STATE OF OREGON **INTEROFFICE MEMO**

Department of Transportation
Transportation Development Division
Mill Creek Office Park
555 13th Street NE Suite 2
Salem, Oregon 97301-4178
(503) 986-4110 FAX (503) 986-4174

File Code:

Date: November 1, 2018

TO: **Tom Guevara, Region 3 Planning**
Dick Converse, RVCOG

FROM: **Peter L Schuytema, P.E, Senior Transportation Analyst**
Transportation Planning Analysis Unit

SUBJECT: **DRAFT: Rogue River TSP Technical Memorandum #8 Alternative Screening**

Technical Memorandum 8 shows the results of the evaluation applied to the alternatives and options shown in Technical Memorandum 7. The alternatives have been pared down into a preferred list of TSP projects after applying evaluation criteria based on a set of expanded TSP objectives. In addition, the effect of the state and local operational projects will require alternate mobility standards to be adopted to help address outstanding deficiencies.

TSP Evaluation Objectives

This memorandum needs to compare and contrast alternatives and options using evaluation criteria based on TSP objectives. Technical Memorandum 1 had a list of TSP objectives that were desired to be met over the course of the planning effort. However, most of these were TSP process objectives rather than ones that can be used to evaluate alternatives against, so there were not enough of them for a well-rounded evaluation. From TM1, the given TSP objectives were:

- Provide for a safe and efficient transportation system based on the existing and future land uses
- Prioritize improvement projects for existing transportation facilities
- Create a project list for soliciting funding through the Middle Rogue Metropolitan Planning Organization
- Establish a document that is simple and easy to understand for developers and the community

- Include a safe routes to school component that provides a plan to construct missing portions of bicycle and pedestrian infrastructure
- Comply with applicable state and local laws, rules, and regulations

From the above, only the first objective is standard as it is related to safety and congestion, but it is very broad. The rest of them are process-based. The typical TSP has a much longer objective list considering a wide range of different items (environment, accessibility, freight needs, etc.), so an expanded list was created and was reviewed by the participants in the July 2018 TSP Project Advisory Committee (PAC) meeting. After comments were addressed, the expanded TSP evaluation objectives are shown in Table 1.

Table 1: Expanded TSP Evaluation Objectives

Objective	Description
Potential Environmental Impacts	Impacts to slopes, wetlands, riparian areas
Funding Likelihood	Based on total cost ranges, multiple funding sources (leverage potential) , and ability to break into multiple phases
Constructability	Based on potential right-of-way needs, grade issues, and structure needs
Improves Connectivity	Based on the ability to reduce out-of-direction travel or travel distance
Improves Access to Destinations	Based on general accessibility and improving connections between housing and employment areas, schools and major community destinations
Improves Congestion	Impacts to v/c ratio, delay and/or queuing
Improves Safety	Based on potential crash reduction, increased pedestrian/bicyclist comfort, lower bike stress, greater separation, etc.
Freight Access	Impacts to freight movements, access to I-5 and industrial areas
Parking Impacts	Based on a net increase or decrease in parking spots
Safe Routes to School Compatibility	Based on how well an option improves connectivity and safety to/from schools

Compatibility with Neighborhood Context	Based on how well an option "fits" with the surrounding existing and future land uses
Consistency with the Oregon Highway Plan (OHP) Goals	Based on how well an option supports the OHP Goals of System Definition, System Management, Access Management, Travel Alternatives, and Environmental and Scenic Resources.

Weighting and Scoring

All criteria are assumed to have equal weight in this analysis versus having measures with varying levels of importance. A scoring system needs to be simple enough to administer but also show enough potential change between the alternatives and options in order to screen or rank them. The following scoring system that was used for the Rogue River TSP is shown in Table 2.

Table 2: Scoring System

Points	Description
+2	Significant positive impact
+1	Slight positive impact
0	Neutral, no change, or not applicable
-1	Slight negative impact
-2	Significant negative impact

Evaluation Criteria

Any specific evaluation criterion from an objective needs to be measurable either on a qualitative or quantitative basis from available data or information. The evaluation criteria are compared against a given alternative or option in order to score and rank it. The objectives and their related criteria were finalized before any ranking started to avoid accidentally creating biases. Tables 3 through 14 show the evaluation criteria that go along with each of the proposed objectives and scoring thresholds.

Table 3: Potential Environmental Impacts - Qualitative

General assessment of impacts to cross-slopes, creek/river banks, floodways, and undisturbed lands	
0	Neutral, no change, or not applicable
-1	Slight negative impact
-2	Significant negative impact

Table 4: Funding Likelihood – Qualitative & Quantitative[1]

Improvement cost ranges: From most likely fundable to least likely fundable	
2	<$100,000
1	$100,000 - $500,000
0	$500,000 - $2,000,000
-1	$2,000,000 - $10,000,000
-2	> $10,000,000
Funding sources = Assessment of the probability of having multiple funding sources to split costs (i.e. private developers, SRTS funds, etc.).	
0	No additional sources
1	One additional source
2	Two or more additional sources
Phaseability (Ability to break up project into multiple pieces)	
2	Improvement can be broken into more than two phases
1	Improvement can be broken into two phases
0	Improvement is not phaseable

[1]Each element has one-third (~33%) of the total score

Table 5: Constructability – Qualitative[1]

Right-of-way needs	
0	No extra right-of-way needed
-1	Possible right-of-way needed
-2	Possible right-of-way needed including potential displacements
Roadway grade impacts	
0	No grade impacts
1	Slight grades
2	Moderate to steep grades
Potential structure needs	
2	No structures needed/affected
1	Structure improvements needed/retaining walls possible
0	New structures with substantial length, width or height

[1]Each element has one-third (~33%) of the total score

Table 6: Improves Connectivity - Qualitative

General assessment of connectivity improvements for the applicable affected modes	
0	Neutral, no change, or not applicable
1	Fills a gap
2	Reduces out-of-direction travel or total travel distance

Table 7: Improves Access to Destinations – Qualitative[1]

General assessment on ability of project to improve accessibility between residential and community destinations	
2	Significant positive impact
1	Slight positive impact
0	Neutral or not applicable
-1	Slight negative impact
-2	Significant negative impact

[1]Each of the following elements have 20% of the final score: commercial areas (i.e. downtown, East Main St), industrial areas, schools, parks, and areas outside the city.

Table 8: Improves Congestion – Qualitative & Quantitative[1]

Change in volume-to-capacity ratio[2] compared to 2040 future no-build conditions Applicable only to OS and some C-class projects[3]	
2	> -0.10 change
1	From -0.03 to -0.10 change
0	Within -0.02 to 0.02 change or not applicable
-1	From 0.03 to 0.10 change
-2	> 0.10 change
Change in 95th percentile queues compared to 2040 future conditions averaged across all approaches Applicable only to OS and some C-class projects[3]	
2	> -10 vehicles (~250')
1	- 3 vehicles (~75') to -9 vehicles (~225')
0	+/- 2 vehicles (~50') or not applicable
-1	+ 3 vehicles (~75') to +9 vehicles (~225')
-2	> +10 vehicles (~250')
General assessment of the ability of the project to improve congestion (applicable only to C-class projects not in the above) OR General assessment of the potential to affect mode share (applicable to other project classes)	
2	Significant positive impact
1	Slight positive impact
0	Neutral or not applicable
-1	Slight negative impact
-2	Significant negative impact

[1]Measures dependent on project class to avoid double-counting impacts
[2]Uses either the intersection v/c ratio for signalized intersections or highest approach for unsignalized intersections
[3]The quantitative v/c and queuing elements each have 50% of the total score.

Table 9: Improves Safety – Qualitative & Quantitative

Highest crash reduction factors (CRF) Applicable only to OS-class projects	
2	CRF > 0.40
1	CRF between 0.10 and 0.40
0	CRF < 0.10 or not available/applicable
Improvements in Bicycle Level of Traffic Stress or pedestrian qualitative rating Applicable only to B & P-class projects	
2	Change of 2 or more LTS or pedestrian rating levels
1	Change of 1 LTS or pedestrian rating level
0	No change in LTS or pedestrian rating
General assessment of ability of project to improve safety for users Applicable only for T, C, BR & PV-class projects	
2	Significant ability
1	Slight ability
0	Neutral or not applicable

Table 10: Freight Access – Qualitative

General assessment of project impacts to freight movements, access to I5, and access to commercial and industrial uses	
2	Improves access, shortens travel distance to and from
1	Enhances access, shortens travel distance to or from
0	Maintains access/no impact/not applicable
-1	Restricts access, creates out-of-direction travel to or from
-2	Limits access, creates significant out-of-direction travel to and from

Table 11: Parking Impacts – Quantitative

Net increase or decrease in parking spaces	
2	Adds 10+ parking spaces
1	Adds <10 parking spaces
0	No change/not applicable
-1	Removes <10 parking spaces
-2	Removes 10+ parking spaces

Table 12: Safe Routes to Schools Compatibility – Quantitative

General assessment of bicycle and/or pedestrian separation from motor vehicles	
2	>10 feet separation
1	>2 to 10 feet separation
0	2 feet separation /not applicable
-1	No separation (less than 2 feet)
-2	No separate facility

Table 13: Compatibility with Neighborhood Context – Qualitative

General assessment of how project is consistent with neighborhood "feel" for today and into the future; does it change the character of the neighborhood or the ability to function as a cohesive unit?	
2	Enhances neighborhood
1	Improves neighborhood
0	No change; consistent with context
-1	Affects neighborhood
-2	Impacts neighborhood

Table 14: Consistency with OHP Goals – Qualitative[1]

General Assessment of how project is consistent with the five OHP goals: Goal 1: System Definition[2], Goal 2: System Management[3], Goal 3: Access Management[4], Goal 4: Travel Alternatives[5], and Goal 5: Environmental and Scenic Resources[6]	
2	Consistent with OHP Goals
1	Somewhat consistent with OHP Goals
0	Neutral
-1	Somewhat inconsistent with OHP Goals
-2	Inconsistent with OHP Goals

[1]Each goal is 20% of the final score
[2]Goal 1 – uses the average of the score from the Improves Congestion and Improves Safety criteria
[3]Goal 2 – uses the average of the scores of the Improves Connectivity, Improves Access to Destinations, Improves Safety, Safe Routes to Schools Compatibility, and the funding sources sub-criteria
[4]Goal 3 – uses the average of the score of the Improves Connectivity and Freight Access criteria
[5]Goal 4– uses the average of the Freight Access, Improves Access to Destinations , and the Improves Congestion potential to change mode share component (applied to all project types) criteria
[6]Goal 5 – uses the average of the scores of the Potential Environmental Impacts, Constructability, and the Compatibility with Neighborhood Context

PREFERRED PROJECTS

The alternatives and related options were scored based on the scoring criteria above. Where multiple options existed for a single alternative, only the highest scoring option was passed. The higher the score, the more consistent the alternative is with the overall objectives. The full scoring matrix is shown in Appendix A. Appendix B has all of the projects ranked by score to help facilitate the development of the financially constrained project list. Appendix C shows a table of the dismissed options. Tables 15, 17-19, and 21-23 show each project category with the projects ranked by overall score. Detailed project descriptions follow each summary table in numeric order.

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.

As part of the funding element of the TSP, funding policies shall consider and include among the priorities, facilities and improvements that support mixed-use, pedestrian friendly development and increased use of alternative modes. These funding mechanisms may also be described in terms of general guidelines or local policies.

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

Pedestrian Projects

Table 15: Pedestrian Projects

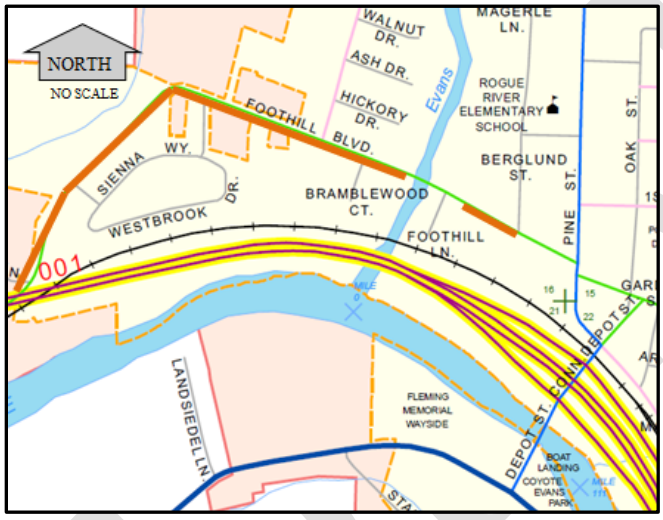
Project #	Description	Agency[1]	Cost	Score
P1-B	West Main St/Foothills Blvd: Add 10' sidepath	City	$378,000	12.8
P12-M	West Evans Creek Rd (N of Palmerton Park): Add 10' sidepath	City/SRTS	$240,000	12.5
P12-E	Oak St : Add sidewalks	City/SRTS	$456,000	12.2
P12-B	1st St (Broadway – Cedar): Add sidewalks	City/SRTS	$166,000	12.0
P7-C	North River Rd: Add crosswalk & pedestrian refuge island	City	$289,000	11.7
P12-I	Gardiner St: Add sidewalks	City/SRTS	$243,000	11.7
P12-D	Berglund St: Add sidewalks	City/SRTS	$332,000	11.6
P4-6-A	Broadway, Pine, & East Main St: Add marked crosswalks	City	$108,000	11.4
P8-B	Classick Dr: Add 10' sidepath	City	$352,000	11.4
P12-A	West Evans Creek Rd (S of Palmerton Park): Add sidewalks	City/SRTS	$624,000	11.3
P10-B	Pine & Depot St: Add crosswalk markings	City	$105,000	11.3
P12-F	Cedar St: Add sidewalks	City/SRTS	$629,000	10.6
P7-B	North River Rd: Add street lighting	City	$122,000	10.6
P3-B	East Evans Creek Rd: Add 10' sidepath	City	$768,000	10.6
P7-D	North River Rd: Add 6' sidewalk/10' sidepath combination	City	$667,000	10.5
P12-C	2nd St (Cedar – Wards Creek): Add sidewalks	City/SRTS	$80,000	10.5
P12-H	Park St: Add sidewalks	City/SRTS	$370,000	10.4
P12-J	4th St (off of Berglund St); Add sidewalks	City/SRTS	$173,000	10.2
P12-G	Robbins Ave: Add sidewalks	City/SRTS	$153,000	9.8
P2-B	East Main St (Wards Creek Rd to North River Rd) : Add 10'sidepath	City	$27,000	9.8
P11-B	Wards Creek Rd (East Main St to City Limits) : Add 10' sidepath	City	$96,000	9.6
P13-A	OR99: Add 6' sidewalks	City/ODOT	$675,000	9.6
P9-B	3rd St: Add 10' sidepath	City	$384,000	9.4
P8-C	Classick Dr: Add street lighting	City	$67,000	9.3
P10-A	Pine St (Depot – Main St): Add 6' sidewalks	City	$130,000	8.5
P9-C	3rd St: Add street lighting	City	$24,000	8.3

[1]Applicable to jurisdiction and/or funding sources - SRTS indicates projects that were in the SRTS category, but most of these in this list could be funded all or in part with SRTS funds.

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 roadway also has paved shoulders that could be used as bicycle facilities, although it is too narrow. The road cross section and shoulder space narrows on Foothill Boulevard, west of West Evans Creek Road as it approaches the Urban Growth Boundary. Improvements should be continued west on Foothill Blvd to the city limits. This section of roadway has a posted speed of 25-45 mph. The 2040 ADT for this street is projected to be 6500 near the school, but 1700 on Foothill Boulevard.

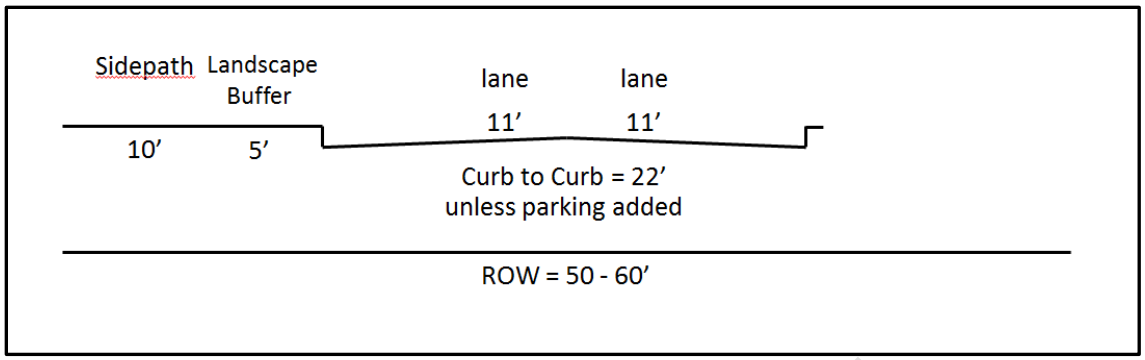
Vicinity Map



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.

Roadway Cross-section



Benefits: A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. The bicycle LTS rating significantly improves from LTS 3 to LTS 1. This leaves open space from curb to curb, possibly for parking. This improves this street from poor to very good.

Preliminary Cost Estimate: $378,000

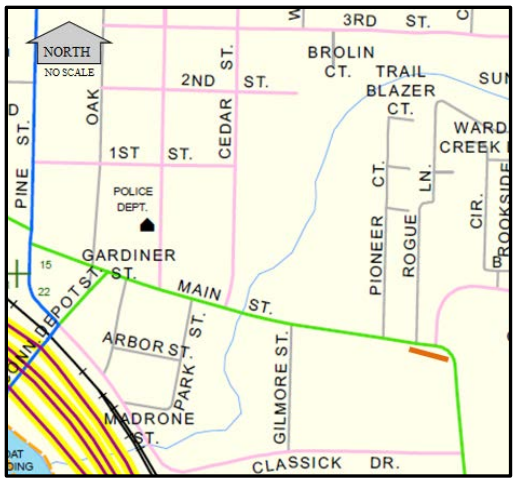
Key Considerations/Impacts: If origin and destination of a walking trip both exist opposite of the path, then extra crossings will expose pedestrians to vehicle traffic. Buffer types and widths need to be considered where the path crosses private accesses. Pedestrians and bicyclists would be safer traveling on a sidepath. Design considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

Notes: This is in the same location as Project B3-C and is duplicated by it. Project B3-C was dismissed as it was lower rated (See Appendix C).

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 25 mph. The 2040 ADT for this street is projected to be 9800.

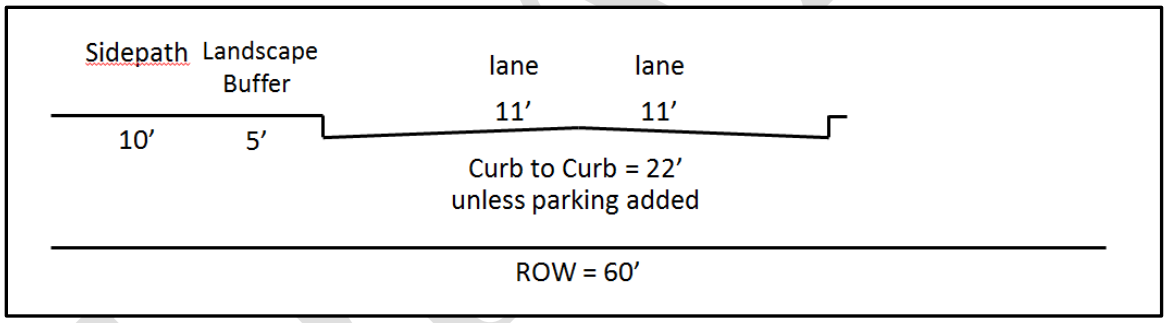
Vicinity Map



Improvement Option B: Create 10' sidepath

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

Roadway Cross-section



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.

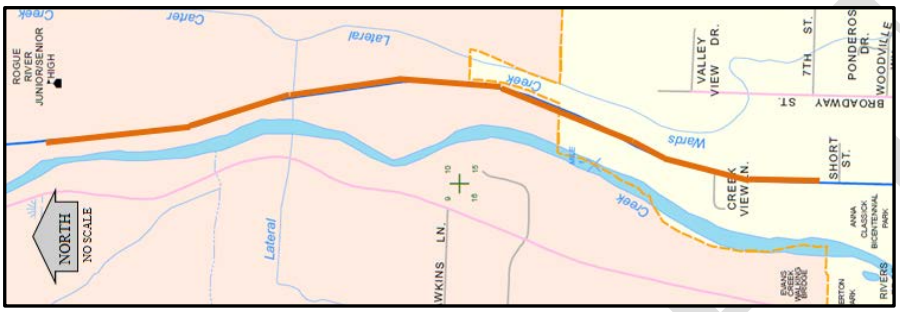
Preliminary Cost Estimate: $27,000

Key Considerations/Impacts: Pedestrians and bicyclists would be safer traveling on a sidepath. Design considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

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 to access the junior/senior high school. This section of roadway has a posted speed of 25-45 mph, even in the school zone. The 2040 ADT for this street is projected to be 3500.

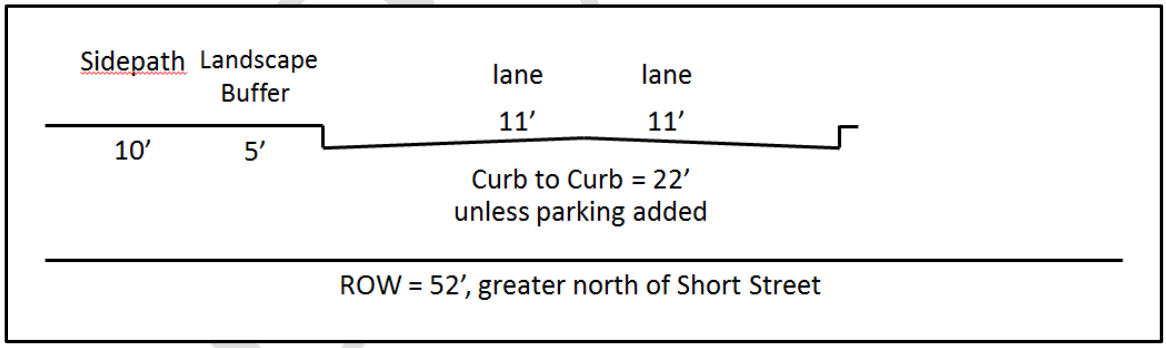
Vicinity Map



Improvement Option B: Create 10' sidepath

Description: A ten foot sidepath would be built from beginning of roadway north to the junior/senior high school.

Roadway Cross-section



Benefits: Providing a sidepath should help pedestrians traveling on this street or going to the junior/senior high school. Pedestrians will have a safe space to walk away from traffic. A sidepath and buffer would give a comfortable separated space for bicyclists and pedestrians especially in the higher speed sections, maximizing use. The bicycle LTS rating significantly improves from LT4 to LTS 1. 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: In some areas this option may require retaining walls. Pedestrians and bicyclists would be safer traveling on a sidepath. The east side is chosen

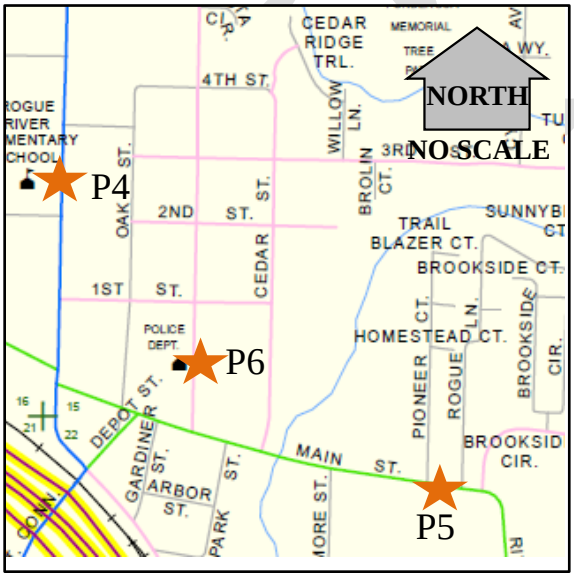
as it will not interfere with utility poles and have fewer slope issues. Design considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

Notes: Project B2-C was also selected as the choice for the bicycle mode which duplicates this project as they are both sidepath options. This project is rated slightly higher and is estimated to be slightly less in cost, so Project B2-C was dismissed.

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 Pine Street), with a 2040 ADT of 8000; at Main Street/N River Road (P5 near shopping area), with a 2040 ADT of 9800; and at Broadway (P6 near 1st Street), with a 2040 ADT of 3000. These roadways have a posted speed of 25 mph, with the exception of the school zone.

Vicinity Map



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)

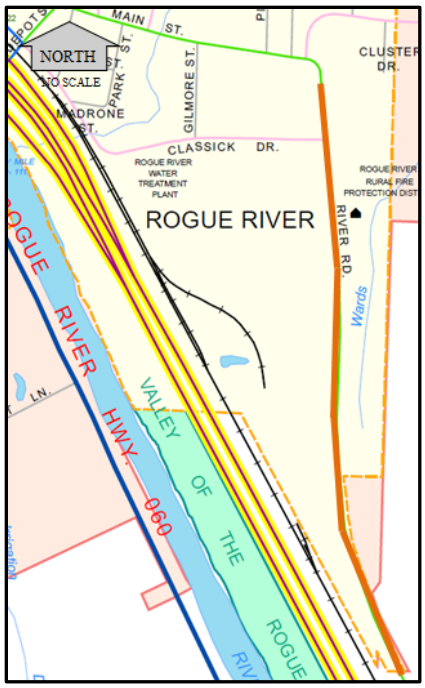
Key Considerations/Impacts: This will make the crossing locations more obvious to drivers so that they will yield to pedestrians when needed.

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. This section has a wide paved shoulder that could be used for bicycle facilities instead of unnecessary parking. 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 just outside of the UGB. 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.

This section of roadway has a posted speed of 25-45 mph. The 2040 ADT for this street is projected to be 3500, and 3100 south of Classick Drive. 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.

Vicinity Map



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.

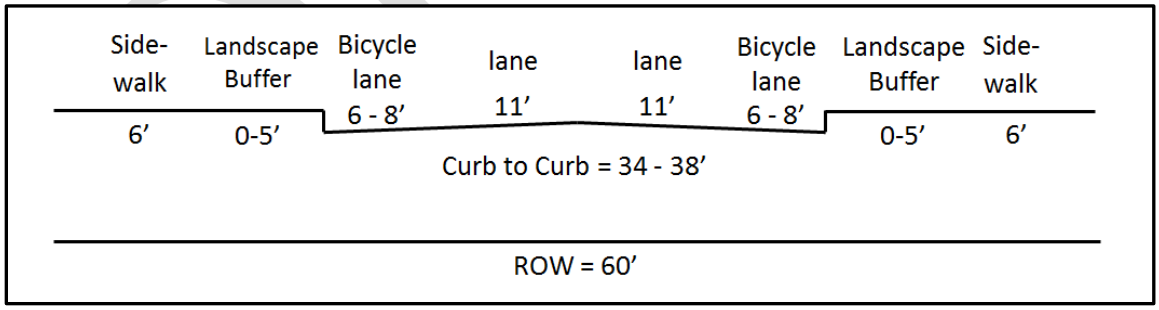
Preliminary Cost Estimate: $289,000

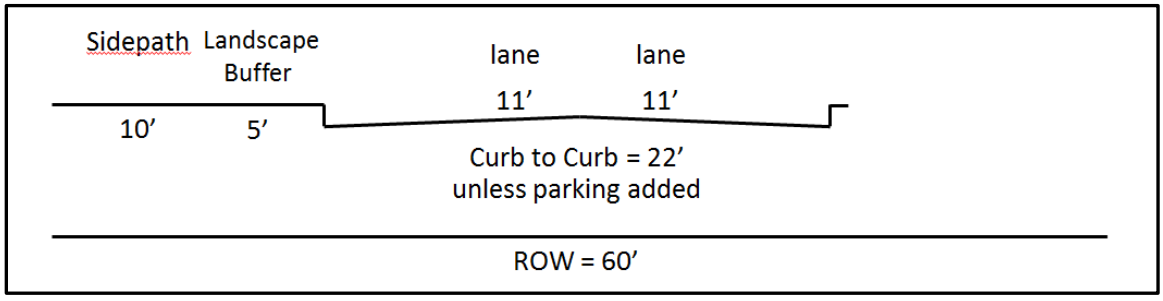
Key Considerations/Impacts: Vehicular traffic traveling into town will be more likely to see signing or a beacon. Pedestrians crossing the street would be much safer with one of these improvements.

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. The paved shoulders would be converted to bicycle lanes north of Classick Drive. A ten foot sidepath would be built from Classick Drive to the city limits which would address the needs of both pedestrians and bicyclists.

Roadway Cross-sections





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. The LTS rating remains at LTS 3 for the paved shoulder section and improves to LTS 1 in the sidepath section.

Preliminary Cost Estimate: $667,000

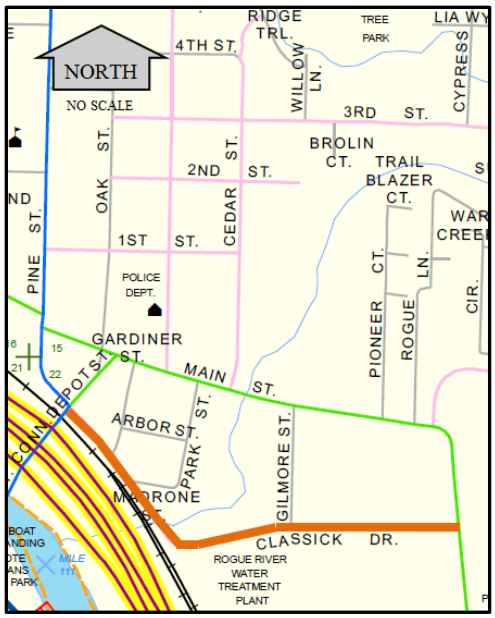
Key Considerations/Impacts: The major impact would be no street parking allowed on this segment, however, most of the uses have off-street parking locations which will minimize the loss. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Attention should be paid to avoid interference with utility poles. Design considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

Notes: Project B7 was combined into this project as the selected improvement option (buffered bicycle lane) conflicted with the sidepath option in this project, but also had a much higher cost and lower overall evaluation score. 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.

P8 Classick Drive

Deficiency: Classick Drive was originally 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 25 mph. The 2040 ADT for this street is projected to be between 2300 and 800.

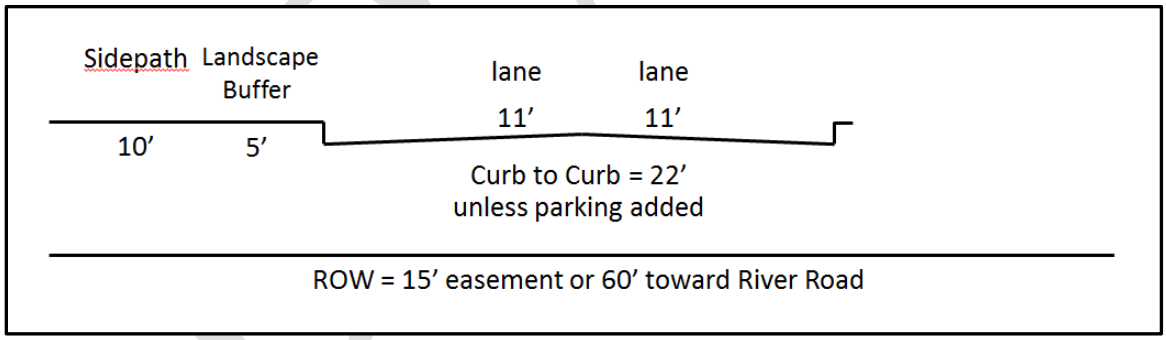
Vicinity Map



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.

Roadway Cross-section



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: Right-of-way is a 15 foot easement from Depot Street to Gilmore Street. Attention should be paid to avoid interference with utility poles. Design considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

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:

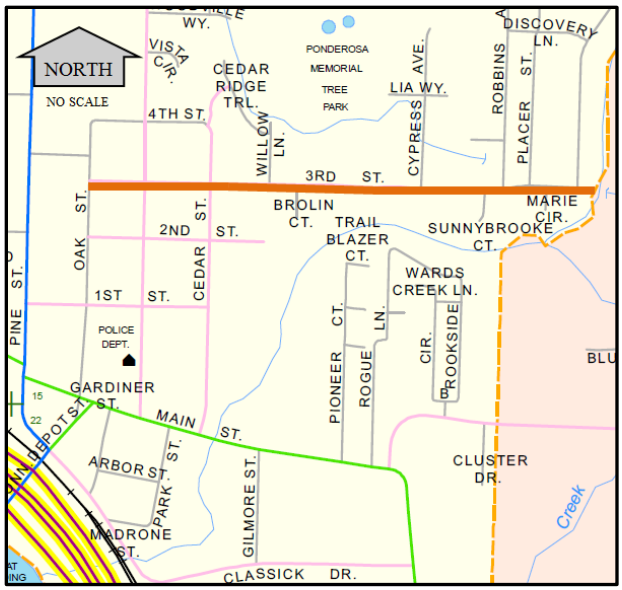
Considerations/Impacts: Utility lines should be investigated. This option may be less relevant if Classick Drive is restricted at the Pine/Depot Street intersection. Bicyclist needs are still not met.

Notes: Classick Drive also involves Project BR2-B which is a parallel bicycle/pedestrian bridge which would match well with the P8-B project above.

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 25 mph.

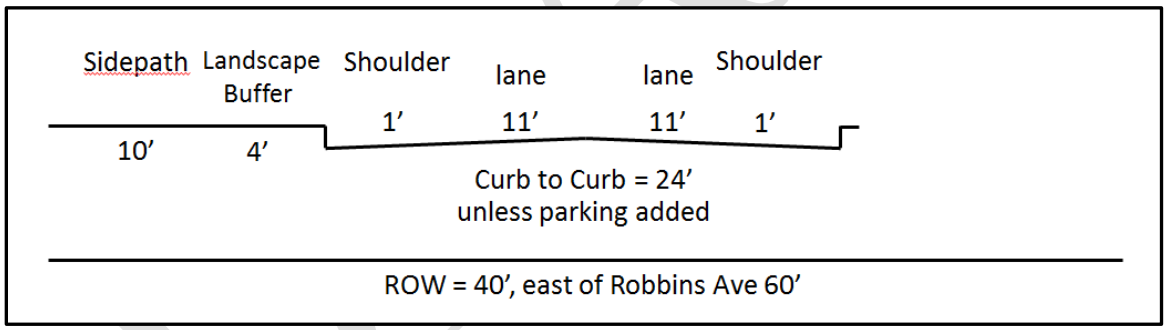
Vicinity Map



Improvement Option B: Create 10' sidepath

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

Roadway Cross-section



Benefits: A sidepath would give a comfortable separated space for bicyclists and pedestrians, maximizing use. This option would improve the pedestrian facilities to very good.

Preliminary Cost Estimate: $384,000

Key Considerations/Impacts: To avoid right-of-way purchase, the current street alignment may need to be adjusted. 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 considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

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.

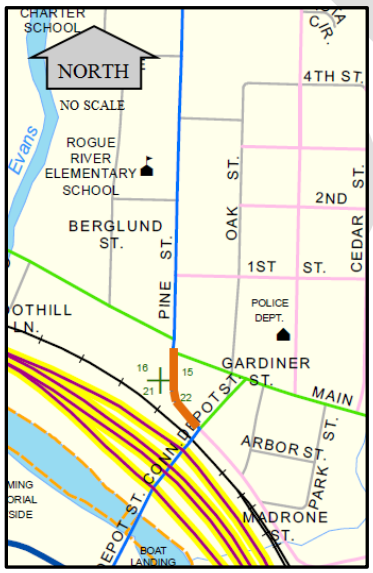
Preliminary Cost Estimate: $24,000

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 25 mph. The 2040 ADT for this street is projected to be 8200.

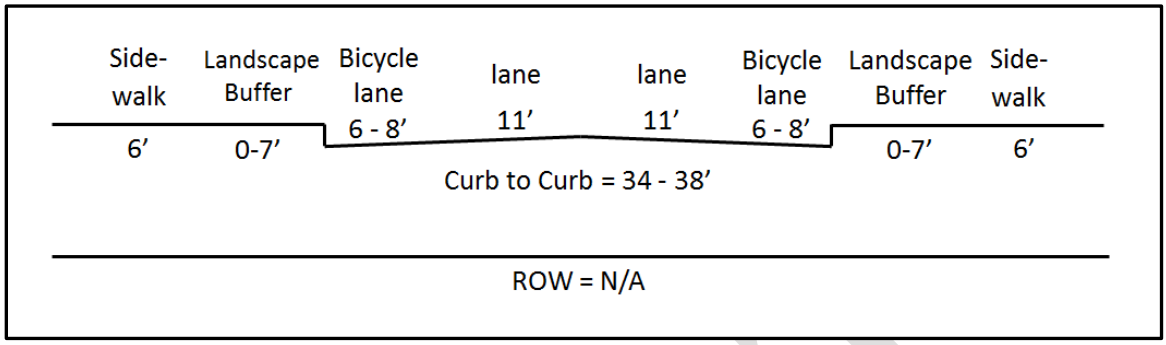
Vicinity Map



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.

Roadway Cross-section



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 on the Depot St and Classick legs of the Pine/Depot/Classick intersection.

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: $70,000

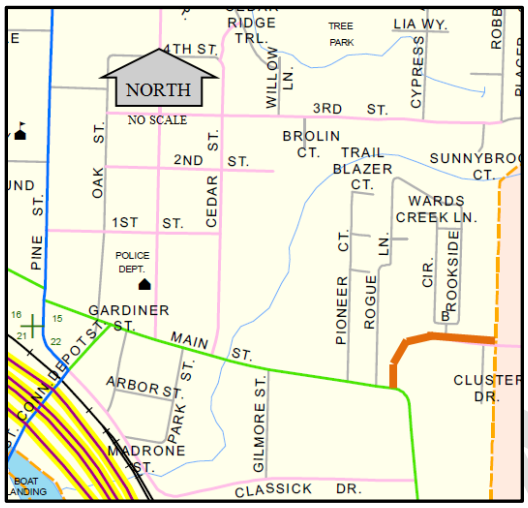
Key Considerations/Impacts: Continental Crosswalks are recommended for installation at mid-block locations. This will not detract from vehicular needs, but make the crossing locations more obvious to drivers. This option will need to be modified for crossing distance or number of stopped approaches if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

Notes: This project is at the same location as Project OS4-F. This project has been modified to be fully compatible by allowing crosswalks only on the north and east legs of the intersection as the west and south legs are essentially free-flow.

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 25 mph. The 2040 ADT for this street is projected to be 1300.

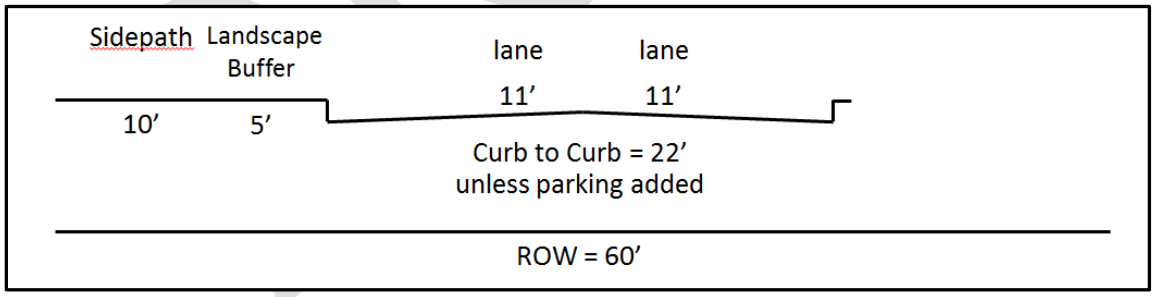
Vicinity Map



Improvement Option B: Create 10' sidepath

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

Roadway Cross-section



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: 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 eleven 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 considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

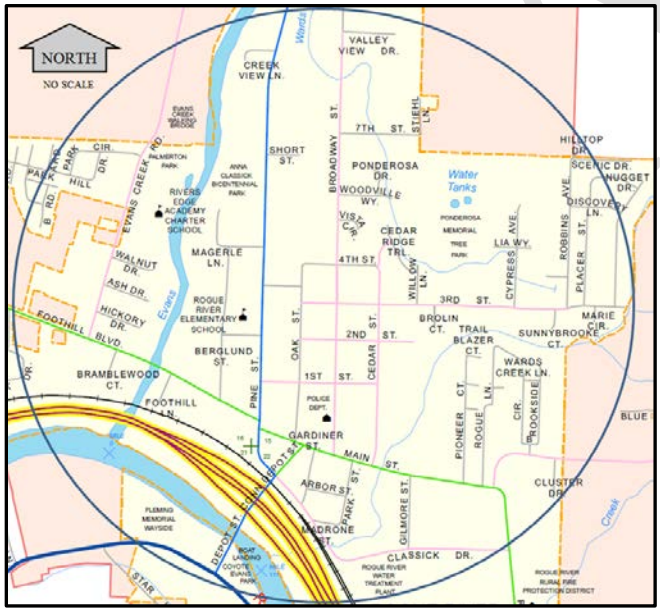
Notes: Grade should be a consideration. A rest point midway up the hill for wheelchairs and elderly could be considered.

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.

Deficiency: Priority should be given to providing sidewalks, or equivalent, within a ½ mile walk to the combined junior/senior high 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.

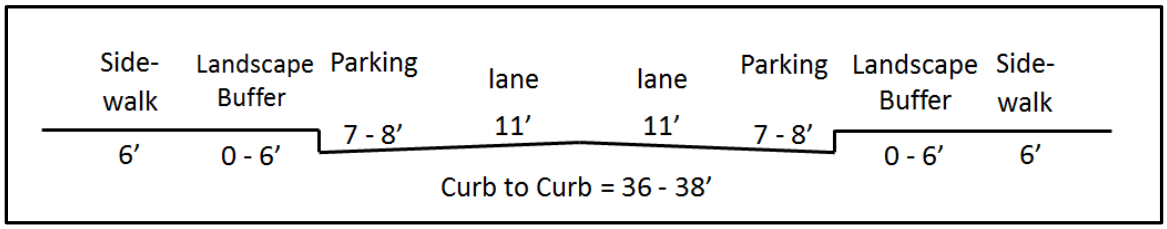
Vicinity Map



Improvement Sidewalk Option: Build six foot sidewalks.

Description: The sidewalks would be built as shown in Table 16 below.

Roadway Cross-section Example



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

Table 16: Sidewalk project location listing (P12-A to J)

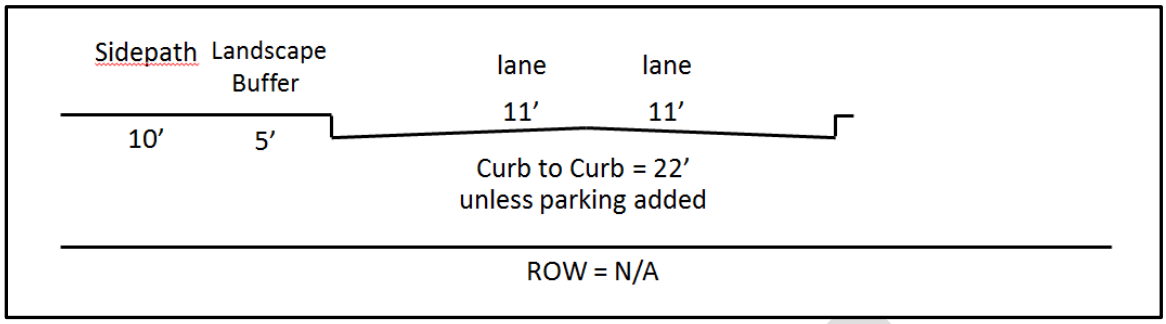
Sidewalk Option	ROW	Estimate
a: West Evans Creek Rd; S of Palmerton Park	N/A	$624,000
b: 1st St: Broadway to Cedar St	40'	$166,000
c: 2nd St Cedar to Ward Creek	40 – 35'	$80,000
d: Berglund St	50 – 36'	$332,000
e: Oak St	40'	$456,000
f: Cedar St	60'	$629,000
g: Robbins Ave	28'	$153,000
h: Park St	36'	$370,000
i: Gardiner St	50'	$243,000
j: 4th St off of Berglund St	34' 8"	$173,000

Key Considerations/Impacts: These options, with the exception of Gardner Street and Cedar Street, will 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 Sidepath Option (P12-M): Create 10' sidepath

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

Roadway Cross-section Example



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.

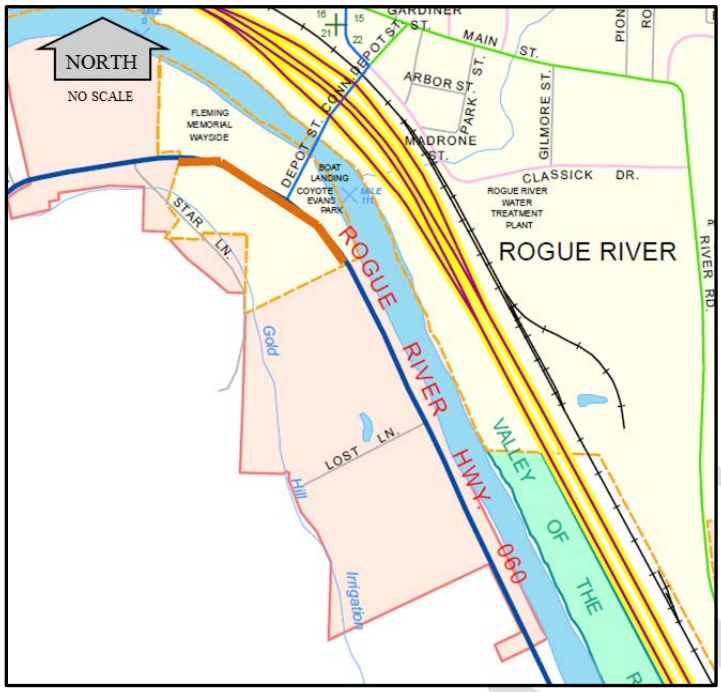
Preliminary Cost Estimate: $240,000

Key Considerations/Impacts: This option may require additional right-of-way, a consideration. The street widths that exist might 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. Design considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

P13 OR99

Deficiency: With the high volume of vehicles using OR99, there should be improved sidewalk facilities for pedestrian safety on both sides of OR99 within the UGB. There are just shoulders currently on this high speed, high volume facility. This section of roadway has a posted speed of 30 mph, 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.

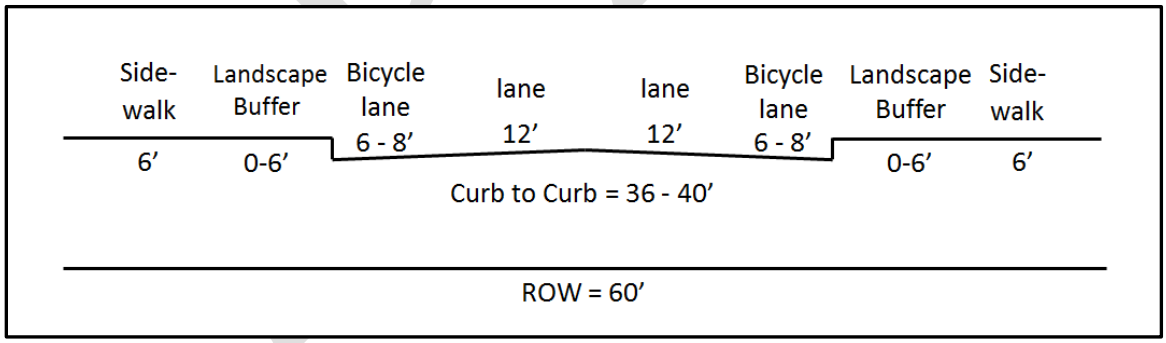
Vicinity Map



Improvement Option A: Build six foot sidewalks

Description: Six foot sidewalks would be added on both sides of OR99 within the Rogue River UGB.

Roadway Cross-section



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 OR99. The curbs will help protect pedestrians from vehicles veering out of their lane. This option would improve the pedestrian facilities to fair.

Preliminary Cost Estimate: $675,000

Key Considerations/Impacts: This will not provide as much separation as other options, such as sidepaths. 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. Sidewalk does not currently exist that is shown on the roadway cross sections. This option follows the guidance in ODOT's Highway Design Manual for urban fringe/suburban areas.

Notes: TSPs cannot obligate ODOT to fund a future improvement unless the project is already programmed in the STIP. Improvements on State facilities would need to be City/ODOT projects to address a performance target deficiency. The City will need to show alternate funding sources to fund the improvement on a State facility until the project is funded in the STIP (e.g.,, LID, SDCs, developer exactions, CIP etc.…)

This is also the same location as the Project B9-A sidepath, so either sidewalks or a sidepath could be constructed depending on ROW or local context as needed.

Bicycle Projects

Table 17: Bicycle Projects

Project #	Description	Agency	Cost	Score
B1-C	Pine St (East Main St – City Limits): Add 10' sidepath	City	$480,000	12.1
B9-A	OR99 (MP 7.9 to MP 8.48/Landsiedel Ln): Add 10' sidepath	City/ODOT	$490,000	11.3
P12-P	Pine St (Depot – East Main St): Add buffered bicycle lane	City/SRTS	$417,000	9.4
B8-C	3rd St (Pine St – City Limits) : Add 10' sidepath	City	$528,000	7.7
B5-A	Broadway St (1st St – N) : Add 6' bike lanes	City	$35,000	6.8
B6-B	Broadway St (East Main – 1st St): Add 8' buffered bike lanes	City	$18,000	6.5
B4E-A	East Main St (Ward Creek – North River Rd) : Add 6' bike lanes	City	$12,000	6.3
B4W-A	East Main St (Pine St - Ward Creek): Add 6' bike lanes	City	$12,000	1.5

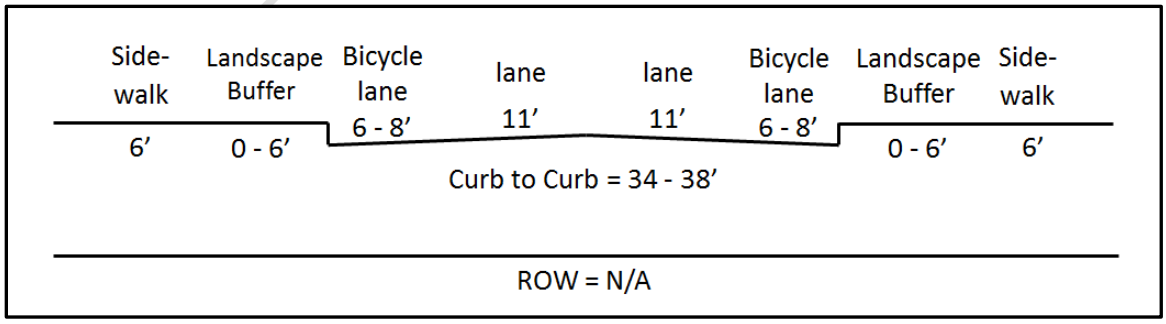
Safe Routes To School (Project P12)

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 5 summarizes the SRTS options.

Improvement Bicycle Lane Option (P12-P): Create buffered bicycle lanes

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

Roadway Cross-section Example



Benefits: Bicycle lanes would give a space for bicyclists, vehicles not allowed in lanes.

Preliminary Cost Estimate: $417,000

Key Considerations/Impacts: This option may require additional right-of-way, a consideration.

B1 Pine Street

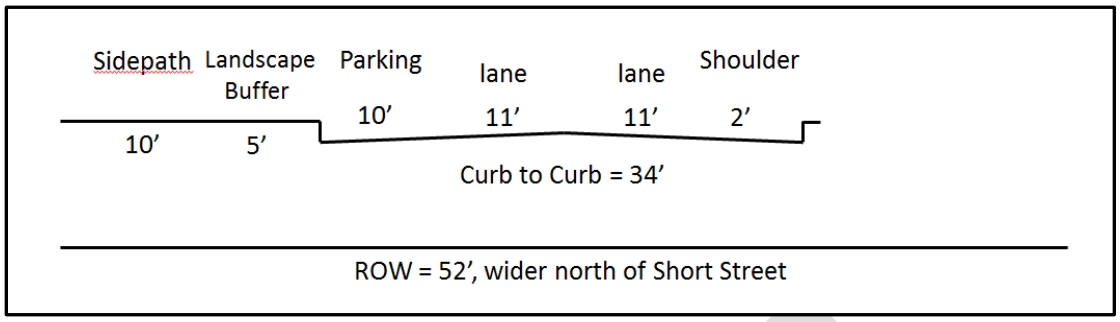
Deficiency: There are no bicycle lanes on Pine Street, from Main Street to East Evans Creek Road. Pine Street has paved shoulders running along both sides of Pine Street, beyond the elementary school and into suburban area until it turns into East Evans Creek Road. This section of roadway has a posted speed of 25 mph, 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 junior high school.

Vicinity Map

Improvement Option C: Add a sidepath

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

Roadway Cross-section



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: To avoid right-of-way acquisition, centerline of the roadway may need to be realigned. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Design considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

B4W East Main Street, West of Bridge

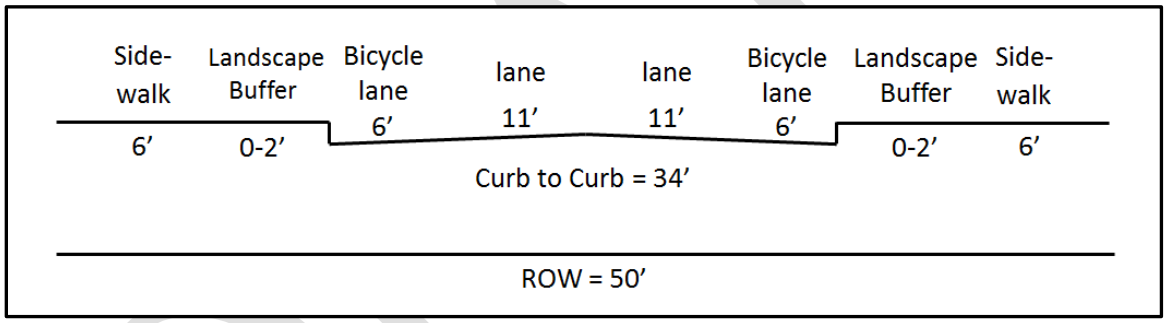
Deficiency: East Main Street needs to create bicycle lanes or show shared path markings for vehicles and bicycles from the Ward Creek bridge west to Pine Street. This section of roadway has a posted speed of 25 mph. The 2040 ADT for this street is projected to be 6600.

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 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: $12,000

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.

B4E East Main Street, East of Bridge

Deficiency: East Main Street needs to create bicycle lanes or show shared path markings for vehicles and bicycles from Ward Creek west to the Ward Creek bridge. This section of roadway has a posted speed of 25 mph. The 2040 ADT for this street is projected to

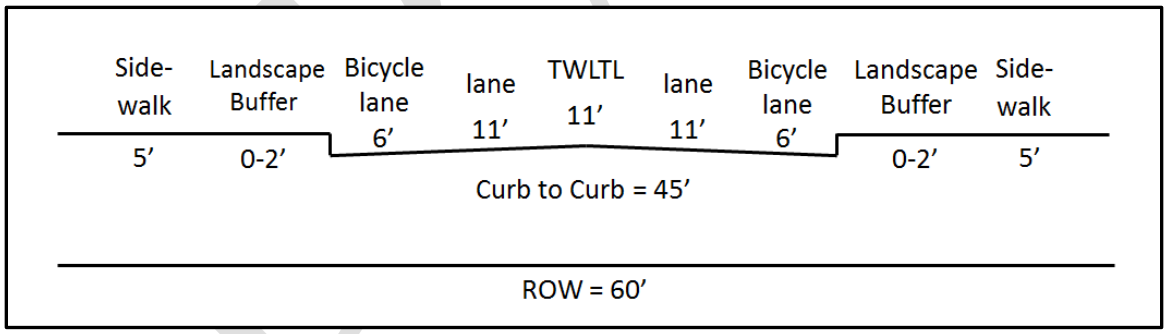
be 9800. East Main Street east of Ward Creek to North River Road has a wider shoulder on the north side to Wards Creek Road that could be converted into a four to six foot bicycle lane.

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 (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: $12,000

Key Considerations/Impacts: With 60 feet of right of way this option should fit within that. Reducing lane width to eleven feet will not have any significant impacts to vehicular capacity or operation. Pedestrian sidewalks are not affected.

B5 Broadway Street North

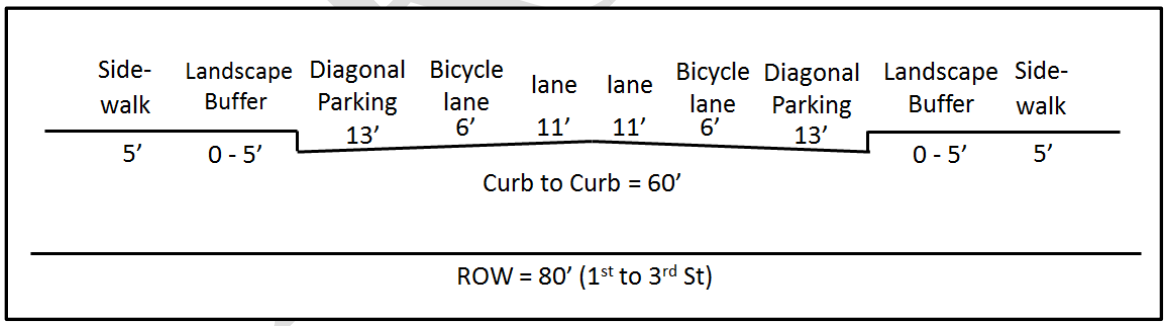
Deficiency: Broadway Street north of 1st Street needs to have bicycle lanes. This section of roadway has a posted speed of 25 mph.

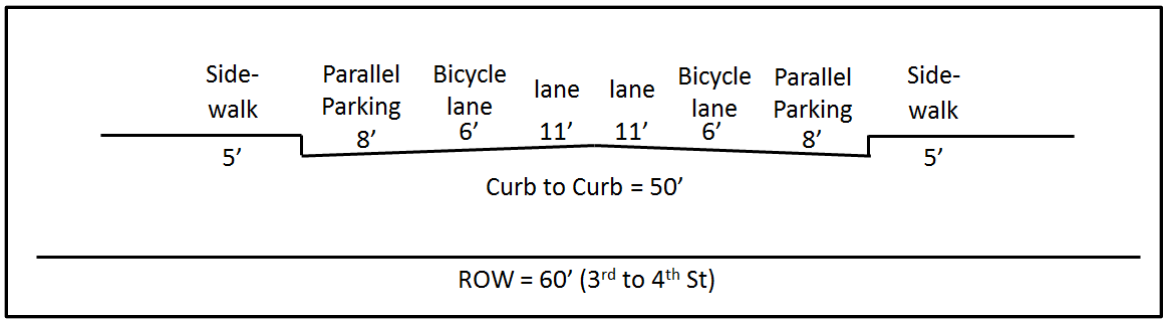
Vicinity Map

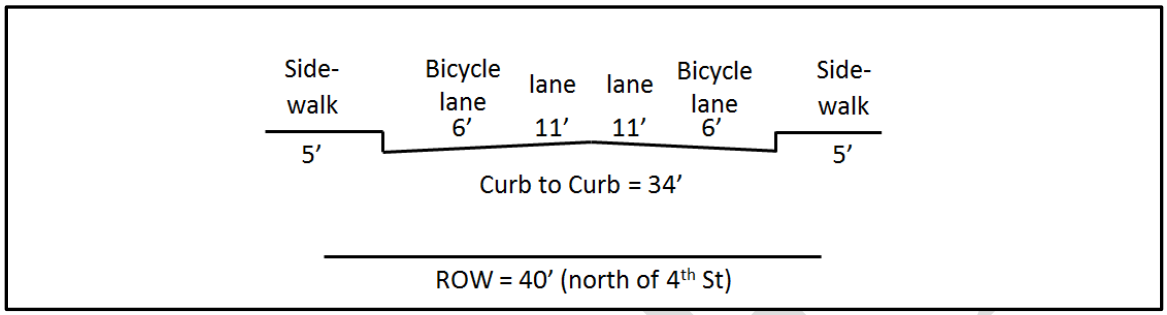
Improvement Option A: Create six foot bicycle lanes.

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

Roadway Cross-Sections







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.

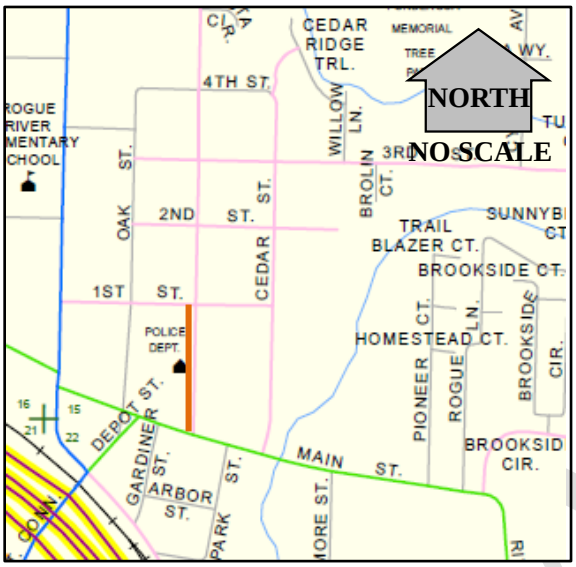
Preliminary Cost Estimate: $35,000

Key Considerations/Impacts: Diagonal parking could be preserved (at 13 foot width) as the paved street surface is wide enough for eleven foot 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. Parking may be affected as there is less right-of-way north of 3rd and 4th Street. Right-of-way will be an issue north of 4th Street. Right-of-way would be needed if sidewalks are desired. In the section north of 4th Street, where the right-of-way is 40 feet, a sidepath may be an option the City would like to consider.

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 25 mph. The 2040 ADT for this street is projected to be 3000.

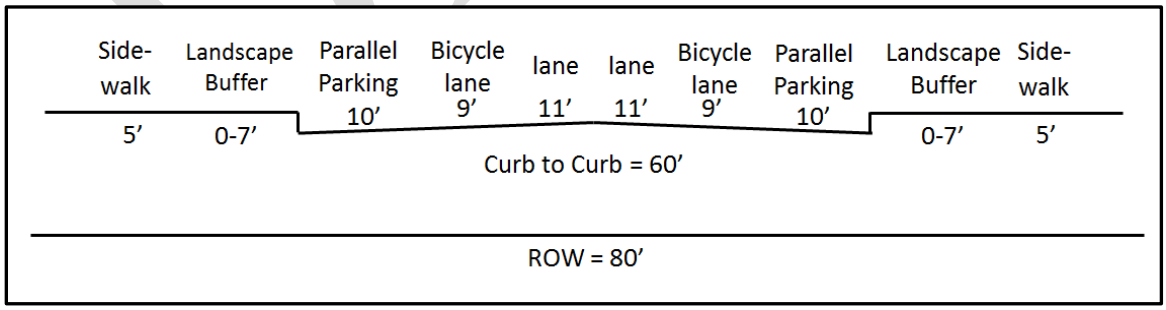
Vicinity Map



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



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.

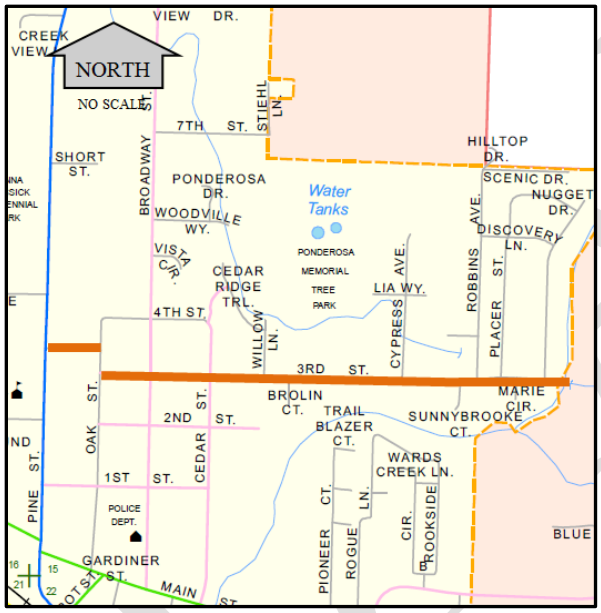
Preliminary Cost Estimate: $18,000

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.

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 25 mph.

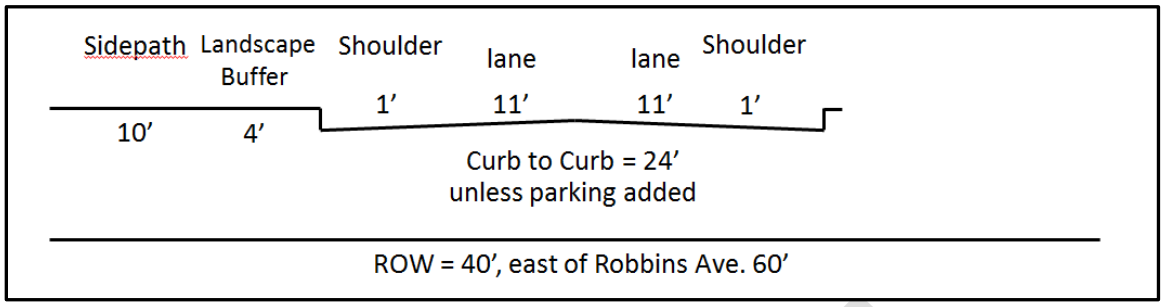
Vicinity Map



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.

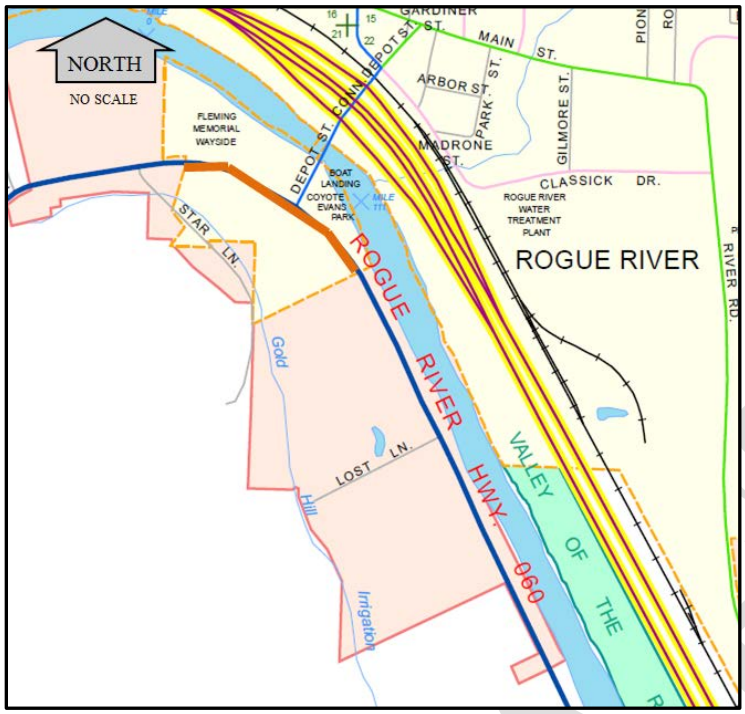
Preliminary Cost Estimate: $528,000

Key Considerations/Impacts: If the current centerline of the roadway is kept, then right-of-way may be an issue west of Robbins Avenue, at least on one side of the roadway. However, the total dimensions of this option will fit within the current right-of-way, if the centerline is shifted. 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 considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

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 30 mph, 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



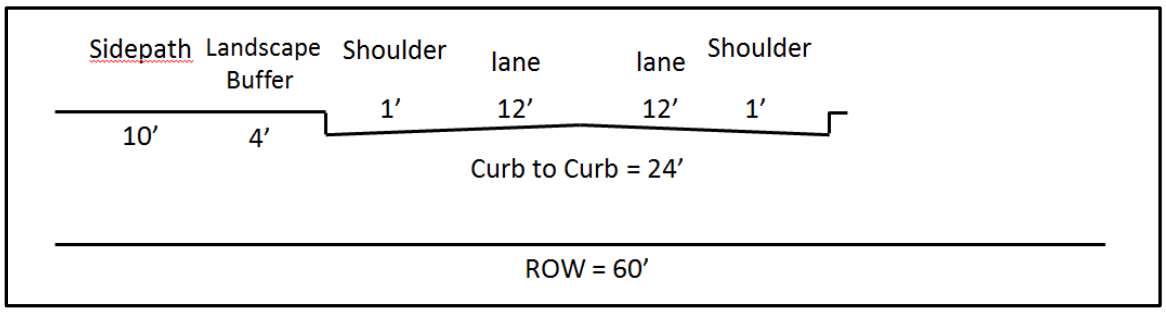
Note: The options shown below are all consistent with ODOT's Highway Design Manual standard for urban fringe/suburban areas.

TSPs cannot obligate ODOT to fund a future improvement unless the project is already programmed in the STIP. Improvements on State facilities would need to be City/ODOT projects to address a performance target deficiency. The City will need to show alternate funding sources to fund the improvement on a State facility until the project is funded in the STIP (e.g., LID, SDCs, Developer Exactions, CIP etc.…)

<u>Improvement Option A: Create a 10' sidepath</u>

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: $490,000

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 considerations, such as storm drainage, should be given for crossing a driveway or roadway, likely less impact than a sidewalk (no ramps required).

Notes: This is also the same location as the Project P13 sidewalks, so either sidewalks or a sidepath could be constructed depending on ROW or local context as needed.

Transit Projects

Table 18: Transit Projects[1]

Project #	Description	Agency	Cost	Score
T1-A	Add on-demand transit service	City	$179,000/yr	10.7

[1]Project T2 (Stop placement) had Option C selected, but since this option leaves the current stop location in place, there is no need for a separate project.

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.

Notes: Estimates based on weekday service with 12 hours a day.

Operations and Safety Projects

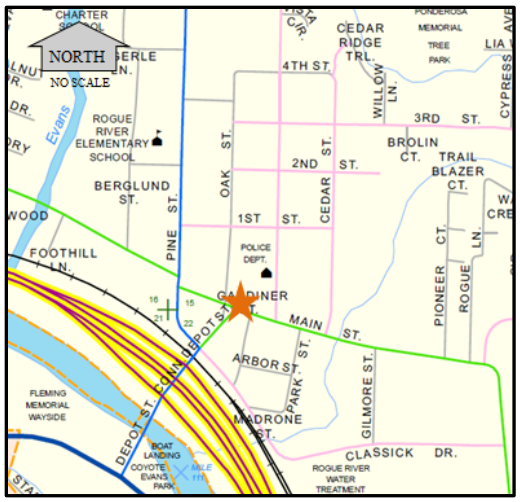
Table 19: Operations & Safety Projects

Project #	Description	Agency	Cost	Score
OS4-F	Depot & Pine St intersection: Convert to Pine St as through movement & Depot St to one-way NB	City	$81,000	12.5
OS3-D	Depot & East Main St intersection: Depot St one-way NB & Pine/Main roundabout	City	$280,000	10.6
OS5-C	SB I-5 off-ramp: Lengthen ramp and turn lanes and widen SB I-5 Evans Creek bridge	ODOT	$2,276,000	
OS5-B	NB I-5 off-ramp: Add right turn lane	ODOT	$619,000	
OS8-C	Pine & Main St intersection: compact roundabout	City	$250,000	9.6
OS5-E	Interchange refinement study	ODOT	$750,000	2.6

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. This congestion and slowing is due to the nearby interchange, because of proximity and problems with the interchange. 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. Preliminary Signal Warrants (PSW's) were not met for this intersection.

Vicinity Map



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

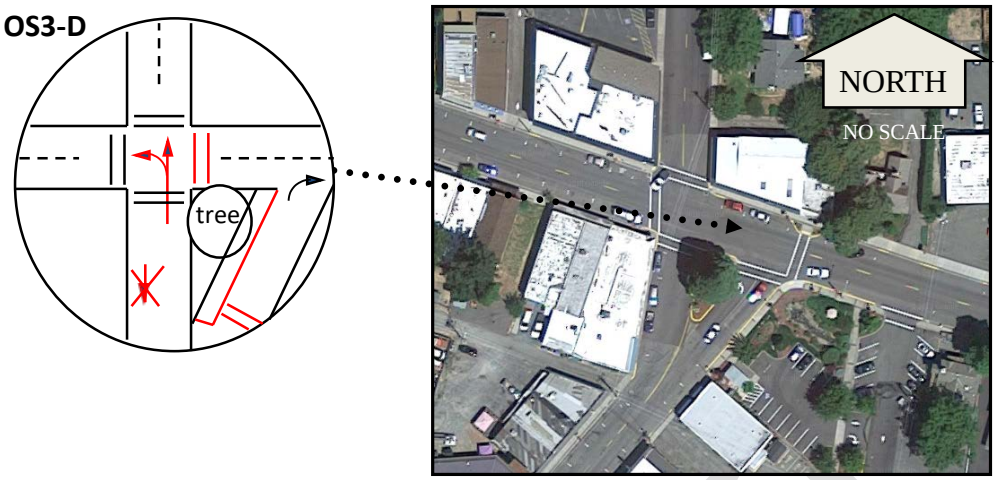
Description: Depot Street becomes a one-way northbound street from Classic Drive to East Main Street.

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 intersection's 2040 LOS remains at LOS C. 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. The East Main Street and Pine Street intersection V/C ratio rises from 1.08 to 1.39 and will meet preliminary signal warrants which will trigger the need for OS8 Option C (Pine/Main roundabout) which is included in the cost estimate. A Pine/East Main Street roundabout with bypass lane on the east to north will have a V/C ratio of 0.68 and LOS C.

Intersection Diagram

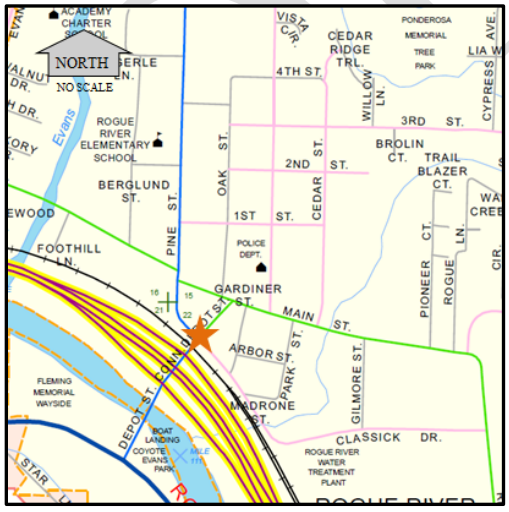


Copyright 2018 Google

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 interchange creates congestion and affects the closely spaced city street system. 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 F: Pine Street through movement

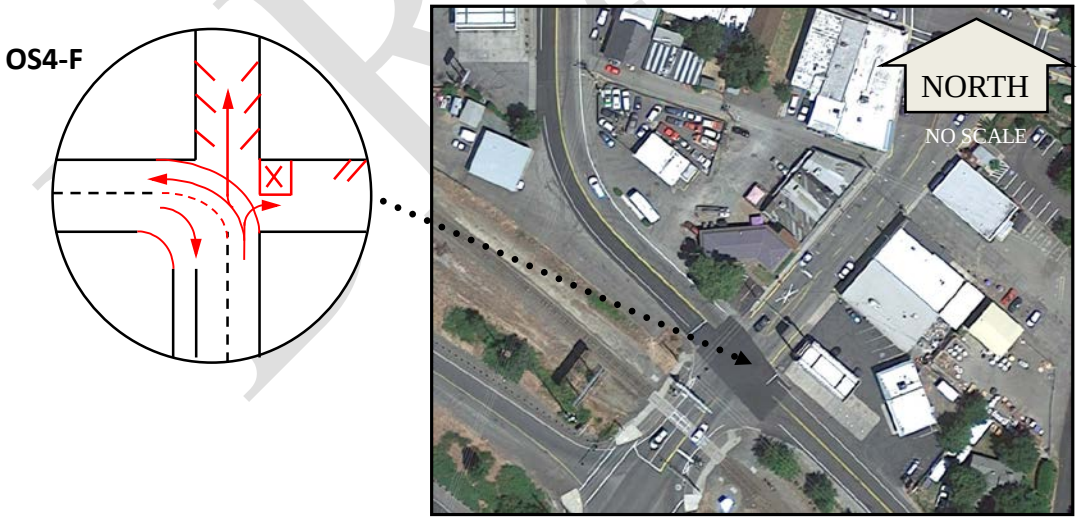
Description: The through movement is realigned to be to/from Pine/Depot streets. Classick Drive becomes a right in only. Depot Street becomes a right only. Classick Drive and Depot Street become one way eastbound and northbound streets till they end.

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 remains at 0.72 because is it controlled by the northbound Depot Street approach. The intersection's 2040 LOS improves from LOS F to LOS B. 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: $ 81,000 (OS4-F only) - $361,000 (OS3-D+OS4-F+OS8-C)

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. This project also will trigger need for Project OS3-D as Depot Street is converted to one-way under OS4-F. Project OS3-D already includes Project OS8-C within it.

Intersection Diagram

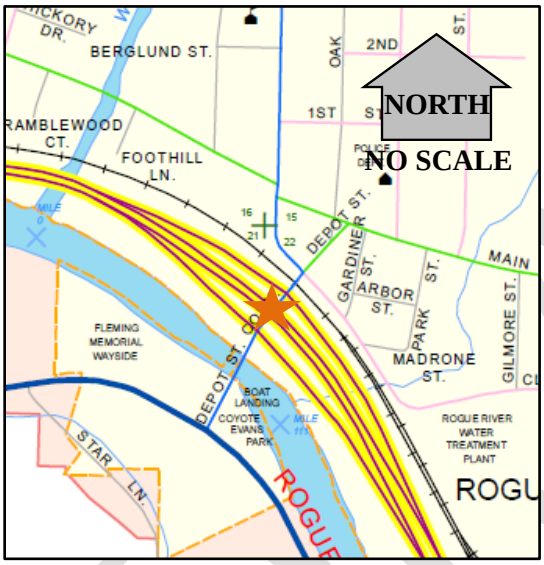


OS5 Depot Street Interchange

Deficiency: This signalized interchange will have queues in both directions on Depot Street radiating from the closely spaced ramp terminals. 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 ramps.

The V/C at the southbound ramp terminal is forecasted to be over capacity at a v/c of 1.07 in 2040. The V/C at the northbound ramp terminal is forecasted to be 1.17 in 2040. The southbound ramp terminal is predicted to exceed the OHP v/c target by 2028 and capacity by 2036, while the northbound will reach the target by 2026 and capacity by 2032.

Vicinity Map



Impacts Discussion: There are three elements creating above standard and over capacity V/Cs at the interchange: volume, timing, and space restrictions. The projected volumes are not high, just more than this system and interchange structure can handle. The volume levels would not normally be expected to cause this level of congestion for an urban area the size of Rogue River.

The Rogue River interchange brings more traffic and congestion onto itself as it also routes traffic to or from OR99. The interchange operates between Grants Pass and Medford and takes in several trips from these locations. Rogue River functions as a bedroom community to these larger cities with about a third of trips going to destinations in Jackson County and over 40% to destinations in Josephine County. People traveling from the Evans Creek valley north of the city also must funnel through this interchange. About 90% of the commuting trips through the interchange are by single-occupant vehicles based on the latest American Community Survey 2010-2015 data.

There is already optimized coordinated signal timing in operation at this interchange done by ODOT District 8. Additional timing improvements will not address capacity issues. Longer signal cycle lengths could theoretically push more traffic through, but at the expense of much longer queue lengths which there is not room for on the ground.

Available queue storage is at a premium in and immediately surrounding the interchange. More interchange width would help, but the railroad tracks and the river constrain that element. The railroad tracks and I5 itself creates issues of widening the northbound ramp (retaining walls likely needed). Longer ramps to prevent queues from backing onto the mainline through lanes of I5 should be pursued, but there is the nearby Evans Creek bridge that significantly adds to the cost of lengthening the southbound ramp. The southbound ramp terminal is constrained by the adjacent bridge over the Rogue River and the Rogue River Greenway path entrance.

Tight overall geometry is a large problem when considering the turning radii of trucks at these intersections and the narrow Depot Street undercrossing. Trucks cannot turn from the southbound off ramp onto Depot Street and completely stay in their own lane. The turning radius of larger trucks and the off-tracking of the trailers causes some vehicles waiting to turn left to have to back up to make room (not always possible without delay). Trucks and emergency service vehicles do not have room to wait on either side of the railroad tracks and stay in a lane. There is not enough queue storage between the ramp terminals to accommodate even current demands. The Depot Street undercrossing is too narrow and only allows one lane into the downtown. This one lane then controls the Depot Street and Pine Street/Classick Drive intersection, as it is the only move not stopped. Vehicles from the other approaches need to divert to other routes or "force" themselves into the intersection to go though it which causes immediate backups and delays in the interchange.

There is also a safety issue as I5 bends between the railroad tracks and the river at the City of Rogue River. This bend reduces sight distance just before the gore point of the Rogue River southbound exit ramp. Adding to the geometry issues is the I5 bridge itself over Evans Creek, also just before the gore point of the Rogue River southbound exit ramp.

Future volume growth through the interchange will not be entirely because of city growth. Looking at the segment between the ramp terminals, 44% of the growth to 2040 is from increased background or through growth on County roadways or on I-5. The remaining 56% of the growth at 2040 is projected City growth in the residential, commercial, and industrial sectors.

Future growth can be highly variable as it is based on a number of economic factors that cannot be directly controlled. To help address this, a sensitivity analysis was performed with an extra 10% and 25% growth in volume. A ten percent volume growth represents the daily fluctuation that could occur in a given week. The 25% growth represents a much larger impact due to unexpected or faster than predicted background growth either within the city, in the surrounding Jackson County areas to the north, or along I-5 to the north and south. Table 20 shows the sensitivity analysis results.

With a 10% volume increase, v/c ratios and queuing are not affected for the southbound ramp terminal (see Tables 22 and 23 for comparison). However, the v/c ratio does increase substantially and the ramp queues approximately triple for the northbound terminal. The 25% increase raises the v/c substantially for both ramp terminals. Queues increase to over half of the length of the northbound ramp and three-quarters of the southbound ramp, which substantially extend into the deceleration zone which increases the risk for high-speed rear-end collisions. At either sensitivity level, the resulting queues on Depot Street would likely extend over the Rogue River bridge and impact OR99 in addition to substantial congestion in the Rogue River downtown area. This shows that even small increases in volumes can have substantial impacts to the surrounding system. Given the constraints, these impacts could create a substantial burden on the interchange area.

Table 20: 2040 No-build Sensitivity Analysis Results

Scenario	NB Ramp Terminal	SB Ramp Terminal
2040 TSP Future No-build Conditions	Off-ramp queues : 225' Intersection v/c = 1.17 Intersection LOS = F	Off-ramp queues: 400' Intersection v/c = 1.07 Intersection LOS = F
+ 10% volume increase	Off-ramp queues : 700' Intersection v/c = 1.27 Intersection LOS = F	Off-ramp queues : 475' Intersection v/c = 1.14 Intersection LOS = F
+ 25% volume increase	Off-ramp queues : 900' Intersection v/c = 1.41 Intersection LOS = F	Off-ramp queues : 675' Intersection v/c = 1.21 Intersection LOS = F

A large number of potential alternatives were evaluated at the local street level to address deficiencies. A set of local improvement alternatives have been identified in this TSP memorandum to help funnel traffic to and from the direct interchange area (Projects OS3-D, OS4-F, and OS8-C). Because of the limited street network, these are all interrelated together. Project OS4-F converts the Depot/Pine/Classick intersection into a couple of "right-off's" to Depot Street and Classick Drive but also ends up triggering OS3-D to complete the on-way conversion of Depot Street and OS8-C to mitigate the shifted traffic from OS3-D and OS4-F. The end result will streamline the Depot/Pine intersection by eliminating conflicting movements from the minor approaches with the main/through Depot-Pine movements. The project will also improve movements into the interchange by removing a driver decision point, reducing conflicts and improving storage distance. The Depot and Main Street (OS3-D) and Pine and Main Street (OS8-C) projects also streamline the traffic flow.

Tables 21 through 23 shows the impact of the preferred projects at significant study area intersections. Appendix D contains the analysis output files for these intersections. The

Depot and Pine Street three-way stop is removed while the Pine and Main Street all-way stop is replaced by a roundabout. At both of these locations, the total delay drops substantially with an increase of total capacity. The removal of these two local bottlenecks allows traffic to flow faster and arrive at the northbound ramp terminal at a much higher level. This causes the delay at the northbound ramp terminal to increase and decreases intersection capacity which causes the significantly higher v/c seen in Table 22. Since the northbound ramp terminal is now the "new" bottleneck and meters traffic, the southbound terminal is unaffected by these projects.

The addition of the right turn lane at the northbound terminal does improve the efficiency at both ramp terminals as delay decreases and capacity increases. However, this improvement is not enough to improve operations down to or under the no-build level. Further improvements are not possible because of current space restrictions from the river and railroad and the three-lane span length of the I-5 overcrossing structures. The v/c at the southbound terminal also increases as both intersections need to work together to balance the flow through the interchange, but delay is still decreased with a shorter assumed cycle time (to 70 seconds down from 95). This improvement does not affect the Depot and Pine Street intersection but smooths out the flow on both roadways generally reducing delay and improving capacity at both the Depot and Main Street and Pine and Main Street intersections. Note that this improvement is needed to allow the roundabout at the Pine and Main Street intersection to function with the City proposed LOS standard.

Table 21 : Comparison of 2040 Total Delay & Capacity

Intersection	2040 No-Build		2040 Local Projects Build		2040 Preferred Build	
	Total Delay (s)	Intersection Capacity (vph)	Total Delay (s)	Intersection Capacity (vph)	Total Delay (s)	Intersection Capacity (vph)
NB I-5 Ramp Terminal	220	2200	400	2010	320	2930
SB I-5 Ramp Terminal	310	2660	310	2660	170	2690
Depot St & Pine St	300	2350	10	2500	10	2490
Depot St & E Main St	50	4790	50	3880	40	4320
Pine St & E/W Main St	240	2650	100	4280	70	4520

Table 22 : Comparison of 2040 v/c & LOS[1]

Intersection	2040 No-Build v/c, LOS	2040 Local Projects Build v/c , LOS	2040 Preferred Build v/c, LOS
NB I-5 Ramp Terminal	**1.17, F**	**1.43, F**	**1.33, F**
SB I-5 Ramp Terminal	**1.07, F**	**1.06, F**	**1.18, F**
Depot St & Pine St	1.06, **F**	0.55, B	0.61, B
Depot St & E Main St	0.48, C	0.66, D	0.48, D
Pine St & E/W Main St	1.14, **F**	0.99, **F**	0.88, D

[1]Black-shaded cells indicate that the ODOT OHP v/c (no-build) or the HDM v/c (build) or the proposed City LOS thresholds have been exceeded.

The overall impact of the changing capacity and delay values is reflected in the 95th percentile queues. The issues at the northbound ramp terminal with the higher v/c ratio with the local projects is reflected with an off-ramp queue of three times the no-build value. With the northbound ramp terminal widening, the value falls back to the no-build value. This improvement also shows a lesser chance of blocking the northbound terminal with queues extended back from the southbound terminal and preventing northbound queues from extending back over the Rogue River bridge and blocking the intersection with OR99. Because of the short 300' ramp terminal spacing, queues generally extend between both terminals in all scenarios over 50% of the time which reduces capacities on Depot Street and on the ramps 50% or more.

Table 23 : Comparison of 2040 Ramp Terminal Queuing

Intersection	2040 No-Build		2040 Local Projects Build		2040 Preferred Build	
	Queue (ft)	Blocked Intersection & Probability	Queue (ft)	Blocked Intersection & Probability (%)	Queue (ft)	Blocked Intersection & Probability (%)
NB Ramp Terminal						
SB Depot St	100	Depot & Pine, 50%+	100	Depot & Pine, 50%+	100	Depot & Pine, 50%+
NB Off-ramp	225		675		225	

NB Depot St	500	SB Ramp Terminal, 50%+	500	SB Ramp Terminal, 50%+	500	SB Ramp Terminal, 50%+
SB Ramp Terminal						
SB Depot St	500	NB Ramp Terminal, 50%+	500	NB Ramp Terminal, 50%+	375	NB Ramp Terminal, 22%
SB Off-ramp[1]	400		400		425	
NB Depot St	750	Depot St & OR99, 32%	750	Depot St & OR99, 32%	500	

[1]Queue extends beyond provided 200' storage into ramp deceleration zone

This analysis emphasizes the fact that the ramp terminal intersections and the two most significant local intersections of Depot and Main Street and Pine and Main Street are tied together and improvements are needed at both locations to address issues on the local and state systems.

There is a need to be able to investigate larger lane configurations on the ramps and on Depot Street with their impacts on the adjacent local system, but the permutations and required detail level are too great for a TSP-level analysis. Some improvements that would also need to be analyzed, such as new interchange forms or locations require a much broader set of expertise and detail and also would generate many new solutions both at a high-system level and a detailed operational level is also not appropriate for a TSP analysis.

ODOT has exhausted all possibilities to try to make this interchange work better within the limits of a TSP analysis. All of the operational, safety, geographic, and geometric issues that surround this interchange confirm a set of unique conditions shown in the Rogue River TSP that do not typically exist in other small cities. Region 3 has indicated that rebuilding or relocating the interchange is not fiscally prudent, so physical improvements are limited to the ramp improvements shown below. This reinforces the need for further future study such as a refinement plan and/or consideration of alternative mobility standards.

Alternative Mobility Standards

The addition of local and state projects in and around the interchange have not addressed the no-build over-capacity condition under the 2040 30th highest hour (future design hour) conditions. Alterative mobility standards will be needed to help fill the gap before more extensive interchange improvements are completed pending financial need and regional priorities.

Since the ramp terminals were overcapacity using the 30th highest hour (design hour) volumes, the 2040 volumes were reduced approximately eight percent to average weekday conditions. Table 24 shows the I-5 ramp terminal v/c ratios for the 2040 no-build and build scenarios. Even with average weekday volumes, the interchange v/c's are still exceeding 1.0.

Table 24: I-5 Ramp Terminal v/c's under Average Weekday Conditions

Intersection	2040 No-build v/c	2040 Local Projects Build v/c	2040 Preferred Build v/c
NB I-5 Ramp Terminal	1.08	1.32	1.24
SB I-5 Ramp Terminal	1.07	1.07	1.17

Since the average weekday conditions are forecasted to be greater than 1.0, any alternative mobility standard will be based on the duration of congestion (i.e. hours at or exceeding 1.0). The northbound ramp terminal is the controlling intersection in the interchange, so the alternative mobility standard will be based on forecasted conditions at that location. Because of the different conditions that occur depending on whether the local or interchange projects are constructed a set of different standards are needed. See Appendix E for figures showing the intersection demand, the available capacity, and the actual demand that can be served. The resulting durations of congestion are:

- 2040 No-build : 4 hours at or above an intersection v/c ratio of 1.0
- 2040 Local Projects Build: 12 hours at or above an intersection v/c ratio of 1.0
- 2040 Preferred Build : 6 hours at or above a intersection v/c ratio of 1.0

During this period of when the ramp terminal v/c exceeds 1.0, there is essentially not a standard in place in terms of safety. A periodic monitoring program will be necessary to measure queues on the ramps to determine triggers for ramp queue warning system for approaching I-5 mainline traffic and for the physical ramp improvements listed in the next section. This monitoring need is especially critical if the local projects are completed (and thus relocating the bottleneck to the northbound ramp terminal) before the ramp improvements.

Projects

Improvement Option B: Add right turn lane to northbound I-5 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 allowing for local congestion as well as queuing space for train crossings. 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. An ITS – based (Intelligent Transportation System) queue warning system may be necessary as a first phase or added into the project to alert I-5 drivers of congestion on the ramp and/or mainline especially if a train is passing through the railroad crossing.

The draft TSP will need to discuss potential monitoring or triggers for the ITS and/or physical improvements. For example, queues that extend into the deceleration portion of the ramp for a significant number of days or hours could be a potential trigger point.

Improvement Option C: Lengthen southbound I-5 off-ramp, queue storage and widen southbound I-5 Evans Creek bridge

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

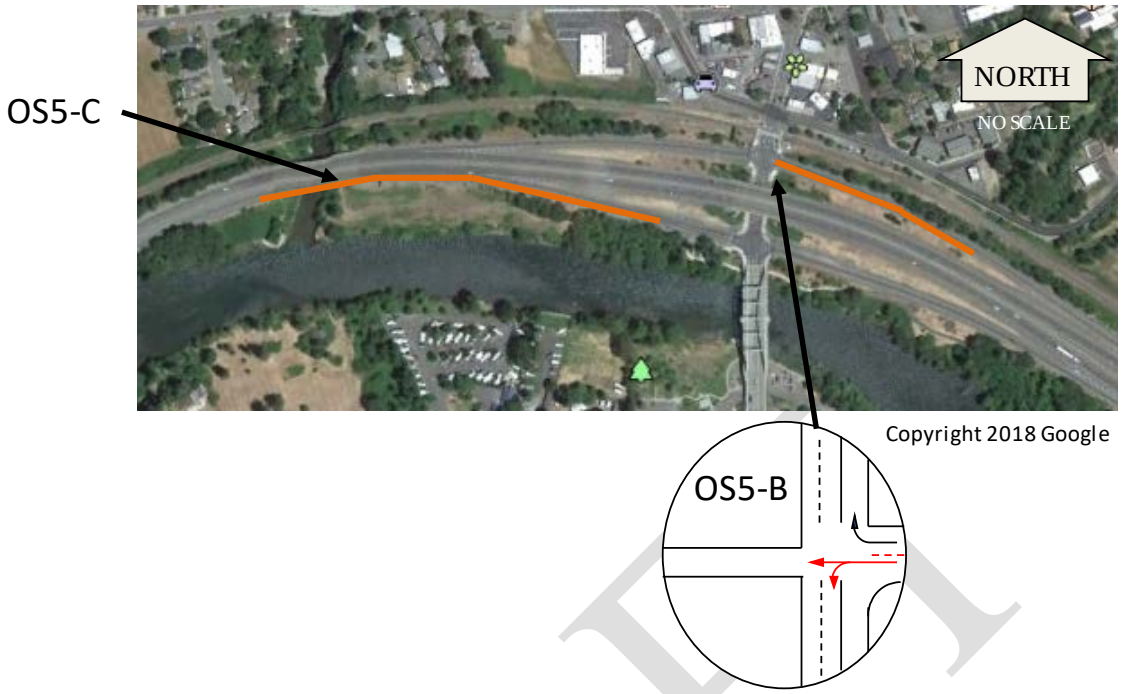
Benefits: This moves the off-ramp to a straighter I-5 section which will improve sight distance to the diverge area. The deceleration zone is also moved back which will allow for a larger queue storage area. A ramp extension of at least 300' will be needed to accommodate increased queues which will relocate the ramp gore point to the north of the Evans Creek overcrossing. A Crash Reduction Factor (CRF) of 0.41 should be applied for the ramp being lengthened.

Preliminary Cost Estimate: $2,276,000

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 so a parallel ramp structure may be needed instead. An ITS – based (Intelligent Transportation System) queue warning system may be necessary as a first phase or added into the project to alert I-5 drivers of congestion on the ramp and/or mainline.

The draft TSP will need to discuss potential monitoring or triggers for the ITS and/or physical improvements. For example, queues that extend into the deceleration portion of the ramp for a significant number of days or hours could be a potential trigger point.

Option B & C Intersection Diagrams



Improvement Option E: Interchange refinement study

Description: A separate refinement plan will be required to investigate more changes to the interchange ramps, ramp terminals and the Depot Street cross-section north of the river in order to address the queuing, capacity and geometric issues at the interchange and the surrounding local system. The plan would need to identify specific solutions to address the interchange ramp terminal deficiencies shown in the TSP.

The refinement study should investigate the issues and deficiencies that were brought up during the TSP process but are too detailed in scope for the TSP analysis along with aspirational alternatives to address system deficiencies. These include but are not limited to:

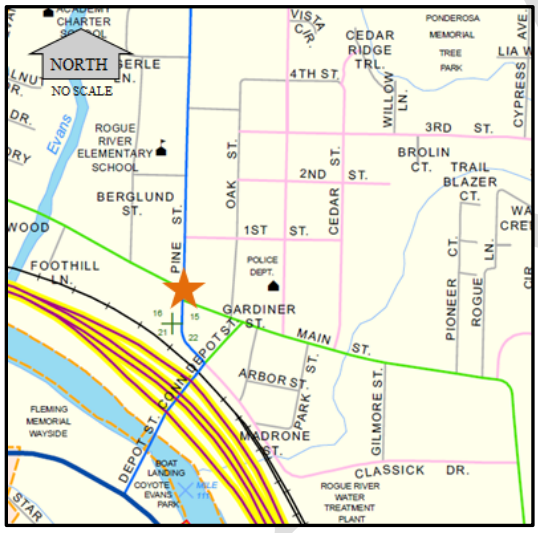
- Emergency turnarounds on I-5 (Deficiency OS11) to improve response time to/from incidents
- Additional crossings of the Rogue River either at Broadway Street (Deficiency C1) or Foothill Boulevard
- Turning radius issues at ramp terminals (Deficiency OS12)
- Revisions to the Exit 45A/B Twin Bridges Rd/OR99 interchange to accommodate increased volumes/truck traffic
- Detailed interaction between the interchange and the local system; especially between the Pine Street/Classick Drive and Pine/Main St intersections (possibly with a OS4 G/H type configuration)
- Analyzing restrictions on future growth as much as possible on the south side of the Rogue River to reduce impacts to the I-5 interchange and Depot Street.

Preliminary Cost Estimate: $750,000

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 (LOS E) in 2037. In 2040 this intersection should be over capacity with a V/C ratio of 1.08/LOS F. Preliminary Signal Warrants (PSW's) were not met at this intersection.

Vicinity Map



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 B and a v/c ratio of 0.56 (all others below 0.46). The overall intersection control delay is 11.87, with an improved LOS of B. A Crash Reduction Factor (CRF) of 0.88 should be applied for a roundabout.

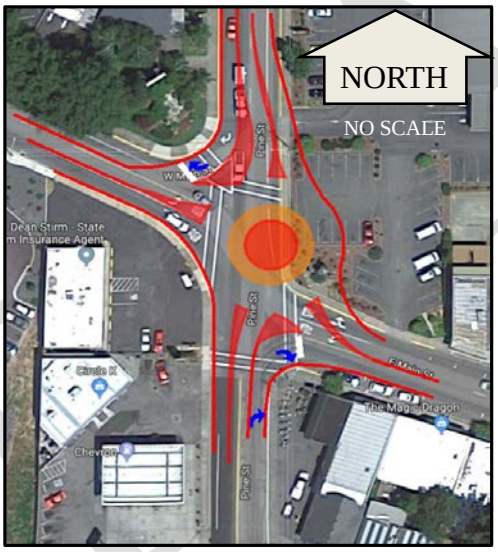
Preliminary Cost Estimate: $250,000

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 potential property impacts than with fully fixing alignment and skew. Occasionally, traffic backs up from the interchange through this intersection and would also back up through the roundabout. This would limit most movements through this intersection compared to other intersection control types.

Notes: Of the three OS projects (OS3, 4 & 8) this one is only one that could be done as a standalone or as a first phase of the other two. OS3-D includes the roundabout in its cost, so this project is not needed if OS3-D is done first. OS4-F also requires OS3-D to complete the one-way conversion of Depot Street.

Intersection Diagram

OS8-C



Connectivity Projects

Table 21: Connectivity Projects

Project #	Description	Agency	Cost	Score
C10	Code updates – Preserving future connectivity	City	n/a	11.4

C4-B	3rd St Extension (to Wards Creek Dr): East of Blue Ridge Dr	City/ County/ Developer	$9,748,000	10.5
C7-B	7th St Extension: Broadway to Pine St	City	$2,158,000	9.0
C2-A	3rd St Extension: Pine St to West Evans Creek Rd	City	$7,325,000	8.3
C5-A	New roadway parallel with West Evans Creek Rd	City/ Developer	$8,652,000	8.2
C6-A	Broadway Extension to Classick Dr	City	$1,274,000	7.9

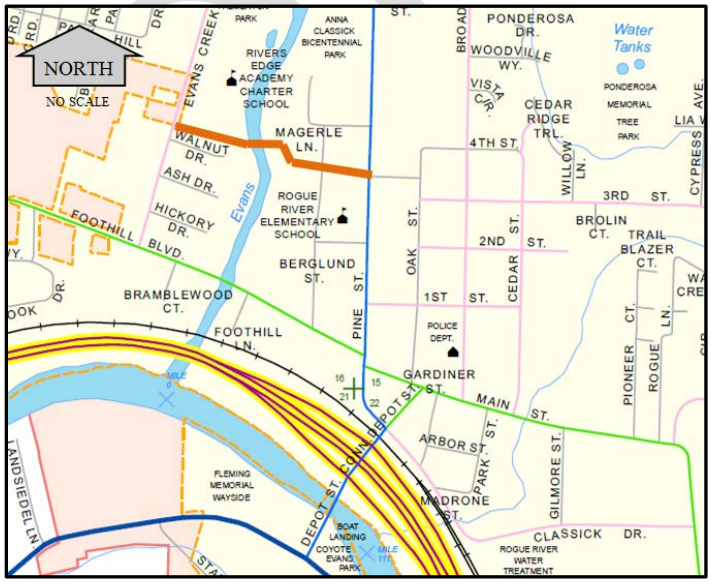
C2 Connectivity Over Evans Creek

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. This will take some of the far northern edge of the field, but the alignment should be optimized to minimize impacts. 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 the city in terms of all modes. This connectivity creation will be a benefit to the community and to the junior/senior 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. This improvement is has the most positive return for the community and all three schools.

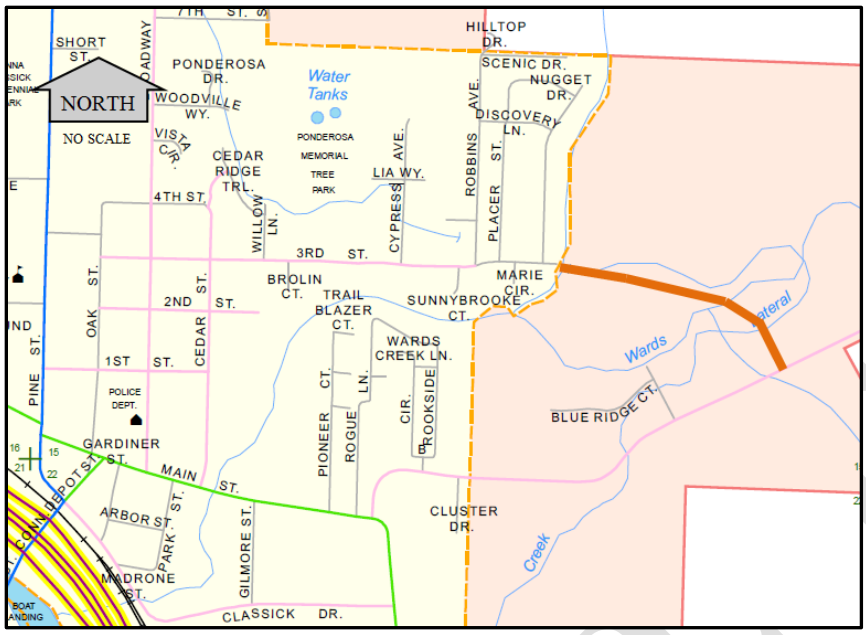
C4 3rd Street Extension to East

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 and a parallel route to Main Street.

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. This would approximately connect to Wards Creek Road approximately 2000’ to the east of Blue Ridge Drive. 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 placed on East Main Street, creating an alternate parallel route using 3rd Street. This location will improve connectivity for all modes along with creating alternate routes for emergency vehicles. This connection will also allow for and facilitate future private development to the east and would be likely developer-funded.

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.

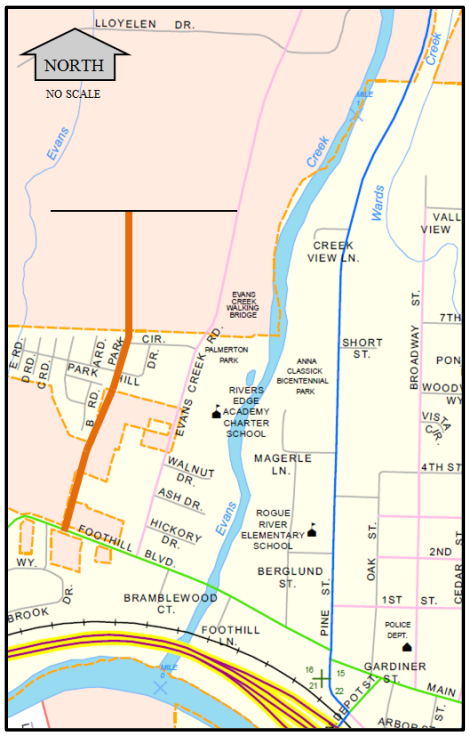
C5 Grow with a Grid

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.

<u>Improvement Option: Build roadway parallel to West Evans Creek Road</u>

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.

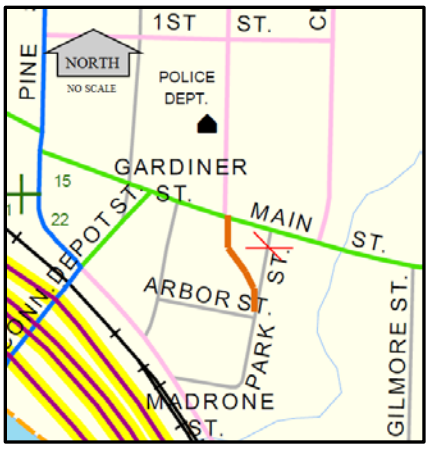
C6 Broadway Extension

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.

<u>Improvement Option A: Extend Broadway Street to Classick Drive</u>

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 re-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.

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.

Notes: Project C6-B scored better in the evaluation, but conflicted directly with Project OS4-F, so it was dismissed.

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 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 is the highest scoring 7th Street option which could substantially reduce out-of-direction travel between Broadway and Pine Streets. This could create additional parking. The extended street will require additional right-of-way, a large consideration requiring property impacts. 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.

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.

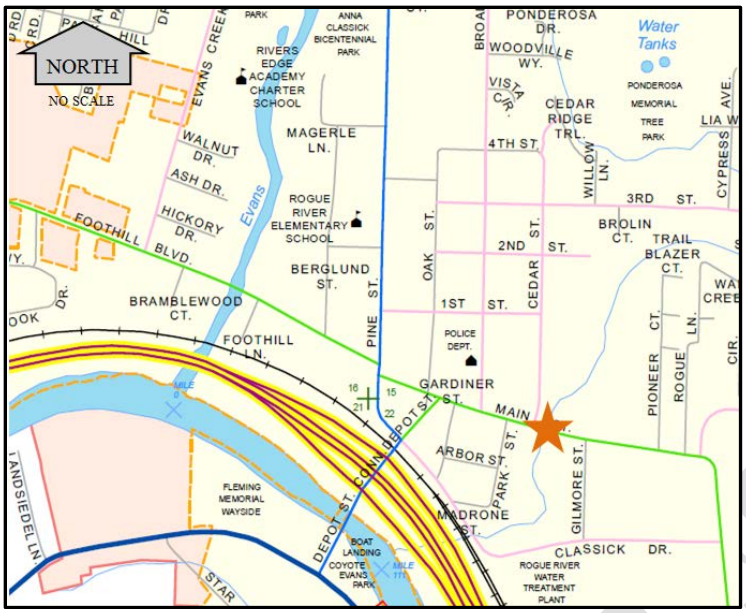
Local Bridge Projects

Table 22: Local Bridge Projects

Project #	Description	Agency	Cost	Score
BR2-B	Classick Dr over Wards Creek: Construct parallel pedestrian/bicycle bridge	City	$91,000	11.3
BR1-B	Main St over Wards Creek: Construct parallel pedestrian/bicycle bridge	City	$203,000	9.4

Improvement Option BR1-B: Main Street bridge across Ward Creek: Build parallel pedestrian/bicycle bridge

Vicinity Map



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.

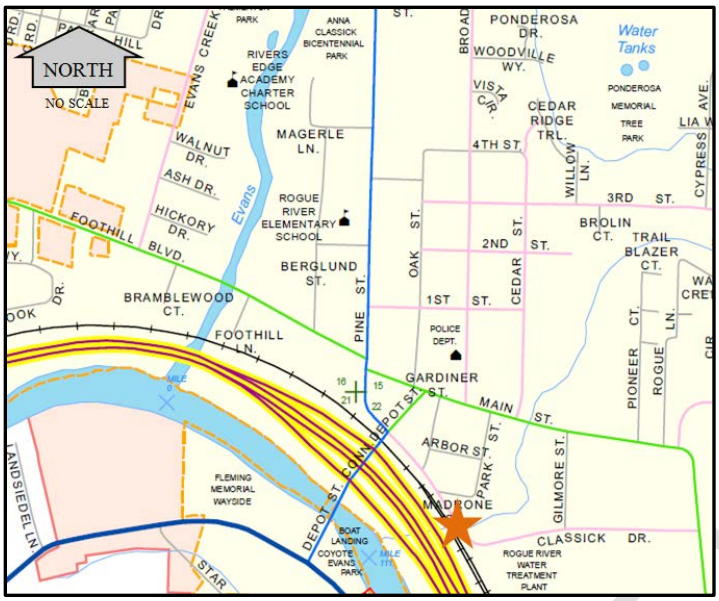
Benefits: This would give pedestrians and bicyclists their own separated location away from motor vehicle traffic which will improve comfort, safety and use. Younger and less confident riders would prefer a separated location instead of having to mix with vehicles or pedestrians.

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.

<u>Improvement Project BR2-B: Classick Drive bridge across Ward Creek: Build parallel pedestrian/bicycle bridge</u>

Vicinity Map



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.

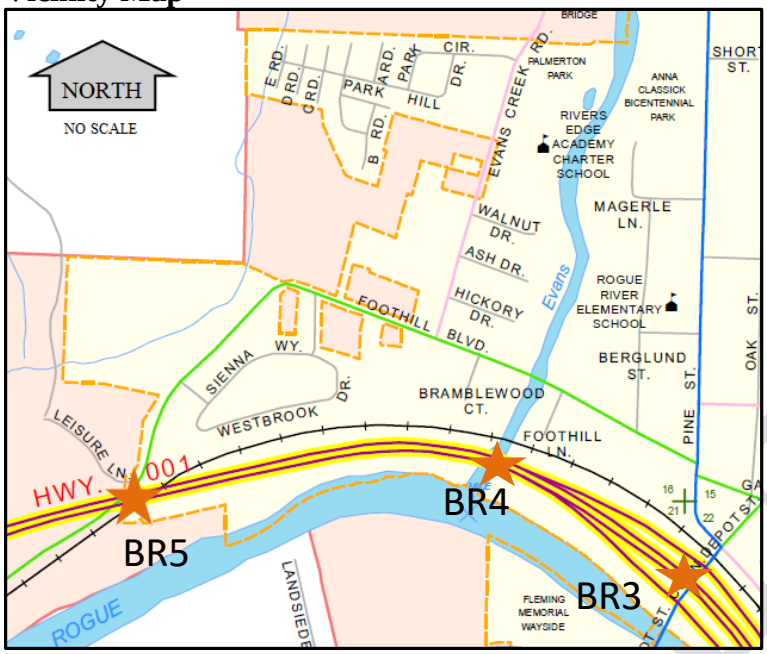
Preliminary Cost Estimate: $91,000

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.

State Bridge Projects - BR3 to BR5

These projects have not been included in the preferred project tables as to not compete for funding as they would be funded outside of the TSP. The city should identify roadway cross-sections using these bridges to ensure that future bridge over-crossings/under-crossings are compatible. The City will continue to work with ODOT to fund and install Seismic Retrofits in accordance with ODOT's Bridge Program. The seismic retrofit estimates are based on a generic structure from Region 3 Bridge Section and are only preliminary estimates.

Vicinity Map



Description: Retrofit the 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 Estimates: BR3: I-5/Depot St overcrossing - $4,900,000

BR4: I-5/Evans Creek overcrossing - $14,200,000

BR5: I-5/Foothills Blvd overcrossing - $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.

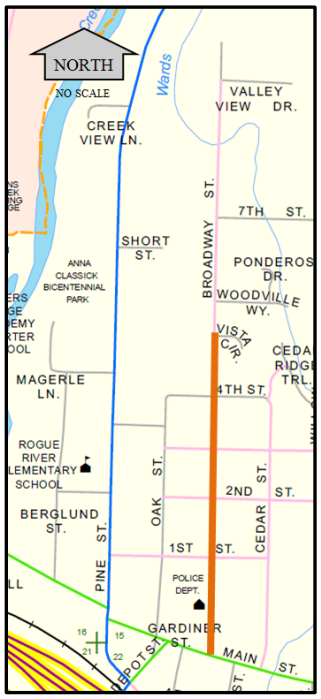
Pavement Projects

Table 23: Pavement Projects

Project #	Description	Agency	Cost	Score
PV1	Broadway St: Crack seal treatment	City	$66,000	3.3
PV3	Wards Creek Rd: Crack seal & seal coat treatment	City	$90,000	3.3
PV4	Foothill Blvd: Crack seal treatment	City	$36,000	3.3

Improvement Project PV1: Broadway Street Resurfacing

Vicinity Map



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

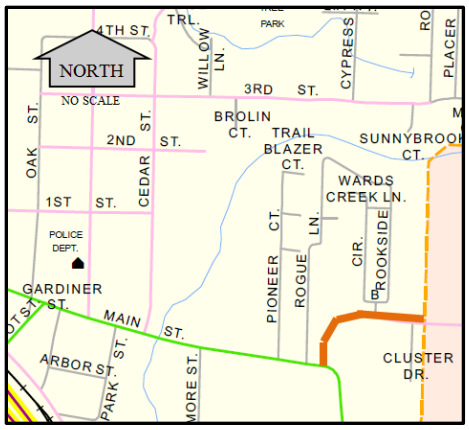
Benefits: This would provide a smoother surface to ride on and allow the driver to focus on the road ahead and those sharing the road.

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.

<u>Improvement Project PV3: Wards Creek Road Resurfacing</u>

Vicinity Map



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

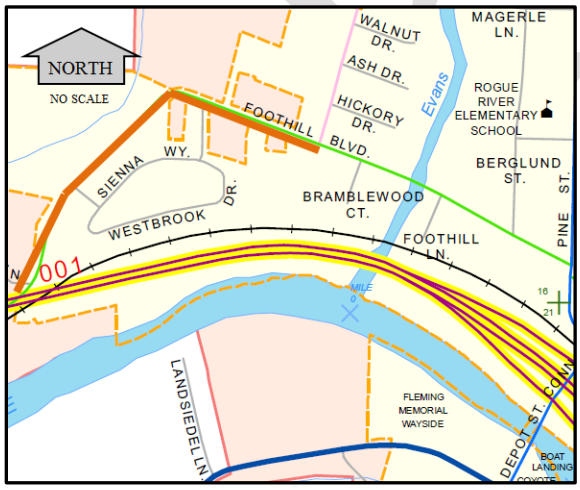
Benefits: This would provide a smoother surface to ride on and allow the driver to focus on the road ahead and those sharing the road.

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.

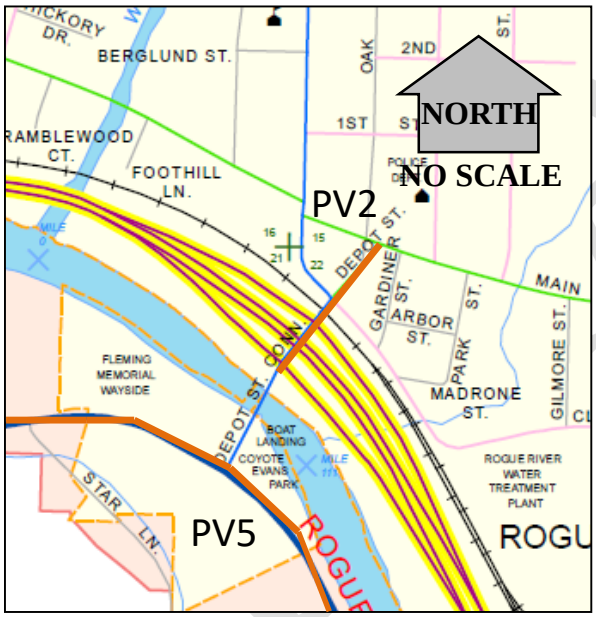
Preliminary Cost Estimate: $36,000

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

State Pavement Projects – PV2 Depot Street & PV5 OR99

Both of these projects have not been included in the final preferred project tables as to not compete for funding as ODOT relies on its maintenance schedule and ODOT Pavement Services to identify and approve large STIP-level paving projects. The City will continue to work with ODOT to fund and repave state highways in accordance with ODOT's Paving Program.

Vicinity Map



Improvement Project PV2: Depot Street Resurfacing

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. Consider doing this project concurrently with OS4F or OS3-D.

Improvement Project PV5: OR99 Overlay

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 Project B9-A to minimize costs.

Next Steps

RVCOG staff will take the final project rankings along with the funding forecast and create the fiscally constrained (20-year) preferred project list including projected project timing (short/medium/long-term). All other projects are assumed to be on the illustrative list. ODOT staff will then take the preferred project list and develop summary project sheets for each for inclusion in the draft TSP.

cc: Brian Dunn, Transportation Planning Analysis Unit