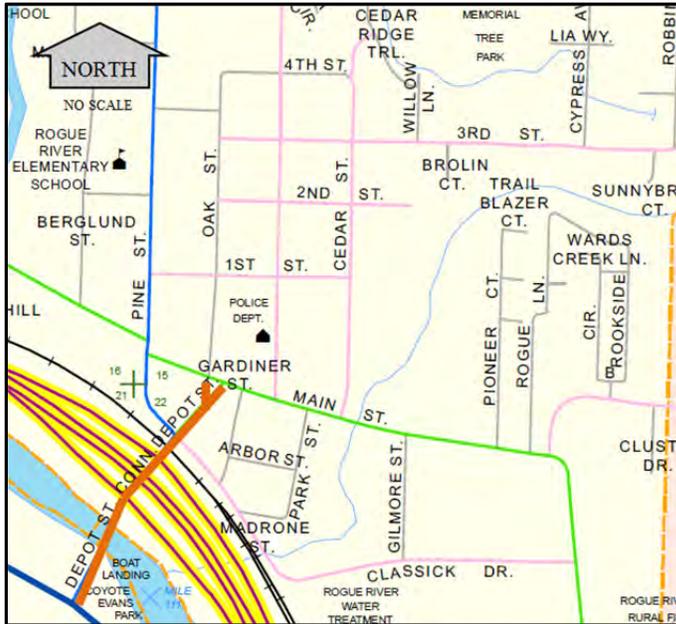
Benefits: This would provide a smoother surface to ride on and allow the driver to focus on the road ahead and those sharing the road.

Preliminary Cost Estimate: \$66,000

Key Considerations/Impacts: This will make the traveling surface for bicycle and vehicle modes smoother and safer. Consider combining with B5 when replacing striping.

Improvement Project PV2: Depot Street Resurfacing

Vicinity Map



Description: Resurface alligator cracking. This includes crack seal and seal coat.

Benefits: This would provide a smoother surface to ride on and allow the driver to focus on the road ahead and those sharing the road.

Preliminary Cost Estimate: \$27,000

Key Considerations/Impacts: This will make the traveling surface for bicycle and vehicle modes smoother and safer.

Improvement Project PV3: Wards Creek Road Resurfacing

Vicinity Map



Description: Resurface alligator cracking. This includes crack seal in lower section and seal coat upper section.

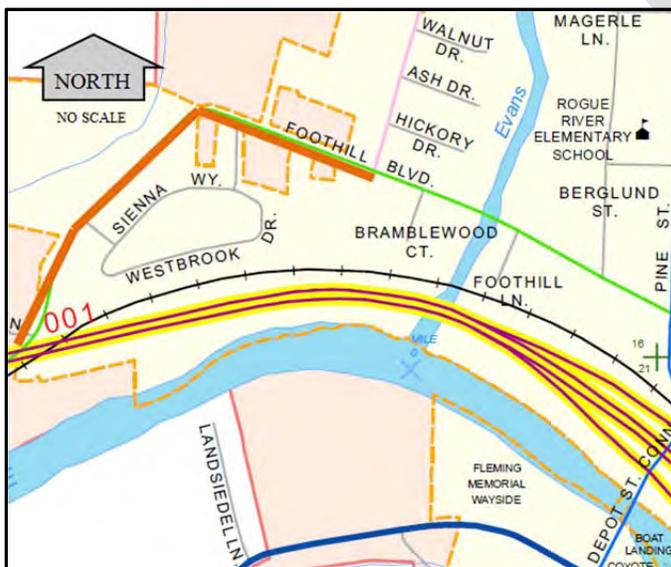
Benefits: This would provide a smoother surface to ride on and allow the driver to focus on the road ahead and those sharing the road.

Preliminary Cost Estimate: \$90,000

Key Considerations/Impacts: This will make the traveling surface for bicycle and vehicle modes smoother and safer.

Improvement Project PV4: Foothill Boulevard Resurfacing

Vicinity Map



Description: Resurface minor cracking. This includes crack seal.

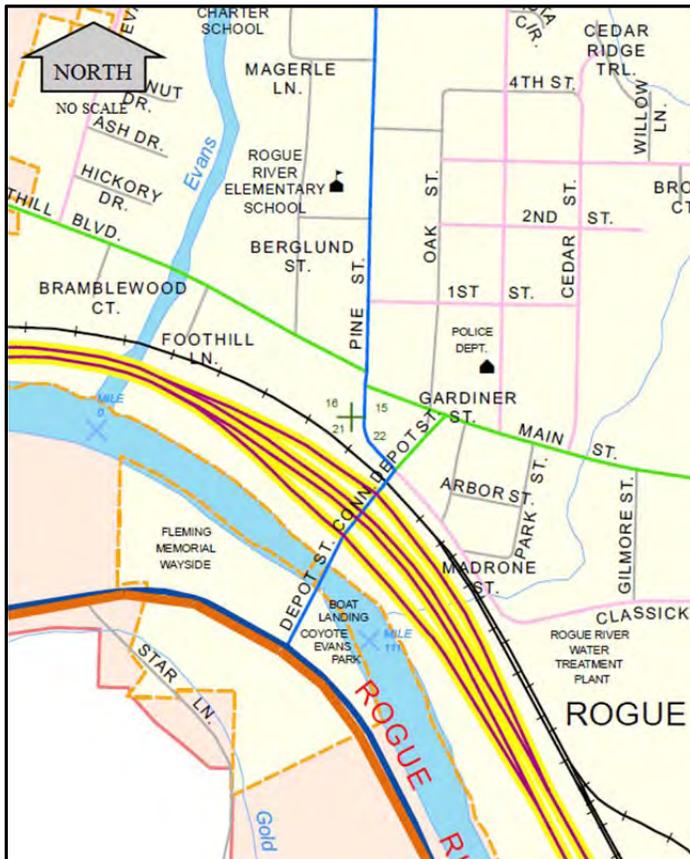
Benefits: This would provide a smoother surface to ride on and allow the driver to focus on the road ahead and those sharing the road.

Preliminary Cost Estimate: \$36,000

Key Considerations/Impacts: This will make the traveling surface for bicycle and vehicle modes smoother and safer.

Improvement Project PV5: OR99 Overlay

Vicinity Map



Description: Resurface with an overlay for 5500 feet.

Benefits: This would provide a smoother surface to ride on and allow the driver to focus on the road ahead and those sharing the road.

Preliminary Cost Estimate: \$1,330,000

Key Considerations/Impacts: This will make the traveling surface for bicycle and vehicle modes smoother and safer. Consider combining with OS2 and P9 to minimize costs.

Summary

There are a number of alternatives to address the deficiencies (shown in Tech Memo 6) within the city. These alternatives create a positive outlook that Rogue River can address the needs of their citizens as the city grows. Substantial improvements will occur as funding is created for pedestrian, bicycle and transit modes to help ensure future livability.

Next Steps

The next steps will finalize alternatives from comments by the PAC and the public in the next series of meetings. Alternatives will be evaluated by TSP goals and objectives and other measures of effectiveness in Technical Memorandum #8. Alternatives will be ranked and a preferred alternative chosen. All alternatives will be on an overall project list to assist RVCOG in determining a constrained project list after a complete funding forecast. Individual project sheets (based on this memorandum) will be created for each project and incorporated within the draft TSP document.

If you have any questions, please feel free to contact me at 503-986-4112.

cc: Peter Schuytema, TPAU
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