

Technical Memorandum

November 17, 2023

Project# 19531.016

To: Dayna Webb, PE
City of Oregon City

From: Marc Butorac, PE, PTOE, PMP; Amy Griffiths; Nicholas Gross; Sophia Semensky

CC: Mahasti Hastings, Oregon Department of Transportation

RE: 3.3.1A - TM#4: Alternative Concepts
McLoughlin Boulevard Enhancements - 10th Street to tumwata village

PRELIMINARY ALTERNATIVE CONCEPTS

This memorandum serves as an overview of the alternative concepts developed for the McLoughlin Boulevard Enhancements - 10th Street to tumwata village Project (Project).

Three primary alternatives have been developed to meet the Corridor Vision Statement (Reference 1), and Purpose and Need Statement (Reference 2). Each of the three alternatives and their respective sub alternatives are described in further detail in the following sections. These alternatives will be initially screened as part of Technical Memorandum #5: Existing Safety and Active Transportation Analysis and further evaluated as part of Technical Memorandum #6: Most Promising Alternatives to identify the three "most promising" alternatives.

The alternative concepts have been developed in collaboration with and based on input from City of Oregon City staff, City of Oregon City Commission, and Oregon Department of Transportation (ODOT) staff. The conceptual streetscape design for McLoughlin Boulevard will be developed following the identification of a preferred shared-use path design alternative.

Alternative Concepts¹

Three design alternatives were developed for the Project: Realign, Retrofit, and Reroute. There are four (4) sub-alternatives under Realign and three (3) sub-alternatives under Retrofit and no sub-alternatives under Reroute. Figure 1 provides an overview of the sub-alternative alignments. Further descriptions with 3D model visualizations are summarized in the following section².

¹ Alternative Concepts illustrations have been developed to visualize path alignments and do not show the required structural elements for support. Structural elements will be considered as part of further concept design refinement and visualized for the most promising alternatives.

² Structural terminology used in the descriptions of the alternatives are defined in Appendix A.



Figure 1: Overview of Alternatives

Alternative 1A: Low Route

This alignment would be constructed as a floating esplanade at water level. Ramping structures would be needed to bring path users down to water level and back up to McLoughlin Blvd. The dock and ramping structures would need to be constructed to adjust to changing water levels throughout the year. This alignment would bypass the Arch Bridge underneath the arch rib.

Alternative 1B: High Route

This alignment would be constructed approximately at-grade and adjacent to the existing viaduct. This alignment would either bypass the Arch Bridge between the arch columns or reroute through the arch pilaster.

Alternative 1C: Hybrid Route (At-Grade & Below-Grade)

This alignment would be constructed as a standalone structure between 10th Street and 8th Street. Southwest of 8th Street, existing on-street parking would be removed in exchange for path space. The alignment would pass through or around the utility structure and bypass the Historic Arch Bridge through the arch pilaster, a cantilever structure, or a tunnel underneath the arch pilaster.

Alternative 2A: McLoughlin Boulevard Reorganization

This alternative reimagines and reallocates the existing McLoughlin Blvd roadway cross section to provide a multiuse path within the right-of-way. This alternative retains and attempts to rework the current viaduct envelope without additional structural width.

Alternative 2B: Viaduct Augmentation

Alternative 2B augments the viaduct through a cantilevered structure (cantilever add on) between 10th Street and 8th Street. The alignment would pass through the utility structure via modifications and bypass the Arch Bridge through either the arch pilaster, a cantilever structure, or a structure supported from the rock. Retaining wall augmentation would also occur to provide additional width for the multiuse path near the McLoughlin Blvd "elbow".

This alignment is shared by **Alternative 1C and 2B**

Alternative 3: Reroute

Alternative 3 provides a parallel alignment through downtown Oregon City via. 10th Street and Main Street. Based on a review of background material, as well as the goals and objectives of the Plan, this alternative is not preferred. Alternative 3 will only be advanced if Alternative 1 and Alternative 2 are deemed infeasible or fatally flawed.

Alternative 1: Realign

Alternative 1 provides a shared-use path adjacent to McLoughlin Boulevard via a standalone, separate structure. Alternative 1 has three sub alternatives described in further detail below. All Realign sub alternatives are not anticipated to trigger seismic retrofit updates to the existing viaduct.

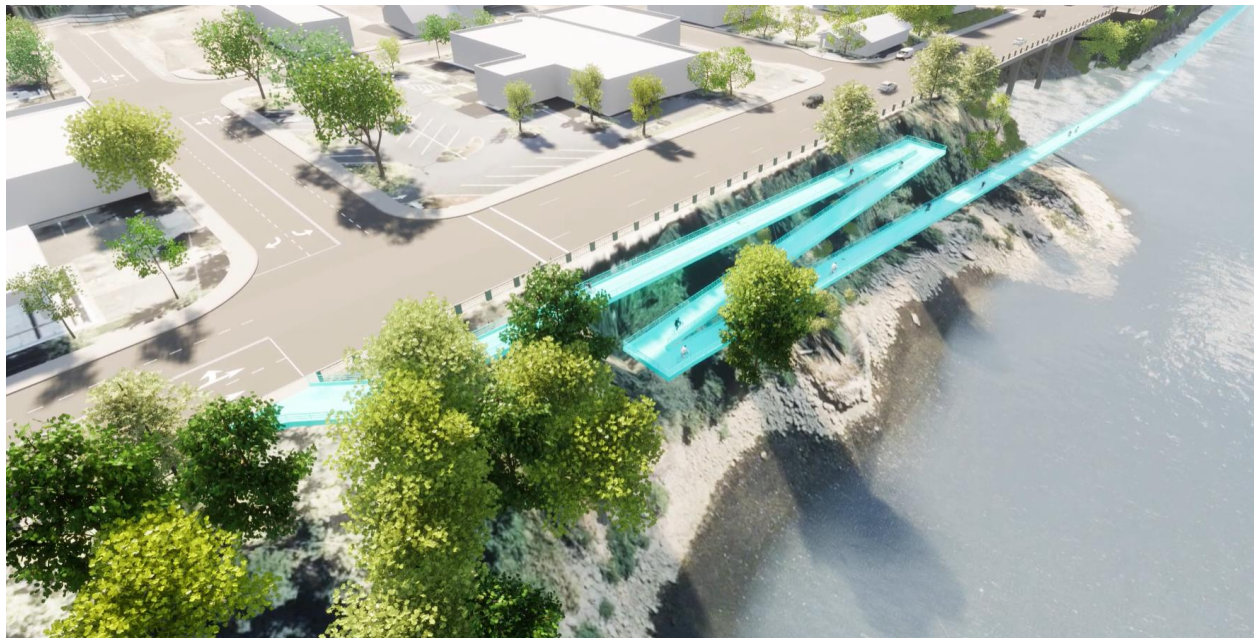
Sub-Alternatives

Alternative 1A: Low Route

This alternative would be constructed as a floating esplanade at water level.

Figure 2 illustrates ramping structures are needed to bring path users down to water level near 10th Street. Structural support for the ramping structures may rely on the outcropping of landmass on the north side of McLoughlin Boulevard.

Figure 2: Low Route Ramping Structures at 10th Street



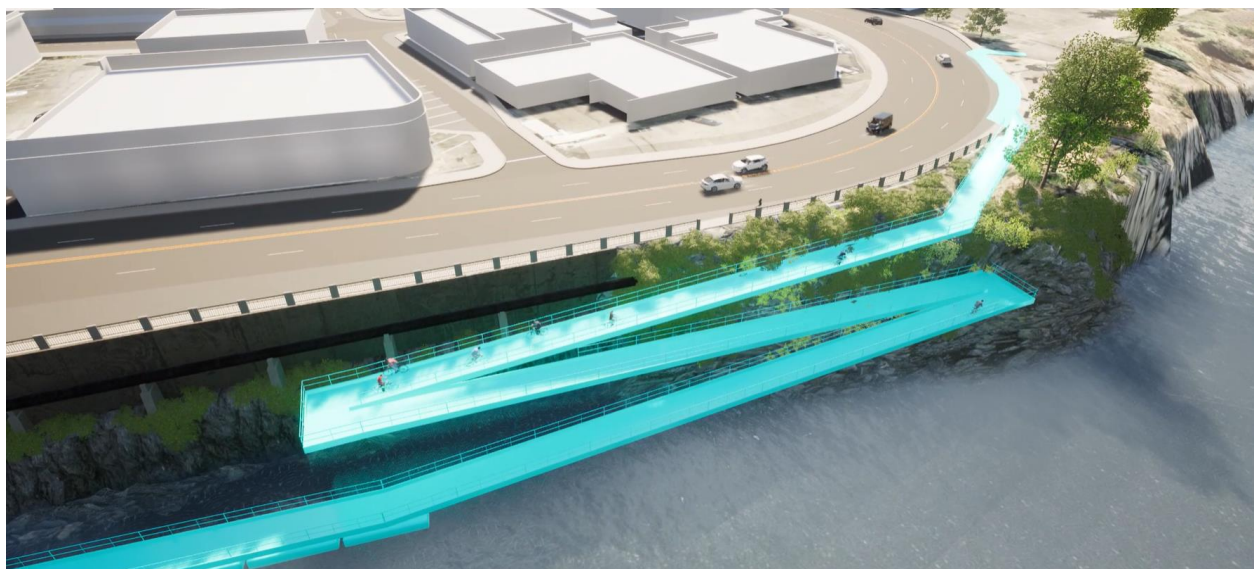
The ramping structures would need to be constructed to adjust to the changes of water levels throughout the season. The movement (expansion and reduction) of the ramping structures is a maintenance consideration that the project team will further evaluate going forward.

Figure 3: Low Route Traversing Historic Arch Bridge



As shown in Figure 3, this alternative would bypass the Historic Arch Bridge underneath the arch rib. Changes of water levels throughout the season must be considered as it relates to the vertical clearance of the floating esplanade underneath the arch rib. As river levels rise (reducing the vertical clearance) the floating esplanade will need to shift further offshore to provide sufficient clearance for path users. This consideration as it relates to navigable waterways and user experience is a consideration that the project team will further evaluate going forward

Figure 4: Low Route Ramping near tumwata village



As shown in Figure 4, ramping structures are also needed at the “elbow” of McLoughlin Boulevard near the future open space and tumwata village development to bring path users up to roadway grade from river level. Opportunities exist to utilize the outcropping of landmass on the north side of McLoughlin Boulevard to support ramping structures.

Alternative 1B: High Route

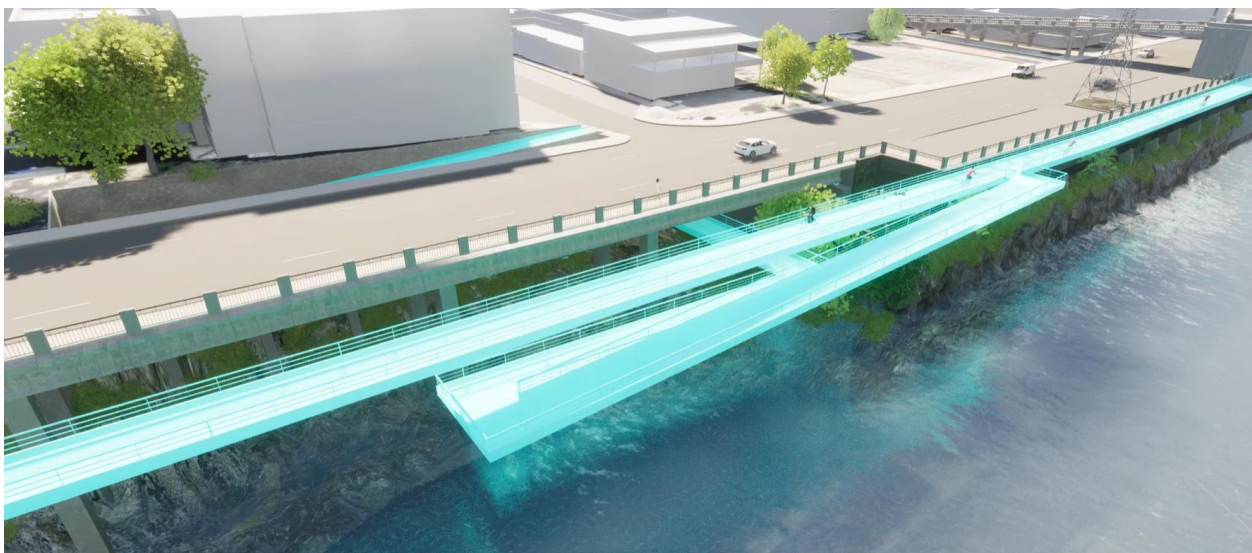
Figure 5 illustrates the High Route alternative. This alternative would be constructed at the same grade as McLoughlin Boulevard and adjacent to the existing viaduct on a fully separated structure. The connection to McLoughlin Boulevard will occur near 10th Street and reconnect near the future Tumwata Village development with additional opportunities for connections back to McLoughlin Boulevard further described in the section below.

Figure 5: High Route Alignment



Figure 6 illustrates the potential for a grade-separated undercrossing at 8th Street. The grade separated undercrossing would utilize the existing space occupied by the 8th Street stairwell adjacent to the Oregon City Court House, which today provides access to the river, and former 8th Street dock.

Figure 6: High Route 8th Street Undercrossing



To fit the required ramping structures on the east side of McLoughlin Boulevard bringing path users underneath the viaduct, significant cut and fill of existing earth is required adjacent to the Oregon City Court House.

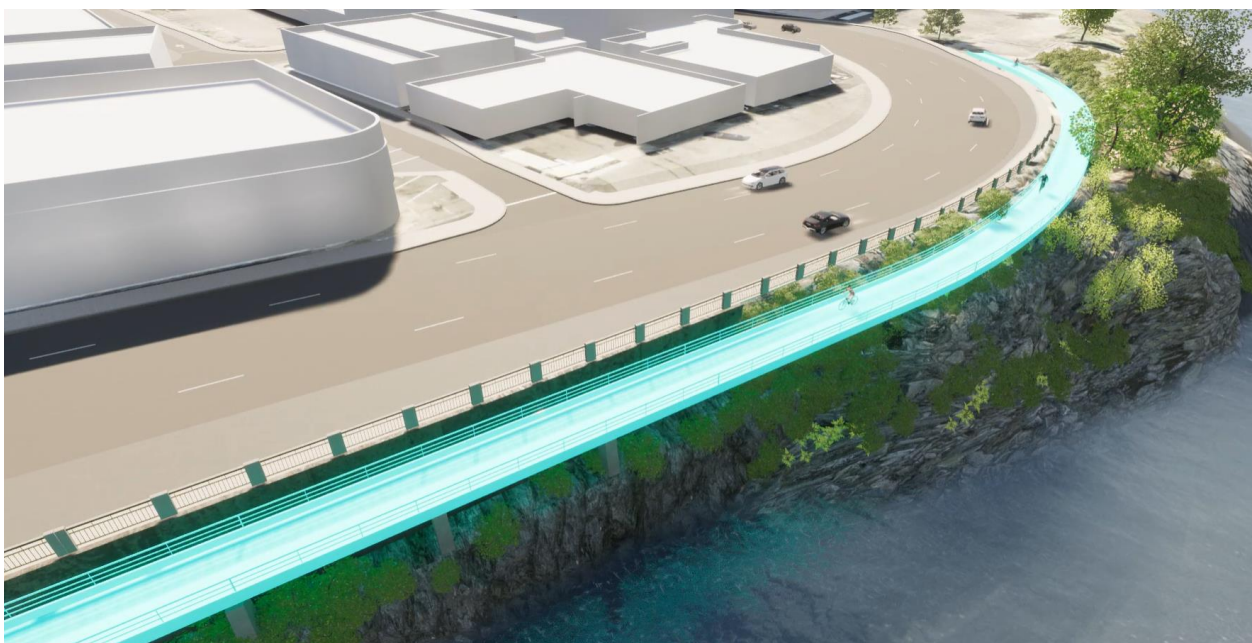
Figure 7 shows the High Route alternative at the Historic Arch Bridge. This alternative would bypass the Historic Arch Bridge between the arch columns with no structural impacts to the Historic Arch Bridge.

Figure 7: High Route Traversing Historic Arch Bridge



Figure 8 shows how the High Route alternative would continue at McLoughlin Boulevard grade and connect into the future open space and tumwata village development on a separate structure adjacent to McLoughlin Boulevard.

Figure 8: High Route connecting to tumwata village



Alternative 1C: Hybrid Route: At-Grade

The Hybrid Route: At-Grade alternative would be constructed as a standalone structure between 10th Street and 8th Street (adjacent to the existing viaduct) as shown in Figure 9. Southwest of 8th Street, the viaduct structure ties back into the same grade as McLoughlin Boulevard where McLoughlin Boulevard widens. Within this space, existing on-street parking would be removed and converted to path space.

Figure 9: Hybrid Route: At-Grade



Figure 10 shows two sub alternatives to traverse the utility tower structure. These include an alternative through the utility tower requiring modifications to the structure to improve clearance for path users as well as a separate structure around the utility tower, fully avoiding impacts or modifications to the utility tower.

Figure 10: Hybrid Route: At-Grade Traversing Utility Tower

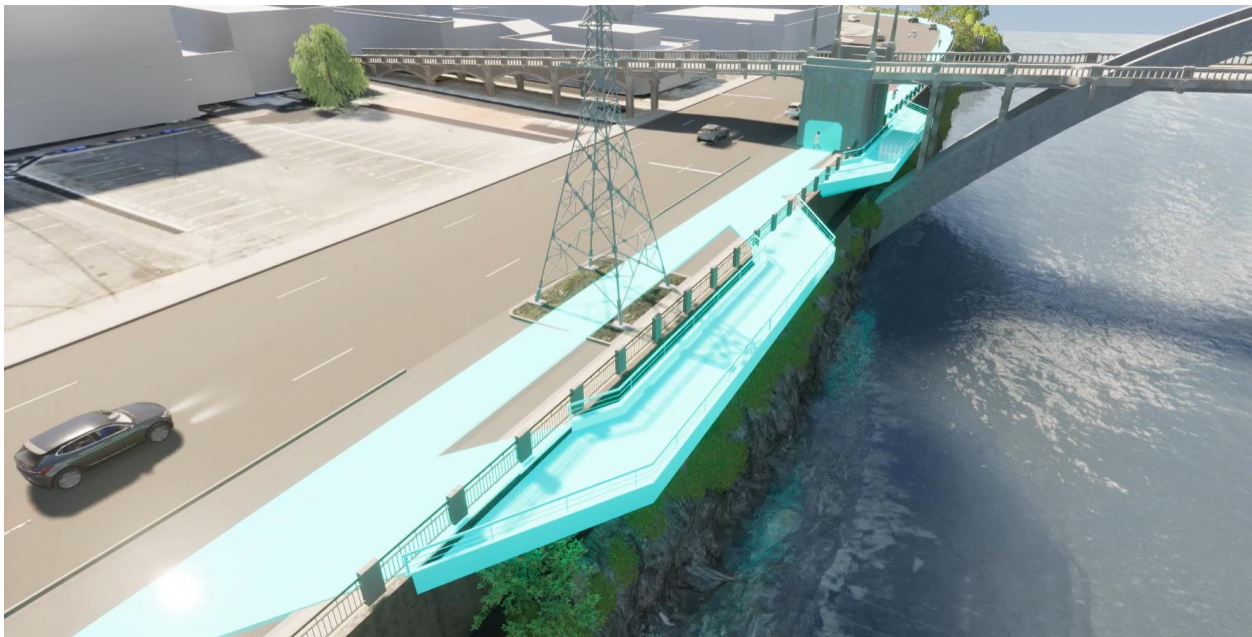


Figure 11 shows two sub alternatives to traverse the Historic Arch Bridge. These include an alignment through the arch pilaster as well as a separate structure around the arch pilaster, fully avoiding impacts or modifications to the arch pilaster.

Figure 11: Hybrid Route: At-Grade Traversing Historic Arch Bridge



Figure 12 shows how the Hybrid Route: At-Grade connects into the future open space and tumwata village development within the existing footprint of the McLoughlin Boulevard right-of-way.

Figure 12: Hybrid Route: At-Grade connecting to tumwata village



Alternative 1C: Hybrid Route: Below-Grade

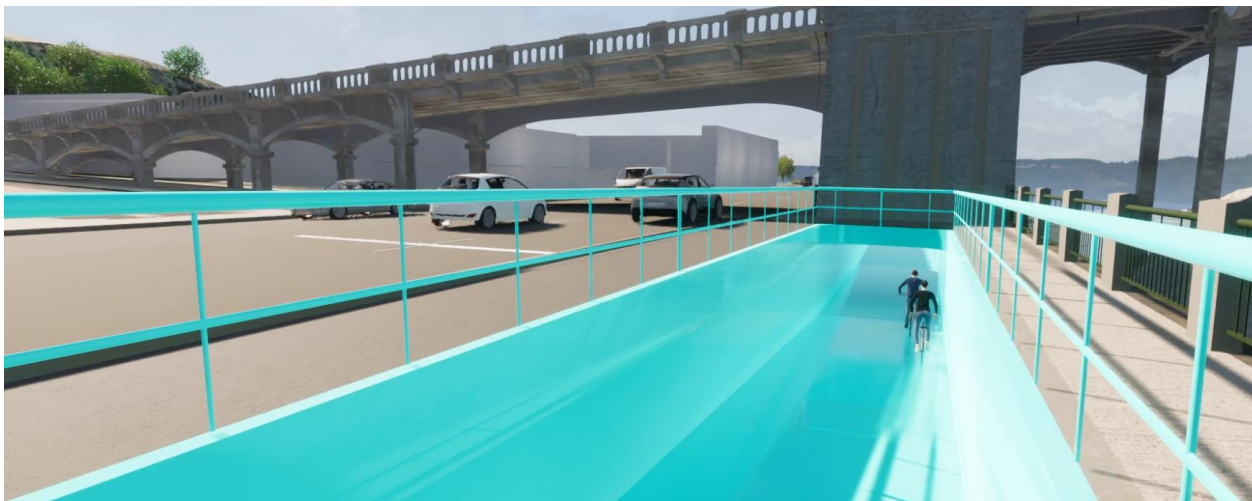
Identical to the Hybrid Route: At-Grade, the Hybrid Route: Below-Grade would be constructed as a standalone structure between 10th Street and 8th Street. However, at the point in which the alternative ties into the widened section of McLoughlin Boulevard, the path would begin ramping into the subgrade of McLoughlin Boulevard where on-street parking exists today. See Figure 13.

Figure 13: Hybrid Route: Below-Grade



Ramping at a maximum grade of 5% requires the full length of space between the arch pilaster and the viaduct to bring path users underneath the arch pilaster with adequate vertical clearance. As part of this alignment, the utility structure would require relocation.

Figure 14: Hybrid Route: Below-Grade Traversing Historic Arch Bridge



As shown in Figure 14, a tunnel is provided to traverse path users underneath the arch pilaster with little-to-no impacts to the structure of the Historic Arch Bridge. The vertical clearance for the tunnel underneath the arch pilaster is 10 feet consistent with vertical clearance requirements for shared-use paths per AASHTO Bicycle facilities guide, Section 5-6.

Alternative 2: Retrofit

Alternative 2 provides a shared-use path adjacent to McLoughlin Boulevard via a connected structure that relies on modifications to the cross section of McLoughlin Boulevard and structural support the McLoughlin Boulevard viaduct. The three Retrofit sub alternatives are described in further detail below. All Retrofit alternatives are anticipated to trigger seismic updates to the existing viaduct.

Sub-Alternatives

Alternative 2A: McLoughlin Boulevard Reorganization

This alternative reimagines and reallocates the existing McLoughlin Boulevard roadway cross section to provide streetscape enhancements and multimodal improvements within the right-of-way. This alternative retains and attempts to work within the current viaduct envelope. Figure 15 shows the conceptual footprint of the McLoughlin Boulevard Reorganization alternative.

Figure 15: OR99 Reorganization Alternative

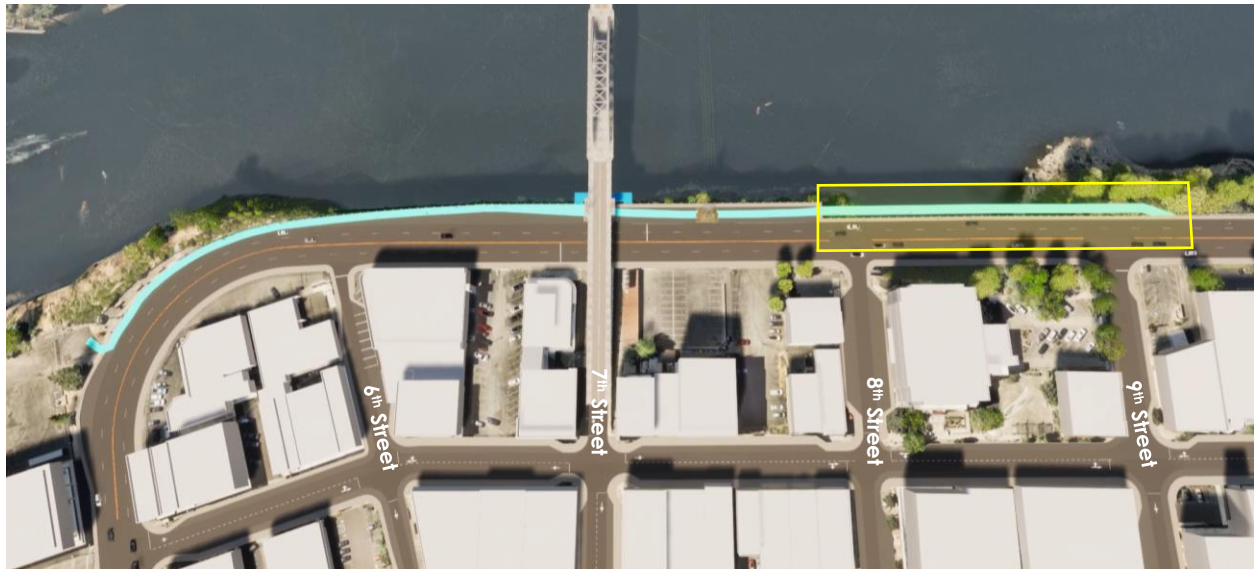


The shared-use path alternatives described previously as part of the Alternative 1: Realign series are of highest priority and will occur first as part of the design process. Determining the alternative design for the shared-use path alignment will influence the streetscape enhancements and multimodal improvements as part of the McLoughlin Boulevard Reorganization alternative.

Alternative 2B: Viaduct Augmentation

This alternative is similar to Alternative 1C; however, instead of a separated structure between 10th Street and 8th Street, Alternative 2B augments the viaduct through a cantilevered structure (cantilever add on) between 10th Street and 8th Street. Southwest of 8th Street, Alternative 2B could take on any variation of the Alternative 1C sub alternatives. Figure 16 illustrates the segment requiring viaduct augmentation as part of Alternative 2B.

Figure 16: Alternative 2B: Viaduct Augmentation



Alternative 2C: Viaduct Rebuild

This alternative recognizes the seismic liability of the existing viaduct and proposes a full rebuild of the structure. As part of the viaduct reconstruction, the McLoughlin Boulevard abutments will also be reconstructed to ensure seismic reliability.

Rebuilding the viaduct will allow for an increase width of the structure, increasing opportunity for pedestrian and bicycle access. The viaduct rebuild alternative could tie into any of the Alternative 1: Realigned shared-use path sub alternatives.

Alternative 3: Reroute (No-Build)

Alternative 3 provides a parallel alignment through downtown Oregon City via 10th Street and Main Street as shown in Figure 17.

Based on a review of background material, as well as the goals and objectives of the Plan, this alternative is viewed as a no-build alternative. Alternative 3 will only be advanced if Alternative 1 and Alternative 2 are deemed infeasible or fatally flawed. Alternative 3 will not trigger seismic retrofit to the existing viaduct.

Figure 17: Reroute Alignment



Sub-Alternatives

No sub alternatives are currently provided for Alternative 3. Further refinement will be placed on developing sub-alternatives for Alternative 3 if Alternative 1 and Alternative 2 are deemed infeasible.

Next Steps

The alternatives and sub-alternatives presented in this memorandum establish the set of alternatives that will be initially screened as part of Technical Memorandum #5: Existing Safety and Active Transportation Analysis and further evaluated as part of Technical Memorandum #6: Most Promising Alternatives to identify the three "most promising" alternatives. Once a preferred alternative is selected, the full complete street design concept for the corridor will be developed.

References

1. Kittelson & Associates, Inc. *Final Corridor Vision Statement, 2023.*
2. Kittelson & Associates, Inc. *Final Purpose and Need Statement, 2023.*

Appendices

- A. Structural Terminology

Appendix A: Structural Terminology

