



Warren Avenue Bridge Pedestrian Improvements

Feasibility & Alternatives Analysis

Bremerton, Washington

Prepared For:

City of Bremerton

Prepared By:

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September 2023



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CONSULTING SERVICES

Final Report

Project Information

Project: Warren Avenue Bridge Pedestrian Improvements –
Feasibility and Alternatives Analysis

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Table of Contents

1	Introduction	2
1.1	Project Description	2
1.2	Project Initiation	3
2	Background	4
2.1	Study Area	4
2.2	Existing Streets and Highways	5
2.3	Warren Avenue Bridge Existing Conditions	10
2.4	Previous Reports	13
3	Purpose and Need	16
3.1	Values of the Feasibility Study	16
3.2	Objectives of the Feasibility Study	16
3.3	Desired Outcomes of the Feasibility Study	16
4	Alternatives Considered	17
4.1	Identification of Alternatives	17
4.2	Off-Bridge Improvements	21
5	Public and Agency Involvement Process	23
5.1	Stakeholder Advisory Group	23
5.2	Complete Streets Committee	24
5.3	Public Outreach	24
5.4	WSDOT Meetings	27
6	Screening of Alternatives	29
6.1	Level 1 – Initial Screening	29
6.2	Level 2 – Alternative Evaluation	32
6.3	Level 3 – Recommended Alternative	37
6.4	Recommended Preferred Alternative	38
7	Conclusion	38
8	Recommendations	38

List of Tables

Table 1. Study Area Roadway Grades	11
Table 2. Crashes by Severity	12
Table 3. Crashes by Type.....	12
Table 4. Alternatives Matrix.....	18
Table 5. Off-Bridge Improvement Costs	21
Table 6. Level 2 Results Matrix	35
Table 7. Level 3 Budget Evaluation	37

List of Figures

Figure 1 – Vicinity Map	2
Figure 2 – Study Area	4
Figure 3 – Warren Avenue (SR 303).....	5
Figure 4 – Original Bridge Walkway Width	5
Figure 5 – Lebo Boulevard (Looking East toward Warren Avenue)	6
Figure 6 – Callahan Drive (Looking West toward Warren Avenue)	7
Figure 7 – Callahan Drive (Looking East toward Warren Avenue).....	7
Figure 8 – 18th Street (Looking East toward Warren Avenue).....	8
Figure 9 – 17th Street (Looking West toward Warren Avenue)	9
Figure 10 – Typical Street Truss Style Bridge Constructed in 1950 (WSDOT).....	10
Figure 11 – Steel Plate Girder on the Warren Avenue Bridge	10
Figure 12 – Warren Avenue Bridge Existing Conditions	11
Figure 13 – SR 303 Corridor Study Proposed Section, Warren Avenue Bridge	15
Figure 14 – SR 303 Corridor Study Proposed Section, Warren Avenue Bridge to Callahan Drive	15
Figure 15 – Cross Section View of Each Alternative	20
Figure 16 – Off-Bridge Improvements Considered	22
Figure 17 – Public Involvement at Open House #1.....	24
Figure 18 –Open House #2 Presentation Cover Slide	26
Figure 19 – Alternatives Analysis Process	29
Figure 20 – Under Bridge Inspection Truck (UBIT).....	30
Figure 21 – Rope Access Inspection Team	30
Figure 22 – Key Preferences.....	33
Figure 23 – Alternative 2.....	36
Figure 24 – Alternative 3.....	36

List of Appendices

- A. West Sound Cycle Club Presentation, March 2021
- B. Historical Significance
- C. Collision Data
- D. Structural Design Memorandum and Cross Sections
- E. On-Bridge Improvement Cost Estimations
- F. UBIT letter by West Sound Cycle Club sent to Gov. Inslee and WSDOT leadership
- G. Steve Roark response to West Sound Cycle Club UBIT letter
- H. UBIT access memorandum by Sargent Engineers
- I. Stakeholder Meeting Presentations and Minutes
- J. Complete Streets Committee Presentation and Minutes
- K. Project Website (as of September 2023)
- L. Open House #1 Presentation Boards and Comment Response Forms
- M. April 2023 Public Survey Responses
- N. Open House #2 Presentation
- O. WSDOT Meeting Minutes

Executive Summary

The Warren Avenue Bridge Pedestrian Improvements project is a City of Bremerton-led effort to implement safe, multimodal, ADA-compliant walkways on the Warren Avenue Bridge. This Feasibility and Alternatives Analysis Report outlines the purpose and need for the project, the design alternatives considered by WSDOT and project stakeholders, community involvement in decision-making, and the screening criteria used to determine the preferred alternative.

Current conditions provide substandard facilities for multimodal users and fail to meet the requirements of the Americans with Disabilities Act (ADA). The SR 303 Corridor Study, completed in May 2021, outlines criteria for improvements on the Warren Avenue Bridge, suggesting 10-foot walkway widths. However, during discussions between the City and WSDOT, WSDOT stated that walkway widths on the bridge must be 8 feet or less due to the limitations of WSDOT inspection trucks. The Bremerton City Council rejected this limitation of walkway width and directed the completion of a feasibility and alternatives analysis.

Eleven design alternatives were developed after a review of transportation planning documents, communication with WSDOT, and input from project stakeholders. Alternatives varied from 8 to 16 feet wide, on one or both sides of the bridge.

Throughout the feasibility and alternatives analysis process, the project team focused on community involvement. A stakeholder advisory group was assembled with representatives of the Chamber of Commerce, Olympic College, Bremerton Parks Department, Bremerton Police Department, Bremerton Fire Department, the West Sound Cycle Club, Naval Base Kitsap, the Complete Streets Committee, Kitsap Transit, Kitsap Public Health, WSDOT, the Mayor, City Council President, and several others. Other public outreach methods included the creation and development of a project website, two open houses, and a public survey to gain feedback on existing usage, potential usage, and public preferences for the design alternatives. Public and stakeholder engagement created an ongoing conversation between the project team and the project users, ensuring that a broad range of perspectives were considered.

In order to analyze the alternatives and ultimately arrive at a single preferred alternative, the project team relied on three levels of screening: initial screening (Level 1), alternative evaluation (Level 2), and recommended alternative (Level 3).

- Level 1 screening focused on a fatal flaw analysis, where any alternatives that were structurally infeasible or inaccessible for maintenance were removed from consideration.
- Level 2 screening involved an evaluation of each alternative in terms of ADA-compliance based on three key preferences developed in partnership with the WSDOT Office of Equity and Civil Rights, the City of Bremerton ADA Committee, and a community survey. Key preferences included widening for pedestrians on both sides of the bridge, implementing equal-width walkways on both sides of the bridge, and adopting a walkway width of 10 feet or greater.
- Level 3 screening evaluated the budget for each alternative.

Alternative 2, which consists of 10-foot active transportation paths on both sides of the bridge and a total of four 6' x 24' overlooks, was the recommended preferred alternative to best meet the needs of the community.

1 Introduction

The City of Bremerton (The City) is in the process of implementing multimodal and safety improvements to the Warren Avenue Bridge. The City is working toward implementing many of the recommendations evaluated in the SR 303 Corridor Study, including improving safety, reliability, and pedestrian and bicycle connectivity along SR 303 and the Warren Avenue Bridge. This feasibility and alternatives analysis report documents the efforts put forth by the City, stakeholders, and the public to determine a preferred alternative that meets the construction budget of \$26.5 million.

1.1 Project Description

The Warren Avenue Bridge spans the Port Washington Narrows and is the primary connection between downtown and East Bremerton. The existing bridge includes two travel lanes in each direction, a raised median curb, and sidewalks that are less than four feet wide on each side of the bridge. These narrow walkways are not compliant with the Americans with Disabilities Act (ADA) and do not provide adequate width for wheelchairs, strollers, or bicycles. Users with wheeled devices moving in opposite directions are unable to pass each other, which has become a common problem with increased multimodal travel on the bridge.

For these reasons, the Warren Avenue Bridge Pedestrian Improvement project proposes to improve pedestrian and bicycle access along Warren Avenue, between 17th Street and Clair Avenue/Callahan Drive. See **Figure 1** for the study area.

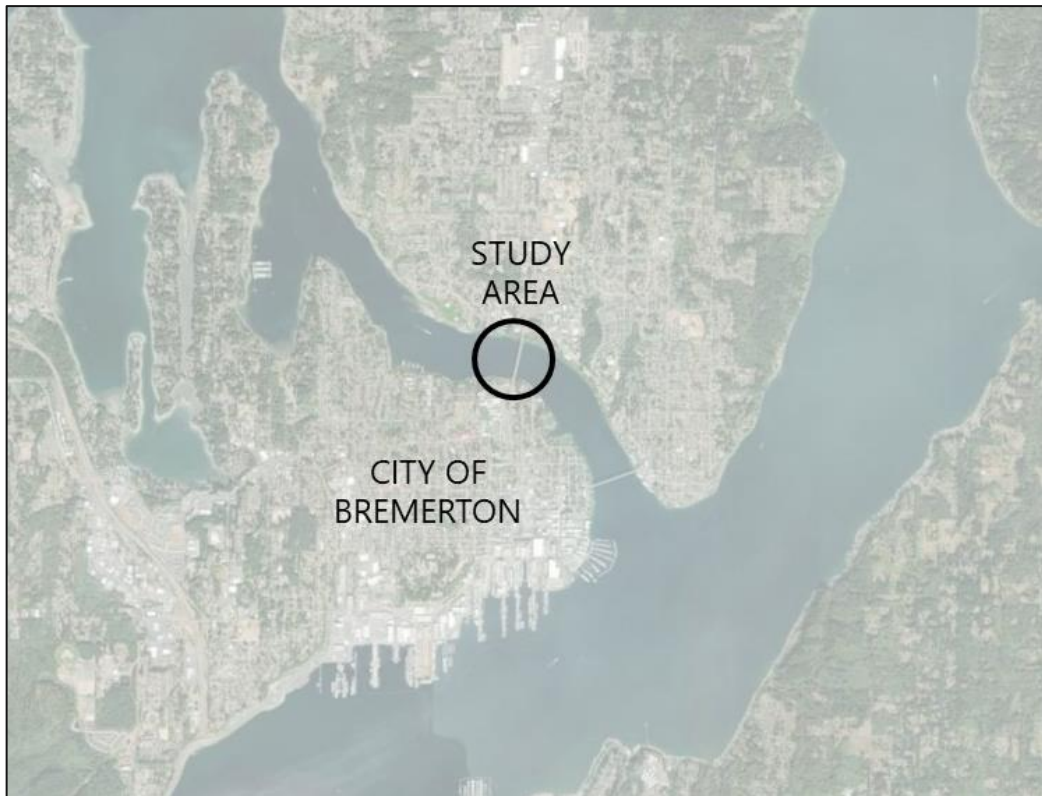


Figure 1 – Vicinity Map

1.2 Project Initiation

In early 2021, the City was prepared to execute a contract with the Washington State Department of Transportation (WSDOT) for structural engineering design of the bridge improvement recommended in the SR 303 Corridor Study (See **Section 2.4.3** of this report). During this contract negotiation, WSDOT asserted that the largest allowable walkway width on the bridge was 8 feet, due to the limitations of WSDOT's existing bridge inspection trucks. This was a decrease from the 10-foot walkway width called out in the SR 303 Corridor Study.

In March of 2021, the West Sound Cycle Club (WSCC) submitted a presentation to the Public Works staff and Mayor Greg Wheeler regarding their vision for the Warren Avenue Bridge. This presentation is included as **Appendix A**.

WSDOT's design contract was presented to the Bremerton City Council in March of 2021, where Council found the reduction of the walkway width unacceptable and directed staff to perform a feasibility and alternatives analysis, including the concepts presented by the WSCC.

2 Background

This chapter provides a discussion of background information on the project, including the following:

- The project study area
- Existing roadway characteristics in the study area
- Existing traffic volumes in the study area
- Existing safety analysis along the Warren Avenue (SR 303) corridor in the study area
- Previously completed reports/analysis relevant to the bridge improvements

2.1 Study Area

The Warren Avenue Bridge is located in Bremerton, Washington on State Route 303 (Warren Avenue). The approximate extents of the study area are from 17th Street (milepost 0.62) to Callahan Drive (SR 303 milepost 1.26). The Warren Avenue Bridge crosses the Port Washington Narrows and connects downtown Bremerton to East Bremerton. The bridge is owned and maintained by WSDOT.

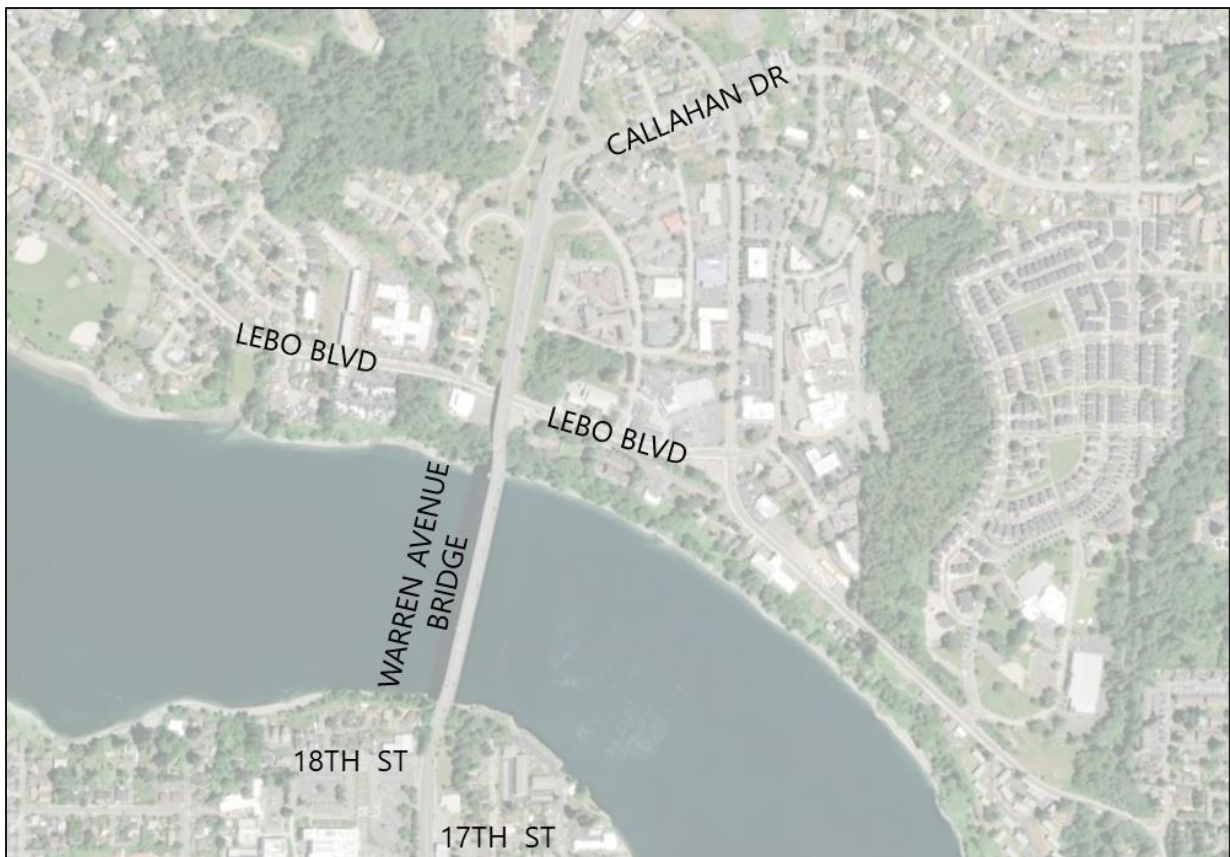


Figure 2 – Study Area

2.2 Existing Streets and Highways

Warren Avenue/SR 303 is classified by WSDOT as ‘Non-Limited Access Average Restriction’ from the south end of the Warren Avenue Bridge to the north project limit and is classified as ‘Non-Limited Access Least Restrictive’ from the south end of the bridge to the south project limit. The roadway in the study area has two travel lanes in each direction and sidewalks and/or shoulders on each side. The posted speed limit is 35 mph.



Figure 3 – Warren Avenue (SR 303)

The Warren Avenue bridge has substandard pedestrian facilities that do not comply with the Americans with Disabilities Act (ADA). When the bridge originally opened, walkways were just under 5 feet wide. However, after the installation of concrete barriers (most recently upgraded in 2010), the walkways are less than 4 feet wide.

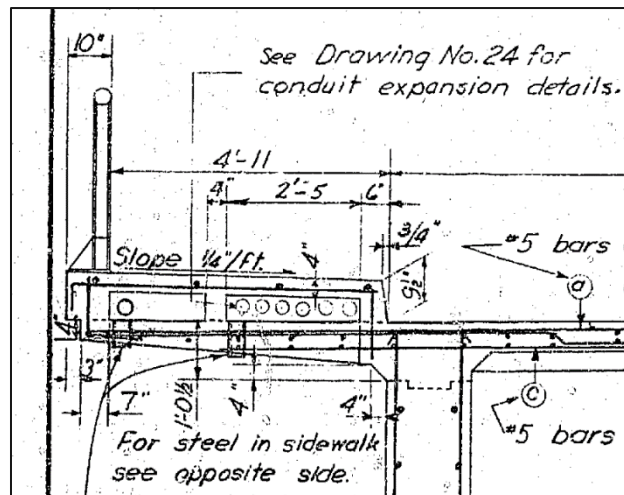


Figure 4 – Original Bridge Walkway Width

Lebo Boulevard is an east/west Urban Minor Arterial that runs under the Warren Avenue Bridge on the north side of the Port Washington Narrows. The road has one travel lane in each direction, bike lanes and sidewalks on the north side and a shared use path on the south side. The posted speed limit is 25 mph.



Figure 5 – Lebo Boulevard (Looking East toward Warren Avenue)

Callahan Drive is an east/west Urban Major Collector that intersects Warren Avenue on the north side of the Port Washington Narrows. There is an interchange for vehicles traveling to and from Warren Avenue at the intersection of the two roads. Callahan Drive has one travel lane in each direction to the east and west of the interchange with sidewalks on both sides. Under the interchange, Callahan Drive is single directional for westbound traffic only. The posted speed limit is 25 mph.



Figure 6 – Callahan Drive (Looking West toward Warren Avenue)



Figure 7 – Callahan Drive (Looking East toward Warren Avenue)

18th Street is an east/west local street that intersects Warren Avenue on the south side of the Port Washington Narrows. The intersection of 18th Street and Warren Avenue is currently a stop controlled southbound access ramp onto Warren Avenue. The roadway has no painted centerline, is 45 feet wide, and has sidewalks on both sides of the road. The posted speed limit is 25 mph.



Figure 8 – 18th Street (Looking East toward Warren Avenue)

17th Street is an east/west Urban Major Collector that intersects Warren Avenue on the south side of the Port Washington Narrows. There is one lane in each direction with sidewalks on both sides of the road. There is an acceleration lane for northbound vehicles turning right onto Warren Avenue from 17th Street. The posted speed limit is 25 mph.



Figure 9 – 17th Street (Looking West toward Warren Avenue)

2.3 Warren Avenue Bridge Existing Conditions

2.3.1 Historical Significance

The bridge was completed in 1958, with landward portions constructed of concrete and the mid-section constructed of steel girders. The bridge is listed on the Washington Historic Registry and has been deemed eligible for the National Register of Historic Places. The significant engineering feature of this bridge is the 606-foot, three-span, continuous riveted steel plate girder unit. When constructed in 1958, the Warren Avenue Bridge had the longest continuous plate girder unit in the state. The Warren Avenue Bridge was different from other steel bridges of its era because the continuous steel plate girder system did not include any structural components above the bridge deck. While not the explicit intent of the design at the time, one unique feature of this structure style is that, unlike other bridges in this era, the expansion of the bridge deck was not prohibited by the presence of structural members. More information on the historic significance of the bridge can be found on the National Register of Historic Places Registration Form completed for the bridge in 2002 (**Appendix B**).



Figure 10 – Typical Street Truss Style Bridge Constructed in 1950 (WSDOT)



Figure 11 – Steel Plate Girder on the Warren Avenue Bridge

2.3.2 Roadway and Traffic Characteristics

The existing bridge includes 11-foot inside and 11.5-foot outside vehicle lanes, 3.5-foot shoulders, a central median curb, and walkways that are less than 4 feet wide on each side of the bridge. The existing curb-to-curb width is 56 feet, with the overall deck measuring approximately 67.5 feet. The bridge is 1,718 feet long (approximately one third of a mile). In 2022, the average annual daily traffic on the bridge was approximately 41,900 vehicles per day.

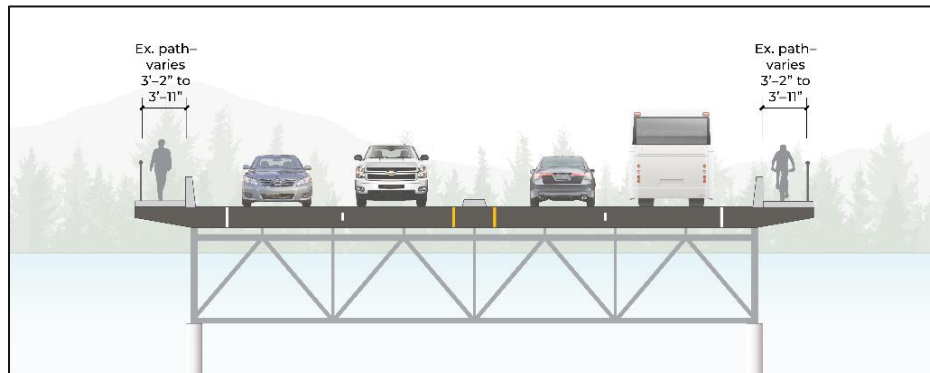


Figure 12 – Warren Avenue Bridge Existing Conditions

2.3.2.1 Grade

The existing roadway has a downward-sloped grade from north to the south, starting near Sheridan Road. **Table 1** shows the grades for each section of the project area.

Table 1. Study Area Roadway Grades

Segment	Description	Approximate Grade of Roadway Segment
North	Sheridan Road to north end of bridge	5.7%
Bridge	Full length of bridge	Varies 2.8% - 4.9%
South	South end of bridge to 17 th Street	2.1%

2.3.2.2 Speed

As reported in Section 4.3 of the SR 303 Corridor Study, the 85th percentile speed across the Warren Avenue Bridge for both directions is 48 miles per hour (mph). This speed is 13 mph faster than the posted speed limit of 35 mph.

2.3.2.3 Bridge Barriers

The existing bridge currently has a 26-inch wide, 6-inch high concrete center median curb that runs the entire length of the bridge. On the bridge structure there are concrete barriers and metal railings separating the vehicle lanes from the sidewalks on both sides of the bridge that are approximately 4 feet high. Additionally, on each approaching leg of the bridge, there are single slope barriers installed to deflect vehicles from leaving the roadway before the bridge structure.

2.3.2.4 Collision History

The SR 303 Corridor Study performed a review of collisions for the entire SR 303 corridor (Burwell Street to NE Fairgrounds Road) which included a summary of the type of crashes, severity of crashes, and crash locations. Crash data from the corridor study was collected between January 1, 2014 and December 31, 2018. The study noted there were approximately one hundred twenty six (126) crashes within the Warren Avenue Bridge project area (16th Street to Sheridan Road). Of these crashes, there were two (2) serious injury crashes and one (1) crash involving a bicycle.

This data was further augmented by collecting crash data from Washington State Department of Transportation within the Warren Avenue Bridge study area between January 1, 2019 and December 31, 2020. The two data sources were combined and represented as follows: **Table 2** summarizes the crash data by severity and **Table 3** summarizes the crash data by type.

Table 2. Crashes by Severity

Time Interval	Fatal	Serious Injury	Minor/Possible Injury	Property Damage Only	Unknown	Total
2014 to 2020	1	4	81	162	10	258
	0.4%	1.6%	31.4%	62.8%	3.9%	

Table 3. Crashes by Type

Time Interval	Rear End	Turning	Angle	Sideswipe	Bike	Pedestrian	Other	Total
2014 to 2020	165	2	13	31	1	2	44	258

Crash data from the SR 303 Corridor Study and newly collected data is available in **Appendix C**.

The following is a required disclaimer when publishing collision data provided by WSDOT:
 Under 23 U.S. Code §148 and 23 U.S. Code §409, safety data, reports, surveys, schedules, list compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

2.4 Previous Reports

2.4.1 Bremerton Port Washington Trail – Trail Master Plan (2005)

The Bremerton Port Washington Trail Master Plan was completed in October 2005 for the City of Bremerton. The master plan established the need for a trail system along the Port Washington Narrows to connect neighborhoods, businesses, and downtown areas with various city parks. The report established the needed and/or desired trail routing, trail cross-sections, and potential park updates for the proposed trail system.

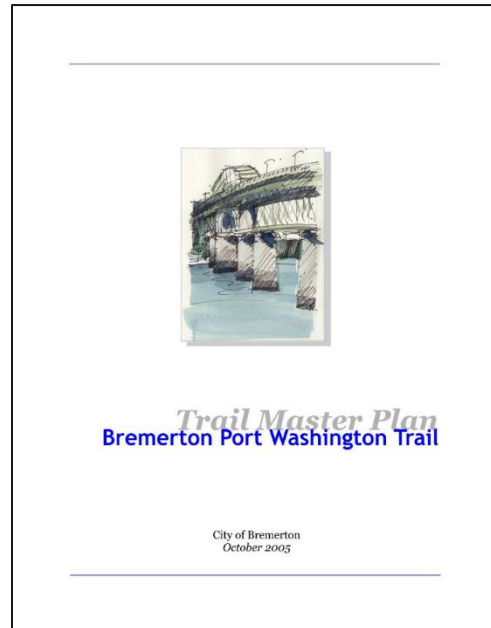
The Trail Master Plan recommended the following improvements within the Warren Avenue Bridge Pedestrian Improvements project area:

On-Structure Improvements

- Widen existing sidewalks to 8 feet on the bridge

Off-Structure Improvements

- Add a 10-foot multi-use path from the Warren Avenue Bridge on the north side
- Add a 10-foot multi-use path under Warren Avenue on the south side
- Add a 10-foot multi-use path on the west side of Warren Avenue from the Warren Avenue Bridge to the south
- Add an 8-foot sidewalk on the south side of 18th Street from Warren Avenue to Broadway Avenue

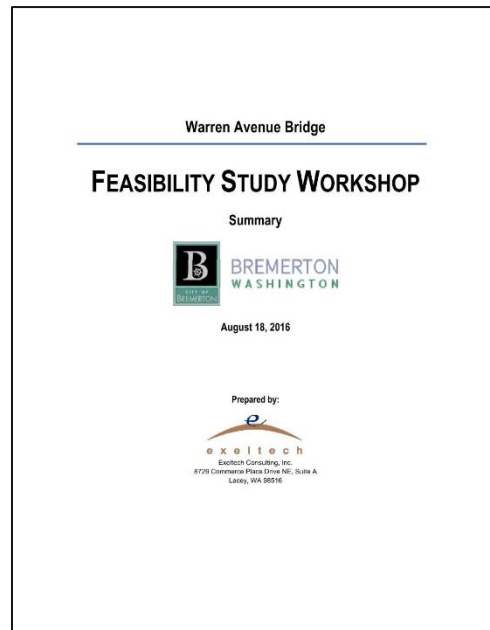


2.4.2 Warren Avenue Bridge Feasibility Study Workshop (2016)

The Warren Avenue Bridge Feasibility Study Workshop was completed in June 2016 for the City of Bremerton. The purpose of this study was to evaluate options for the construction of ADA-compliant, bicycle-accessible facilities on the existing bridge, creating a safe environment for non-motorized users. The study relied on a 4-day collaborative workshop with six (6) participants. The recommended option from the study was determined by evaluating seven (7) options through design, structure, traffic, and cost criteria. Only alternatives with a construction cost of less than \$5M were considered.

The Warren Avenue Bridge Feasibility Study recommended the following:

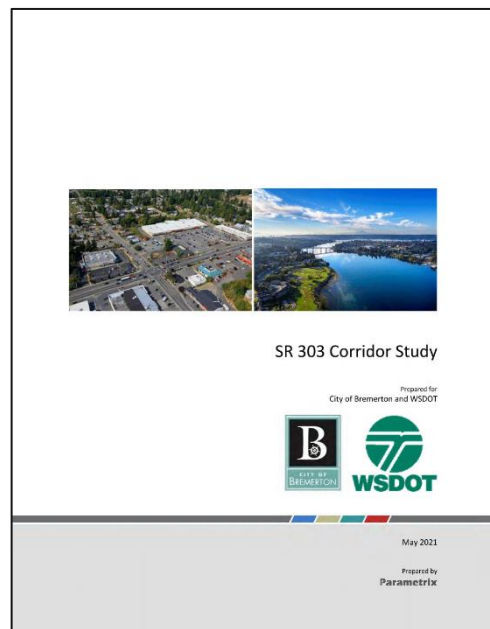
- Shift existing barriers toward the inside of the bridge to provide an 8-foot shared use path on each side of the bridge.
- Provide four lanes with 11-foot minimum widths.
- Remove existing median curb and replace with 1-foot wide concrete curb.



2.4.3 SR 303 Corridor Study (2021)

The SR 303 Corridor Study was completed in May 2021 for the City of Bremerton, WSDOT, and Kitsap County. The purpose of the study was to determine reliable, safe, and cost-effective transportation solutions to improve the usability and performance for all users along the corridor. The study developed and grouped several potential projects along the entire corridor (from NE Fairgrounds Road to Burwell Street) into three corridor alternatives, and finally proposed a preferred alternative. The preferred alternative was created to achieve the goals and objectives established by the stakeholder group, the public, and the City.

The SR 303 Corridor Study's preferred alternative recommended the following on-structure and off-structure improvements within the Warren Avenue Bridge Pedestrian Improvements project area:



On-Structure Improvements

- 10-foot sidewalks on both sides of the bridge
- Wayfinding for active transportation
- Consider narrowing vehicle lanes to a minimum of 10.5 feet
- Construct a center barrier
- Update lighting for roadway users on the bridge

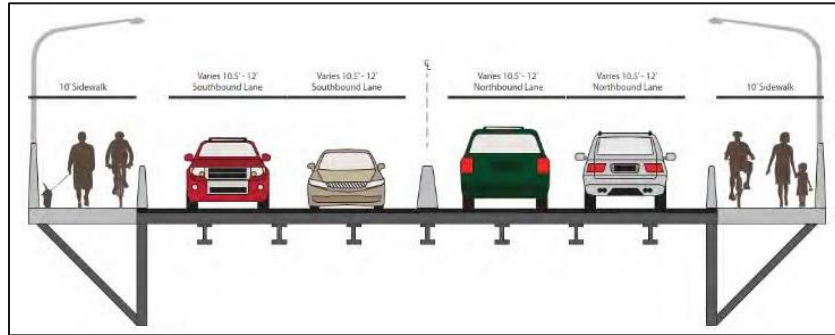


Figure 13 – SR 303 Corridor Study Proposed Section, Warren Avenue Bridge

Off-Structure Improvements

- Add curb and gutter, a 6-foot buffer, and 10-foot sidewalks on both sides of Warren Avenue from the bridge to Sheridan Road
- Add an active transportation facility to connect Warren Avenue to Lebo Boulevard
- Add a northbound business access and transit (BAT) lane from the Warren Avenue Bridge to Callahan Drive
- Add 10-foot sidewalks on the west side of Warren Avenue from 13th Street to the Warren Avenue Bridge
- Complete sidewalk connections from the Warren Avenue Bridge to 18th Street
- Add active transportation facilities on 18th Street from Warren Avenue through Olympic College
- Consider closing southbound ramp access from 18th Street to Warren Avenue
- Add an active transportation tunnel under Warren Avenue
- Add bicycle facilities between Warren Avenue and Park Avenue
- Add a 3-foot buffer and 10-foot sidewalks on the east side of Warren Avenue from Warren Avenue Bridge to 17th Street

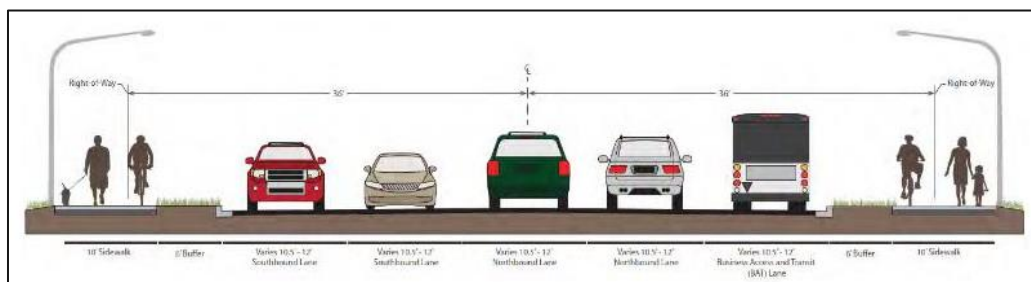


Figure 14 – SR 303 Corridor Study Proposed Section, Warren Avenue Bridge to Callahan Drive

3 Purpose and Need

The purpose of the project is to create an ADA-compliant facility for active transportation users where none currently exists. At the inception of this feasibility study, a stakeholder advisory committee was established to outline goals and objectives to ensure that the recommended improvements would meet the needs of the community. Through the development of previous reports as discussed in **Section 2.4**, along with the public outreach discussed in **Section 5.3**, the following themes emerged for determining the needs of the community and steering the outcome of the project.

3.1 Values of the Feasibility Study

The first step in evaluating the project alternatives was identifying community values. Community values guide decision-making by providing a measure to set priorities and evaluate trade-offs between alternatives. Values are often not tangible but based more on the perceptions of users and decision-makers. The following are values that guided the alternative development process:

- Community pride in the improvement
- Safety for all modes
- Neighborhood connectivity
- Transportation choices
- Accessibility

3.2 Objectives of the Feasibility Study

Objectives represent the second tier of measure that allows for further evaluation of the alternatives based on the values listed above and the identification of key success factors. The following are objectives of the feasibility study:

- Structural feasibility
- Accommodate maintenance and inspection access
- Meet Americans with Disabilities Act (ADA) requirements for the bridge
- Construct within allotted budget
- Reflect community preferences

3.3 Desired Outcomes of the Feasibility Study

Desired outcomes for the project are tangible improvements that define the user experience. The following desired outcomes were developed during this feasibility and alternatives analysis:

- Construct the project within budget
- Provide ADA-compliant access on the bridge
- Ensure fidelity with adopted planning documents
- Provide opportunity for scenic viewpoints
- Focus on civic beauty, placemaking, and achieving landmark status
- Improve user experience
- Maintain vehicle throughput capacity
- Connect to existing pathways
- Avoid functional obsolescence
- Minimize impact to users during construction
- Design facilities for all modes and ages

4 Alternatives Considered

This chapter discusses the characteristics of each design alternative. The following alternatives were developed through a review of existing planning documents, guidance from WSDOT, and input from stakeholders. Eleven alternatives were identified and evaluated using the alternative screening process. An overview and matrix-style summary of each alternative is included in **Section 4.1** (below).

4.1 Identification of Alternatives

Based on the recommendations from the SR 303 Corridor Study and coordination with project stakeholders and WSDOT, the following alternatives were identified:

- **Alternative 1:** 8-foot wide pedestrian facilities on both sides of the bridge with two 8'x24' overlooks on each side.
- **Alternative 2:** 10-foot wide pedestrian facilities on both sides of the bridge with two 6'x24' overlooks on each side.
- **Alternative 3:** 12-foot wide pedestrian facilities on both sides of the bridge.
- **Alternative 4a:** 16-foot wide shared use path on the west side of the bridge.
- **Alternative 4b:** 16-foot wide shared use path on the east side of the bridge.
- **Alternative 5:** 14-foot wide shared use path on both sides of the bridge.
- **Alternative 6:** Separated 6-foot bicycle lane and 6-foot pedestrian sidewalk on both sides of the bridge.
- **Alternative 7:** 12-foot wide shared use path on the east side of the bridge and 5-foot wide pedestrian facility on the west side of the bridge.
- **Alternative 7a:** 12-foot wide shared use path on the east side of the bridge.
- **Alternative 8:** 14-foot wide shared use path on the east side of the bridge, 5-foot wide pedestrian facility on the west side of the bridge.
- **Alternative 8a:** 14-foot wide shared use path on the east side of the bridge.

The following pages contains **Table 4**, a matrix-style summary of each design alternative, and **Figure 15**, which provides a graphic cross-section of each alternative.

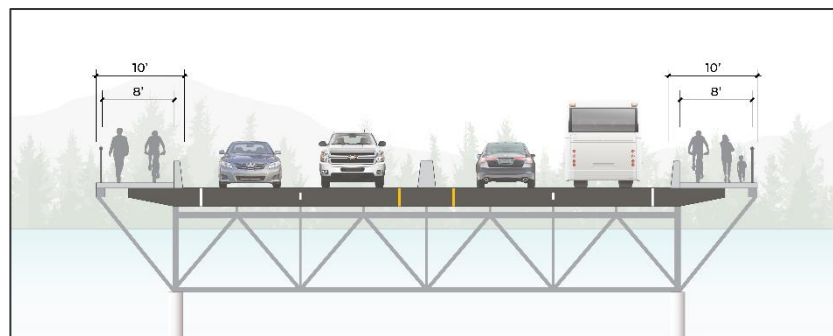
Detailed sections of the structural design for each evaluated alternative are included in **Appendix D**.

Comprehensive cost estimations for each alternative (excepting those that are fatally flawed) are included in **Appendix E**.

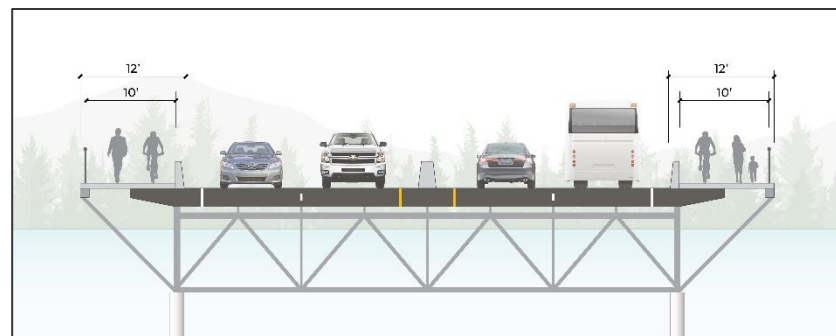
Table 4. Alternatives Matrix

	Alternative 1	Alternative 2	Alternative 3	Alternative 4a	Alternative 4b	Alternative 5	Alternative 6	Alternative 7	Alternative 7a	Alternative 8	Alternative 8a
Alternatives	8-foot clear width	10-foot clear width	12-foot clear width	16-foot clear width	16-foot clear width	14-foot clear width	At-grade 6-foot bike lane, 6-foot sidewalk	12-foot clear width on east side; 5-ft clear width on west side	12-foot clear width	14-foot clear width on east side; 5-ft clear width on west side	14-foot clear width
	Both sides	Both sides	Both sides	West side	East side	Both sides	Both sides	Both sides	East side *	Both sides	East side *
Origin	WSDOT recommendation	SR 303 Corridor Study preferred alternative	Larger 2-sided alternative assuming purchase of new UBIT	Combined WSCC one-sided alternative with WSDOT standard for shared use path	Alternate to 4a, not requiring an undercrossing of SR 303	WSDOT Traffic Office requested	Input from the stakeholder survey	WSCC option plus 5' for ADA access on opposite side	WSCC option as presented to Council (2021)	WSCC option plus 5' for ADA access on opposite side	WSCC option as presented to Council (2021)
Overlooks	8'x24', 4 total	6'x24', 4 total	No	No	No	N/A	N/A	No	No	No	No
Structural Feasibility	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Bridge Fully ADA Compliant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Maintenance & Inspection Access	Existing UBIT*	Existing UBIT*	Larger UBIT*	Rope access required	Rope access required	Larger UBIT*	Existing UBIT*	Larger UBIT*	Larger UBIT*	Larger UBIT*	Larger UBIT*
Planning Level Project Cost (Design and Construction)	\$23.1M	\$25.6M	\$29.1M	N/A	N/A	N/A	N/A	\$23.0M	\$17.8M	\$25.6M	\$20.2M

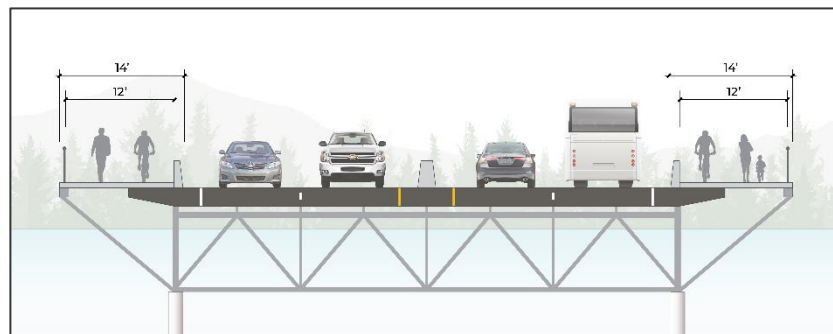
*UBIT stands for "under-bridge inspection truck", a machine commonly used by WSDOT to safely inspect bridges.



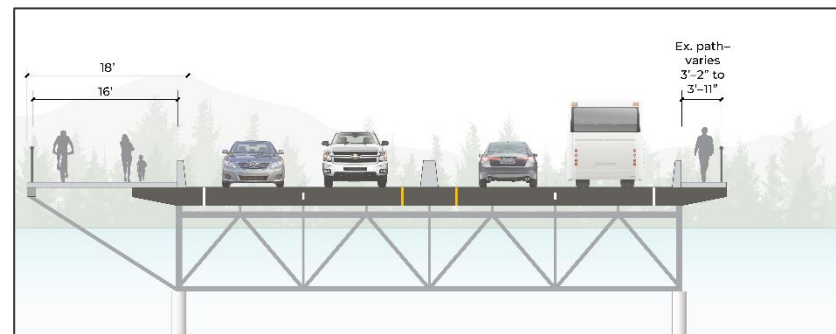
Alternative 1



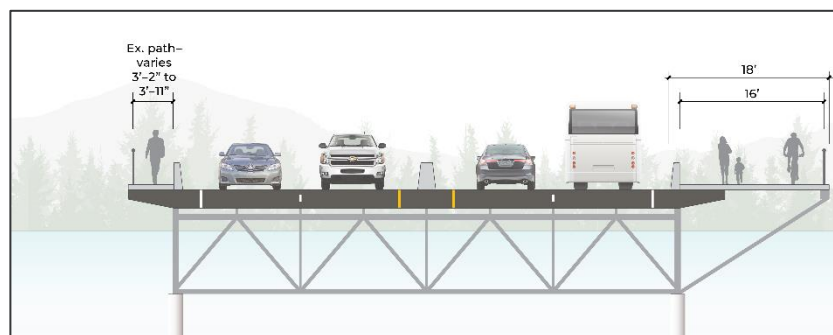
Alternative 2



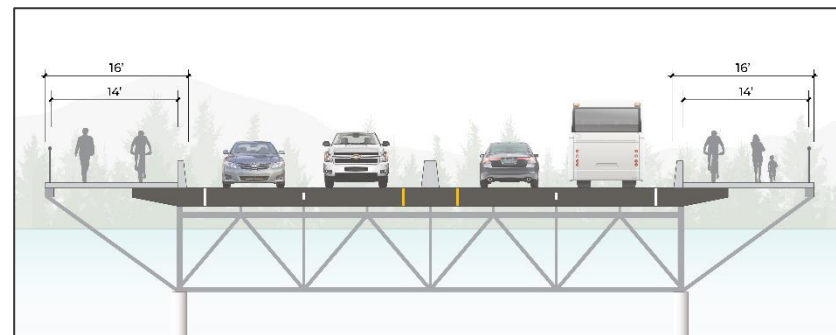
Alternative 3



Alternative 4a



Alternative 4b



Alternative 5

Figure 15 – Cross Section View of Each Alternative

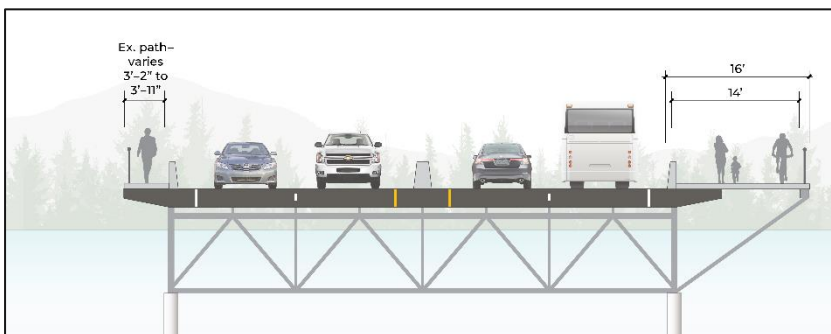
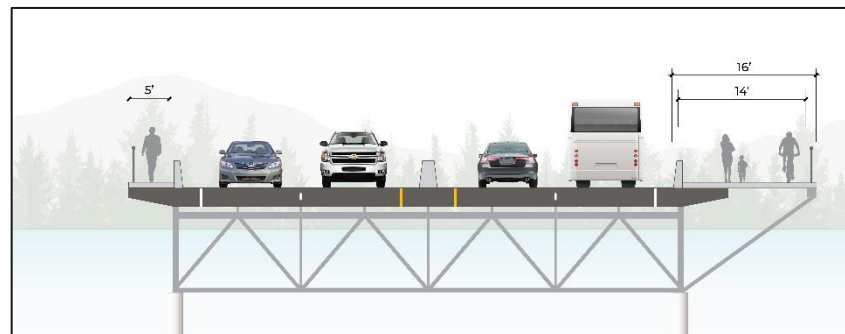
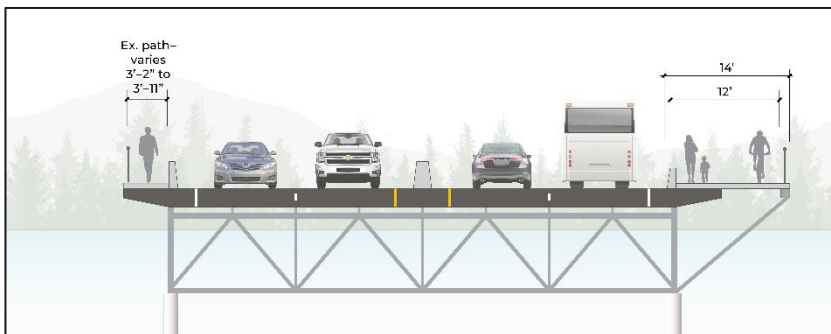
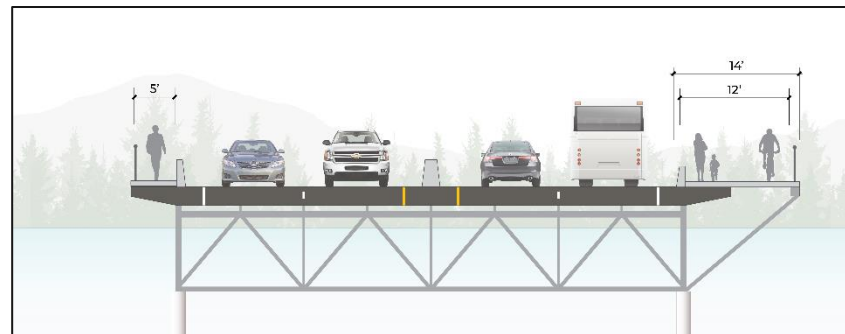
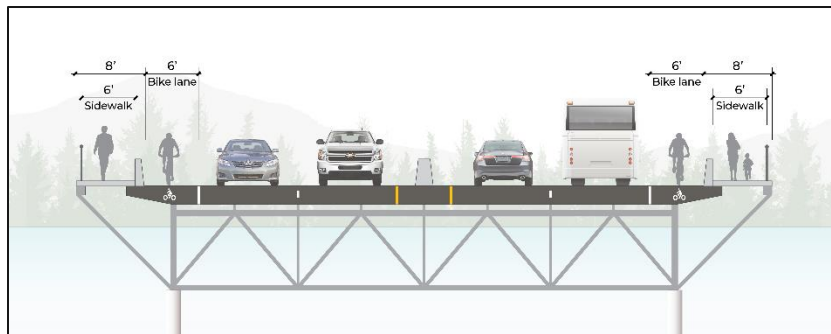


Figure 15 – Cross Section View of Each Alternative (continued)

4.2 Off-Bridge Improvements

Initial conceptual designs also included off-bridge elements based on the improvements described in the SR 303 Corridor Study (see **Section 2.4.3**). These improvements included the following:

- 17th Street one-way eastbound conversion
- 18th Street ramp closure
- Potential non-motorized connection (i.e., tunnel) at 18th Street
- Pathway through Roto Vista Park connecting to Elizabeth Avenue
- Sidewalk extensions along Wheaton Way from the bridge to the ramps at Callahan Dr/Claire Avenue
- Pathway through Sheridan Park connecting to Lebo Boulevard
- Pathway connection to Juniper Street

A graphical representation of the improvements is included in **Figure 16** (next page) and cost estimations for the improvements are included in **Table 5** (below).

Table 5. Off-Bridge Improvement Costs

Off-Structure Improvement	Conceptual Level Cost Estimate
Roadway and Sidewalk Improvements, 17 th Street to Callahan/Clair	\$5.8M
Roto Vista Park Pathway	\$2.2M
Lebo Blvd Pathway	\$2.6M
18 th Street Tunnel	\$10.0 M

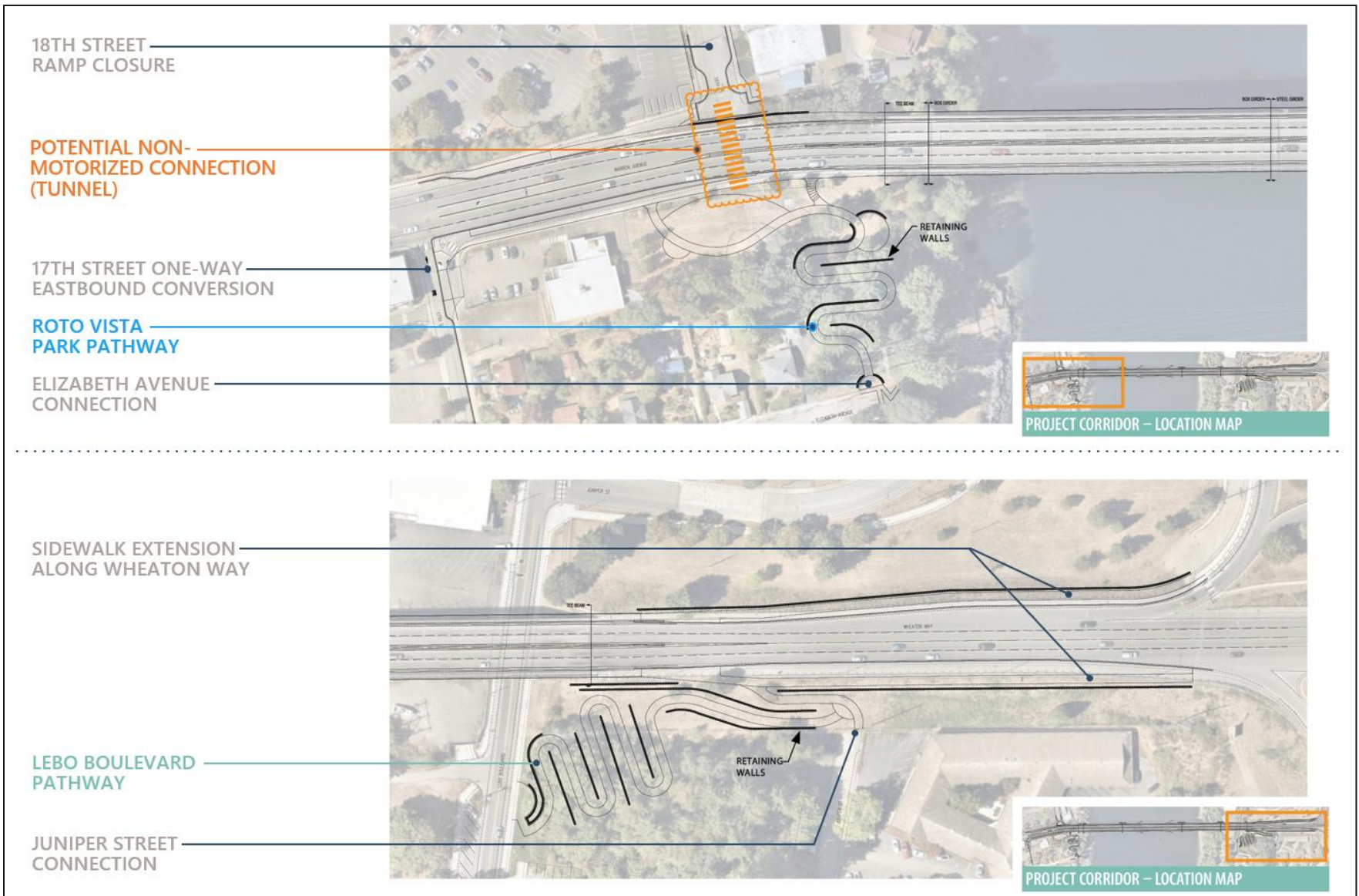


Figure 16 – Off-Bridge Improvements Considered

5 Public and Agency Involvement Process

A core element of this Feasibility and Alternatives Analysis, as directed by the City Council, was to conduct a robust public outreach process to gather feedback on community preferences for the proposed improvements to the Warren Avenue Bridge. To achieve this, the following efforts were made:

- Formation of a Stakeholder Advisory Group
- Creation of a project-specific website
- Public open houses
- Public online surveys
- Coordination with WSDOT

5.1 Stakeholder Advisory Group

The Stakeholder Advisory Group included representatives of the Chamber of Commerce, Olympic College, Bremerton Parks Department, Bremerton Police Department, Bremerton Fire Department, the West Sound Cycle Club, Naval Base Kitsap, the Complete Streets Committee, Kitsap Transit, Kitsap Public Health, WSDOT, the Mayor, City Council President, and several others. The stakeholder group held five meetings to provide updates and discuss alternatives throughout the analysis process. The goal of the meetings was to engage a broad group of entities with a vested interest in the project in a free exchange of ideas, and to select a preferred alternative that meets the needs of the stakeholders and the community. Below is a brief summary of each meeting. Full notes and slides are included in **Appendix I**.

5.1.1 Stakeholder Meeting #1

On February 4, 2022, the project team held a kickoff meeting with stakeholders to introduce the project and project goals. After the meeting, a survey was distributed to participants to determine which components of the project were most valuable to each stakeholder.

5.1.2 Stakeholder Meeting #2

The second stakeholder meeting was held on March 28, 2022. The purpose of the meeting was to review the results of the survey and decide how to move forward. The survey distributed at the end of Stakeholder Meeting #1 was originally intended only for members of the stakeholder group, but, due to a misunderstanding, was shared to a wider audience, and received over 700 responses.

5.1.3 Stakeholder Meeting #3

The project team met with stakeholders again on September 12, 2022 to review alternatives with fatal flaws and discuss why these alternatives were removed from further consideration.

5.1.4 Stakeholder Meeting #4

On November 30, 2022, the project team met with stakeholders to discuss the fatal flaw analysis with WSDOT Bridge and Structures Engineering. In addition to discussing the alternatives and cost estimates, the group also reviewed off-bridge project elements.

5.1.5 Stakeholder Meeting #5

The project team reconvened with stakeholders for a final time on June 8, 2023 to provide a review of the alternatives analysis and discuss the recommended preferred alternative.

5.2 Complete Streets Committee

The City of Bremerton Complete Streets Committee consists of nine members appointed by the Public Works Director who are qualified by experience or demonstrated interest in the “Complete Streets approach” of prioritizing pedestrians, bicyclists, and transit users in planning and roadway design.

5.2.1 Complete Streets Committee Meeting #1

On November 4, 2021, the Complete Streets Committee held a quarterly meeting addressing the Warren Avenue Bridge Pedestrian Improvements project. Topics discussed included project cost, connectivity with other facilities, and safety. See **Appendix J** for an archive of the presentation and meeting minutes.

5.3 Public Outreach

5.3.1 Project Website

The Warren Avenue Bridge Multimodal Project website includes information for the public to learn about the improvements, track the process, and take part in the project development. The website includes information about the project phases, event dates/times, process documents, meeting recordings, and technical memos to keep the public informed and engaged.

Link: www.warrenavebridgeproject.com

An archive of the project website, as of September 2023, is included as **Appendix K**.

5.3.2 Open House #1

A drop-in open house was hosted by the City on April 24, 2023 to provide information to the public and gather public feedback.

Project boards provided the following information:

- Project Description
- Previous Planning Studies
- Existing Bridge Conditions
- Project Schedule
- Alternative Analysis Process and helpful terms
- Alternatives Screening Matrix and cross section graphics
- Off-bridge connectivity routing and concepts



Figure 17 – Public Involvement at Open House #1

Forty-nine (49) community members attended the open house and twenty-seven (27) participants recorded their thoughts on the comment response sheets provided.

The following themes emerged from the comments received during the open house:

- Widen both sides of the bridge equally
- Widen only one side as much as possible
- Safer bike/pedestrian facilities are needed
- Consider Juniper Street bike/ped access to bridge
- Crossing options – under/overcrossing needed
- Build off of bridge connectivity projects

Appendix L includes the presentation boards and the comment response forms.

5.3.3 Public Survey

A public survey was conducted from April 10-28, 2023 to solicit feedback on existing usage, potential usage, and preferences for the proposed walkways. The following are questions that were included in the survey.

- What is the zip code where you live?
- What is your relationship to Bremerton?
- How do you currently use the Warren Avenue Bridge?
- If you live in Bremerton, how long have you been a part of the community?
- Why do you typically use the Warren Avenue Bridge?
- When utilizing the existing sidewalks on the bridge, is there one side that you prefer to use?
- Do you anticipate using the bridge as a pedestrian or bicyclist once the project is complete?
- Do you have a preference for widening the walkways on only one side of the bridge or on both sides of the bridge?
 - Widening for pedestrian and bicycle use on both sides
 - Widening for pedestrian and bicycle use on one side
 - I don't have a preference
- If the project widens the walkways on both sides of the bridge, which would you prefer?
 - Equal width walkways on both sides accommodating pedestrians and bicycles
 - A wide walkway on one side accommodating pedestrians and bicycles, with the minimum pedestrian accessible width on the other
 - I don't have a preference
- From your perspective, what minimum walkway width is needed to comfortably accommodate all pedestrians and bicyclists on the bridge?
 - 14 feet
 - 12 feet
 - 10 feet
 - 8 feet
 - 5 feet (minimum for ADA compliance)
 - Existing width is comfortable

In total, four hundred seventeen (417) surveys were completed and fifty-three (53) partial responses were received. **Appendix M** includes a full summary of the survey responses.

5.3.4 Open House #2

The City hosted the second open house on Monday, June 12, 2023 to present the results of the alternatives analysis. A webinar style presentation was provided, followed by responses to public questions.

The presentation provided the following information:

- A Recap of the Need, Intent, and Budget for the Project
- An Outline for the Public Outreach Process
- A Presentation of the Community Survey Results (per **Section 5.3.3**)
- An Explanation of the Alternatives Analysis Screening Process
- A Presentation of the Results of the Three-Part Screening Process



Figure 18 –Open House #2 Presentation Cover Slide

Appendix N includes the presentation from the open house.

5.4 WSDOT Meetings

As the bridge owner, WSDOT is a key decision-maker for the Warren Avenue Bridge improvements. Regular coordination meetings with WSDOT occurred throughout the feasibility and alternatives analysis process. Attendees from multiple groups, including the WSDOT Bridge and Structures Office, Traffic Office, and Environmental Services assisted in identifying areas of concern requiring further evaluation during the preliminary engineering phase. Below is a brief summary of each meeting. Full notes and slides are included in **Appendix N**.

5.4.1 Kickoff Meeting

A WSDOT kickoff meeting occurred on September 21, 2021, with attendees from multiple groups within WSDOT, as well as City staff. The meeting introduced the project to WSDOT staff and identified potential project risks, including maintaining the structural capacity of the bridge with improvements, inspection/maintenance access, and cormorant nesting.

5.4.2 Local Programs Meeting

The project team held a local programs meeting with WSDOT on December 7, 2021 to discuss the project background, needs, benefits, risks, previous efforts, preliminary alternatives, measure of success, scope of work, team communications, project milestones, invoicing, and next steps.

5.4.3 Bridge and Structures Meeting #1

A meeting with WSDOT was held on December 14, 2021 to discuss the design parameters for the feasibility analysis in further detail. Topics discussed included historical preservation, construction sequencing, material specifications, loading, and maintenance considerations.

5.4.4 Traffic Engineering Meeting #1

On December 16, 2021, a meeting with WSDOT was held to discuss the available roadway width on the existing bridge deck and how it might be better utilized. This meeting introduced the conversation and outlined information necessary for WSDOT to provide recommendations.

5.4.5 Traffic Engineering Meeting #2

A follow-up meeting was held on January 6, 2022 in order to resolve topics previously discussed. Topics discussed included travel lane width, shoulder width, and collisions.

5.4.6 Progress Meeting #1

The first progress meeting was held on January 12, 2022. Attendees included WSDOT staff from Local Programs, Bridge & Structures, Traffic, and Environmental. The conversation covered questions about the primary purpose of the project, maintenance access, and the WSDOT review process for the alternatives.

5.4.7 Bridge and Structures Meeting #2

A second bridge and structures meeting was held on January 14, 2022. The meeting focused primarily on the historic preservation needs for the project, including structural feasibility for widening with cantilevered walkways and material choice.

5.4.8 Progress Meeting #2

The second progress meeting, held on March 7, 2022, included WSDOT staff from Local Programs, Bridge & Structures, Traffic, and Environmental. An update of the project status was provided to WSDOT Staff including a review of the preliminary alternatives and stakeholder outreach.

5.4.9 Progress Meeting #3

On May 11, 2022, another progress meeting was held with WSDOT staff from Local Programs, Bridge & Structures, Traffic, and Environmental. A brief discussion was held about known project risks such as existing utilities on the bridge, cormorant nesting, lead based paint, and use of barges for material staging.

5.4.10 Progress Meeting #4

The fourth progress meeting, held on July 14, 2022, included WSDOT staff from Local Programs, Bridge & Structures, Traffic, and Environmental. A review of the conceptual designs and cost estimates for Alternative 3 and Alternative 4a was conducted and there was a detailed discussion about the alternatives.

5.4.11 Traffic Engineering Meeting #3

On August 25, 2022, a meeting with WSDOT was held to review alternatives and discuss any fatal flaws from a traffic perspective.

5.4.12 Progress Meeting #5

The project team reconvened with WSDOT on September 22, 2022 to discuss public outreach efforts, the alternative screening process, feasibility of UBIT inspection, environmental concerns, and the project schedule.

5.4.13 Progress Meeting #6

The sixth progress meeting, held on February 13, 2023, covered stormwater concerns, structural considerations, and ADA accessibility.

6 Screening of Alternatives

The alternative analysis process relied on three levels of screening based on key feasibility criteria, project goals and objectives, and design priorities. Each screening preference is based on a review of existing planning documents and input from WSDOT, stakeholders, and the public. The following chapter outlines the method of evaluating and screening alternatives, with the goal of arriving at a single recommended alternative.

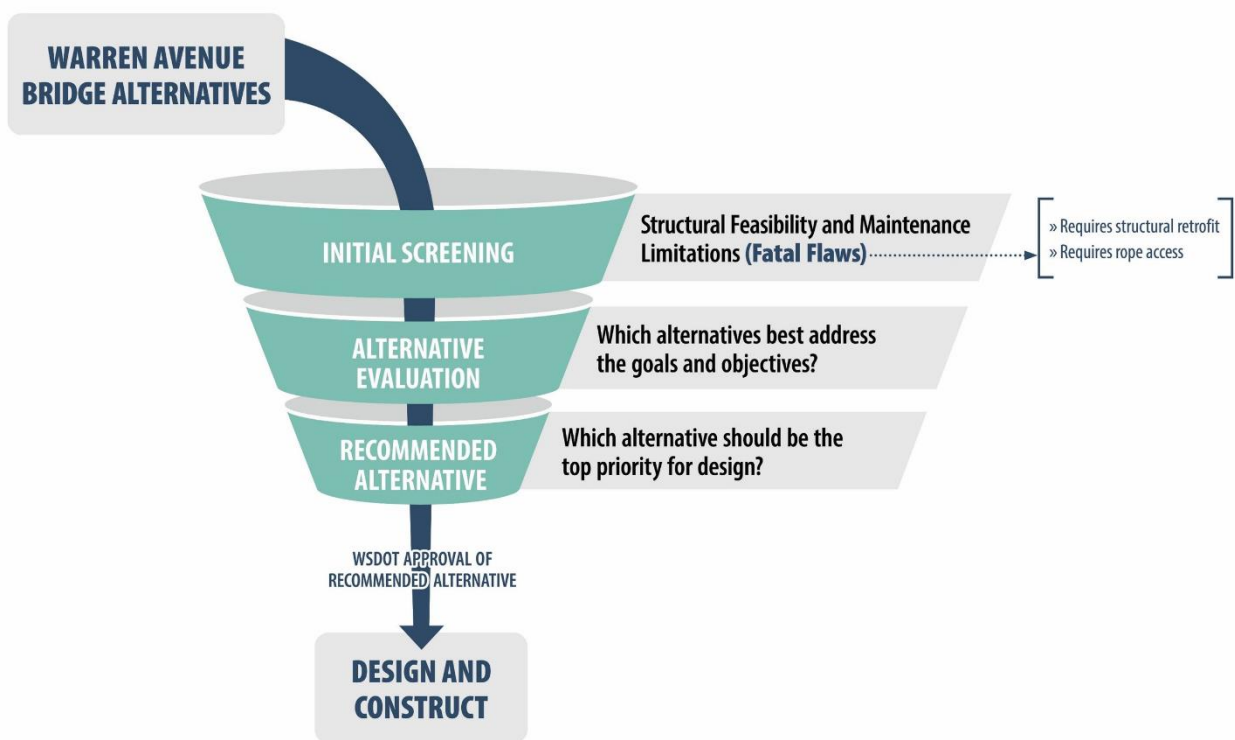


Figure 19 – Alternatives Analysis Process

6.1 Level 1 – Initial Screening

During initial screening, two fatal flaws were identified: structural feasibility and maintenance access. After a review of each alternative and discussions with the stakeholder group, elected officials, WSDOT, and City staff, these criteria were selected as fatal flaws because it was identified as essential that the bridge support the weight of each alternative without a major retrofit, and WSDOT had safety and staffing concerns with rope access bridge inspections. Each fatal flaw is discussed in further detail below.

6.1.1 Structural Feasibility

Fatal Flaw #1: Is the alternative structurally feasible?

The Warren Avenue Bridge Pedestrian Improvements project proposes to modify the loads on the existing Warren Avenue Bridge, and it is therefore essential that the amount of weight does not exceed the limits of the bridge structure. If an alternative exceeded the allowable amount of additional weight (capped at 10%), the bridge would need a major retrofit. This retrofit would significantly increase the project cost, so the team identified that any alternatives exceeding the weight requirement were infeasible and should not be considered for further evaluation.

6.1.2 Maintenance

WSDOT currently uses two types of inspection methods: inspection via an under bridge inspection truck (UBIT), and inspection via rope access.

Under Bridge Inspection Truck (UBIT)

UBITs are common for bridge inspections, maintenance, and repairs throughout the state because they are safe and have an arm that can reach directly under the bridge. WSDOT is currently using a UBIT for inspections and maintenance on the Warren Avenue Bridge.



Figure 20 – Under Bridge Inspection Truck (UBIT)

Rope Access Inspection Team

An alternate method of inspection can be performed with a rope access team. Rope access teams repel using climbing ropes to reach areas that are not accessible by UBIT truck. Rope access inspections are uncommon because they carry additional safety hazards, but are sometimes used on steel bridges.



Figure 21 – Rope Access Inspection Team

The development of the maintenance fatal flaw was an iterative process involving WSDOT, the project team, and stakeholders. During the September 2022 progress meeting, WSDOT staff provided direction to the project team that any alternative that cannot be inspected using the current fleet of UBITs should be considered fatally flawed. After this was presented to the stakeholder advisory group in November 2022, stakeholders representing the West Sound Cycle Club sent a letter to WSDOT leadership and the Governor's office requesting that WSDOT purchase a larger UBIT that could accommodate wider pathways. This letter is included as **Appendix F**.

A response letter was received by the City of Bremerton from the WSDOT Olympic Region Administrator, removing the stipulation that alternatives must be inspected using WSDOT's current UBITs. This letter is included as **Appendix G**.

A summary memorandum regarding the capabilities of UBITs under consideration is included as **Appendix H**.

Through discussions with WSDOT during the feasibility and alternative analysis, it was determined that alternatives requiring inspection and maintenance via a rope access team are not feasible due to safety concerns.

Fatal Flaw #2: Does the alternative allow for maintenance and inspection without requiring rope access?

6.1.3 Level 1 Results

After identifying the fatal flaws, the project team removed the following alternatives from consideration. Remaining alternatives were evaluated against Level 2 screening.

- **Alternative 5** – removed due to structural infeasibility
- **Alternative 6** – removed due to structural infeasibility
- **Alternative 4a** – removed due to infeasibility of UBIT inspection
- **Alternative 4b** – removed due to infeasibility of UBIT inspection

6.2 Level 2 – Alternative Evaluation

Level 2 screening involved a comprehensive coordination process with the WSDOT Office of Equity and Civil Rights (OECR), the City of Bremerton ADA Committee, and a public survey released in April 2023. Each group provided guidance on the alternatives from a perspective of ADA regulations, public preferences, and other important considerations. Three key preferences were developed, and any alternatives that failed to address the established preferences were removed from consideration. The following sections describe the coordination process and how each key preference was developed.

6.2.1 ADA Requirements

Updating the bridge to meet current ADA requirements was the top priority goal of the Warren Avenue Bridge Multimodal Project. The project team conferred with both WSDOT's Office of Equity and Civil Rights (OECR) to confirm regulatory requirements for providing ADA accessibility and the City's ADA committee to determine local preferences.

WSDOT Office of Equity and Civil Rights

WSDOT provided the following guidance for the Warren Avenue Bridge to meet accessibility (ADA) requirements:

- Federal ADA regulations require projects to remove barriers and to bring systems into compliance.
- The City requested clarification on alternatives that leave one side unimproved, which currently does not meet ADA requirements.
- WSDOT Office of Equity and Civil Rights was not supportive of a design that did not remove ADA barriers when there were other viable options being considered that do meet ADA requirements.

The primary goal of the project is to improve accessibility, and it is therefore essential that the facility meets current ADA standards. The discussion with the WSDOT Office of Equity and Civil Rights clarified that any alternatives failing to address the issue of ADA compliance should be removed from consideration. Additionally, they stated that alternatives meeting ADA compliance on both sides of the bridge should be given first preference.

Key Preference #1: Widening for pedestrians on both sides

City ADA Committee Recommendations

On March 20, 2023, the City ADA Committee met and came up with the following recommendations:

- Unanimously opposed options that only built improvements on one side.
- Unanimously opposed a 5' wide improvement on the west side of the bridge with a wider shared use path on the east side of the bridge.
- Unanimously supported Alternatives 2 and Alternative 3.

Key Preference #1: Widening for pedestrians on both sides

Key Preference #2: Equal width walkways on both sides

Key Preference #3: Minimum walkway width of 10 feet or greater

The City ADA Committee discussion revealed that preference should be given to Alternative 2 and Alternative 3, which proposes a minimum of 10-foot ADA-compliant facilities on both sides of the bridge.

6.2.2 Public Input

The public survey released in April 2023 provided additional input. By analyzing results, the project team developed the following key preferences (refer to **Appendix M** for survey responses).

- Widening for pedestrian and bicycle use on both sides – preferred by 68% of survey respondents.
- Equal width walkways on both sides accommodating pedestrians and bicycles – preferred by 65% of survey respondents.
- Minimum walkway width of 10 feet or greater – preferred by 70% of survey respondents.

Key Preference #1: Widening for pedestrians and bicycle use on both sides

Key Preference #2: Equal width walkways on both sides accommodating pedestrians and bicycles

Key Preference #3: Minimum walkway width of 10 feet or greater

6.2.3 Key Preferences

The three key preferences below were developed by considering WSDOT’s evaluation, the City ADA Committee’s recommendations, and the findings from the public survey. Feedback from all three jurisdictions supported widening for pedestrian and bicycle use on both sides of the bridge, and feedback from the City of Bremerton ADA Committee and the public survey supported equal width walkways for pedestrians and bicyclists on both sides of the bridge with a minimum width of 10 feet in both directions.

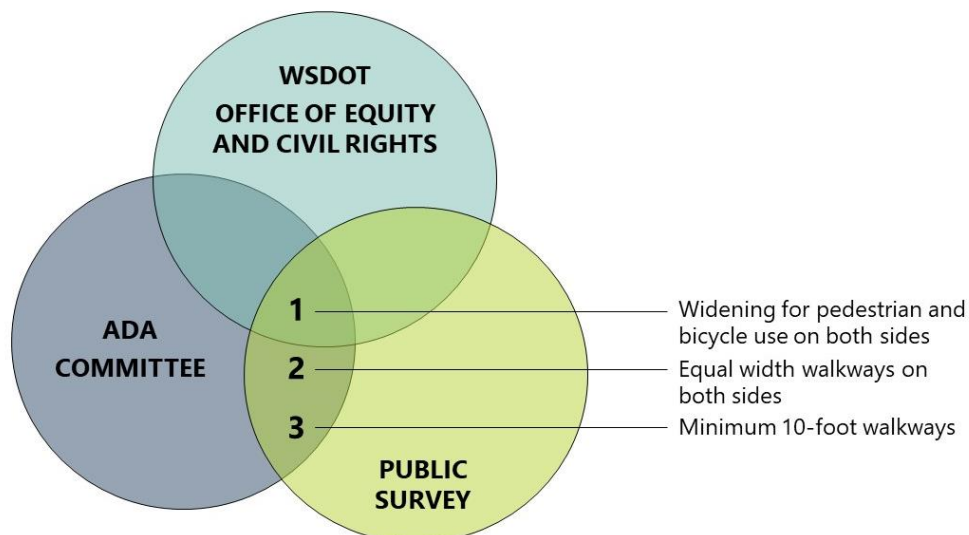


Figure 22 – Key Preferences

6.2.4 Level 2 Results

Once the key preferences were developed, they were used to evaluate each alternative. After Level 2 screening, the following alternatives were removed from consideration.

- **Alternative 1** – removed because it does not provide a 10-foot walkway width
- **Alternative 7** – removed because it does not provide equal width walkways on both sides of the bridge
- **Alternative 7a** – removed because it does not widen for pedestrian and bicycle use on both sides of the bridge
- **Alternative 8** – removed because it does not provide equal width walkways on both sides of the bridge
- **Alternative 8a** – removed because it does not widen for pedestrian and bicycle use on both sides of the bridge

The next page contains a matrix-style summary illustrating the screening process for Level 1 and Level 2.

Level 2 Results Matrix Key

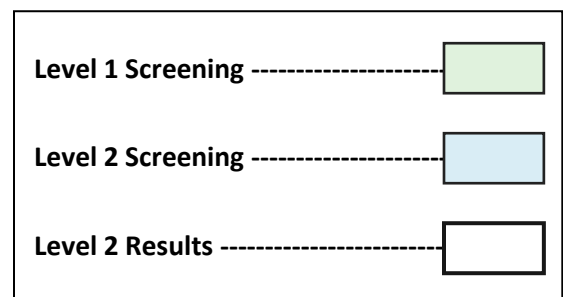


Table 6. Level 2 Results Matrix

	Alternative 1	Alternative 2	Alternative 3	Alternative 4a	Alternative 4b	Alternative 5	Alternative 6	Alternative 7	Alternative 7a	Alternative 8	Alternative 8a
Alternatives	8-foot clear width Both sides	10-foot clear width Both sides	12-foot clear width Both sides	16-foot clear width West side	16-foot clear width East side	14-foot clear width Both sides	At-grade 6-foot bike lane, 6-foot sidewalk Both sides	12-foot clear width on east side; 5-ft clear width on west side Both sides	12-foot clear width East side *	14-foot clear width on east side; 5-ft clear width on west side Both sides	14-foot clear width East side *
Origin	WSDOT recommendation	SR 303 Corridor Study preferred alternative	Larger 2-sided alternative assuming purchase of new UBIT	Combined WSCC one-sided alternative with WSDOT standard for shared use path	Alternate to 4a, not requiring an undercrossing of SR 303	WSDOT Traffic Office requested	Input from the stakeholder survey	WSCC option plus 5' for ADA access on opposite side	WSCC option as presented to Council (2021)	WSCC option plus 5' for ADA access on opposite side	WSCC option as presented to Council (2021)
Overlooks	8'x24', 4 total	6'x24', 4 total	No	No	No	N/A	N/A	No	No	No	No
Structural Feasibility	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Bridge Fully ADA Compliant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Maintenance & Inspection Access	Existing UBIT*	Existing UBIT*	Larger UBIT*	Rope access required	Rope access required	Larger UBIT*	Existing UBIT*	Larger UBIT*	Larger UBIT*	Larger UBIT*	Larger UBIT*
Planning Level Project Cost (Design and Construction)	\$23.1M	\$25.6M	\$29.1M	N/A	N/A	N/A	N/A	\$23.0M	\$17.8M	\$25.6M	\$20.2M

As displayed in the matrix, only Alternative 2 and Alternative 3 remain after Level 2 screening. These alternatives meet all three key preferences. Refer to **Figure 23** and **Figure 24** below for section views of Alternative 2 and Alternative 3.

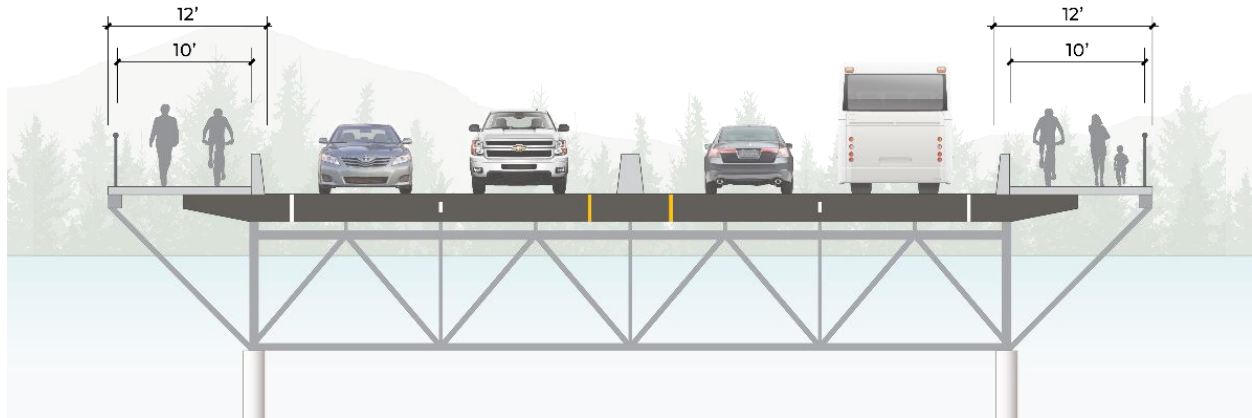


Figure 23 – Alternative 2

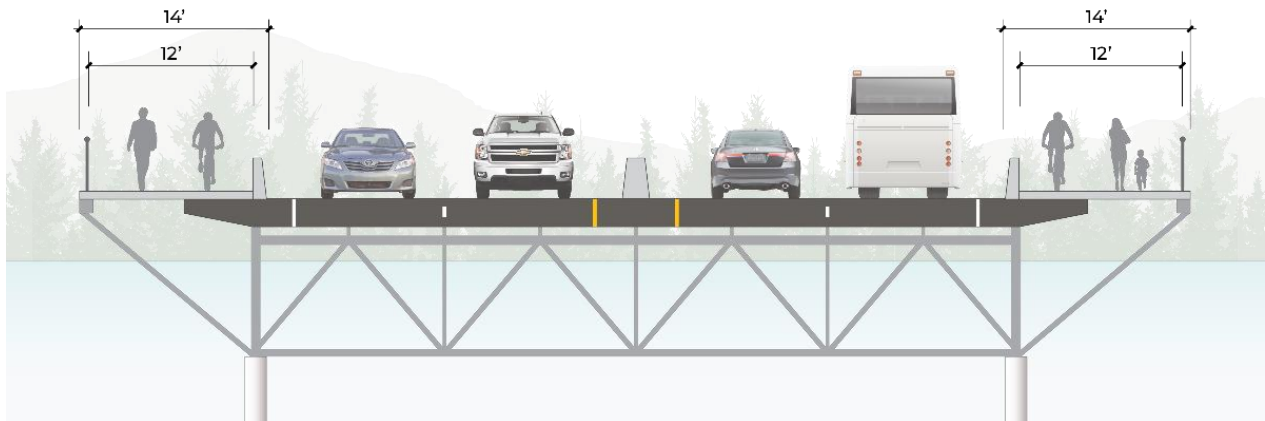


Figure 24 – Alternative 3

6.3 Level 3 – Recommended Alternative

The final step in the feasibility and alternatives analysis process was to eliminate alternatives that exceeded the project budget. Level 3 screening focused on budget because the City identified that it was critical to keep the project within a budget of \$26.5 million.

6.3.1 Budget

In Level 3 screening, any alternatives exceeding the project budget were removed. **Table 7** (below) displays the projected budgets for the final two alternatives.

	Alternative 2	Alternative 3
Alternatives	10-foot clear width Both sides	12-foot clear width Both sides
Origin	SR 303 Corridor Study preferred alternative	Larger 2-sided alternative assuming purchase of new UBIT
Overlooks	6'x24', 4 total	No
Structural Feasibility	Yes	Yes
Bridge Fully ADA Compliant	Yes	Yes
Maintenance/Inspection Access	Existing UBIT	Larger UBIT
Planning Level Project Cost (Design and Construction) *Costs are in 2023 \$\$ and not projected into 2029	\$25.6M	\$29.1M

Table 7. Level 3 Budget Evaluation

Alternative 3 is estimated to be over budget at \$29.1 million and was therefore removed from consideration. However, Alternative 3 is intended to be included in design and permitting as an additive bid item that may be awarded as part of the contract if bids are within the budget specified in the contract.

After the budget analysis, the recommended alternative was presented to the City Council in the form of a Council Resolution. The purpose of the resolution is to formally adopt the preferred alternative. Once the recommended alternative has been approved by WSDOT and the City, the project will proceed with permitting and design.

6.3.2 Level 3 Results

After Level 3 screening for compliance with the project budget, Alternative 2 was the only remaining alternative meeting every criterion.

6.4 Recommended Preferred Alternative

The preferred alternative and the culmination of the feasibility and alternatives analysis process is Alternative 2, which proposes 10-foot active transportation paths on both sides of the bridge and a total of four 6' x 24' overlooks.

7 Conclusion

After an extensive feasibility and analysis process involving feedback from key stakeholders and members of the public; outreach efforts, including the development of a website, a survey, and two open houses; and a detailed screening method for project alternatives, the recommended preferred alternative is Alternative 2. Alternative 2 will serve the needs of the community by providing ADA-compliant multimodal pathways on both sides of the Warren Avenue Bridge and improving safety, reliability, and connectivity along SR 303. Alternative 3 will, however, remain in design and permitting as an additive bid item that could be awarded as part of the contract if the bids are within the budget specified in the contract.

8 Recommendations

In order to prepare for upcoming phases of the project, including Design and Construction, the following recommendations outline next steps for the City of Bremerton.

- Working with legislative partners to ensure project funding will be available in 2025
- Consulting with WSDOT on mitigation regarding the use of a larger UBIT if Alternative 3 proceeds forward
- Working towards obtaining permitting
- Progressing into design starting in the fall of 2023