

SALEM URBAN DESIGN VERIFICATION



JANUARY 2024

ACKNOWLEDGMENTS

PREPARED FOR ODOT REGION 2

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INTRODUCTION & BACKGROUND

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The Salem Urban Design Verification (UDV) Study, led by the Oregon Department of Transportation (ODOT), aims to improve the city's bicycle and pedestrian infrastructure along selected state highway segments. This study focuses on finding ways to enhance these facilities, either by adding them to existing ODOT maintenance projects or securing grant funding for new projects. We worked with ODOT and City of Salem staff to develop design solutions, considering factors like cost, safety, community input, and ODOT standards. We also looked at potential opportunities for future projects led by ODOT or the City.

The study area covers OR 99EB from Martin Luther King Jr. Parkway (Milepoint 3.34) to 12th Street NE (Milepoint 6.24), including downtown and segments of Commercial Street NE, Front Street NE, Ferry Street NE-Trade Street NE, Pringle Parkway, and Bellevue Street NE (see **Figure 1**). We excluded the part of Commercial Street NE between Division Street NE and D Street NE because it was recently upgraded through local redevelopment projects. There is an ongoing ODOT project in this section as well.

THIS STUDY IS FOCUSED ON INFRASTRUCTURE ELEMENTS THAT CAN BE ADDED TO CONSTRUCTION PROJECTS. OTHER SOLUTIONS, SUCH AS SIGNAL TIMING CHANGES, WERE ONLY EVALUATED AT INTERSECTIONS WHERE OTHER CHANGES TO THE ROADWAY ARE RECOMMENDED.



FIGURE 1. SALEM UDV STUDY AREA





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EXISTING CONDITIONS & NEEDS



EXISTING CONDITIONS & NEEDS

The study corridor was evaluated through the following efforts to verify existing conditions and identify multimodal needs.

- Multiple field visits to confirm bicycle lane and sidewalk condition and type, on-street parking utilization, and feasibility of potential solutions
- Detailed review of existing facilities and lane geometry using aerial imagery and ODOT inventory data via TransGIS and FACS-STIP
- Detailed review of the ODOT Highway Design Manual (HDM) to determine the context-appropriate urban design characteristics for vehicle lanes, bicycle lanes, sidewalks, and pedestrian crossing spacing
- Review of needs identified in other sources, such as the Active Transportation Needs Inventory (ATNI), Safety Priority Index System (SPIS), and Americans with Disabilities Act (ADA) program scoping notes
- Review of City plans, studies, and programs, including:
 - Transportation System Plan
 - Safer Crossings Program
 - Central Salem Mobility Study
 - Pedestrian Safety Study
 - Winter-Maple Bikeway Plan
 - Bike & Walk Salem Plan
 - Safe Routes to School Plans
 - Cherriots Transit Plan
- Input from the community via online open house events and in-person on-street surveys

The conditions and needs of bicycle and pedestrian facilities are generally summarized on the following page:

- **Pedestrian Facilities:** Sidewalk is present throughout the corridor, but several sections are not wide enough to meet HDM guidance. In addition, there are many existing pedestrian crossings that need upgrades to meet ADA requirements and the spacing between enhanced crossings is longer than desired.

- *Note: Due to a legal settlement, ODOT is required to upgrade ADA facilities on state facilities that do not meet standards. There are 300 ramps within the study area that require upgrades, and 12 intersections require one or more upgraded push-buttons.*

- **Bicycle:** There are standard on-street bike lanes and shared lanes (sharrows) along most of the corridor. However, the HDM identifies buffered bicycle lanes or separated bike lanes as the recommended treatment. Per the HDM¹, the recommendation for this study corridor is to provide Tier 1 separated bike lanes consistent with Table 900-4. Tier 1 facilities often require additional maintenance and inter-agency coordination. Due to these additional challenges, this study recommends an incremental improvement to a Tier 2 facility design (buffered bike lanes). Adding vertical separation should be explored during future project delivery.
- **Vehicle:** With the exception of a few key sections, the vehicle lanes on the majority of the corridor are greater than 12 feet

wide, which may allow for reallocation of the existing roadway space to improve bicycle and pedestrian facilities. The HDM recommends 11-12 feet wide travel lanes through the study area. The entirety of the corridor is also a Reduction Review Route².

- **Target Speeds:** For each urban context in the HDM, a target speed is listed. Currently, much of the corridor has a posted speed greater than the target speed range.

Specific needs identified along the study corridor, as shown in **Figure 2**, include the following:

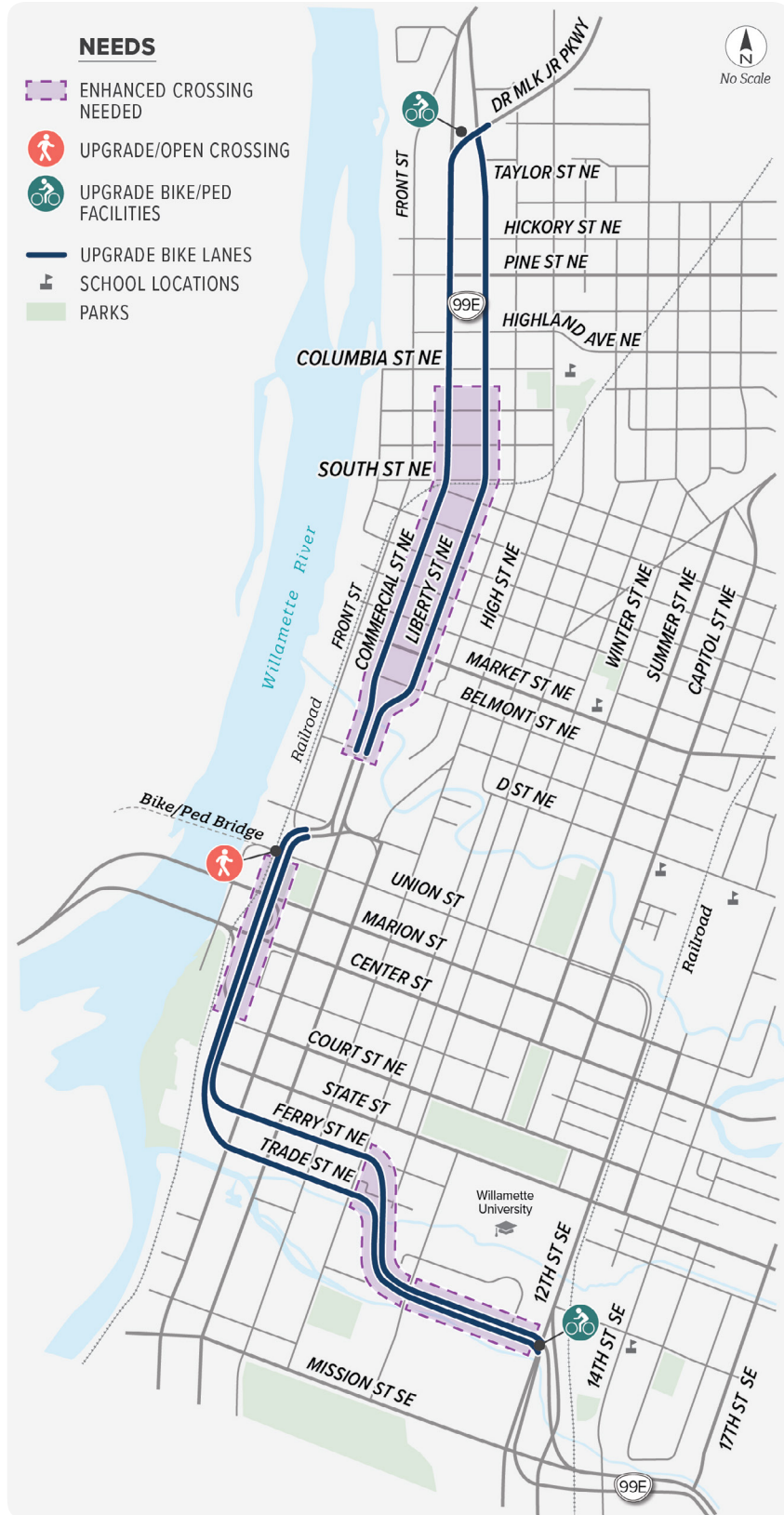
- More enhanced pedestrian crossings
- Installation of buffered bicycle lanes
- Upgrade and open the pedestrian crossing at Union Street NE and Front Street NE
- Upgrade the bicycle and pedestrian facilities at both ends of the study area

Because the scope of this study focuses only on low-cost solutions, the project team did not examine high-cost, long-term solutions. This means that this study does not include solutions for some locations identified on **Figure 2** as needing improvements because the appropriate solutions are too complex or costly to address through leveraging opportunities.

1 Section 941, Highway Design Manual, Oregon Department of Transportation. January 2023.

2 Reduction Review Routes are routes that have been identified as state highways subject to ORS 366.215 and require review under OAR Chapter 731, Division 12.

FIGURE 2. SALEM UDV CORRIDOR NEEDS





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URBAN CONTEXT

URBAN CONTEXT

The North and South segments of the study corridor are classified as Urban Mix roadway context. The Urban Mix context consists of a mix of land uses within a well-connected roadway network where commercial uses front the street and posted speeds are typically 25 to 35 mph. The Urban Mix designation, shown in purple, applies from MLK Jr Parkway at the north end of the corridor to D Street NE, as well as between Church Street NE and the west end of the study corridor at 12th Street NE.

The Downtown segment, shown in teal-green, is classified as a Central Business District roadway context. The Central Business District is an area with the most dense development and tallest buildings in an urban area. Buildings are located close to the roadway and are served by a well-connected roadway network with typical posted speeds of 25 mph or less. The Central Business District designation, shown in teal, applies between Front Street NE and Church Street NE.

FIGURE 3. OR 99E CORRIDOR URBAN CONTEXTS PER HDM

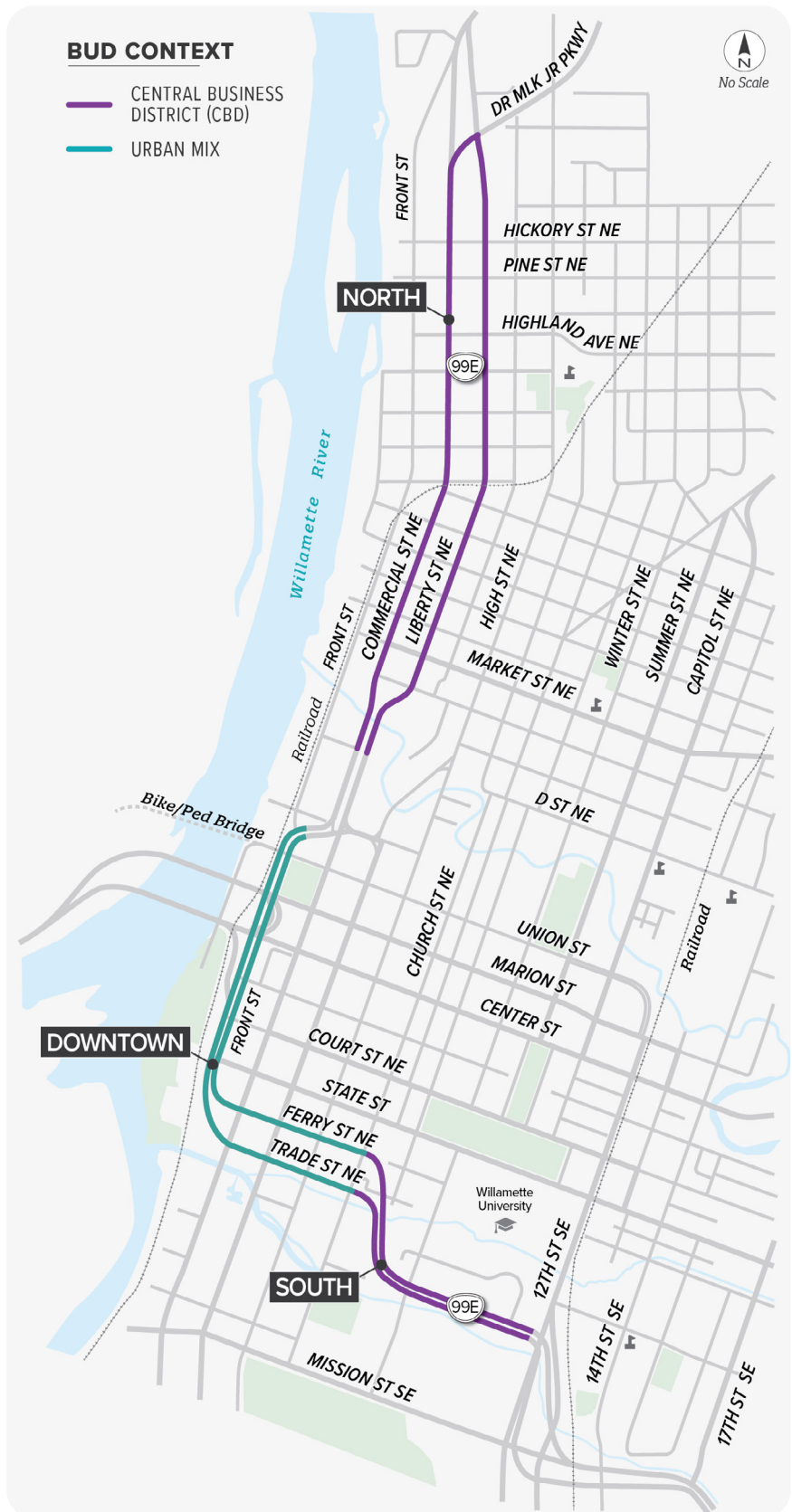


TABLE 1. OR 99E STUDY CORRIDOR URBAN CONTEXTS

SEGMENT	MILEPOINTS (LENGTH)	URBAN CONTEXT	DESCRIPTION
NORTH	MP 3.34 – 4.58 (1.24 miles)	Urban Mix	<p>This segment begins at MP 3.34 at the beginning of the Commercial Street NE-Liberty Street NE couplet and ends at MP 4.58 near D Street NE.</p> <p>The segment includes land use elements consistent with the HDM’s Urban Mix context, including mixed-use, residential, general commercial, and industrial commercial. There is no on-street parking on this segment, except for approximately 500 feet of parking on the very north end.</p>
DOWNTOWN	MP 4.80 – 5.65 (0.85 miles)	Traditional Downtown/ Central Business District (CBD)	<p>This segment extends from MP 4.80 near Union Street NE to MP 5.65 near Church Street NE. It is also known as Front Street NE, and the Ferry Street NE-Trade Street NE couplet.</p> <p>The segment provides access to Salem’s downtown area, with surrounding central business district land uses consistent with the HDM’s Traditional Downtown/Central Business District (CBD) context. On-street parallel parking is present intermittently along this segment.</p>
SOUTH	MP 5.65 – 6.24 (0.59 miles)	Urban Mix	<p>This segment begins at MP 5.65 near Church Street NE and ends at MP 6.24 at 12th Street NE. It is also known as Pringle Parkway and Bellevue Street NE.</p> <p>The segment provides access to Willamette University and Salem Hospital. Surrounding land use elements include central business district, public/private education, public health, and retail commercial. This mix of land uses is consistent with the HDM’s Urban Mix context. There is no on-street parking on this segment.</p>

**Note: MP 4.58 to 4.80 is excluded from the study corridor.*



TABLE 2. **HDM GUIDANCE FOR OR 99EB STUDY CORRIDOR – NORTH SEGMENT**

ELEMENT	HDM GUIDANCE (URBAN MIX)	EXISTING CONDITIONS
TARGET SPEED	25 to 30 mph	Posted speed: 35 mph from MLK Parkway to Pine Street NE 30 mph from Pine Street NE to Division Street NE
TRAVEL LANES	11' to 12'	12' to 14'
TURN LANES	11' to 12'	12'
SHY DISTANCE	0' to 1'	0' to 1'
MEDIAN	Raised median (no turn lane): 8' to 11' Raised median (with left turn lane): 12' to 14'	None in couplet section; raised median >3' in non-couplet section
BICYCLE FACILITY	Start with Tier 1. Consider Tier 2 or Tier 3 where Tier 1 is not feasible. Tier 1: Separated bikeway using these options for delineation: parking, raised island, flexible delineator posts, rigid bollards, parking stops, planters, bioswale. Separated bicycle lane (curb constrained facility): 7' to 8' Tier 2: Evaluate bicycle lane buffer. On-street bicycle lane (not including buffer): 5' to 6', Bicycle/street buffer: 2' to 4' Tier 3: Evaluate bicycle lane vs shared lane	On-street, dedicated non-buffered bike lane with very narrow sections of bike lane from Salem Parkway to Pine Street NE 2' to 7' wide
SIDEWALK	5' to 8'	4' to 5'
TARGET PEDESTRIAN CROSSING SPACING RANGE	250' to 550'	Greater than 550'
ON-STREET PARKING	8'	500' of parallel parking north of Hickory Street NE; otherwise, none

TABLE 3. **HDM GUIDANCE FOR OR 99EB STUDY CORRIDOR – DOWNTOWN SEGMENT**

ELEMENT	HDM GUIDANCE (CENTRAL BUSINESS DISTRICT)	EXISTING CONDITIONS
TARGET SPEED	20 to 25 mph	Posted speed: 30-35 mph
TRAVEL LANES	11'	10' to 14'
TURN LANES	Right turn lane: 11' to 12' Left turn lane: 11'	10' to 12'
SHY DISTANCE	0' to 1'	0' to 1'
MEDIAN	Raised median (no turn lane): 8' to 11' Raised median (with left turn lane): 12' to 14'	None in couplet section; raised median 4'-20' in non-couplet section
BICYCLE FACILITY	<p>Start with Tier 1. Consider Tier 2 or Tier 3 where Tier 1 is not feasible.</p> <p>Tier 1: Separated bikeway using these options for delineation: parking, raised island, flexible delineator posts, rigid bollards, parking stops, planters, bioswale.</p> <p>Separated bicycle lane (curb constrained facility): 7' to 8'</p> <p>Tier 2: Evaluate bicycle lane buffer.</p> <p>On-street bicycle lane (not including buffer): 5' to 6', Bicycle/street buffer: 2' to 3'</p> <p>Tier 3: Evaluate bicycle lane vs shared lane</p>	<p>On-street, dedicated non-buffered bike lane with two blocks missing a bike lane from State Street NE to Commercial Street NE</p> <p>3.5' to 6' wide</p>
SIDEWALK	8' to 10'	4' to 8'
TARGET PEDESTRIAN CROSSING SPACING RANGE	250' to 550'	Greater than 550' in some sections
ON-STREET PARKING	7' to 8'	7' on-street parking present intermittently along segment

TABLE 4. **HDM GUIDANCE FOR OR 99E STUDY CORRIDOR – SOUTH SEGMENT**

ELEMENT	HDM GUIDANCE (URBAN MIX)	EXISTING CONDITIONS
TARGET SPEED	25 to 30 mph	30 mph
TRAVEL LANES	11' to 12'	12'
TURN LANES	11' to 12'	12'
SHY DISTANCE	0' to 1'	0' to 1'
MEDIAN	<p>Raised median (no turn lane): 8' to 11'</p> <p>Raised median (with left turn lane): 12' to 14'</p>	<p>None on Pringle Parkway due to couplet section</p> <p>17' raised median present on curve between Pringle Parkway and Bellevue Street NE</p> <p>Bellevue Street NE: 12' wide, 500' long raised median is present between Winter Street NE and Bellevue Street NE</p> <p>Rest of Bellevue Street NE segment has 3' to 4' raised median</p>
BICYCLE FACILITY	<p>Start with Tier 1. Consider Tier 2 or Tier 3 where Tier 1 is not feasible.</p> <p>Tier 1: Separated bikeway using these options for delineation: parking, raised island, flexible delineator posts, rigid bollards, parking stops, planters, bioswale.</p> <p>Separated bicycle lane (curb constrained facility): 7' to 8'</p> <p>Tier 2: Evaluate bicycle lane buffer.</p> <p>On-street bicycle lane (not including buffer): 5' to 6', Bicycle/street buffer: 2' to 4'</p> <p>Tier 3: Evaluate bicycle lane vs shared lane</p>	<p>On-street, dedicated non-buffered bike lane</p> <p>4' wide</p>
SIDEWALK	5' to 8'	4' to 6'
TARGET PEDESTRIAN CROSSING SPACING RANGE	250' to 550'	Greater than 550'
ON-STREET PARKING	8'	None



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RECOMMENDATIONS

RECOMMENDATIONS

Two types of improvements, cross section or striping changes and location-specific solutions, were identified to improve safety, mobility, and accessibility for those walking, biking, and rolling through the study area. Each recommended solution is described in the following sections. All provided cost estimates are for planning purposes only. Cost estimates include a 30% contingency and assume no right-of-way acquisition (additional detail is provided in the appendix).

CROSS SECTION CHANGES

Standard bicycle lanes and shared lanes (or “sharrows”) are intermittently present along the existing study corridor. However, buffered bicycle lanes are preferred for the Urban Mix and Central Business District roadway contexts. As part of the UDV process, the project team identified opportunities where the existing curb-to-curb roadway width could be reallocated (restriped) to accommodate buffered bicycle lanes by narrowing existing travel lanes or removing on-street parking. There are no recommended changes to the number of vehicle travel lanes.

Figure 4 shows proposed cross sections within the existing roadway width that will allow for implementing buffered bicycle lanes. It should be noted that providing buffered bicycle lanes on the north end of Segment A would necessitate the removal of approximately 500 feet of existing on-street parking on Commercial Street NE north of Hickory Street NE. The City of Salem was supportive of this change.

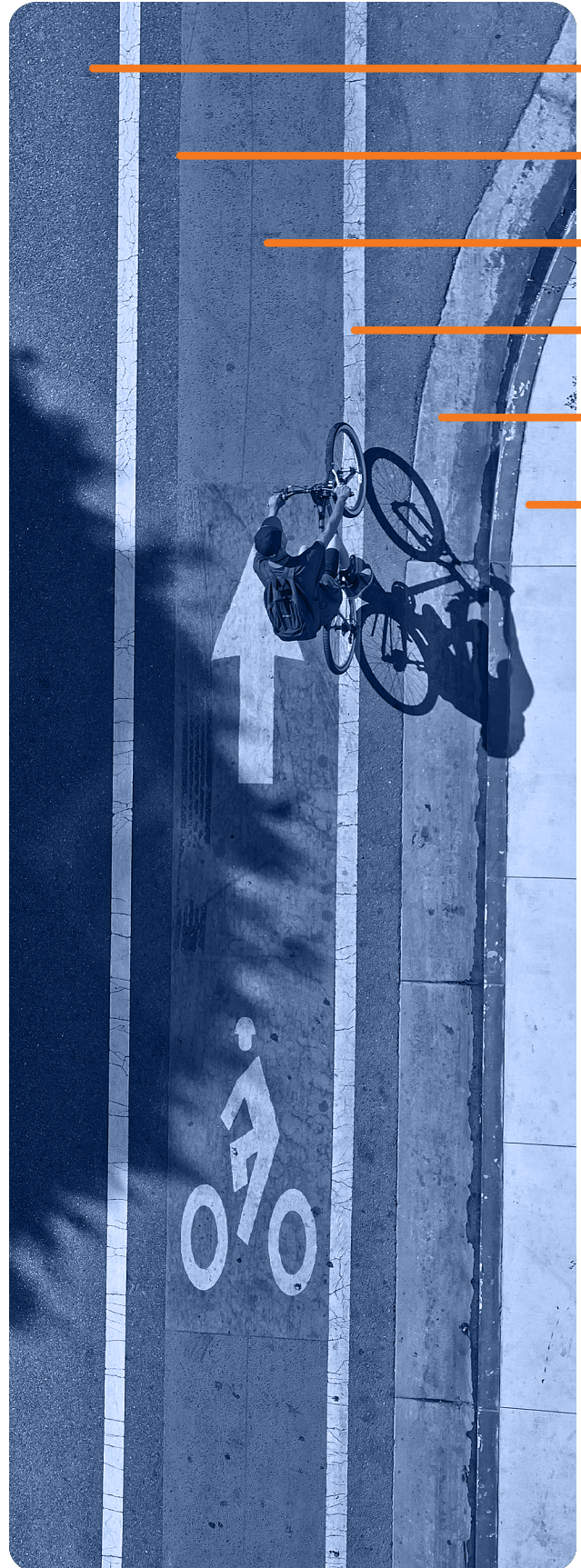


FIGURE 4. CROSS SECTION LOCATIONS WITHIN CORRIDOR

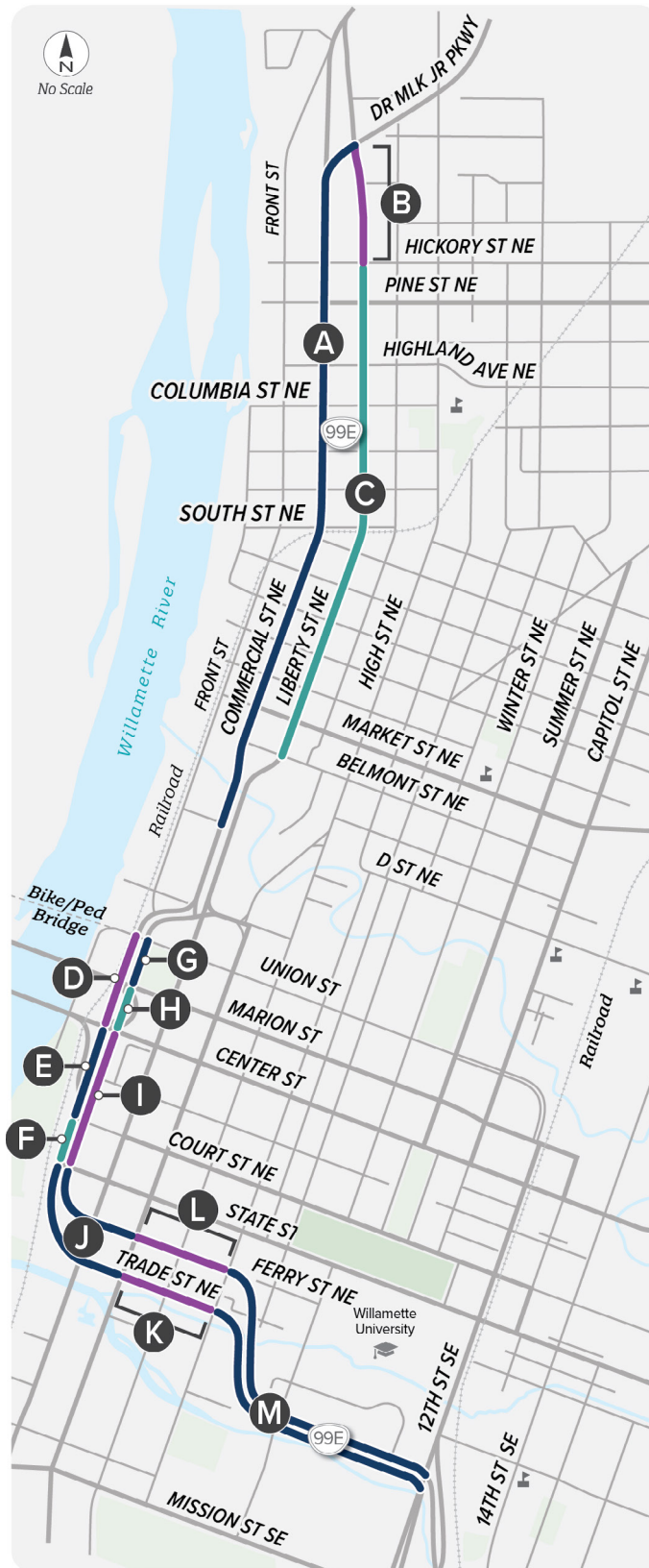
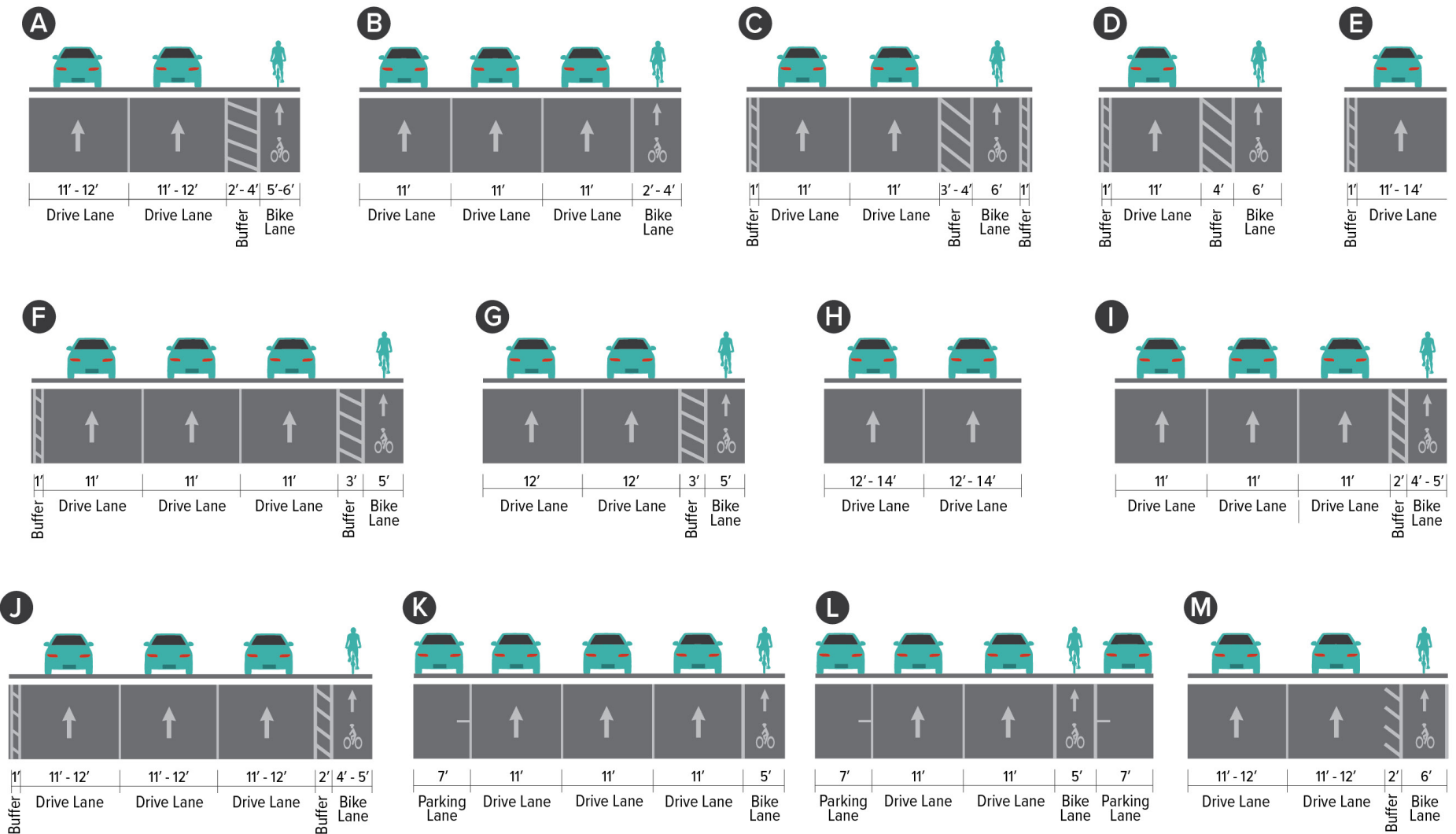


FIGURE 5. EXAMPLE CROSS SECTION CHANGES WITHIN EXISTING ROADWAY WIDTH

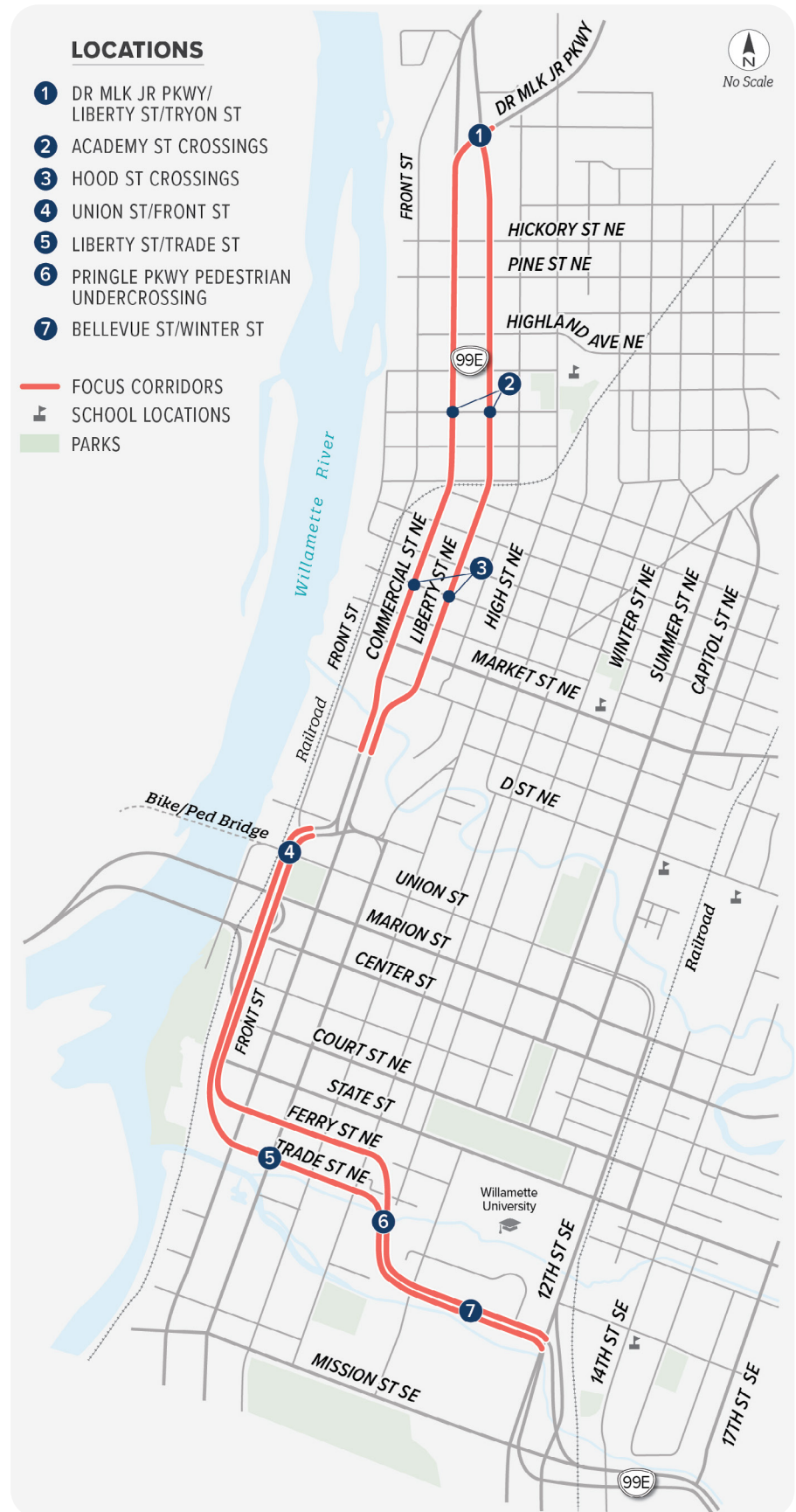


* Pavement marking design to be determined during design phase

LOCATION-SPECIFIC SOLUTIONS

The UDV evaluation identified seven locations where unique solutions are recommended to improve safety and mobility for those walking, biking, and rolling in the study area, as shown in Figure 6.

FIGURE 6. MAP OF LOCATION-SPECIFIC SOLUTIONS

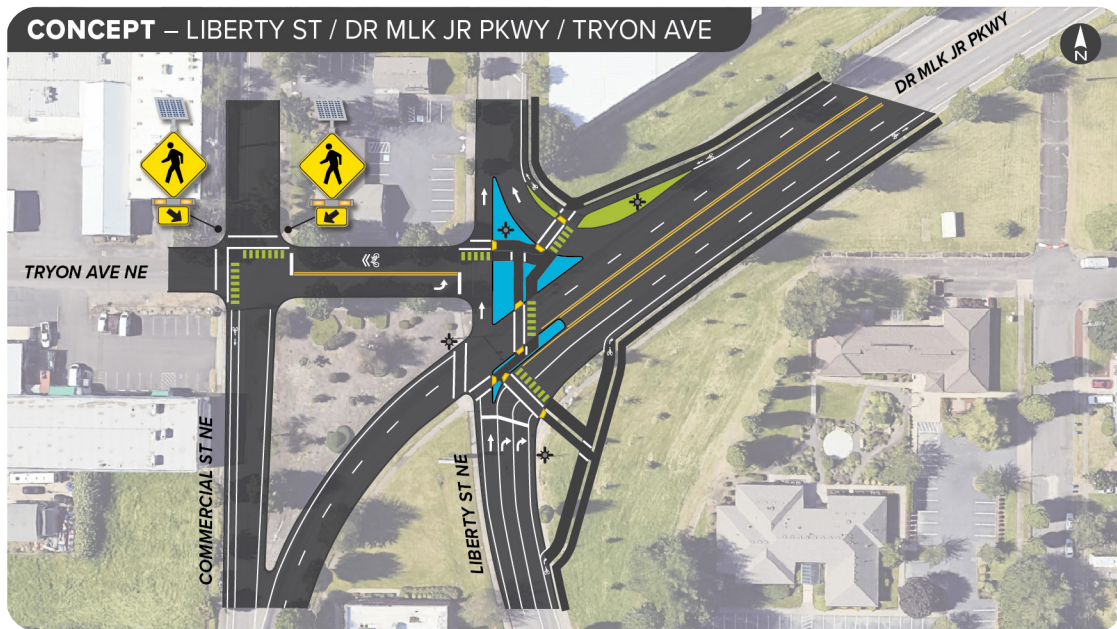


LOCATION 1: LIBERTY STREET NE / DR. MLK, JR. PARKWAY/TRYON AVENUE INTERSECTION

This intersection is a barrier to people walking and biking. The north-south pedestrian crossing on the east leg of the intersection is currently closed, and crossing east-west along Tryon Avenue at either Liberty Street NE or Commercial Street NE requires crossing free-flow traffic that does not stop. The intersection is even more challenging for those riding a bike. There is no ability for northbound bicyclists to travel through the intersection without sharing a lane with vehicles traveling at 30 mph or more, and bicyclists destined for southbound Commercial Street NE from the Parkway get “trapped” at the merge point where the bicycle lane abruptly ends.

A concept design for this location is shown in Figure 7 below. It is a comprehensive solution to address needs holistically on both ODOT facilities (MLK Jr. Parkway, Commercial Street NE, and Liberty Street NE) and City of Salem facilities (Tryon Avenue NE).

FIGURE 7. LIBERTY STREET/DR MLK JR PKWY/TRYON AVE CONCEPT DESIGN



The following improvements are recommended.

- Raised center median on MLK Jr. Parkway to allow two-stage crossings for bicyclists and pedestrians on the east leg of the intersection (currently a closed crossing)
- Separated bicycle and pedestrian paths connecting existing facilities to the intersection
- Enhanced crossing with a rectangular rapid flashing beacon (RRFB) with passive detection at Tryon Avenue NE/Commercial Street NE
- Improved signalized pedestrian and bicycle crossings across Liberty Street NE north of Tryon Avenue NE
- Closed crosswalk on the south side of Tryon Avenue NE at Liberty Street NE

- Improved channelizing island on the north side to match vehicle lane configuration and accommodate continuous bicycle travel, and
- Reconfigured vehicle lanes for northbound Liberty Street NE, providing dual northbound right turns and a single northbound through lane (striping and merge area on Liberty Street NE north of MLK Jr. Parkway will need to be modified)

COST ESTIMATE:	ENGINEERING	CONSTRUCTION	TOTAL
		\$650,000.00	\$2,200,000.00

LOCATIONS 2 & 3: ACADEMY STREET NE AND HOOD STREET NE CROSSINGS

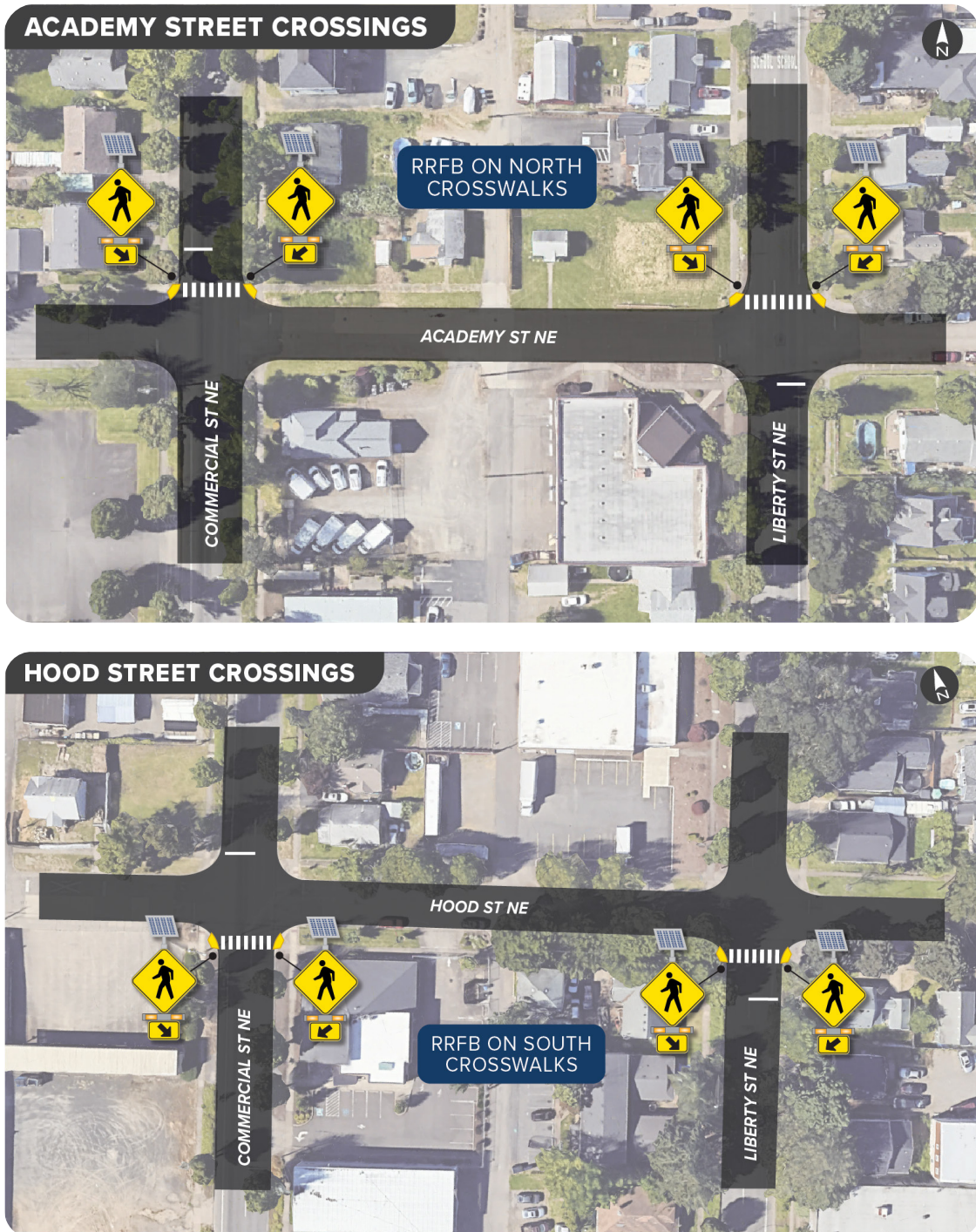
There is a need to provide more enhanced pedestrian crossings along Liberty Street NE and Commercial Street NE between Columbia Street NE and Market Street NE (the next closest signal/enhanced pedestrian crossing to the south). There are existing marked school crossings one block north at Columbia Street NE, serving Highland Elementary School to the east. Project team members did not observe any students using the Columbia Street NE crossings before or after school, and school staff confirmed minimal or no student usage. Originally, the idea was to improve those school crossings by installing rectangular rapid flashing beacons (RRFBs) there. However, several community members shared that an improved crossing at Academy Street NE may be more useful. Hood Street NE was also chosen for recommended enhanced crossings because it connects to key neighborhood destinations, like Broadway Commons, Salem Alliance Church, and Grant Community School.

The solution at both locations would include installing a marked crosswalk with curb ramps and a rectangular rapid flashing beacon



(RRFB) across both Commercial Street NE and Liberty Street NE. Concept designs for these crossings are shown in **Figure 8**.

FIGURE 8. ACADEMY STREET NE AND HOOD STREET NE CONCEPT DESIGNS



COST ESTIMATE:

Academy St / Commercial St	\$50,000.00	\$200,000.00	\$250,000.00
Hood St / Commercial St	\$50,000.00	\$200,000.00	\$250,000.00

LOCATION 4: UNION STREET NE / FRONT STREET NE INTERSECTION

There is currently no marked crosswalk at this signalized intersection for people walking north-south on the west side crossing of Union Street NE. Adding a crosswalk and curb ramps at the intersection in the typical location is not feasible due to the adjacent railroad tracks; in order to fit in a crossing, all lanes and the median on Front Street would need to shift to the east. This solution would provide an enhanced crossing just west of the intersection for both bicyclists and pedestrians. It would also modify the four corners and existing median islands to provide curb extensions and accessible curb ramps for pedestrians crossing Front Street NE. This would be a city-led project that is part of larger planned improvements for the Union Street NE Family Friendly Bikeway. A concept design for improvements at the intersection of Union Street NE /Front Street NE is shown in **Figure 9**.

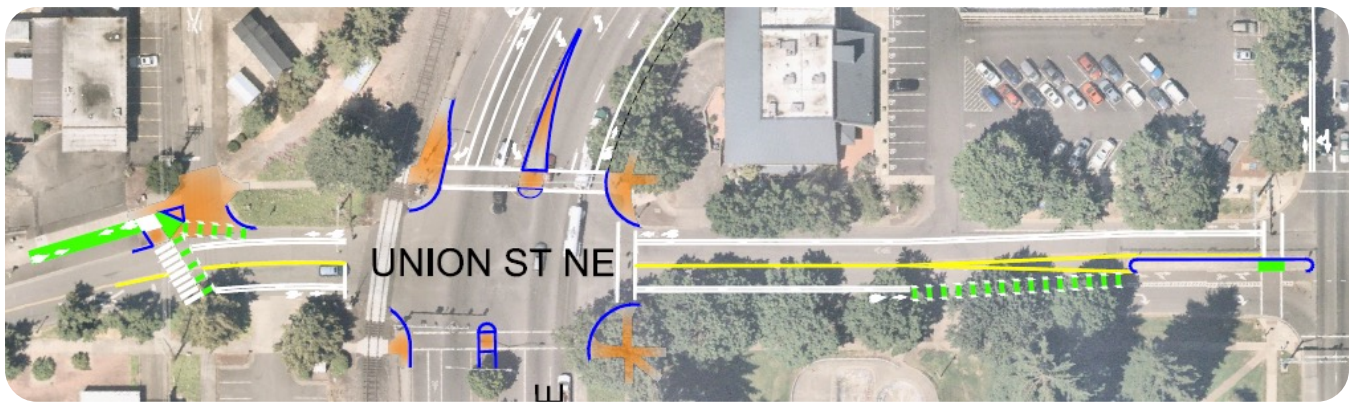


FIGURE 9. UNION STREET NE/FRONT STREET NE CONCEPT DESIGN (DEVELOPED BY CITY OF SALEM)

LOCATION 5: LIBERTY STREET NE/TRADE STREET NE INTERSECTION

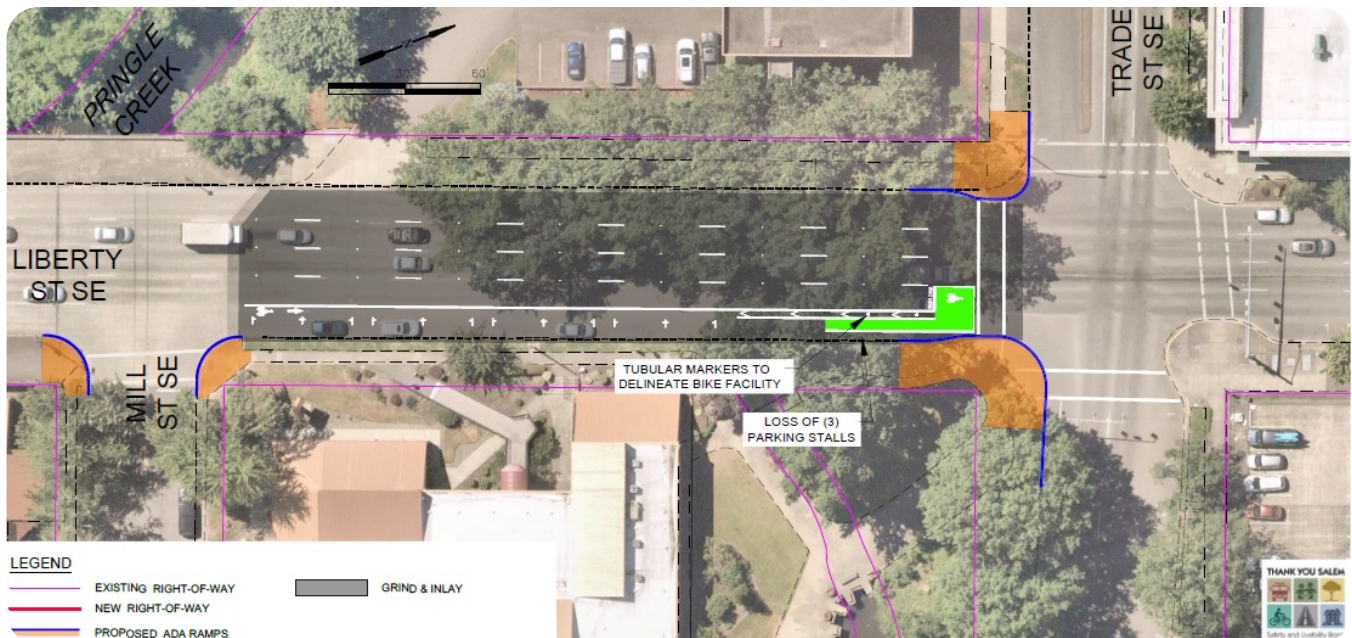
The City has a planned project that will improve bicycle safety for northbound cyclists on Liberty Street NE crossing Trade Street NE. Currently, the on-street bicycle lane on Liberty Street NE ends at Trade Street NE and northbound bicyclists must find a way to merge with traffic to share the vehicle lane north of Trade Street NE.

The solution provides a green bike box that allows bicyclists to queue ahead of vehicles at the signal. When the light turns green, they will be better positioned to share the lane with vehicles. Static or dynamic no-turn on red signs for northbound right-turning traffic would also be needed¹. This improvement would remove two on-street parking stalls.

A concept design for improvements at the Liberty Street NE/Trade Street NE intersection is shown in Figure 10.

¹ Even though the project is on a local street approach, State Traffic Roadway Engineer (STRE) approval is required for this improvement as it impacts a state highway signal.

FIGURE 10. LIBERTY STREET/TRADE STREET CONCEPT DESIGN (DEVELOPED BY CITY OF SALEM)



COST ESTIMATE:	ENGINEERING	CONSTRUCTION	TOTAL
	\$115,000.00	\$395,000.00	\$510,000.00

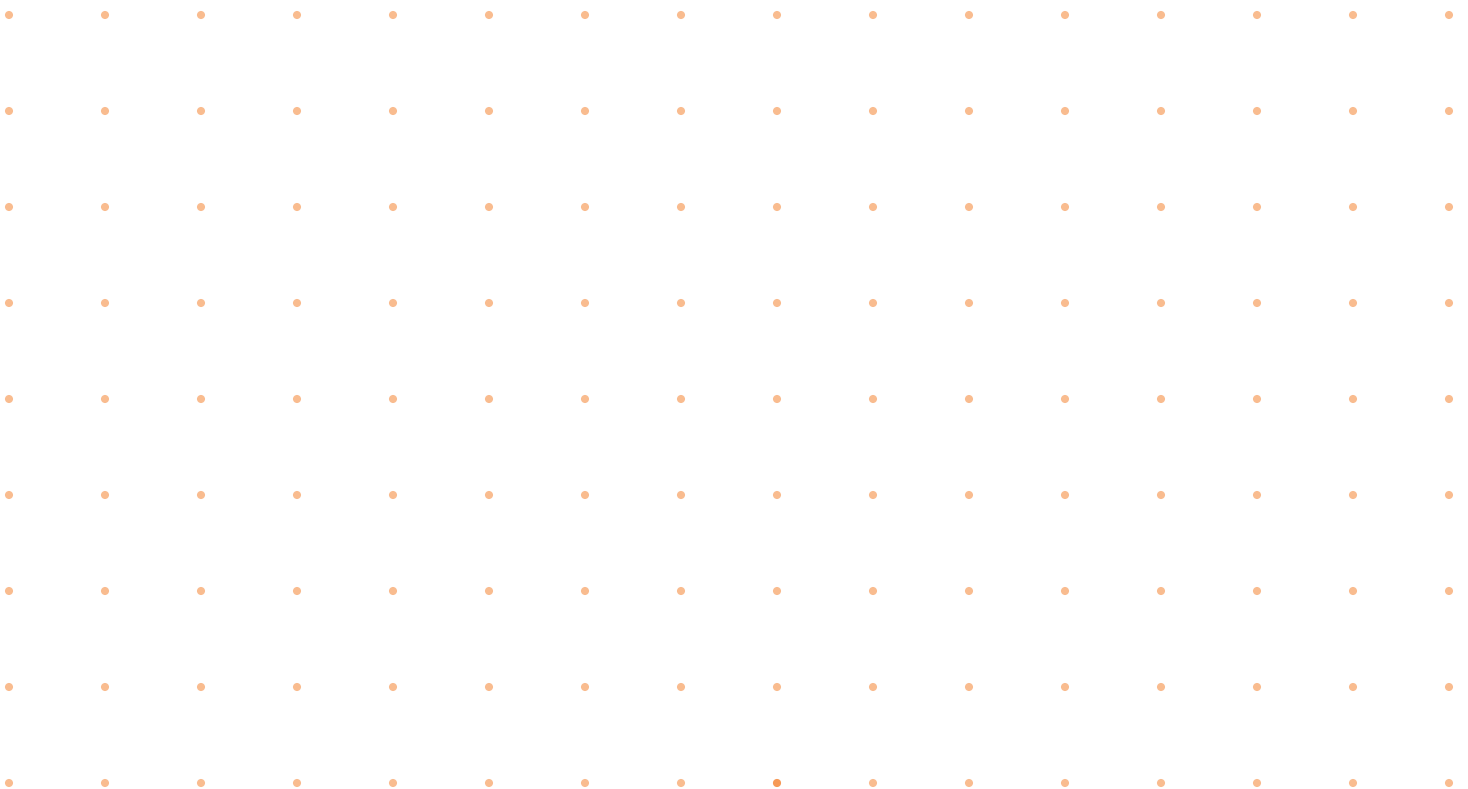
*Century West conducted preliminary cost estimates on behalf of City of Salem

LOCATION 6: PRINGLE PARKWAY PEDESTRIAN UNDERCROSSING

The Pringle Parkway pedestrian undercrossing allows pedestrians to cross underneath Pringle Parkway using a separate path that connects to Church Street NE. Community members have shared that using this path feels unsafe and uncomfortable because it is poorly lit and is not clearly marked. At this location, our proposed solution is to provide guide signing and path lighting (on the approaches and within the undercrossing) to improve pedestrian safety and comfort. Implementing this solution would likely require coordination between ODOT and the City of Salem based on jurisdictional boundaries.



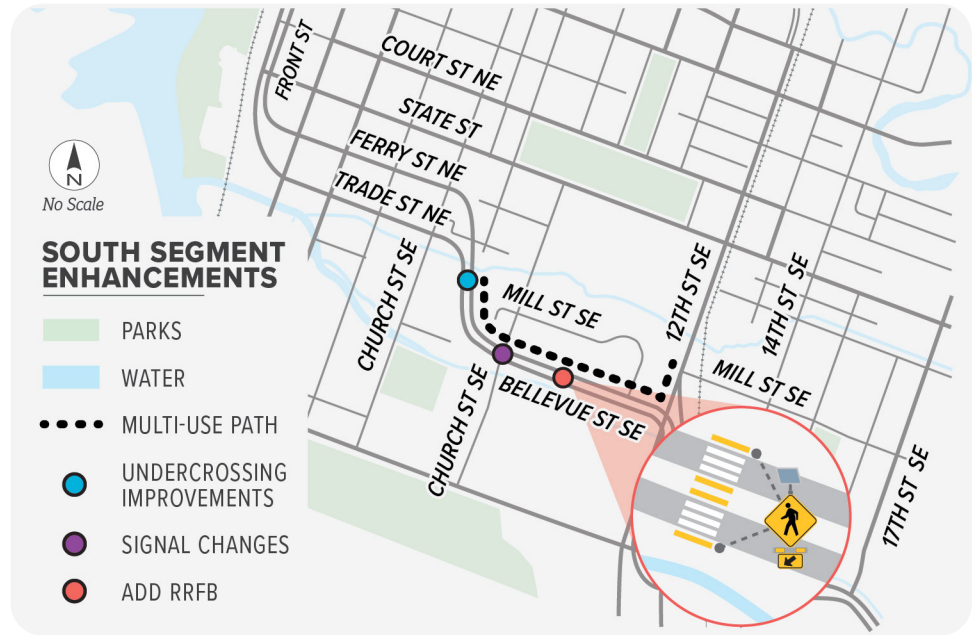
COST ESTIMATE:	ENGINEERING	CONSTRUCTION	TOTAL
	\$75,000.00	\$245,000.00	\$320,000.00



LOCATION 7: BELLEVUE STREET NE FROM WINTER STREET NE TO 12TH STREET NE

With Salem Hospital to the south, Willamette University to the north, and the train station to the east, this segment of Bellevue Street NE between Church Street NE and 12th Street NE serves competing needs for people driving, walking, and cycling. Although buffered bicycle lanes could be added to this section of Bellevue Street NE, 12th Street NE will continue to be a barrier

FIGURE 11. SOUTH SEGMENT IMPROVEMENTS - CONCEPT DESIGN



to bicycle and pedestrian travel without major (and costly) improvements that are beyond the scope of this study. Although the project team recognized a need for bicycle and pedestrian improvements at the 12th Street NE intersection, no feasible low-cost improvements were identified. Higher-cost improvements, which may have impacts to right-of-way or the OR 22 bridge, should be examined as part of another study.

The solutions here include converting the sidewalk on the north side of Bellevue Street NE (along Willamette University) to a multi-use path (see Figure 11). This new multi-use path would connect to the Pringle Parkway undercrossing on the west end and to the existing RRFB at 12th Street NE/ Mill Street NE at the east end. To encourage people biking and walking to use this multi-use path, a mid-block enhanced crossing with an RRFB is suggested along Bellevue Street NE.

Changes to the signal operations at the intersection of Bellevue Street NE and Winter Street NE will reduce conflicts with turning vehicles and improve safety for people walking and biking:

- Make left turns protected (green arrow) from Winter Street NE turning onto Bellevue Street NE
- Restrict right turns on red from Winter Street NE turning onto Bellevue Street NE

COST ESTIMATE:	ENGINEERING	CONSTRUCTION	TOTAL
	\$815,000.00	\$2,785,000.00	\$3,600,000.00



5

PUBLIC FEEDBACK

PUBLIC FEEDBACK

The project team performed both in-person and virtual public outreach to gather input on the needs of people walking, biking, and rolling in the area, as well as to gather feedback on the proposed solutions. A summary of the public outreach efforts is described below.

PUBLIC OUTREACH #1

VIRTUAL OUTREACH

The project team hosted an online open house in May and June 2023 to gather input on locations where residents would like to see new or improved facilities for biking, walking, and rolling in the study area. Approximately 50 people participated in the online open house and provided opinions about their safety and comfort walking, biking, and rolling in the study area. Some of the reoccurring themes noted in the comments are summarized below.

- Preference for enhanced crossings with RRFBs at Academy Street NE and Hood Street NE
- The study area has several barriers to walking and biking, including the

intersections of Liberty Street NE/ Dr. MLK Jr. Parkway and Bellevue Street NE/12th Street NE

- Walking and biking through signalized intersections are still a challenge due to short walk-times and conflicts with turning vehicles
- Many people are not comfortable riding in the bicycle lanes because there is no separation between vehicle lanes where cars and heavy trucks travel at a high speed
- Sidewalks and bicycle lanes are not well maintained (e.g., poor condition of sidewalks, debris in bicycle lanes)



PUBLIC OUTREACH #2

IN-PERSON OUTREACH

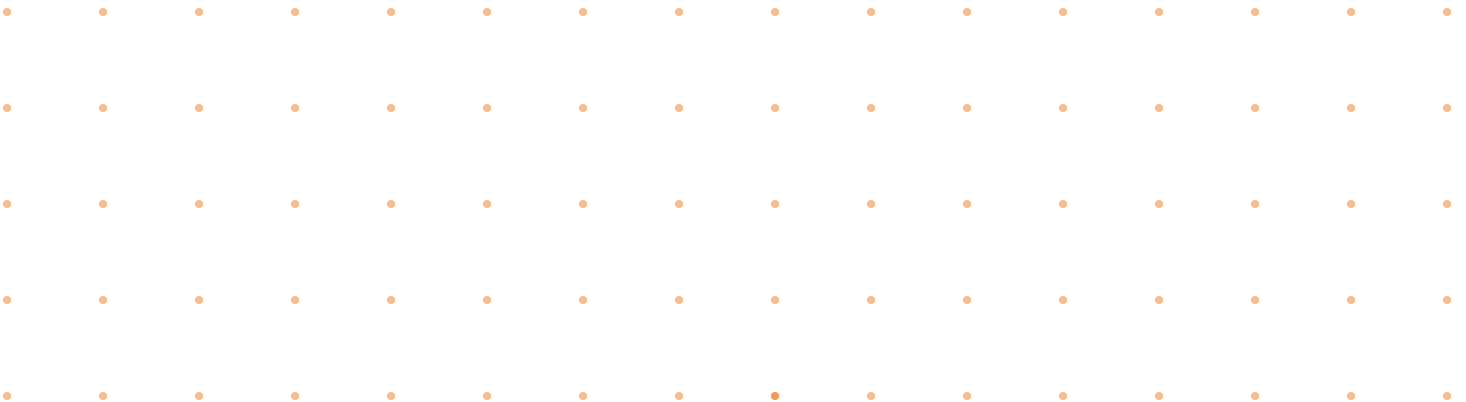
The project team solicited in-person feedback during on-street surveys of people walking and biking in the project study area in early December 2023. The project team also had informal discussions with Highland Elementary School staff during field visits in September 2023. Feedback on the proposed solutions include:

- Very few students use the existing school crossings on Commercial Street NE and Liberty Street NE at Columbia Street NE.
- Academy Street NE is a good location for an enhanced crossing due to its proximity to neighborhood destinations and services
- Well-maintained buffered bike lanes would improve mobility and safety for bicyclists along the corridor. Many people interviewed indicate they feel more comfortable riding their bikes on the sidewalk than using the on-street bike lanes. Bicyclists in the area also appreciate green pavement markings when navigating more complicated intersections
- The railroad tracks on Front Street NE are a barrier for safe bicycle travel

VIRTUAL OUTREACH

The project team hosted an online open house in early January 2024 to solicit feedback on the solutions outlined in this report. Approximately 160 individual comments were submitted. Based on this feedback, the community is generally supportive of the recommended solutions and believes the solutions will improve safety. Many people noted a desire for physical barriers or separated bicycle lanes instead of buffered bicycle lanes. A few key changes were made to the solutions to better reflect the interests of the community:

- The recommended multi-use path along Bellevue Street NE was extended west to connect to the existing undercrossing under Pringle Parkway NE
- Suggestions for additional protection for bicycle lanes were added to the “Additional Considerations” section of this study
- Suggestions for improving signal operations were added to the “Additional Considerations” section of this study.





6

ADDITIONAL CONSIDERATIONS & IMPLEMENTATION

IMPLEMENTATION

The solutions outlined in this study will be implemented as funding becomes available. ODOT is actively exploring leveraging opportunities with planned maintenance projects and is also partnering with the City of Salem on grant opportunities.

BUFFERED BICYCLE LANE DESIGN

Many people who bike along OR 99EB in Salem have shared that they would like to see physical barriers between vehicle lanes and bicycle lanes as opposed to painted buffers. The recommendation for buffered bicycle lanes is intended as an incremental improvement, not an ultimate solution. Additional opportunities for protection and separation of bicycle lanes should be evaluated as funding becomes available and redevelopment occurs. As previously discussed, the Salem UDV Study was focused on finding feasible near-term infrastructure improvements to make it safer for people walking and biking along OR 99EB. The emphasis on low-cost, simple, and feasible improvements makes it more likely that these solutions will be built because they can be leveraged with (or added onto) future planned projects and maintenance activities.

SIGNALIZED INTERSECTION OPERATIONS

As noted above, the Salem UDV Study was focused on infrastructure improvements that could be added onto future planned construction projects and maintenance



activities. Operational changes at signals not directly related to infrastructure changes were not discussed. However, there are several signal timing and phasing modifications shown to improve safety for people walking and biking at signalized intersections. These treatments should be considered during project development of the proposed solutions or as part of routine signal management.

- Install leading pedestrian intervals
- Provide protected left-turn phasing
- Restrict left-turns and right-turns on red (or when conflicting pedestrian calls are present)
- Optimize pedestrian walk times

APPENDIX

A. EXISTING AND PROPOSED CROSS SECTIONS

APPENDIX A – EXISTING AND PROPOSED CROSS SECTIONS PER HDM ON OR 99E STUDY CORRIDOR

STREET	DIR.	START	END	MP START	VEHICLE LANE CHANGES NEEDED TO FIT BUFFERED BICYCLE LANES	PROPOSED BICYCLE LANE WIDTH	PROPOSED BICYCLE LANE BUFFER WIDTH	EXISTING CROSS SECTION WIDTHS
								LANES BIKE LANE
COMMERCIAL STREET NE	SB	Salem Parkway	Hickory Street NE	3.34	Narrow to 11'	6'	4'	14'-14'-14' 5'
COMMERCIAL STREET NE	SB	Hickory Street NE	Pine Street NE	3.56	Narrow to 11'	6'	4'	14'-16'-14' 3'
COMMERCIAL STREET NE	SB	Pine Street NE	Grove Street NE	3.65	Narrow to 12'	6'	4'	16'-21' 3'
COMMERCIAL STREET NE	SB	Grove Street NE	Columbia Street NE	3.75	Narrow to 12'	6'	4'	14'-14' 5.5'
COMMERCIAL STREET NE	SB	Columbia Street NE	Academy Street NE	3.82	Narrow to 12'	5'	4'	14'-14' 5.5'
COMMERCIAL STREET NE	SB	Academy Street NE	River Street NE	3.89	Narrow to 12'	5'	4'	14'-14' 5'
COMMERCIAL STREET NE	SB	River Street NE	South Street NE	3.96	Narrow to 12'	5'	4'	14'-14' 4.5'
COMMERCIAL STREET NE	SB	South Street NE	Norway Street NE	4.02	Narrow to 12'	5'	4'	14'-14' 5.5'
COMMERCIAL STREET NE	SB	Norway Street NE	Shipping Street NE	4.11	Narrow to 12'	5'	4'	14'-14' 5'
COMMERCIAL STREET NE	SB	Shipping Street NE	Hood Street NE	4.17	Narrow to 12'	5'	4'	14'-14' 5'
COMMERCIAL STREET NE	SB	Hood Street NE	Gaines Street NE	4.24	Narrow to 12'	5'	3'	14'-14' 4'
COMMERCIAL STREET NE	SB	Gaines Street NE	Market Street NE	4.30	Narrow to 12'	5'	4'	14'-14' 5'

STREET	DIR.	START	END	MP START	VEHICLE LANE CHANGES NEEDED TO FIT BUFFERED BICYCLE LANES	PROPOSED BICYCLE LANE WIDTH	PROPOSED BICYCLE LANE BUFFER WIDTH	EXISTING CROSS SECTION WIDTHS LANES BIKE LANE
COMMERCIAL STREET NE	SB	Market Street NE	Belmont Street NE	4.36	Narrow to 12'	6'	4'	15'-15' 5'
COMMERCIAL STREET NE	SB	Belmont Street NE	D Street NE	4.42	Narrow to 12'	6'	4'	14'-16' 4.5'
LIBERTY STREET NE	NB	Salem Parkway	Hickory Street NE	3.34	N/A	2'	N/A	11'-11'-12' 2'
LIBERTY STREET NE	NB	Hickory Street NE	Pine Street NE	3.55	N/A	4'	N/A	10'-11'-12' 4.5'
LIBERTY STREET NE	NB	Pine Street NE	Grove Street NE	3.62	Narrow to 11'	6'	4'	14'-14' 4.5'
LIBERTY STREET NE	NB	Grove Street NE	Columbia Street NE	3.73	Narrow to 11'	6'	4'	14'-14' 6'
LIBERTY STREET NE	NB	Columbia Street NE	Academy Street NE	3.80	Narrow to 11'	6'	4'	14'-14' 5'
LIBERTY STREET NE	NB	Academy Street NE	River Street NE	3.88	Narrow to 11'	6'	4'	14'-14' 5.5'
LIBERTY STREET NE	NB	River Street NE	South Street NE	3.95	Narrow to 11'	6'	4'	14'-14' 4.5'
LIBERTY STREET NE	NB	South Street NE	Norway Street NE	4.02	Narrow to 11'	6'	4'	14'-14' 4.5'
LIBERTY STREET NE	NB	Norway Street NE	Shipping Street NE	4.12	Narrow to 11'	6'	4'	14'-14' 5'
LIBERTY STREET NE	NB	Shipping Street NE	Hood Street NE	4.18	Narrow to 11'	6'	4'	14'-14' 5.5'

STREET	DIR.	START	END	MP START	VEHICLE LANE CHANGES NEEDED TO FIT BUFFERED BICYCLE LANES	PROPOSED BICYCLE LANE WIDTH	PROPOSED BICYCLE LANE BUFFER WIDTH	EXISTING CROSS SECTION WIDTHS
								LANES BIKE LANE
LIBERTY STREET NE	NB	Hood Street NE	Gaines Street NE	4.24	Narrow to 11'	6'	4'	14'-14' 5.5'
LIBERTY STREET NE	NB	Gaines Street NE	Market Street NE	4.30	Narrow to 11'	6'	4'	14'-14' 4.5'
FRONT STREET NE	SB	Union Street NE	Marion Street NE On Ramp	4.85	Narrow to 11'	6'	3'	14' 6'
FRONT STREET NE	SB	Marion Street NE On Ramp	Center Street NE Off Ramp	4.93	Narrow to 11'	6'	3'	14' 6'
FRONT STREET NE	SB	Center Street NE Off Ramp	Chemeketa Street NE	5.02	N/A	N/A	N/A	14' N/A
FRONT STREET NE	SB	Chemeketa Street NE	Court Street NE	5.10	N/A	N/A	N/A	14' N/A
FRONT STREET NE	SB	Court Street NE	State Street NE	5.18	Narrow to 11'	5'	3'	14'-11'-11' 5'
FRONT STREET NE	NB	Union Street NE	Marion Street NE On Ramp	4.85	Narrow to 12'	4'	4'	14'-14' 6'
FRONT STREET NE	NB	Marion Street NE On Ramp	Center Street NE Off Ramp	4.93	N/A	N/A	N/A	14'-12' N/A
FRONT STREET NE	NB	Center Street NE Off Ramp	Chemeketa Street NE	5.02	Narrow to 11'	5'	2'	13'-11'-11' 5'
FRONT STREET NE	NB	Chemeketa Street NE	Court Street NE	5.10	Narrow to 11'	4'	2'	13'-11'-11' 4'
FRONT STREET NE	NB	Court Street NE	State Street NE	5.18	Narrow to 11'	4'	2'	13'-11'-11' 4'

STREET	DIR.	START	END	MP START	VEHICLE LANE CHANGES NEEDED TO FIT BUFFERED BICYCLE LANES	PROPOSED BICYCLE LANE WIDTH	PROPOSED BICYCLE LANE BUFFER WIDTH	EXISTING CROSS SECTION WIDTHS
								LANES BIKE LANE
TRADE STREET NE	EB	State Street NE	Commercial Street NE	5.25	Narrow to 11'	4'	2'	12'-12'-12' 4'
TRADE STREET NE	EB	Commercial Street NE	Liberty Street NE	5.43	N/A	4'	2'	7' 11'-11' 6'
TRADE STREET NE	EB	Liberty Street NE	High Street NE	5.52	N/A	5'	2'	7' 14'-11'-11' 5'
TRADE STREET NE	EB	High Street NE	Church Street NE	5.60	N/A	5'	None	7' 14'-11'-11' 5'
FERRY STREET NE	WB	State Street NE	Commercial Street NE	5.26	Narrow to 11'	5'	2'	10'-12'-12' 5'
FERRY STREET NE	WB	Commercial Street NE	Liberty Street NE	5.39	Narrow to 11'	4'	2'	10'-12'-10'-12' 4'
FERRY STREET NE	WB	Liberty Street NE	High Street NE	5.47	N/A	4'	None	7'-11'-13' 4'-7'
FERRY STREET NE	WB	High Street NE	Church Street NE	5.56	N/A	4'	None	7'-11'-11' 4'-7'
PRINGLE PARKWAY	Both	Church Street NE	Winter Street NE	5.65	Narrow to 11'	4'	2'	12'-12' 4'
PRINGLE PARKWAY	Both	Winter Street NE	12th Street NE	5.93	Narrow to 11'	4'	2'	12'-12' 4'

* Precise widths for vehicle lanes, bicycle lanes, and buffers are subject to change during the design phase

** Existing cross section widths include on-street parking in the Downtown segment along Trade Street NE and Ferry Street NE between Liberty Street NE and Church Street NE.

APPENDIX

B. PLANNING LEVEL COST ESTIMATES

APPENDIX B – SUMMARY COST ESTIMATE FOR CROSS SECTION RESTRIPIING

CROSS SECTION CHANGES	TOTAL
ROADWAY SEGMENT A	\$465,000.00
ROADWAY SEGMENT B	\$60,000.00
ROADWAY SEGMENT C	\$485,000.00
ROADWAY SEGMENT D	\$50,000.00
ROADWAY SEGMENT E	\$15,000.00
ROADWAY SEGMENT F	\$35,000.00
ROADWAY SEGMENT G	\$30,000.00
ROADWAY SEGMENT H	\$15,000.00
ROADWAY SEGMENT I	\$95,000.00
ROADWAY SEGMENT J	\$225,000.00
ROADWAY SEGMENT K	\$40,000.00
ROADWAY SEGMENT L	\$35,000.00
ROADWAY SEGMENT M	\$310,000.00
COMBINED PROJECTS TOTAL	\$1,860,000.00

PRELIMINARY ENGINEER'S ESTIMATE

CROSS-SECTION CHANGES

Project: Salem UDV Project
 Prepared by: Nate Koenig, E.I.
 Date: Monday, January 22, 2024

1 block was assumed to be an average of 400' (Price of paint per foot assumed to be \$4.50, price of paint removal was assumed to be \$1.00)

Per Block Costs:	
Travel Lane	\$ 2,200.00
Buffer	\$ 6,600.00
Bike Lane	\$ 2,800.00
Parking Lane	\$ 250.00

Items in Place	Unit	Quantity	Unit Cost	Total
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$24,000	\$24,000
Construction Staking (3% of Total)	LS	1	\$8,000	\$8,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$19,000	\$19,000
Segment "A" (Travel Lane, Travel Lane, Buffer, Bike Lane)	Per Block	17	\$13,800	\$234,600
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$36,000	\$36,000
Construction Engineering (14% of Total)	LS	1	\$33,000	\$33,000
			Total	\$354,600
			Contingency (30% of Total)	\$106,380
			Grand total	\$461,000

CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$3,000	\$3,000
Construction Staking (3% of Total)	LS	1	\$1,000	\$1,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$3,000	\$3,000
Segment "B" (Travel Lane, Travel Lane, Travel Lane, Bike Lane)	Per Block	3	\$9,400.00	\$28,200
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$5,000	\$5,000
Construction Engineering (14% of Total)	LS	1	\$4,000	\$4,000
			Total	\$44,200
			Contingency (30% of Total)	\$13,260
			Grand total	\$58,000

CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$25,000	\$25,000
Construction Staking (3% of Total)	LS	1	\$8,000	\$8,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$20,000	\$20,000
Segment "C" (Buffer, Travel Lane, Travel Lane, Buffer, Bike Lane, Buffer)	Per Block	12	\$20,400	\$244,800
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$37,000	\$37,000
Construction Engineering (14% of Total)	LS	1	\$35,000	\$35,000
			Total	\$369,800
			Contingency (30% of Total)	\$110,940
			Grand total	\$481,000

CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$3,000	\$3,000
Construction Staking (3% of Total)	LS	1	\$1,000	\$1,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$2,000	\$2,000
Segment "D" (Travel Lane, Buffer, Bike Lane)	Per Block	2	\$11,600	\$23,200
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$4,000	\$4,000
Construction Engineering (14% of Total)	LS	1	\$4,000	\$4,000
			Total	\$37,200
			Contingency (30% of Total)	\$11,160
			Grand total	\$49,000
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$1,000	\$1,000
Construction Staking (3% of Total)	LS	1	\$1,000	\$1,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$1,000	\$1,000
Segment "E" (Travel Lane)	Per Block	2	\$2,200	\$4,400
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$1,000	\$1,000
Construction Engineering (14% of Total)	LS	1	\$1,000	\$1,000
			Total	\$9,400
			Contingency (30% of Total)	\$2,820
			Grand total	\$13,000
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$2,000	\$2,000
Construction Staking (3% of Total)	LS	1	\$1,000	\$1,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$2,000	\$2,000
Segment "F" (Travel Lane, Travel Lane, Travel Lane, Buffer, Bike Lane)	Per Block	1	\$16,000	\$16,000
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$3,000	\$3,000
Construction Engineering (14% of Total)	LS	1	\$3,000	\$3,000
			Total	\$27,000
			Contingency (30% of Total)	\$8,100
			Grand total	\$36,000
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$2,000	\$2,000
Construction Staking (3% of Total)	LS	1	\$1,000	\$1,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$2,000	\$2,000
Segment "G" (Travel Lane, Travel Lane, Buffer, Bike Lane)	Per Block	1	\$13,800	\$13,800
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$3,000	\$3,000
Construction Engineering (14% of Total)	LS	1	\$2,000	\$2,000
			Total	\$23,800
			Contingency (30% of Total)	\$7,140
			Grand total	\$31,000
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$1,000	\$1,000
Construction Staking (3% of Total)	LS	1	\$1,000	\$1,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$1,000	\$1,000
Segment "H" (Travel Lane, Travel Lane)	Per Block	1	\$4,400	\$4,400
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$1,000	\$1,000
Construction Engineering (14% of Total)	LS	1	\$1,000	\$1,000
			Total	\$9,400
			Contingency (30% of Total)	\$2,820
			Grand total	\$13,000

CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$5,000	\$5,000
Construction Staking (3% of Total)	LS	1	\$2,000	\$2,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$4,000	\$4,000
Segment "I" (Travel Lane, Travel Lane, Travel Lane, Buffer, Bike Lane)	Per Block	3	\$16,000	\$48,000
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$8,000	\$8,000
Construction Engineering (14% of Total)	LS	1	\$7,000	\$7,000
			Total	\$74,000
			Contingency (30% of Total)	\$22,200
			Grand total	\$97,000
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$12,000	\$12,000
Construction Staking (3% of Total)	LS	1	\$4,000	\$4,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$10,000	\$10,000
Segment "J" (Buffer, Travel Lane, Travel Lane, Travel Lane, Buffer, Bike Lane)	Per Block	5	\$22,600	\$113,000
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$17,000	\$17,000
Construction Engineering (14% of Total)	LS	1	\$16,000	\$16,000
			Total	\$172,000
			Contingency (30% of Total)	\$51,600
			Grand total	\$224,000
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$2,000	\$2,000
Construction Staking (3% of Total)	LS	1	\$1,000	\$1,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$2,000	\$2,000
Segment "K" (Parking Lane, Travel Lane, Travel Lane, Travel Lane, Bike Lane)	Per Block	2	\$9,650	\$19,300
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$3,000	\$3,000
Construction Engineering (14% of Total)	LS	1	\$3,000	\$3,000
			Total	\$30,300
			Contingency (30% of Total)	\$9,090
			Grand total	\$40,000
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$2,000	\$2,000
Construction Staking (3% of Total)	LS	1	\$0	\$0
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$1,000	\$1,000
Segment "L" (Parking Lane, Travel Lane, Travel Lane, Bike Lane, Parking Lane)	Per Block	2	\$7,700	\$15,400
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$3,000	\$3,000
Construction Engineering (14% of Total)	LS	1	\$3,000	\$3,000
			Total	\$24,400
			Contingency (30% of Total)	\$7,320
			Grand total	\$32,000
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$17,000	\$17,000
Construction Staking (3% of Total)	LS	1	\$0	\$0
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$3,000	\$3,000
Segment "M" (Travel Lane, Travel Lane, Buffer, Bike Lane)	Per Block	12	\$13,800	\$165,600
SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$25,000	\$25,000
Construction Engineering (14% of Total)	LS	1	\$24,000	\$24,000
			Total	\$234,600
			Contingency (30% of Total)	\$70,380
			Grand total	\$305,000
All Segments Combined Total				\$1,650,000

PRELIMINARY ENGINEER'S ESTIMATE

MLK/LIBERTY/TRYON

Project: Salem UDV Project
 Prepared by: Nate Koenig, E.I.
 Date: Monday, January 22, 2024

Items in Place	Unit	Quantity	Unit Cost	Total
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$140,000	\$140,000
Construction Staking (3% of Total)	LS	1	\$42,000	\$42,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$112,000	\$112,000
Clearing and Grubbing and Removal of Surfacing	SY	4,000	\$30	\$120,000
Asphalt Pavement Saw Cutting	LF	-	\$2.50	\$0
Excavation	CY	2,000	\$70	\$140,000
Raised Median Construction	SF	2,600	\$50	\$130,000
Curb & Gutter	LF	685	\$70	\$47,950
Asphalt Pavement - 6" New (Level 3 PG64-22)	TON	-	\$140	\$0
Asphalt Pavement - 2" New	TON	1,400	\$50	\$70,000
Crushed Rock Agg. Base (3/4") for Road and Sidewalks	TON	5,000	\$70	\$350,000
Cold Plane Pavement Removal, 2 Inches Deep	SY	-	\$6	\$0
Asphalt Pavement - 2" Grind and Inlay (Level 3 PG70-22)	TON	-	\$140	\$0
Geotextile Fabric	SY	4,000	\$2	\$8,000
Sidewalk	SF	6,000	\$15	\$90,000
Sidewalk Ramps	EA	11	\$5,000	\$55,000
C900 Storm Pipe (10")	LF	-	\$160	\$0
Storm Concrete Inlets, Type CG-2	EA	-	\$4,500	\$0
Storm Connection to Existing	EA	-	\$2,000	\$0
Trench Resurfacing	SY	-	\$140	\$0
Adjusting Boxes	EA	-	\$600	\$0
Candlesticks @ 10' Spacing	EA	-	\$100	\$0
Bike Conflict Area	SF	500	\$12	\$6,000
Corridor Street Lighting	LS	1	\$150,000	\$150,000
Signing	LS	1	\$15,000	\$15,000
Traffic Signal Modifications	LS	1	\$160,000	\$160,000
Thermoplastic Line Striping	LS	1	\$50,000.00	\$50,000
Subtotal:				\$1,685,950

SOFT COSTS				
Preliminary Engineering	LS	1	\$252,893	\$252,893
ROW Services (12 Parcels, for ROW and TCE)	LS	-	\$50,000	\$0
ROW Acquisitions - ROW	SF	-	\$25.00	\$0
ROW Acquisitions - TCE	SF	-	\$2.50	\$0
Construction Engineering	LS	1	\$236,033	\$236,033
Subtotal:				\$488,926

Total	\$	2,174,876
Contingency (30% of Total)	\$	652,463
Grand Total		\$2,830,000.00

COST ESTIMATE
DKS Associates
ACADEMY AT COMMERCIAL/LIBERTY RRFBS

Estimator: NMK Project: Salem UDV
Checked By: SMM Project #:

Composite Labor Cost: \$125.00 Measurement: English

ITEM	UNIT	MATERIAL			LABOR			ITEM COST
		QTY	UNIT COST	COST	HR/UNIT	HOURS	COST	
CONTROLLERS/CABINETS								
334 Cabinet	EA	2	\$4,200.00	\$8,400.00	8	16	\$2,000.00	\$10,400.00
TRAFFIC SIGNAL SUPPORTS/STANDARDS								
Solar Flashing Pedestrian Beacon - wired (main pole)	EA	2	\$4,000.00	\$8,000.00	5	10	\$1,250.00	\$9,250.00
Solar Flashing Pedestrian Beacon - wired (secondary pole)	EA	2	\$2,500.00	\$5,000.00	5	10	\$1,250.00	\$6,250.00
STRAIN POLES								
LIGHTING POLES/STANDARDS								
Lighting Upgrades	LS	1	\$50,000.00	\$50,000.00	0	0	\$0.00	\$50,000.00
FOUNDATIONS								
Service Cabinet Foundation	EA	2	\$80.00	\$160.00	14	28	\$3,500.00	\$3,660.00
Pedestrian Pedestal Foundation	EA	4	\$800.00	\$3,200.00	0	0	\$0.00	\$3,200.00
SIGNAL INDICATIONS								
SIGNS								
LIGHTING FIXTURES								
VEHICLE DETECTION								
PREEMPTION								
CAMERAS								
CAMERA CONTROL SOFTWARE								
ROAD WEATHER INFORMATION SYSTEMS								
COMMUNICATIONS EQUIPMENT								
JUNCTION/PULL BOXES & VAULTS								
ODOT Type 2 Junction Box	EA	4	\$390.00	\$1,560.00	2	8	\$1,000.00	\$2,560.00
TRENCHING/BORING/SAWCUTS								
Trench & Backfill - Horizontal Drilling	LF	200	\$50.00	\$10,000.00	0	0	\$0.00	\$10,000.00
CONDUIT								
PVC Conduit: 2" (51 mm)	LF	200	\$4.55	\$910.00	0.04	8	\$1,000.00	\$1,910.00
WIRES & CABLES								
#8 AWG Wire	LF	200	\$0.47	\$94.00	0.005	1	\$125.00	\$219.00
#8 Ground Wire	LF	100	\$0.25	\$25.00	0.005	0.5	\$62.50	\$87.50
7 Conduction-14 AC Control Cable	LF	400	\$2.06	\$824.00	0.003	1.2	\$150.00	\$974.00
SPlicing AND TESTING FIBER OPTIC CABLE								
REMOVAL								
RELOCATION								
MISCELLANEOUS								
Thermoplastic Line Striping	LF	240	\$2.00	\$480.00	1	1	\$125.00	\$605.00
Sidewalk Ramps	EA	4	\$20,000.00	\$80,000.00	10	40	\$5,000.00	\$5,000.00
SUBTOTAL								
				\$168,653.00			\$15,462.50	\$104,115.50
OVERHEAD & PROFIT	15%			\$25,297.95				\$25,297.95
MOBILIZATION	10%			\$16,865.30			\$1,546.25	\$18,411.55
CONTINGENCIES	0%			\$0.00			\$0.00	\$0.00
SALES TAX ON MATERIALS	0.0%			\$0.00				\$0.00
TOTAL PROJECT COST					\$210,816.25		\$17,008.75	\$147,825.00

Rounded Construction Total \$148,000

SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$23,000	\$23,000
Construction Engineering (14% of Total)	LS	1	\$21,000	\$21,000
			Total	\$192,000
			Contingency (30% of Total)	\$57,600
			Grand total	\$250,000

COST ESTIMATE
DKS Associates
HOOD AT COMMERCIAL/LIBERTY RRFBS

Estimator: NMK Project: Salem UDV
Checked By: SMM Project #:

Composite Labor Cost: \$125.00 Measurement: English

ITEM	UNIT	MATERIAL			LABOR			ITEM COST
		QTY	UNIT COST	COST	HR/UNIT	HOURS	COST	
CONTROLLERS/CABINETS								
334 Cabinet	EA	2	\$4,200.00	\$8,400.00	8	16	\$2,000.00	\$10,400.00
TRAFFIC SIGNAL SUPPORTS/STANDARDS								
Solar Flashing Pedestrian Beacon - wired (main pole)	EA	2	\$4,000.00	\$8,000.00	5	10	\$1,250.00	\$9,250.00
Solar Flashing Pedestrian Beacon - wired (secondary pole)	EA	2	\$2,500.00	\$5,000.00	5	10	\$1,250.00	\$6,250.00
STRAIN POLES								
LIGHTING POLES/STANDARDS								
Lighting Upgrades	LS	1	\$50,000.00	\$50,000.00	0	0	\$0.00	\$50,000.00
FOUNDATIONS								
Service Cabinet Foundation	EA	2	\$80.00	\$160.00	14	28	\$3,500.00	\$3,660.00
Pedestrian Pedestal Foundation	EA	4	\$800.00	\$3,200.00	0	0	\$0.00	\$3,200.00
SIGNAL INDICATIONS								
SIGNS								
LIGHTING FIXTURES								
VEHICLE DETECTION								
PREEMPTION								
CAMERAS								
CAMERA CONTROL SOFTWARE								
ROAD WEATHER INFORMATION SYSTEMS								
COMMUNICATIONS EQUIPMENT								
JUNCTION/PULL BOXES & VAULTS								
ODOT Type 2 Junction Box	EA	4	\$390.00	\$1,560.00	2	8	\$1,000.00	\$2,560.00
TRENCHING/BORING/SAWCUTS								
Trench & Backfill - Horizontal Drilling	LF	200	\$50.00	\$10,000.00	0	0	\$0.00	\$10,000.00
CONDUIT								
PVC Conduit: 2" (51 mm)	LF	200	\$4.55	\$910.00	0.04	8	\$1,000.00	\$1,910.00
WRES & CABLES								
#8 AWG Wire	LF	200	\$0.47	\$94.00	0.005	1	\$125.00	\$219.00
#8 Ground Wire	LF	100	\$0.25	\$25.00	0.005	0.5	\$62.50	\$87.50
7 Conduction-14 AC Control Cable	LF	400	\$2.06	\$824.00	0.003	1.2	\$150.00	\$974.00
SPLICING AND TESTING FIBER OPTIC CABLE								
REMOVAL								
RELOCATION								
MISCELLANEOUS								
Thermoplastic Line Striping	LF	240	\$2.00	\$480.00	1	1	\$125.00	\$605.00
Sidewalk Ramps	EA	4	\$20,000.00	\$80,000.00	10	40	\$5,000.00	\$5,000.00
SUBTOTAL								
				\$168,653.00			\$15,462.50	\$104,115.50
OVERHEAD & PROFIT	15%			\$25,297.95				\$25,297.95
MOBILIZATION	10%			\$16,865.30			\$1,546.25	\$18,411.55
CONTINGENCIES	0%			\$0.00			\$0.00	\$0.00
SALES TAX ON MATERIALS	0.0%			\$0.00				\$0.00
TOTAL PROJECT COST				\$210,816.25			\$17,008.75	\$147,825.00

Rounded Construction Total \$148,000

SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$23,000	\$23,000
Construction Engineering (14% of Total)	LS	1	\$21,000	\$21,000
Total				\$192,000
Contingency (30% of Total)				\$57,600
Grand total				\$250,000

PRELIMINARY ENGINEER'S ESTIMATE

UNION STREET UPGRADES

Project: Union Street Family Friendly Bikeway Improvements
 Prepared by: Kurtis Pipkin, P.E.
 Date: Wednesday, January 24, 2024

Items in Place	Unit	Quantity	Unit Cost	Total
Union St NE/Front St NE Improvements - Construction Costs				
Mobilization (10% of Total)	LS	1	\$35,000	\$35,000
Construction Staking (3% of Total)	LS	1	\$11,000	\$11,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$28,000	\$28,000
Erosion Control (1% of Total)	LS	1	\$4,000	\$4,000
Clearing and Grubbing and Removal of Surfacing	SY	558	\$30	\$16,733
Excavation	CY	50	\$70	\$3,489
Curb & Gutter	LF	360	\$70	\$25,200
Standard Curb	LF	150	\$60	\$9,000
Asphalt Pavement - 9" New (Level 3 PG70-22)	TON	80	\$140	\$11,130
Cold Plane Pavement Removal, 2 Inches Deep	SY	2,144	\$6	\$12,867
Asphalt Pavement - 2" Grind and Inlay (Level 3 PG70-22)	TON	253	\$140	\$35,360
Aggregate Base for Road and Sidewalks	TON	203	\$60	\$12,158
Subgrade Geotextile Fabric	SY	150	\$3.00	\$450
Concrete Sidewalk and Driveway	SF	2,770	\$15	\$41,550
Extra for Curb Ramps and Truncated Domes	EA	13	\$1,600	\$20,800
Storm System Upgrades	LS	1	\$20,000	\$20,000
Adjusting Boxes	EA	9	\$500	\$4,500
Union/Front Signal Crossing Modifications (6 Ped Push Buttons)	LS	1	\$250,000	\$250,000
Pavement Legends	EA	16	\$500	\$8,000
Green Bike Crossing/Area Marking	SF	930	\$9.00	\$8,370
Thermoplastic Striping	LF	5,400	\$3.00	\$16,200
Topsoil and Seeding	SY	100	\$27	\$2,700
Subtotal:				\$576,507

Union St NE/Front St NE Improvements - Soft Costs				
Topo Survey and Boundary	LS	1	\$20,000	\$20,000
Civil Engineering	LS	1	\$100,000	\$100,000
Traffic Engineering	LS	1	\$50,000	\$50,000
Cultural and Historic Resources	LS	1	\$10,000	\$10,000
Construction Engineering and Inspection	LS	1	\$100,000	\$100,000
Railroad Coordination	LS	1	\$20,000	\$20,000
TCE Consultation Services	LS	1	\$5,000	\$5,000
TCE Purchase for 1 year (No Anticipated ROW Acquisitions)	SF	400	\$2.50	\$1,000
Subtotal:				\$306,000

Grand Total: \$882,507

Total	\$	882,507
Contingency (30% of Total)	\$	264,752
Grand Total	\$	1,147,259

City of Salem
2024 Pavement R&R
Liberty Street SE/Trade Street SE

Construction Cost Estimate



Estimate Level: 90%
Project No: 40308.013.01
Prepared By: RV
Date: 1/26/2024

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
TEMPORARY FEATURES AND APPURTENANCES					
	Mobilization	LS	ALL	\$ 30,000.00	\$ 30,000.00
	Temporary Protection and Direction of Traffic	LS	ALL	\$ 20,000.00	\$ 20,000.00
	Flagging (Stipulated Price)	HR	40	\$ 70.00	\$ 2,800.00
	Pollution Control Plan	LS	ALL	\$ 500.00	\$ 500.00
	Erosion Control	LS	ALL	\$ 1,500.00	\$ 1,500.00
				Subtotal	\$ 54,800.00
ROADWORK					
	Removal of Structures and Obstructions	LS	ALL	\$ 50.00	\$ 50.00
	Clearing and Grubbing	LS	ALL	\$ 15,000.00	\$ 15,000.00
				Subtotal	\$ 15,050.00
DRAINAGE AND SEWERS					
	12 inch Storm Sewer Pipe	FT	66	\$ 250.00	\$ 16,395.00
	Concrete Manholes, Shallow Flat Top	EA	1	\$ 6,500.00	\$ 6,500.00
	Concrete Inlets, Type 2	EA	4	\$ 3,500.00	\$ 14,000.00
	Minor Adjustment of Manholes	EA	2	\$ 1,500.00	\$ 3,000.00
	Adjusting Boxes	EA	1	\$ 750.00	\$ 750.00
				Subtotal	\$ 40,645.00
BASES					
	Cold Plane Pavement Removal, 0 to 2 inches Deep	SY	6,000	\$ 6.50	\$ 39,000.00
	Extra for Cold Plane Pavement Removal, 2-5 inches Deep	SY	6,000	\$ 3.50	\$ 21,000.00
	Aggregate Base	CY	50	\$ 200.00	\$ 10,000.00
				Subtotal	\$ 70,000.00
WEARING SURFACES					
	Sawed Jointed, PCC or AC	LF	200	\$ 5.00	\$ 1,000.00
	Level 3, 1/2 Inch Dense ACP Mixture	TON	250	\$ 140.00	\$ 35,000.00
	Standard PCC Curb & Gutter, Type A	FT	170	\$ 70.00	\$ 11,900.00
	Concrete Sidewalks, 6 inches Thick	SF	1,610	\$ 24.50	\$ 39,445.00
	Truncated Domes on New Surfaces	EA	4	\$ 500.00	\$ 2,000.00
	Extra for New Curb Ramps	EA	4	\$ 2,000.00	\$ 8,000.00
				Subtotal	\$ 97,345.00
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
	Thermoplastic, Non-Profile, 120 mils, Extruded or Sprayed	FT	150	\$ 3.50	\$ 525.00
	Thermoplastic, Extruded or Sprayed, Green	SF	500	\$ 25.00	\$ 12,500.00
	Pavement Legend, Type B-HS: Bicycle Lane Stencil	EA	1	\$ 950.00	\$ 950.00
	Pavement Bar, Type A	SF	20	\$ 20.00	\$ 400.00
	Pavement Legend, Uncontrolled Crosswalk Striping	SF	200	\$ 20.00	\$ 4,000.00
	Remove and Reinstall Existing Signs	LS	ALL	\$ 1,000.00	\$ 1,000.00
				Subtotal	\$ 19,375.00
WATER SUPPLY SYSTEMS					
	Adjusting Water Valves & Meters	EA	2	\$ 1,000.00	\$ 2,000.00
				Subtotal	\$ 2,000.00
RIGHT OF WAY DEVELOPMENT AND CONTROL					
	Mulch	CY	10	\$ 150.00	\$ 1,500.00
				Subtotal	\$ 1,500.00

PROJECT SUBTOTAL	\$ 300,715
ESTIMATE CONTINGENCY (10%)	\$ 30,072
PROJECT CONSTRUCTION TOTAL	\$ 330,787
Design Costs (10%)	\$ 30,000.00
CA/CEI Costs (5%)	\$ 15,000.00
PROJECT COST TOTAL	\$ 375,787

Total	\$ 390,000
Contingency (30% of Total)	\$ 117,000
Grand Total	\$510,000.00

COST ESTIMATE
DKS Associates
BELLEVUE UNDERCROSSING

Estimator: NMK Project: Salem UDV
Checked By: SMM Project #:

Composite Labor Cost: \$125.00 Measurement: English

ITEM	UNIT	MATERIAL			LABOR			ITEM COST
		QTY	UNIT COST	COST	HR/UNIT	HOURS	COST	
CONTROLLERS/CABINETS								
Service Cabinet/Meter Base (ODOT BMCL)	EA	1	\$12,000.00	\$12,000.00	2	2	\$250.00	\$12,250.00
TRAFFIC SIGNAL SUPPORTS/STANDARDS								
STRAIN POLES								
LIGHTING POLES/STANDARDS								
PGE Decorative Cast Alum. Acorn Pole: 16' Mtg Ht	EA	4	\$10,000.00	\$40,000.00	6	24	\$3,000.00	\$43,000.00
FOUNDATIONS								
Service Cabinet Foundation	EA	1	\$80.00	\$80.00	14	14	\$1,750.00	\$1,830.00
Poured Single Orn LP Foundation	EA	4	\$1,000.00	\$4,000.00	8	32	\$4,000.00	\$8,000.00
SIGNAL INDICATIONS								
SIGNS								
LIGHTING FIXTURES								
Underdeck Lighting	EA	4	\$10,000.00	\$40,000.00	4	16	\$2,000.00	\$42,000.00
Single Acorn Luminaire	EA	4	\$1,200.00	\$4,800.00	1	4	\$500.00	\$5,300.00
VEHICLE DETECTION								
PREEMPTION								
CAMERAS								
CAMERA CONTROL SOFTWARE								
ROAD WEATHER INFORMATION SYSTEMS								
COMMUNICATIONS EQUIPMENT								
JUNCTION/PULL BOXES & VAULTS								
ODOT Type 2 Junction Box	EA	6	\$390.00	\$2,340.00	2	12	\$1,500.00	\$3,840.00
TRENCHING/BORING/SAWCUTS								
Trench & Backfill - Horizontal Drilling	LF	400	\$50.00	\$20,000.00	0	0	\$0.00	\$20,000.00
CONDUIT								
PVC Conduit: 2" (51 mm)	LF	400	\$4.55	\$1,820.00	0.04	16	\$2,000.00	\$3,820.00
WMRES & CABLES								
SPLICING AND TESTING FIBER OPTIC CABLE								
REMOVAL								
RELOCATION								
MISCELLANEOUS								
PSST Sign Supports (Includes Support and Foundation)	EA	6	\$10.00	\$60.00	4	24	\$3,000.00	\$3,060.00
4" Thermoplastic Striping	LF	500	\$4.50	\$2,250.00	0	0	\$0.00	\$2,250.00
Bike Conflict Area	SF	25	\$12.00	\$300.00	0	0	\$0.00	\$300.00
SUBTOTAL								
				\$129,090.00			\$24,000.00	\$153,090.00
OVERHEAD & PROFIT	15%			\$19,363.50				\$19,363.50
MOBILIZATION	10%			\$12,909.00			\$2,400.00	\$15,309.00
CONTINGENCIES	0%			\$0.00			\$0.00	\$0.00
SALES TAX ON MATERIALS	0.0%			\$0.00				\$0.00
TOTAL PROJECT COST								
				\$161,362.50			\$26,400.00	\$187,762.50

Rounded Construction Total \$188,000

SOFT COSTS				
Preliminary Engineering (15% of Total)	LS	1	\$29,000	\$29,000
Construction Engineering (14% of Total)	LS	1	\$27,000	\$27,000
			Total	\$244,000
			Contingency (30% of Total)	\$73,200
			Grand total	\$318,000

PRELIMINARY ENGINEER'S ESTIMATE

BELLEVUE MUP, RRFB, WINTER STREET SIGNAL CHANGES

Project: Salem UDV Project
 Prepared by: Nate Koenig, E.I.
 Date: Monday, January 22, 2024

Items in Place	Unit	Quantity	Unit Cost	Total
CONSTRUCTION COSTS				
Mobilization (10% of Total)	LS	1	\$177,000	\$177,000
Construction Staking (3% of Total)	LS	1	\$54,000	\$54,000
Temporary Protection and Direction of Traffic (8% of Total)	LS	1	\$142,000	\$142,000
Clearing and Grubbing and Removal of Surfacings	SY	4,000	\$30	\$120,000
Asphalt Pavement Saw Cutting	LF	-	\$2.50	\$0
Excavation	CY	4,000	\$70	\$280,000
Raised Median Construction	SF	-	\$50	\$0
Curb & Gutter	LF	100	\$70	\$7,000
Asphalt Pavement - 6" New (Level 3 PG64-22)	TON	-	\$140	\$0
Asphalt Pavement - 2" New	TON	8,400	\$50	\$420,000
Crushed Rock Agg. Base (3/4") for Road and Sidewalks	TON	4,200	\$70	\$294,000
Cold Plane Pavement Removal, 2 Inches Deep	SY	-	\$6	\$0
Asphalt Pavement - 2" Grind and Inlay (Level 3 PG70-22)	TON	-	\$140	\$0
Geotextile Fabric	SY	12,000	\$2	\$24,000
Sidewalk	SF	500	\$15	\$7,500
Sidewalk Ramps (Accounted for in RRFB total)	EA	-	\$2,000	\$0
C900 Storm Pipe (10")	LF	-	\$160	\$0
Storm Concrete Inlets, Type CG-2	EA	-	\$4,500	\$0
Storm Connection to Existing	EA	-	\$2,000	\$0
Trench Resurfacing	SY	-	\$140	\$0
Adjusting Boxes	EA	-	\$600	\$0
Candlesticks @ 10' Spacing	EA	-	\$100	\$0
Bike Conflict Area	SF	-	\$12	\$0
Corridor/Path Street Lighting	LS	1	\$250,000	\$250,000
Signing	LS	1	\$15,000	\$15,000
RRFB Installation	LS	1	\$100,000	\$100,000
Traffic Signal Modifications	LS	1	\$200,000	\$200,000
Thermoplastic Line Striping	LS	1	\$50,000.00	\$50,000
Subtotal:				\$2,140,500

SOFT COSTS				
Preliminary Engineering	LS	1	\$321,075	\$321,075
ROW Services (12 Parcels, for ROW and TCE)	LS	-	\$50,000	\$0
ROW Acquisitions - ROW	SF	-	\$25.00	\$0
ROW Acquisitions - TCE	SF	-	\$2.50	\$0
Construction Engineering	LS	1	\$299,670	\$299,670
Subtotal:				\$620,745

Total	\$	2,761,245
Contingency (30% of Total)	\$	828,374
Grand Total	\$	3,589,619