



# **N 148th Non-Motorized Bridge**

## **Bridge/Trail Type, Size, and Location Report**

July 8, 2020 | Final Report









# Bridge/Trail Type, Size, and Location Report

July 8, 2020

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Appendix 3: East Side Bridge Landing

Appendix 4: Project Cost

Appendix 5: Project Background Information and Meeting Notes

Appendix 6: Online Open House Report and Content



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# 1. Executive Summary

## BACKGROUND

In anticipation of the planned Sound Transit (ST) Lynnwood Link Light Rail Extension Project (LLE), the City of Shoreline (City) adopted a subarea plan in 2016 around the Shoreline South/145th Street Station. This plan encourages growth in the area surrounding the station by allowing denser development than what was previously permitted. With this increase in density comes a commensurate increase in both motorized and non-motorized traffic along with the potential for conflict between the two groups. As a means of mitigating these conflicts, the need for a separate, pedestrian/bicycle bridge and trail facility was identified in order to improve safety. This facility will provide an east-west connection across Interstate 5 (I-5) in order to better link the overall subarea as well as provide a direction connection for the neighborhoods west of I-5 to the light rail station.

In 2017, the City completed a feasibility study which examined multiple bridge and trail alignment alternatives with the goal of identifying a preferred alignment. These alternatives were all centered around the Shoreline South/145th Street station and were located as far south as NE 145th Street and as far north as NE 149th Street. The preferred alternative selected during this study was a bridge and trail alignment that aligned approximately with NE 148th Street. This alignment alternative was chosen to be carried forward into preliminary design. The first step in the preliminary design process was to develop this bridge and trail Type, Size and Location (TS&L) study.

## STUDY OBJECTIVE

The purpose of this TS&L study is to identify design alternatives for the bridge and trail connections for the preferred alignment alternative established in the 2017 feasibility study. The TS&L analysis included tasks like civil and structural engineering, surveying, geotechnical explorations, urban design, landscaping, definition of permitting requirements, public involvement and establishment of project aesthetics.

The TS&L process developed multiple trail alignments, bridge types and landing alternatives. The development of these alternatives was largely driven by site constraints including vertical clearances to I-5 and to the light rail station structure, horizontal clearances for bridge foundation locations, existing utility locations, ROW requirements and other site features.

These alternatives were evaluated and compared with one another based on criteria established by the City and the design team which include: user safety and security, connectivity and travel times, ease of stakeholder approval, right-of-way (ROW), operations and maintenance, aesthetics and project costs. Input from key stakeholders received during project briefings also helped inform the selection of these criteria.

Broader public outreach activities that have been completed include project website updates, and the development of outreach materials (e.g. FAQs, fact sheets, folios). A public open house is planned and input received from the public will be incorporated into the final version of this report.

The bridge and trail alternatives are divided into three, distinct sections: West Side Trail Alignments, Bridge Main Span, and the East Side Landings. Multiple options were developed and evaluated for each of these sections. These options can be combined interchangeably to form a complete project.



## **WEST SIDE TRAIL ALIGNMENT RECOMMENDATIONS**

Three west side trail alignment alternatives are presented in this report. Each alternative provides the necessary connection from 1<sup>st</sup> Avenue NE to the main bridge span. Each of these alternatives have benefits and trade-offs especially with regard to ease of stakeholder approval, right-of-way, user safety and security and project costs.

Based on the results of this TS&L evaluation and input from the general public through the online open house, Option 3 – Full Build-out North is the recommended preferred alternative for the west side trail alignment. This option best meets the established project criteria and received the most favorable feedback from the public.

## **BRIDGE MAIN SPAN RECOMMENDATIONS**

Three main span bridge alternatives are presented in this report. These bridges meet the project design requirements, but differ primarily in their costs, aesthetic value and maintenance requirements.

Based on the results of this TS&L evaluation and input from the general public through the online open house, the tied-arch bridge is the recommended preferred alternative for the main span structure. While all bridges met the design criteria and were comparable in their cost, the tied-arch span received the most favorable feedback from the public.

## **EAST SIDE LANDING RECOMMENDATIONS**

Three east side landing alternatives are presented in this report. These landings provide a connection from the bridge to the Shoreline South/145<sup>th</sup> Street Station, the trail-along-the-rail and the surrounding neighborhood. These alternatives vary primarily in their connectivity, vertical clearance to the overhead light rail structure and costs.

Based on the results of this TS&L evaluation and input from the general public through the online open house, Option 3 – Direct Ramp is the recommended preferred alternative for the east side landing. This option best meets the established project criteria and received the most favorable feedback from the public.



## 2. Introduction and Background

### INTRODUCTION

In anticipation of the planned Sound Transit (ST) Lynnwood Link Light Rail Extension Project (LLE), the City of Shoreline (City) adopted a subarea plan in 2016 around the Shoreline South/145th Street light rail station. This plan encourages growth in the area surrounding the station by allowing denser development than what was previously permitted. With this increase in density comes a commensurate increase in both motorized and non-motorized traffic along with the potential for conflict between the two groups. As a means of mitigating these conflicts, the need for a separate, pedestrian and bicycle only facility was identified in order to improve safety. This facility will provide an east-west connection across Interstate 5 (I-5) in order to better link the overall subarea as well as provide a direction connection for the neighborhoods west of I-5 to the light rail station. In addition, this facility is intended to become an integral piece of the larger regional trail network which includes the Interurban and Burke Gilman Trails. Figure 2-1 shows project location in the context of the broader area.



Figure 2-1: Project Vicinity Map



KPFF Consulting Engineers



**Figure 2-2: 2017 Feasibility Study Alignment Options**



## PROJECT SCOPE OF WORK

This report provides the results of the TS&L study for the trail/bridge alignment beginning at 1st Avenue NE in the vicinity of N 148th Street, crossing over I-5 and terminating near the north end of the Shoreline South/145th Street station. The TS&L phase includes the study of trail locations and alignments, bridge types and sizes, project aesthetics, and defines permitting requirements related to the project.

The following tasks were accomplished for the TS&L study:

- General tasks
  - Obtain and review existing project related information and historic documents
  - Perform site visits to evaluate existing site conditions
- Environmental permitting tasks:
  - Estimate locations of wetlands, wildlife habitat and cultural/historic resources in the project area
  - Identify the permits and environmental documentation that is anticipated for the project
  - Create a schedule for obtaining the identified permits and completing environmental documents
- Geotechnical tasks:
  - Identify and evaluate the general geologic conditions in the project area
  - Provide preliminary recommendations regarding potential bridge foundations and embankment construction
  - Provide geotechnical design criteria for the bridge, including seismic design requirements and liquefaction hazard analysis (if applicable)
- Urban design tasks:
  - Develop urban design alternatives for the bridge trail approaches and landings
  - Develop landscaping alternatives
  - Evaluate pedestrian safety for bridge trail approaches and landings
- Civil engineering and survey design tasks:
  - Prepare project basemap incorporating field topographical survey data, boundary survey including easements and underground utility locations.
  - Develop trail alignment plan and profiles alternatives including street connections
  - Develop concept utility relocation plans, as necessary
  - Determine drainage design concepts
  - Identify clearances to I-5, ST's aerial guideway structures, property lines and other site features
- Bridge engineering and architectural tasks:
  - Determine bridge span and foundation locations



- Perform concept level structural analysis
- Determine bridge component types and sizes
- Public outreach tasks:
  - Perform initial outreach to stakeholders
  - Gather input from stakeholders and incorporate into alternatives evaluation, as necessary

## **PROJECT LOCATION AND EXISTING CONDITIONS**

The project was divided into two distinct segments which are divided by I-5. These segments are referred to as the western trail connection and the eastern landing. The main span bridge crossing provides a connection over I-5 which joins these two segments.

### **Project Boundaries**

For the western trail connection, the project boundaries are as follows:

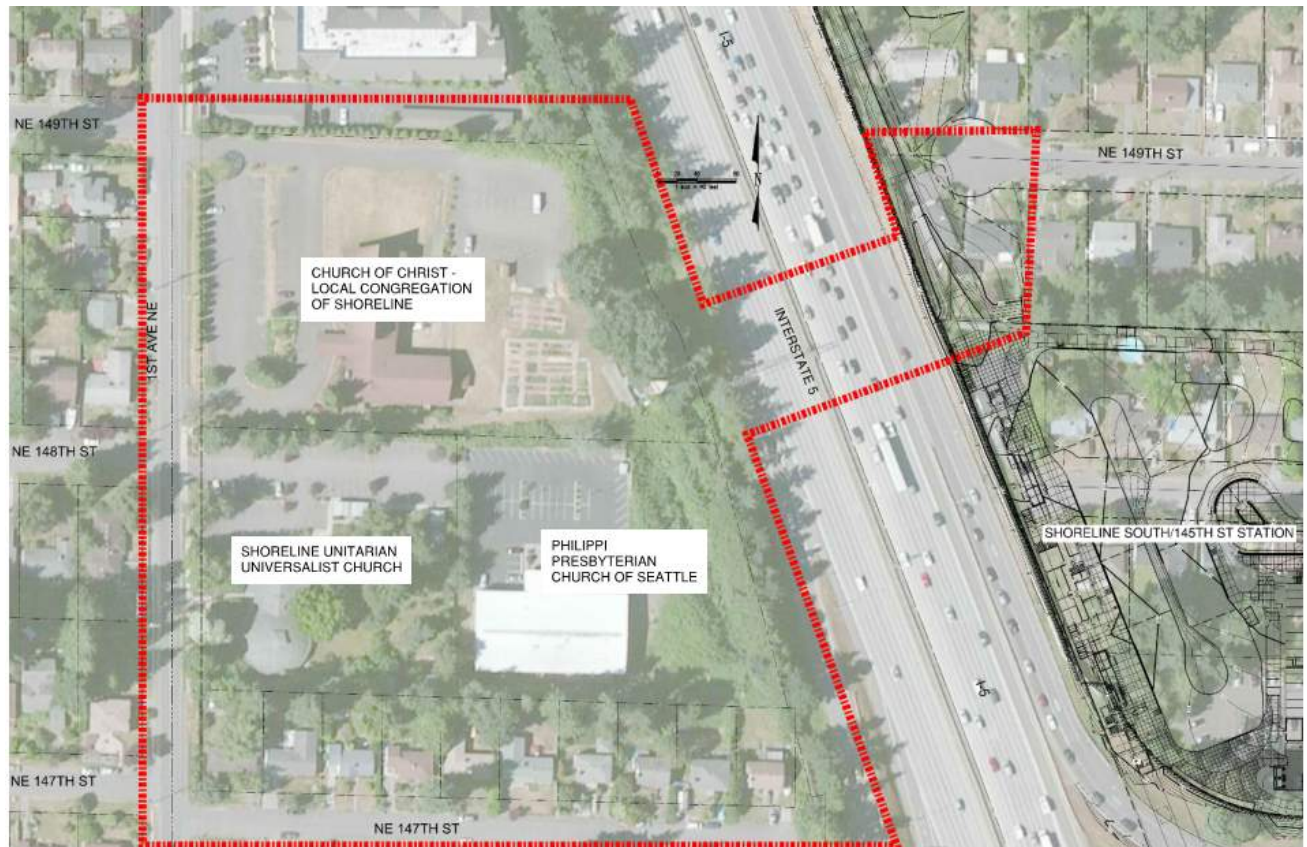
- Northern Boundary – N 149th Street
- Southern Boundary – N 147th Street
- Eastern Boundary – Interstate 5
- Western Boundary – 1st Avenue NE

For the eastern bridge landing, the project boundaries are as follows:

- Northern Boundary – NE 149th Street
- Southern Boundary – Shoreline South/145th Street Station Plaza
- Eastern Boundary – Private Residences north of Shoreline South/145th Street Station Plaza
- Western Boundary – Interstate 5

These boundaries are shown in red in Figure 2-3.





**Figure 2-3: Project Boundaries**



## City Street Connections

Key access points to the western trail connection are 1st Ave NE, N 148th Street, N 149th Street and N 147th Street. Figure 2-4 through Figure 2-7 show the existing conditions of these street connections at the time of this report.



**Figure 2-4: Existing Condition of 1<sup>st</sup> Avenue NE, Looking North**



**Figure 2-5: Existing Condition of N 148th Street, Looking West**





**Figure 2-6: Existing Condition of N 149th Street, Looking West**



**Figure 2-7: Existing Condition of N 147th Street, Looking West**



Key access points to the eastern bridge landing to be considered are NE 149th Street, the Shoreline South/145th Street Station and the Trail Along the Rail (TAR). Both the station and TAR were under construction during the time of the report and are not shown. Figure 2-8 shows the existing condition of NE 149th Street.



**Figure 2-8: Existing Condition of Northeast 149th Street Looking West**

### **Private Property**

Private properties to be considered throughout the TS&L process include:

- Parcel 288170-0340: Church of Christ – Local Congregation of Shoreline, 14800 1st Ave NE



**Figure 2-9: Church of Christ**



This parcel currently houses the Church of Christ – Local Congregation of Shoreline which consists of a single building and surface parking lots. There is a privately owned cell phone tower at the southeast corner of the parcel (see utilities section for further discussion). There are existing underground utility and access easements that allow for the operation and maintenance of this facility.

- Parcel 288170-0342: Shoreline Unitarian Church, 14724 1st Ave NE



**Figure 2-10: Unitarian Universalist Church**

This parcel currently houses the Shoreline Unitarian Universalist Church which consists of the main church building and several outbuildings. There are several easements on this property including an access and utility easement to the Philippi Presbyterian Church immediately to the east.

- Parcel 288170-0343: Philippi Presbyterian Church, 14734 1st Ave NE



**Figure 2-11: Philippi Presbyterian Church**



This parcel currently houses the Philippi Presbyterian Church of Seattle which consists of a single building and surface parking lots. As mentioned previously, the parcel has an access and utility easement on Parcel 288170-0342 immediately to the west.

At the eastern landing, many of the private parcels that might have been impacted by this project have been acquired by Sound Transit for the construction of the Shoreline South/145th Street station. These properties will be turned over to the City upon completion of construction.

## **Utilities**

There are numerous, known utilities in the project area that could be impacted by this project. Below is a description of only the major utilities which represent a significant challenge and/or cost should they be impacted or need to be relocated.

### **Western Trail Connection Utilities:**

As shown in Figure 2-4, there are high voltage transmission lines along the western edge of 1st Ave which are owned by Seattle City Light. As shown in Figure 2-12, there is a utility pole located near the northwest corner of the Unitarian parcel, but within City ROW, that carries multiple fiber optic lines and power. It appears that this pole serves to feed the cell phone tower located in the southeast corner of the Church of Christ parcel.



**Figure 2-12: Existing Utility Pole near Northwest Corner of Unitarian Parcel**

As shown in Figure 2-14, there is a cell phone tower located in the southeast corner of the Church of Christ parcel. This cell phone tower is owned and operated by SBA Communications which leases their facilities to T-



Mobile and Sprint. At the time of this report, right-of-entry had not been granted by the Church of Christ property owners to gather survey on this parcel. However, based on information contained within the title report for this property, there is a utility easement that runs along the southern boundary of the parcel which connects to the tower location. It is assumed that the power and fiber optic lines that are visible on the aforementioned utility pole are buried within this easement. Figure 2-13 shows the location of the utility easement based on legal description contained within the title report.



**Figure 2-13: Utility Easements on Church of Christ Parcel**





**Figure 2-14: Cell Phone Tower at Southeast Corner of the Church of Christ Parcel**

The only significant drainage facility is a 36-inch diameter corrugated metal pipe located at northern edge of the Unitarian parcel that acts as detention and/or flow control for both the Unitarian parcel.

**WSDOT ROW:**

WSDOT has multiple utilities located within their ROW. These include:

- Intelligent Transportation Systems (ITS): There are several buried ITS conduits located within shoulder of southbound I-5.
- Storm Drainage: There is a storm drain located within the median of I-5. A similar facility is also located in the shoulder of northbound I-5.
- Electrical: There is buried power located within the shoulder of both northbound and southbound I-5.

**Eastern Bridge Landing:**

The only significant utilities located within the eastern bridge landing are storm drainage facilities associated with the Shoreline South/145th Street Station. At the time of this report, these facilities have yet to be constructed. All other existing utilities have already been relocated in anticipation of station construction.

**Thornton Creek**

Within the project area, there is a section of Thornton Creek within WSDOT ROW that runs in a north-south direction and essentially parallels southbound I-5. As shown in Figure 2-15, the creek enters two, 6-foot diameter pipe culverts before it passes below the freeway. The culvert locations are based on as-built plans which were also confirmed during the field survey. This section of Thornton Creek has been identified on WSDOT's Fish Passage Uncorrected Barriers Injunction list. At the time of this report, WSDOT had no work



planned or budgeted for fish passage improvements to this section of Thornton Creek in the 2019-2021 state biennium. Design and construction of the pedestrian bridge will need to consider and not preclude future fish passage improvements to this section of Thornton Creek.

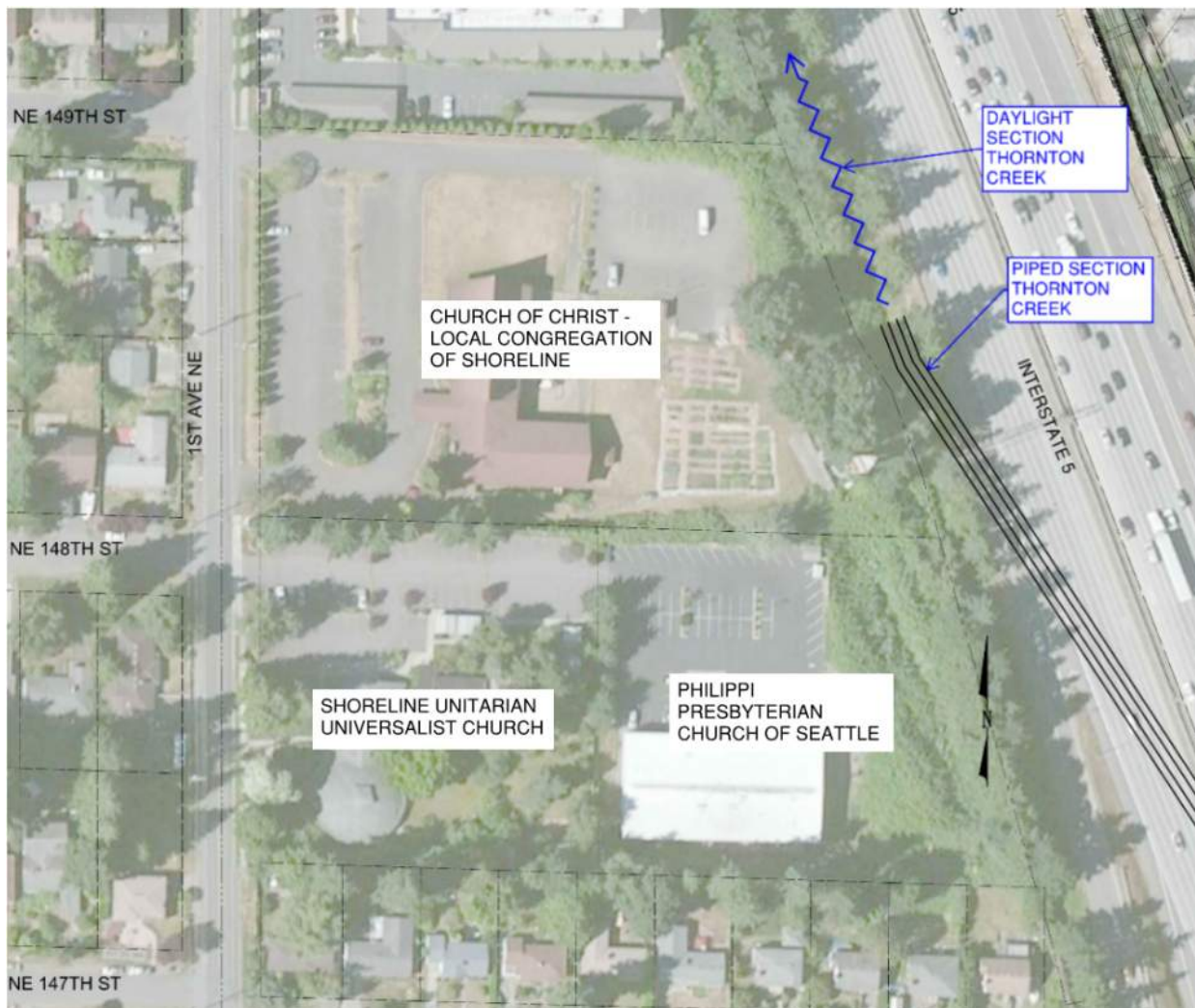


Figure 2-15: Location of Thornton Creek within Project Area

### 3. Design Criteria

#### DESIGN CODES AND REFERENCES

Table 3-1 through Table 3-6 provide lists of design codes and references to be used for all design and construction. The list is not comprehensive; other applicable codes and references may be required as the design develops.

When conflicts are identified between the City of Shoreline Engineering Development Manual and other references, they will be addressed on a case-by-case basis.



**Table 3-1: Pedestrian and Bicycle Facilities Codes and References**

Pedestrian and Bicycle Facilities Codes and References	
<ul style="list-style-type: none"> <li>• Governing Codes <ul style="list-style-type: none"> <li>○ City of Shoreline 2020 Engineering Development Manual</li> </ul> </li> <li>• Referenced Codes <ul style="list-style-type: none"> <li>○ AASHTO A Policy on Geometric Design of Highways and Streets, 7th Edition, 2018</li> </ul> </li> <li>• AASHTO Guide for the Development of Bicycle Facilities, 4th Edition, 2012</li> <li>• NACTO Urban Bikeway Design Guide</li> <li>• 2010 American with Disabilities Act Standards for Accessible Design</li> <li>• Public Rights of Way Accessibility Guidelines (PROWAG)</li> <li>• WSDOT Design Manual M22-01, September 2019</li> <li>• WSDOT Local Agency Guidelines Manual M36-63, June 2018</li> </ul>	

**Table 3-2: Bridge and Structures Codes and References**

Bridge and Structures Codes and References	
<ul style="list-style-type: none"> <li>• Governing Codes <ul style="list-style-type: none"> <li>○ AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, 2nd Edition, December 2009, with Interim Revisions. (AASHTO Pedestrian).</li> <li>○ AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition, 2011, with Interim Revisions</li> <li>○ AASHTO LRFD Bridge Design Specifications, Eighth Edition, 2017, with Interim Revisions</li> </ul> </li> <li>• Referenced Codes <ul style="list-style-type: none"> <li>○ AASHTO LRFD Bridge Construction Specifications, 3rd Edition, 2010, with Interim Revisions</li> <li>○ AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, First Edition, 2015. (AASHTO Signs)</li> <li>○ WSDOT Bridge Design Manual (LRFD) M23-50.18, June 2018. (WSDOT BDM)</li> <li>○ Bridge Welding Code: AASHTO/ AWS D1.5M/D1.5: 2016 An American National Standard, 7th Edition with Interims through 2019.</li> <li>○ IBC – International Building Code, International Code Council, 2018.</li> <li>○ ASCE/SEI 7 - Minimum Design Loads for Buildings and Other Structures, ASCE/SEI 7 Standards Committee, 2016.</li> <li>○ ACI 318 – Building Code Requirements for Structural Concrete, ACI Committee 318, 2014</li> <li>○ AISC 360 – Specification for Structural Steel Buildings, American Institute of Steel Construction, 15th Edition, 2016.</li> <li>○ Structural Welding Code – Steel: AASHTO/AWS D.1M/D1.1M, 2015.</li> </ul> </li> </ul>	



**Table 3-3: Stormwater Codes and References**

Stormwater Codes and References
<ul style="list-style-type: none"> <li>• Governing Codes <ul style="list-style-type: none"> <li>○ City of Shoreline 2020 Engineering Development Manual</li> <li>○ 2014 Department of Ecology Stormwater Management Manual for Western Washington</li> </ul> </li> <li>• Referenced Codes <ul style="list-style-type: none"> <li>○ 2012 Stormwater Manual for Western Washington, as Amended in December 2014</li> <li>○ 2012 Low Impact Technical Guidance Manual for Puget Sound</li> <li>○ King County Surface Water Design Manual</li> </ul> </li> </ul>

**Table 3-4: Roadway Codes and References**

Roadway Codes and References
<ul style="list-style-type: none"> <li>• Governing Codes <ul style="list-style-type: none"> <li>○ City of Shoreline 2020 Engineering Development Manual</li> <li>○ City of Shoreline Municipal Code (SMC)</li> <li>○ City of Shoreline Transportation Master Plan (TMP)</li> <li>○ City of Shoreline Comprehensive Plan</li> </ul> </li> <li>• Referenced Codes <ul style="list-style-type: none"> <li>○ AASHTO A Policy on Geometric Design of Highways and Streets, 7th Edition, 2018</li> <li>○ NACTO Urban Street Design Guide</li> <li>○ WSDOT Design Manual M22-01, September 2019</li> <li>○ WSDOT Local Agency Guidelines Manual M36-63, June 2018</li> <li>○ Institute of Transportation Engineers, Urban Street Geometric Design Handbook</li> <li>○ FHWA Small Town and Rural Multimodal Networks (STAR) Guide</li> <li>○ Manual on Uniform Traffic Control Devices (MUTCD)</li> </ul> </li> </ul>

**Table 3-5: Lighting Codes and References**

Lighting Codes and References
<ul style="list-style-type: none"> <li>• Governing Codes <ul style="list-style-type: none"> <li>○ City of Shoreline 2020 Engineering Development Manual</li> </ul> </li> <li>• Referenced Codes <ul style="list-style-type: none"> <li>○ Sound Transit Design Criteria Manual: <ul style="list-style-type: none"> <li>▪ Chapter 21, Lighting</li> </ul> </li> <li>○ IES RP-8-18 Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting</li> <li>○ WSDOT Design Manual, Chapter 1040 Illumination</li> <li>○ CPTED Guidelines</li> </ul> </li> </ul>



**Table 3-6: Landscape Codes and References**

Landscape Codes and References	
<ul style="list-style-type: none"><li>• Governing Codes<ul style="list-style-type: none"><li>○ Landscaping within City of Shoreline right-of-way:<ul style="list-style-type: none"><li>▪ City of Shoreline 2019 Engineering Development Manual: Chapter 15.2, Landscaping</li></ul></li><li>○ Landscaping on private property:<ul style="list-style-type: none"><li>▪ Shoreline Municipal Code, 20.50:<ul style="list-style-type: none"><li>• General standards: SMC 20.50.520</li><li>• Mature tree retention and replacement: SMC 20.50.350-20.50.370</li><li>• Landscaping along interior lot lines: SMC 20.50.490</li><li>• Internal landscaping for parking area (if required due to reconfiguring existing</li></ul></li></ul></li><li>○ Landscaping within WSDOT right-of-way:<ul style="list-style-type: none"><li>▪ 2017 Roadside Manual: Chapter 800, Vegetation and Chapter 820, Irrigation</li></ul></li><li>○ Landscaping within Sound Transit right-of-way:<ul style="list-style-type: none"><li>▪ Sound Transit Design Criteria Manual: Chapter 9.4, Station and Facility Requirements and Chapter 10.4, Landscaping Requirements</li></ul></li></ul></li></ul>	

## **HORIZONTAL CLEARANCE REQUIREMENTS**

### **Interstate 5 – WSDOT**

The minimum horizontal clearances described below are shown graphically in Appendix 5, Design Criteria and Constraints.

- During construction:
  - Without barrier protection, the minimum work zone clear zone distance is 30 feet from the traveled way per WSDOT Design Manual Exhibit 1010-2.
  - The construction opening with protection shall be the sum of the traffic lane widths and shoulders plus two 2-foot widths for temporary traffic barriers and two 2-foot shy distances per WSDOT BDM 2.3.9.
- For the final, constructed condition:
  - The horizontal clearance between the edge of the traveled way and unprotected components of the permanent structure shall be a minimum of 29 feet per WSDOT Design Manual Exhibit 1600-2.
  - When protected by a minimum 42-inch high, crash tested, rigid TL-5 barrier, the face of the bridge pier can be a minimum of 3.25 feet from the top edge of the traffic face of the barrier per WSDOT BDM 3.16.7.
  - The horizontal clearance between the permanent structure and adjacent sign bridge structures shall be a minimum of 15 feet.



## **Aerial Guideway and Shoreline South / 145th Station – Sound Transit**

Similar to the Sound Transit Design Criteria Manual's (DCM) approach to Landscaping (DCM 10.3), the intent of the clearance to aerial guideway structures is to not adversely affect the sight distance of train operators and the public.

- During construction and for the final condition.
  - Defined as shown in Appendix 5, Design Criteria and Constraints.

## **Trail – City of Shoreline**

- Minimum horizontal clearance from edge of trail pavement to an obstruction (such as bridge piers or guardrail) is 2 feet per WSDOT Design Manual 1515.02(2)(f).

## **VERTICAL CLEARANCE REQUIREMENTS**

The minimum vertical clearances described below are shown graphically in Appendix 5, Design Criteria and Constraints.

### **Interstate 5 – WSDOT**

- During construction:
  - Minimum vertical falsework clearance for bridges over highways is 16.5 feet per WSDOT Design Manual 720.03(5)(a)1 and WSDOT BDM 2.3.9.
- For the final condition:
  - Minimum vertical clearance for the permanent pedestrian bridge over a roadway is 17.5 feet per WSDOT Design Manual 720.03(5)(b)(3) from top of roadway to bottom of structure. Design assumes a minimum vertical clearance of 18 feet to provide an additional 6 inches of construction tolerance.

## **Aerial Guideway and Shoreline South / 145th Station – Sound Transit**

No structures are anticipated to pass above the aerial guideway or Shoreline South / 145th Station.

## **Trail – City of Shoreline**

The minimum vertical clearance above trails is 10-feet per WSDOT Design Manual 1515.04. This is consistent with the 10-foot standard vertical clearance for any projection over a bicycle path surface per Shoreline 2019 Engineering Development Manual, Table 15.1. Eight feet of vertical clearance is required over sidewalk surfaces. The required minimum tree branch clearance above any trail surface is 7-feet.

## **TRAIL AND BRIDGE GEOMETRY**

### **Trail/Bridge/Shoulder Widths**

The 2019 Shoreline Engineering Development Manual requires a minimum width of a multi-use path to be 12 feet. All paths must include 2-foot graded shoulders. If pedestrian traffic is heavy, a wider graded shoulder is recommended.

The full width of the trail, including the shoulders, should be carried across the bridge in order to provide the setback for railings required by the AASHTO Guide for the Development of Bicycle Facilities. Therefore, the trail on the bridge is 16 feet wide.



The maximum cross slope is 2% per City of Shoreline 2019 Engineering Development Manual.

### Horizontal Trail Alignment

The minimum radii for horizontal curves on a paved, shared-use path is 27 feet per the AASHTO Guide for the Development of Bicycle Facilities, Table 5-2. This value based on the lean angle of the cyclist. The lean angle value is based on a 0% cross-slope to adhere to Americans with Disabilities Act (ADA) standards.

Per the AASHTO Guide for the Development of Bicycle Facilities 5.2.4 design speed of bicycles is dependent on the grade of the path, turning radius constraints, and the provided stopping sight distance. Due to geometric constraints, low design speeds will be considered ranging from 12 mph to 20 mph. When considering descending conditions, a higher design speed will be considered. For sustained steeper grades (6% or greater) the highest design speed is 30 mph.

### Vertical Trail Alignment

In addition to the vertical clearance requirements described above, vertical trail alignment is primarily governed by ADA access requirements which are described in the Access Criteria section.

### Trail and Bridge Features

- Bridge railing
  - Height to top of railing, 42 inches per AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, 2nd Edition.
  - Continuous barrier that prevents the passage of a 4 inch diameter sphere from the finished grade to the top of railing per IBC 1015.4.
- Bridge screening (Throw Barrier) for bridges over highways is not required per WSDOT Design Manual 720.03(13). However, based on input received from WSDOT, a 10-foot tall vertical throw barrier over I-5 is assumed.
- Bridge deck joints meet ADA requirements and provide safe passage for bicycles.

## BRIDGE STRUCTURAL DESIGN CRITERIA

### Loads

- Dead Loads
  - Concrete, Normal-weight Reinforced      155 lb/ft<sup>3</sup>      WSDOT BDM 3.8
  - Steel      490 lb/ft<sup>3</sup>      AASHTO LRFD Table 3.5.1-1
  - Utilities      self-weight of conduit/drains/etc.
- Live Loads
  - Pedestrian      90 lb/ft<sup>2</sup>      AASHTO Pedestrian 3.1
  - Maintenance Vehicle      H10 without impact      AASHTO Pedestrian 3.2
- Wind Loads
  - Acting Horizontally, whichever governs between AASHTO Pedestrian 3.4 / AASHTO Signs 3.8 and AASHTO LRFD 3.8



- Acting Vertically, per AASHTO LRFD 3.8.2
- Seismic Loads, Design Parameters
  - Site Class D
  - Design Spectral Ordinates
    - Peak Ground Acceleration Coefficient, AS 0.441g
    - Short-Period (0.2 sec) Response Coefficient, SDS 1.02g
    - Long-Period (1.0 sec) Response Coefficient, SD1 0.545g
  - Seismic Zone (per AASHTO LRFD Table 3.10.6-1) 4
- Vehicular Collision Loads. The bridge piers are expected to be outside of clear zones for I-5 or protected by barriers and will not be designed for collision loads.
- Temperature Loads per WSDOT BDM 3.16.6
  - Concrete Bridges 0° to 100°F
  - Steel Bridges 0° to 120°F

## Allowable Deflections and Vibrations

- Deflections
  - Maximum deflection due to unfactored pedestrian load is 1/220 of the length for cantilever spans and 1/360 of the length for all other spans per AASHTO Pedestrian.
  - Maximum horizontal deflection due to unfactored wind loading is 1/360 of the length.
- Vibrations
  - The fundamental frequency in a vertical mode of the pedestrian bridge without live load shall be greater than 3.0 hertz. The fundamental frequency in the horizontal direction shall be greater than 1.3 hertz.
  - Pedestrian induced vibration and acceleration limits prescribed in the 2016 SETRA Technical Guide to Footbridges

## ACCESS CRITERIA

### Americans with Disabilities Act (ADA) Requirements

The City of Shoreline 2019 Engineering Development Manual requires that all designs meet the current American with Disabilities Act (ADA) requirements and standards in the Public Rights of Way Accessibility Guidelines (PROWAG). These guidelines specify a maximum running slope of 5% for all sidewalks and paths. At this stage of design a maximum slope of 4.25% is used to account for construction tolerance. Where steeper slopes are required, a maximum ramp slope of 8.33% for approximately 30 feet is allowed with a 5-foot wide landing with a slope of 2%. A minimum slope is required of 0.5% to prevent the accumulation of water. At this stage of design, a running slope of 7.5% and a cross slope of 1.0% to 1.5% is used for ramp design to allow for construction tolerance.



## **Maintenance and Inspection Access**

Based on past experience with similar structures and recommendations from the AASHTO Pedestrian Bridge Code, the bridge will be designed for an H10 truck (without dynamic impact). This load is comparable to most maintenance vehicles that are expected to access the bridge.

The preferred structure type will have a significant impact on the equipment necessary to meet inspection and reporting requirements. As the design progresses additional equipment loads may be considered.

## **Emergency Access**

No provisions for emergency response vehicles (e.g. ambulances or fire trucks) will be included in the design of the trail or bridge structure. The ramp configuration at the eastern landing will likely prevent emergency vehicle access across the bridge.

## **STORMWATER DETENTION AND WATER QUALITY**

The City of Shoreline 2020 Engineering Development Manual, Division 3 adopted the 2014 Department of Ecology (DOE) Stormwater Management Manual for Western Washington (Stormwater Manual). The City of Shoreline includes amendments to the DOE Stormwater Manual in the City of Shoreline 2020 Engineering Development Manual. Where the Stormwater Manual states a provision is “optional”, it is listed as a requirement in the City of Shoreline.

The following stormwater requirements are listed in the Stormwater Manual and will be triggered by different project characteristics, as listed below. Refer to the 2014 Stormwater Management Manual Flow Charts for Determining Requirements for New Development. For the purposes of this report, the project is assuming roadway criteria.

### **Requirement 1 – Preparation of Stormwater Site Plans**

- Applies to new and replaced hard surfaces and the land disturbed resulting in 2000 square feet or more of new plus replaced hard surface or land disturbing activity total 7000 square feet.

### **Requirement 2 – Construction Stormwater Pollution Prevention (SWPP)**

- Applies to all new and redevelopment projects.

### **Requirement 3 – Source Control of Pollution**

- Applies to new and replaced hard surfaces and the land disturbed resulting in 2000 square feet or more of new plus replaced hard surface or land disturbing activity total 7000 square feet.

### **Requirement 4 – Preservation of Natural Drainage Systems and Outfalls**

- Applies to new and replaced hard surfaces and the land disturbed resulting in 2000 square feet or more of new plus replaced hard surface or land disturbing activity total 7000 square feet.

### **Requirement 5 – On-site Stormwater Management**

- Applies to new and replaced hard surfaces and the land disturbed resulting in 2000 square feet or more of new plus replaced hard surface or land disturbing activity total 7000 square feet.
- Meet the LID Performance Standards through the use of BMPs.



### **Requirement 6 – Runoff Treatment**

- Applies to road projects with 5000 square feet or more of new hard surfaces and the hard surfaces add 50% or more to the existing hard surfaces within the project limits.

### **Requirement 7 – Flow Control**

- Applies to road projects with 5000 square feet or more of new hard surfaces and the hard surfaces add 50% or more to the existing hard surfaces within the project limits.

### **Requirement 8 – Wetlands Protection**

- Applies to road projects with 5000 square feet or more of new hard surfaces and the hard surfaces add 50% or more to the existing hard surfaces within the project limits.

### **Requirement 9 – Operation and Maintenance**

- Applies to road projects with 5000 square feet or more of new hard surfaces and the hard surfaces add 50% or more to the existing hard surfaces within the project limits.

## **UTILITY DESIGN CRITERIA**

Utility requirements per City of Shoreline 2020 Engineering Development Manual and Shoreline Municipal Code (SMC). Minimum clearances to existing utilities will be determined during design.

## **LIGHTING DESIGN CRITERIA**

The City of Shoreline 2020 Engineering Development Manual Division, Section Streetlight Master Plan addresses illumination by ratings within the City limits. Applicable design standards shall be selected based on the standards outlined in Table 3-5. In addition, lighting levels will take into account CPTED guidelines

The design will utilize LED, energy efficient lighting, address light trespass over the I-5 corridor, and adopt appropriate pole and luminaire types to compliment the adjacent neighborhood and Sound Transit light rail station aesthetics. Electrical design requirements shall follow the latest release of National Electrical Code (NEC).

## **LANDSCAPE DESIGN CRITERIA**

The urban and landscape design will reflect the project context within an existing neighborhood that is evolving into a more urban, transit-oriented district and complement the Sound Transit light rail station aesthetic. The design will emphasize pedestrian-friendly elements including pedestrian-scale lighting and decorative accent lighting; thoughtful yet durable site furnishings such as benches, litter/recycle receptacles and bicycle racks; decorative pavement treatments that help delineate and guide pedestrian/bicycle movements and mixing zones; identity markers that reinforce a sense of place and create landmarks; and pedestrian/bicycle directional wayfinding signs at decision making locations.

In order to meet the City of Shoreline's 1% for the Arts requirements, elements of public art will be incorporated into the project design. The art element could include stand-alone pieces or could be incorporated into the bridge design or the urban design amenities mentioned above. This integration will help to make the bridge an iconic landmark feature within the City of Shoreline. The landscape will emphasize low-maintenance, northwest-adapted plants appropriate for use along public rights-of way and trails. Irrigation will



be provided to reduce maintenance needs and establish a healthy plant community. Low Impact Development (LID) facilities will be incorporated into the landscaping to accommodate drainage from the trail. The landscape design will be governed by the relevant jurisdictional standards outlined in Table 3-6 based on its location within City of Shoreline, WSDOT or Sound Transit right-of-way or private property.

In addition, there are numerous existing mature trees which may be impacted, or which may need to be removed, in order to construct the bridge and associated landing and trail areas. Tree removals will be mitigated per the requirements of the Shoreline Municipal Code, as outlined in Table 3-6.

### **Sound Transit Right-of-Way**

The landscape design at the east bridge landing will be coordinated with the design of the Sound Transit light rail station and will meet the standards of the Sound Transit Design Criteria Manual.

### **WSDOT Right-of-Way**

Landscaping within the WSDOT right-of-way will be designed to meet WSDOT standards for the Interstate-5 corridor and in coordination with the WSDOT Northwest Region. Trees removed within the WSDOT right-of-way will be replaced/mitigated according to WSDOT's tree-replacement requirements.

### **Private Property**

Property restoration to adjacent properties will match/replace landscape areas that are disturbed and in addition will be designed to provide a balance of privacy/screening and visibility between the private property and the trail. Any trees which are required to be removed from private property will be mitigated per Shoreline Municipal Code requirements.

## **4. Design Constraints**

Below are a number of critical design constraints that have been considered during development of the various bridge and trail alternatives.

### **VERTICAL CLEARANCES**

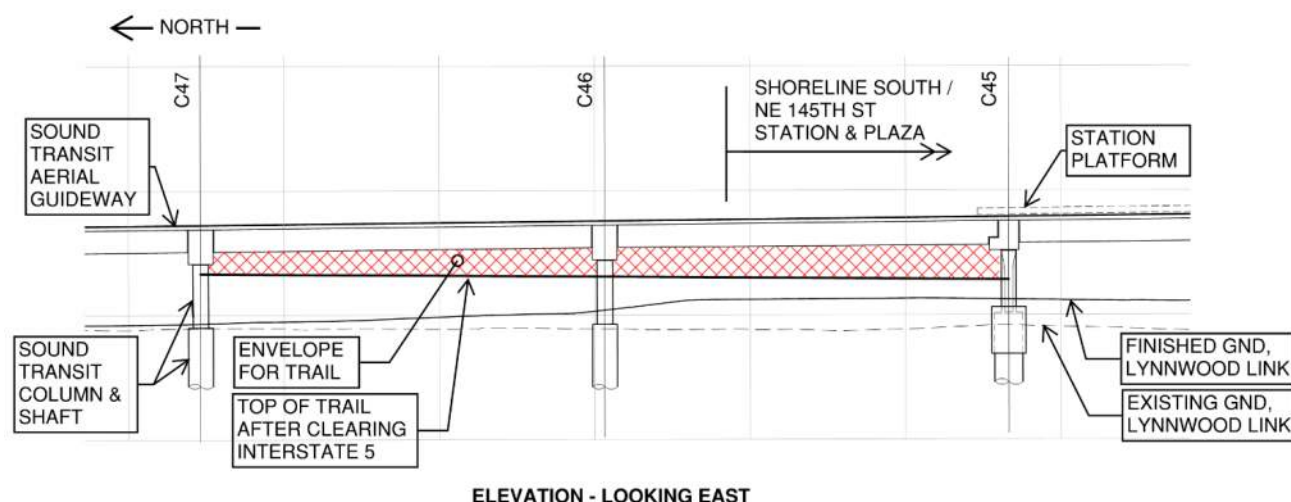
Vertical clearance requirements are the primary constraint that drives the location of the main span bridge crossing of I-5. Section 720.03(5)(b)(3) of the WSDOT Design Manual requires a minimum vertical clearance of 17.5-feet for a pedestrian bridge over a roadway. A vertical clearance of 18-feet is used for design in order to account for construction tolerances. This vertical clearance requirement is seen as non-negotiable.

In addition to passing over the freeway, the bridge must pass below the overhead structure that carries the light rail tracks. The City of Shoreline Engineering Design Manual adopts WSDOT Design Manual criteria which requires a minimum of 10-feet of vertical clearance from the pedestrian pathway to any overhead obstruction. This vertical clearance requirement is consistent with recommendations contained within the AASHTO Guide to Bicycle Facilities which states that a 10-foot minimum vertical clearance is most desirable and that a minimum vertical clearance of 8-feet may be used in constrained areas. If necessary, the City could grant a deviation to their design standard to permit less than 10-feet of vertical clearance. It is recommended that the absolute minimum vertical clearance of 8-feet be used.

These two vertical clearance constraints create a narrow window in which the bridge profile successfully clears I-5 below and the light rail structure above. Figure 4-1 schematically shows this



limited window in which the bridge would fit while meeting minimum vertical clearances stated above.



**Figure 4-1: Main Span Bridge Vertical Clearance Window**

## HORIZONTAL CLEARANCES

Horizontal clearances to I-5 and how they are considered during development of the design alternatives are discussed below.

### East Side of I-5

During the design development of the Lynnwood Link Extension project, ST and WSDOT established two forward compatibility lines (FCL) along the eastern edge of northbound I-5 in the vicinity of the Shoreline South/145th Street Station. These compatibility lines are based upon a future build-out of I-5 which adds a travel lane in each direction along with ramp improvements. The first FCL is referred to as the 94-foot line and represents the eastern most limit of a 10-foot wide amenity zone where elements like signage, utilities and drainage features may be placed. The second FCL line is referred to as the 84-foot line and represents the easternmost edge of the paved shoulder. Generally speaking, obstructions (e.g. bridge piers) may be placed outboard of the 94-foot FCL without restriction. With WSDOT approval, obstructions may be placed in between the 84-foot and 94-foot FCL's, however, these obstructions should be able to accommodate the aforementioned amenity zone improvements. No obstructions are permitted within the 84-foot FCL. These horizontal clearance requirements were used in the design development of this project and are shown in Figure 4-2.

### Bridge Pier in I-5 Median

I-5 in the project area is tightly constrained by the existing layout of the freeway including the existing bridge at NE 145th Street. These constraints would make construction of an intermediate bridge pier in the median very challenging and cost prohibitive. Specific challenges include:

- **Construction Access:** The existing median measured from northbound edge-of-shoulder to southbound edge-of-shoulder is approximately 12-feet wide. It is estimated that the work zone required to construct an intermediate bridge pier would be approximately 25-feet wide, not including construction access pullouts. Temporary re-channelization of I-5 to accommodate the work zone would significantly increase construction costs.

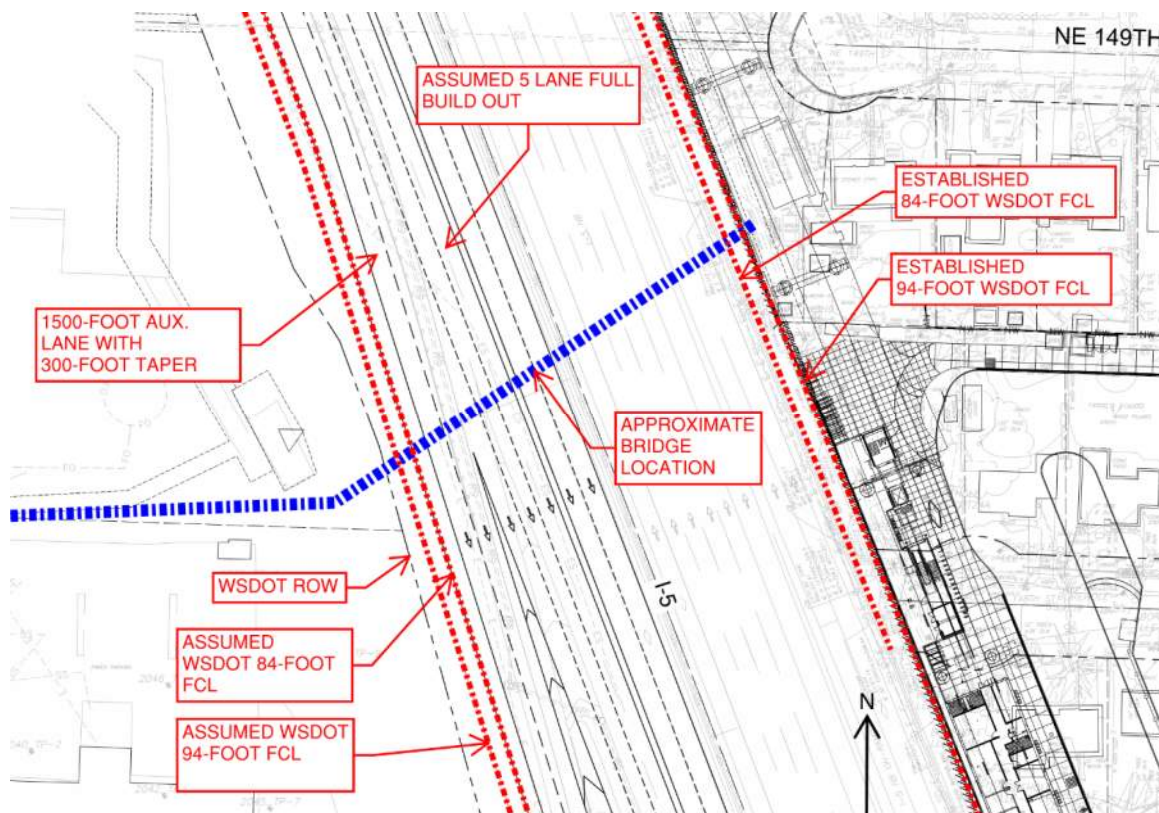


- **Existing Drainage Features:** There is an existing storm drain in the median which was constructed in the 1980's that would likely need to be relocated to accommodate the construction of the bridge pier. This facility would need to be upgraded/mitigated to meet modern design standards. This storm drain also outfalls to Thornton Creek. Mitigation to the storm drain facility and/or associated impacts to Thornton Creek are unknown at this time, but could be cost prohibitive and/or difficult to permit.
- **Traffic Impacts:** Construction of an intermediate bridge pier would require two or more significant traffic shifts in order to accommodate the work zone. Traffic shifts like these are disruptive to traffic and represent an increased safety risk to both the travelling public and the Contractor.

Based on these reasons, it is assumed that an intermediate bridge pier located within the I-5 median is not feasible and was not considered in the TS&L design development. A similar conclusion was reached in the 2017 bridge alignment feasibility study.

### West Side of I-5

In order to establish feasible bridge pier locations at the western trail connection, a FCL for southbound I-5 was determined. Utilizing a similar approach to what was taken at the eastern bridge landing, a future lane configuration was established which consists of five through lanes and a two-lane tapered off-ramp to NE 145th Street which is shown in Figure 4-2.



**Figure 4-2: WSDOT Forward Compatibility Lines**

This figure demonstrates that the 84-foot and 94-foot FCL's are approximately within 20 feet and 10 feet of the edge of the WSDOT ROW line, respectively. Placing a bridge pier within these areas provides only a marginal reduction in bridge span length. For the purposes of the TS&L design development, it was assumed that any bridge pier on this side of I-5 will be located outside of WSDOT ROW.



## **SOUND TRANSIT PARK AND RIDE**

Sound Transit is currently leasing parking spaces from the Philippi and Unitarian parcels as a temporary park and ride facility. This temporary facility replaces the loss of the North Jackson Park and Ride which was demolished for the construction of the Shoreline South/145th Street station. The temporary park and ride facility will need to remain in operation until the new parking garage at the light rail station opens in 2024 when light rail service begins. These parking spaces will need to be maintained or relocated during construction of this project.

## **CELL PHONE TOWER**

As mentioned previously, there is a privately owned cell phone tower located in the southeast corner of the Church of Christ parcel. The cell phone tower is approximately 50-feet tall and is served by several underground utilities. Based on recent experience, relocation of a cell phone tower of this type and size is cost prohibitive. For the purposes of the TS&L design development, it was assumed that the cell phone tower will remain in its existing location.

# **5. Geotechnical Analysis and Recommendations**

A significant amount of geotechnical information is available for the area in the vicinity of the proposed east bridge abutment; however, limited data exists for the area in the vicinity of the proposed west bridge abutment. Relevant available data includes general information on the geologic setting of the entire project area, as well as extensive site specific subsurface information that was collected by others for the Lynnwood Link Extension project. Due to the lack of information in the vicinity of the proposed west bridge abutment, a preliminary subsurface exploration program was conducted near the anticipated location of the western bridge foundation. The exploration program consisted of advancing one exploratory boring to a depth of about 100-feet below the ground surface (bgs). Depending on where the proposed bridge foundations are located, additional explorations may be needed at the actual foundation locations.

Subsurface conditions across the site appear to be somewhat consistent, with the upper 13 to 35 feet of soil consisting of very loose to medium dense sand and very soft to soft silt (Fill). At the locations explored for this project and by others, the fill soils are typically underlain by dense to very dense sand and gravel (Advance Outwash) that extends to the maximum depths explored.

## **GEOLOGIC HAZARDS**

Based on a review of the City of Seattle's *Seattle Hazard Explorer* and King County's *iMAP* web applications, the project site does not appear to be located in a landslide hazard area. However, based on a review of the available geotechnical information for the project area and the results of the preliminary exploration program, it is possible that some portions of the existing fill materials at the project site that are located below the water table could be subject to soil liquefaction and lateral spreading during a design-level earthquake. Soil liquefaction and lateral spreading could subject the bridge foundations to down-drag and lateral loads, respectively. Downdrag loads could lead to bridge foundation damage if not accounted for in the design, as well as increased foundation settlement. If it is determined that lateral spreading could occur at the project site, the foundations for the bridge will need to be situated outside of the zone of lateral spreading or the foundations will need to be designed to withstand the lateral forces by the moving soil. Potential methods to mitigate liquefaction at the site include improving the soils or to design the bridge to tolerate the consequences of liquefaction (i.e., design the structure to tolerate downdrag loads and foundation settlement).



## BRIDGE FOUNDATION RECOMMENDATIONS

The upper 13 to 35 feet of soils at the project site are soft/loose and have marginal foundation support characteristics. Furthermore, portions of the upper soils may be subject to soil liquefaction and lateral spreading during a design-level earthquake. As a result, shallow foundations are not considered to be an appropriate foundation type for the proposed bridge. Another reason that shallow foundations are not considered appropriate for the proposed bridge is because shallow foundations are not effective where soil liquefaction can occur at or below the footing level, unless the liquefiable soil is removed, improved using ground improvement techniques, or is well below the footing level. Therefore, it is anticipated that the proposed non-motorized bridge will need to be supported by deep foundations.

Driven pile foundations and drilled shaft foundations are two deep foundation types that can be used when shallow foundations are not appropriate. For this project, shaft foundations with a diameter of 8-feet or greater appear to be most advantageous because a very dense bearing stratum can be penetrated in order to obtain the anticipated required bearing, uplift, and lateral resistance. In addition, shafts can be cost effective if a single shaft per column can be used as opposed to a pile group with a pile cap, especially if temporary shoring is required to construct the pile cap. Finally, unlike driven piles, shafts have the advantage of a reduced potential to cause damage to existing adjacent facilities from pile driving vibrations.

Under certain situations, augercast piles can be a cost-effective deep foundation. However, because augercast piles have a limited ability to resist lateral loads, they are typically not used to support structures that are subjected to significant lateral loads. Furthermore, it is the WSDOT's policy not to use augercast piles to provide foundation support for bridges.

Based on the subsurface information that was available at the time this report was prepared, drilled shaft foundations located on the east and west sides of I-5 would obtain negligible capacity from approximately the upper 20 and 30 feet of soil, respectively. For preliminary planning purposes, a single non-redundant 8.2 feet (2.5 meter) diameter drilled shaft installed below the upper 20 to 30-feet of soil that will provide negligible capacity could be anticipated to have a nominal tip resistance on the order of about 2,800 kips and a nominal side resistance of approximately 80 kips per foot of embedment below the upper 20 to 30-feet of soft/loose soil. At the service limit state with an assumed 1 inch of allowable foundation settlement, the factored tip resistance and side resistance for a single non-redundant 8.2-foot diameter drilled shaft could be preliminarily assumed to be on the order of about 1,000 kips and 75 kips per foot of embedment below the upper 20 to 30-feet of soft/loose soil, respectively. These preliminary drilled shaft foundation capacities will be refined as the design of the project progresses.

## 6. Public Outreach

Stakeholder outreach and public involvement have been integral parts of the TS&L design development process. Considerable effort was made in presenting options and gathering feedback from key stakeholders throughout the study process. The first step in this development was identifying the project stakeholders who are anticipated to be directly impacted by the project as well as other advocacy groups and community organizations who might have input. Working with the City, the design team developed a list of these stakeholders which is shown in Table 6-1.



**Table 6-1: List of Project Stakeholders**

Stakeholder Type	Prospective Groups
Elected officials	City of Shoreline Mayor, City Council
City of Shoreline leadership	City Manager
Adjacent churches	Philippi Presbyterian Church of Seattle (Korean), Shoreline Unitarian Universalist Church, Church of Christ (Filipino)
Other faith communities	St. Barnabas Anglican Church, Shoreline Full Gospel Fellowship, True Light Church in Seattle (Korean), City Calvary Chapel, True Jesus Church (Chinese), North Seattle Church of the Nazarene, Seattle Arabic Baptist Church
Neighborhood associations	Parkwood Neighborhood Association Ridgecrest Neighborhood Association Briarcrest Neighborhood Association Council of Neighborhoods
School communities	Parkwood Elementary School, The Evergreen School, Lakeside School, Lakeside Middle School, Ingraham High School
Preschool/daycare	The Teaching Home Family Childcare & Preschool, Winding Willow School, Butterfly Home Daycare and Preschool, Petite Academy
Parks users	Twin Ponds Park, Paramount Park, Paramount Open Space, Jackson Park Golf Course, Licorice Fern Natural Area
Commuters/park-and-ride users	
Future Sound Transit light rail users	
Private developers/real estate	Horizon View Homes, Evergreen Point Group, Kidder Mathews, JLL, Intracorp, Yu Wang
Bicycle, pedestrian and mobility advocacy groups	Feet First, Cascade Bicycle Club, Disability Rights Washington, Northwest Universal Design Council, North King County Mobility Coalition, HopeLink, Transportation Choices Mobility Coalition, Futurewise
Senior living communities	Aegis Living Shoreline, Park Ridge Care Center
Other	Malmo Apartments (Parkwood)
WSDOT	
Sound Transit	
King County Metro	
Puget Sound Regional Council	

The following tools have been utilized throughout the design process in order to communicate project progress and gather direct feedback from project stakeholders:

- Project briefings with key stakeholders
- Development of outreach materials including FAQ, project folios and fact sheets
- Maintaining and updating the project website



In addition to these outreach methods, a minimum of two project open houses will be held to gather feedback from the general public. The first open house will presented the bridge and trail alignment alternatives discussed later in this report. See Section 16 of this report for a more detailed discussion of this open house effort and feedback that was gathered. The second open house will present the preferred bridge and trail alignment alternative as well as demonstrate how feedback gathered during the first open house was incorporated into the design.

## **PROJECT BRIEFINGS**

Project briefings have served an important role in gathering feedback from stakeholders who will be directly affected by this project. The following sections provide a summary of comments and concerns that were heard from these groups during these briefings. As the project continues to develop, the City and project team will have follow-up briefings in order to create partnerships and communicate any project impacts to these key stakeholders. Meeting notes from these briefings have been included in Appendix 5.

### **Church of Christ**

The primary project concerns expressed by representatives of the Church of Christ were:

- **Safety:** Church leaders want to ensure a safe environment for their parishioners. This is especially important in light of past security incidents that have occurred at their other church locations in the Seattle area.
- **ROW:** Church leaders want to ensure that there is a clear delineation between public ROW and their property and that the trail alignment does not encourage trespassing.
- **Congestion:** Church leaders were concerned with the potential for illegal parking and/or congestion due to bridge/trail users being dropped off along 1<sup>st</sup> Ave NE in order to access the light rail station.

Follow-up briefings with Church of Christ leadership are planned.

### **Unitarian Universalist Church**

The primary project concerns expressed by representatives from the Unitarian Universalist Church were:

- **Parking:** Church leaders expressed that parking for their parishioners is already a challenge and that loss of parking due to the project would need to be replaced.
- **Trespassing:** Church leaders preferred trail alignments that are formalized and that provide a direct connection to the bridge crossing. Overly circuitous alignments would likely encourage trespassing across their property which increases their liability.

Follow-up briefings have been scheduled with the Universalist Unitarian Church leadership but had not yet occurred at the time of this report.

### **Philippi Presbyterian Church**

The primary project concerns expressed by representatives from the Philippi Presbyterian Church were:

- **Parking:** Church leaders expressed that parking for their parishioners is already a challenge and that loss of parking due to the project would need to be replaced.
- **Trespassing:** Church leaders preferred trail alignments that are formalized and that provide a direct connection to the bridge crossing. Overly circuitous alignments would likely encourage trespassing across their property which increases their liability.



- **Future Development:** Church leaders are interested in potentially redevelopment of their property and want to ensure that this project would not preclude this possibility.

Follow-up briefings have been scheduled with the Philippi Presbyterian Church leadership but had not yet occurred at the time of this report.

### **Ridgecrest Neighborhood Association**

The Ridgecrest neighborhood is located east of I-5 and is bounded by the freeway, NE 175th, 15th Ave NE and NE 145th street. The primary project concerns expressed by representatives from the Ridgecrest Neighborhood Association to the design team and the City during the first project briefing were:

- **Tree Impacts:** Neighborhood association members expressed the desire to minimize mature tree removal as much as possible.
- **Safety:** Neighborhood association members want to have a safe-feeling trail and bridge facility. Nighttime lighting for the trail and bridge is important. Also, less circuitous trail connections are preferred in order to promote user safety.
- **Public Restroom Facilities:** Neighborhood association members would like to see a public restroom facility incorporated into the east landing at the light rail station.
- **Improve Neighborhood Connections:** Neighborhood association members would like to see better pedestrian and bicycle connections in the surrounding neighborhoods including sidewalks and bike lanes.
- **Freeway Noise at East Landing:** Neighborhood association members are concerned that freeway noise will detract from any public spaces at the east bridge landing. The noise wall in this area provides only a limited amount of noise mitigation.

Follow-up briefings with the Ridgecrest Neighborhood Association are planned.

### **Parkwood Neighborhood Association**

The Parkwood neighborhood is located west of I-5 and is bounded by the freeway, N 160th, Highway 99 and N 145th street. The primary project concerns expressed by representatives from the Parkwood Neighborhood Association to the design team and the City during the first project briefing were:

- **Parking:** Neighborhood association members expressed concerns about increased parking congestion in the surrounding neighborhood due to people parking to use the bridge to get to the light rail station.

Follow-up briefings with the Parkwood Neighborhood Association are planned.

### **WSDOT**

The primary project concerns expressed by WSDOT representatives to the design team and the City during the first project briefing were:

- Any structural elements placed within 84-foot and 94-foot forward compatibility lines at the east bridge landing will need to be able to accommodate future drainage features (e.g. ditches or storm drain) and other improvements like ITS or other similar utilities.
- It is likely that the existing sign bridge on southbound I-5 at the NE 145th Street exit will be impacted by the project. This sign bridge is a vintage, truss-style sign bridge and its replacement should be a monotube style sign bridge.
- Any impacts to Thornton Creek in the project area should be avoided.



- Any architectural bridge lighting, other than what is required for pedestrian safety, should be avoided as this may serve as a distraction for drivers.

Follow-up briefings have yet to be scheduled with the WSDOT but are planned.

### **Sound Transit**

The primary project concerns expressed by ST representatives to the design team and the City during the first project briefing were:

- **Minimizing Station Design Impacts:** The design of the pedestrian bridge and landings should strive to minimize impacts to the existing design of the Shoreline South/145th Street Station.
- **Maintain Construction Clearance Envelopes:** Adequate clearance to light rail station structures should be maintained during construction. These distances will need to be established during subsequent design phases.

Follow-up briefings have yet to be scheduled with the ST but are planned.

## **7. Environmental Documentation and Permitting**

Preliminary data was gathered to identify wetlands, waterways, wildlife habitats, and cultural resources issues and the probable associated permitting requirements. The project evaluated at this time was limited to the western trail alignment area as the eastern landing is currently an active construction site. The study area extends 300 feet from the project area for evaluation of wetland/waterway critical areas.

### **WETLANDS, WATERWAYS, WILDLIFE HABITATS, AND PLANTS**

Public documents reviewed included City Critical Areas Mapping, National Wetlands Inventory (NWI) mapping, Federal Emergency Management Agency (FEMA) floodplain data, Washington Department of Fish and Wildlife (WDFW) priority habitats and species (PHS) data, and Washington Natural Heritage Program Geographic Information System (GIS) data sets regarding habitats and plants.

The City of Shoreline Critical Areas mapping identifies (also refer to the Natural Resources Map in Appendix 5, Environmental Permitting):

A piped segment of Thornton Creek is in the project area adjacent/under I-5, and a segment of open channel of Thornton Creek is in the study area parallel to I-5. Thornton Creek in the study area is identified as a Type F (fish habitat) stream, and is mapped by WDFW PHS on the Web as having “occurrence/migration” of resident coastal cutthroat trout (WDFW 2020a). This segment of Thornton Creek does not currently contain anadromous fish due to downstream fish blockages, including a culvert at I-5 (WDFW 2020b). However, the potential exists that these downstream man-made blockages could be repaired to provide fish passage. In accordance with the City of Shoreline’s (City) critical areas regulations, piped stream segments are provided a standard buffer of 10 feet and Type F streams with the potential to be passable by anadromous fish presence are prescribed a standard buffer of 115 feet.

A portion of wetland associated with Thornton Creek intersects the northern limits of the study area. This wetland is mapped by the City overlapping a palustrine, unconsolidated bottom, permanently flooded, diked/impounded (PUBHh) wetland habitat mapped by the NWI, although NWI data do not identify any wetlands extending into the study area. The wetland is separated from the project area by existing



development (i.e., 1st Avenue NE and Aegis Assisted Living Facility). Any associated buffer that potentially intersects the project area is functionally isolated by these developments (as a result, preliminary wetland categorization and buffer width is not provided with this evaluation).

Based on site reconnaissance completed by Landau Associates, Inc. (LAI) on January 23, 2020 (also refer to Natural Resources Map in Appendix 5, Environmental Permitting):

Two potential wetland areas, Wetland A and Wetland B, were observed in the study area in the I-5 right-of-way. Wetland A is provided a preliminary rating as a Category III wetland with an associated habitat score of 4, requiring a 60 foot standard buffer width in accordance with the City critical areas regulations. Wetland B is provided a preliminary rating as a Category IV wetland, requiring a 40 foot standard buffer width in accordance with the City critical areas regulations. These wetlands occur on the highway side of the right-of-way fence and were not accessible at the time of the site reconnaissance. Since these wetlands occur in Washington State Department of Transportation (WSDOT) right-of-way, additional information from WSDOT may be available regarding wetland determinations of these areas, otherwise additional evaluation may be required to confirm preliminary determinations/categorizations.

Ditches were observed along 1st Avenue NE that may require evaluation for jurisdiction under Section 404 of the Clean Water Act (CWA). In general, only those segments of ditches in the vicinity of the 1st Avenue NE and N 149th Street intersection were observed to likely satisfy wetland conditions and/or evidence relatively permanent flow and connection to other jurisdictional waters to potentially satisfy jurisdictional requirements of the CWA.

FEMA floodplain mapping does not identify any 100-year floodplain in the study area (FEMA 1995).

The WDFW PHS on the Web indicates that the project is located in a Township with documented little brown bat (*Myotis lucifugus*) breeding area (WDFW 2020a), however, site specific PHS data requested from WDFW do not identify this breeding area in the project vicinity (WDFW 2020c).

The Washington Natural Heritage Program does not indicate any records of rare plants or unique habitats in the study area (NHP 2019).

## **CULTURAL RESOURCES**

WSDOT Local Programs has completed consultation regarding the Area of Potential Effects (APE) with the Washington Department of Archaeology and Historic Preservation (DAHP), and it has been confirmed that historical/archaeological evaluation will be required for compliance with Section 106 of the National Historic Preservation Act (NHPA). The APE encompasses the extent of the alignment options referenced above. Currently no buildings in the APE are listed on the National Register of Historic Places or Washington Heritage Register (DAHP 2020).

## **ENVIRONMENTAL PERMITS AND DOCUMENTATION**

Documentation evaluating effects of the proposed project on environmental and cultural resources referenced above will be required. Environmental documentation required as part of the selected alignment includes:

Wetland/Waterway Critical Areas Report, involving a formal wetland and ordinary high water mark delineation and discussion of mitigation sequencing, including compensatory mitigation, if needed.



Cultural Resources Investigation Report, involving a field effort and impact evaluation.

Endangered Species Act/Essential Fish Habitat effect determinations, documented in a letter of No Effect, or a Biological Assessment. Evaluation of potential project impacts is likely to focus on water quality/quantity effects related to stormwater runoff associated with new impervious surfaces.

WSDOT National Environmental Policy Act (NEPA) Categorical Exclusion Form and State Environmental Policy Act (SEPA) checklist, requiring design details of the proposed project.

The environmental documentation supports applications for the following environmental permits, which will likely be necessary for the proposed project:

NEPA determination from WSDOT Local Programs, and if necessary, the Federal Highway Administration.

SEPA determination from the City.

US Army Corps of Engineers (USACE) Section 404 permit for unavoidable impacts to potentially jurisdictional ditches/associated wetlands in the vicinity of the 1st Avenue NE and N 149th Street intersection, which is limited to Options 2A, 2B, 3, and 4B.

City wetland/waterway critical areas compliance to address any project activities within regulated wetlands, waterways, and associated buffers. Critical areas compliance will be required for all alignment options associated with the aerial crossing of the piped segment of Thornton Creek, and depending on the location of the proposed bridge landing relative to the buffer associated with Wetland A (refer to Figure 1). No compensatory mitigation is anticipated to be required for the aerial crossing of Thornton Creek, and any unavoidable wetland buffer impacts are expected to be mitigated onsite, and may be combined with project landscaping design.

Typically, the USACE Section 404 permit for wetland impacts takes the most time to acquire. The permit timeline will be reduced if impacts to wetlands can be avoided. If wetlands are impacted, LAI assumes that the project would be permitted under the USACE Nationwide Permit (NWP) No. 14, Linear Transportation Projects, and would not require individual review by Ecology for CWA Section 401 Water Quality Certification. Description of NWP 14 references “trails” as an example of a linear transportation project. While “bridge” is not explicitly referenced in this NWP, the proposed bridge is a component of a trail connecting existing transportation facilities (i.e. 1<sup>st</sup> Ave and Shoreline South/145<sup>th</sup> Street Station). A conservative estimate to obtain a NWP is 6 months from submittal of the application. USACE review timeline should be reduced by the cultural resources and endangered species consultations that will be completed by WSDOT that are also required for CWA permitting. All other environmental permits can normally be obtained within 3 months of application.

## 8. Project Aesthetics

### **BRIDGE ARCHITECTURE**

The architectural design concepts developed for the bridge must all address several basic criteria: pedestrian and cyclist safety; durability and ease of long-term maintenance; economy and image.



It is important to consider the context of the bridge when assessing different concepts. The freeway forms the most dominant contextual element in that most people seeing the bridge from afar will be moving at 60 miles-per-hour. This means that the design should be relatively simple and comprehensible in a brief time. Excessive ornamentation or complexity are not only wasted on highway bridges but can also be distracting to drivers. Simple forms are most appropriate.

The other major contextual element is the adjacent Shoreline South light rail station. At over 400-feet long and nearly the height of the pedestrian bridge, the station is visually complex, with a mix of materials and colors visible from the freeway. Architecturally speaking, a clean and simple bridge design best complements this complexity.

## **URBAN DESIGN**

The character of the neighborhood surrounding the future Shoreline South/145th Street Station is rapidly evolving from single-family residential to a dense, transit-oriented context on both sides of I-5. In addition, the architecture of the light rail station itself will bring a new, more urban aesthetic to the neighborhood. The bridge will be the key element stitching these new neighborhoods on the west and east sides of I-5 together, and the bridge approaches/landings should be considered as vibrant public spaces that draw people to the bridge and foster connectivity across I-5.

The project aesthetic will reflect this context through the use of pedestrian-friendly elements including site lighting and accent lighting that make the spaces feel safe and inviting at all times of day and night; site amenities such as benches, litter/recycling receptacles, bike racks, and wayfinding signage; generous mixing zones and gathering spaces; and decorative pavements to help define these spaces, lend a sense of place, and guide pedestrian/bicycle interactions. Landscaping will be used to soften the hardscape elements and help to blend them into the site while providing low-maintenance, multi-season interest. A preliminary plant palette has been developed for the project and has been included in Appendix 5.

### **Wayfinding**

Because the project spans between neighborhoods, providing continuity of urban design and place-making along the entire route will provide an additional strong visual connection for trail users and aid in wayfinding. In analyzing potential ways to connect to the bridge on the west side, it becomes apparent that the bridge's setback from 1st Ave NE will make good wayfinding a critical element of the project's success. While all of the west-side alternatives provide a connection from 1st Ave NE to the bridge, the bridge may not be visible from the roadway and/or the nearby private parcels. This may make trail users unsure of whether they are on the route to and from the light rail station. Establishing a clear system of wayfinding will help users feel comfortable they are on the correct route. The pathways leading to the bridge should be clearly marked and identified by understandable and welcoming wayfinding from both 1st Ave NE (and beyond as the City connects the bridge into their larger pedestrian and bicycle network) and from the light rail station.

## **9. Evaluation Criteria**

During the design development process, the design team worked closely with City staff to develop a set of criteria to evaluate the various bridge and trail alternatives. These criteria are primarily qualitative in nature and will be used to help distinguish the various options and facilitate the selection of the preferred alternative. These evaluation criteria include:



## **USER SAFETY AND SECURITY**

While all designs considered comply with safety and security code requirements, some options perform better based on their inherent characteristics and how well they meet the principles described in Crime Prevention Through Environmental Design (CPTED). These principles include natural access control to clearly guide trail users through the site, natural surveillance which allows users to see and be seen while passing through the site, territorial reinforcement that clearly defines the space as public, and physical maintenance of the facility. Each alternative will be assessed for how well they meet these criteria.

## **CONNECTIVITY AND TRAVEL TIMES**

Each alternative will be assessed for how well they provide connectivity and influence travel times through the facility. Even minor increases in travel length can significantly reduce the functionality of a pedestrian/bicycle facility. Alternatives that provide direct and intuitive connections help improve the overall user experience.

## **EASE OF STAKEHOLDER APPROVAL**

Each alternative will be assessed for its relative ease of project stakeholder approval. Key stakeholders include: City leadership, ST, WSDOT, adjacent property owners (e.g. churches), permitting agencies, community groups and the general public.

## **RIGHT-OF-WAY**

Each alternative will be assessed for its impact on both ROW costs and ease of acquisition. This includes all necessary temporary or permanent easements and fee takes. Particular attention will be given to how ROW acquisition may affect overall project schedule.

## **OPERATIONS AND MAINTENANCE**

Each alternative will be assessed for the potential future maintenance and operations costs. For the purposes of this evaluation, this will be a qualitative assessment based on past, similar project experience.

## **AESTHETICS**

Because pedestrians and bicyclists interact with bridge and trail facilities at a much more intimate level, project aesthetics go a long way in defining the user experience. Each alternative will be assessed for its aesthetic value.

## **PROJECT COSTS**

Project costs are often the single largest driving factor for any public works project. Preliminary project costs, including construction and soft costs, have been developed for each alternative. The following cost assumptions have been made for all alternatives considered:

- Contingency = 40% of construction cost including mobilization
- Engineering Design = 25% of construction cost including contingency
- Construction Management & Administration = 25% of construction cost including contingency
- ROW costs include temporary construction easements (TCE) and administration



Each design alternative will be qualitatively evaluated and rated against one another using the following system: Very Favorable, Favorable, Neutral, Unfavorable and Very Unfavorable.

## 10. Bridge and Trail Alternatives Overview

A collaborative approach was taken in the development of aesthetic themes and selection of the various components of the project. The City and the design team worked closely together to establish and enhance the City's vision for the bridge and trail connections. At key decision points in the project development, workshops were conducted to discuss trail and bridge alternatives. The workshops included key design team members and City staff from a wide range of departments. These workshops provided a forum for the design team to present information regarding trail alignments, structural forms, project constraints, etc. The City then determined whether these bridge and trail concepts fit within the City's vision for the project and provided direction for next step. Meeting notes from these workshops are included in Appendix 5.

During development of the design alternatives it became evident that the project could be naturally divided into three distinct sections: west side trail alignments, the bridge main span, and the east side landings. The limits of these sections are shown schematically in Figure 10-1 below. Each alternative from each section can be combined interchangeably with the others to form a complete project.



Figure 10-1: Trail and Bridge Segment Overview



# 11. West Side Trail Alignments

The following section describes the trail alignment alternatives for the west side trail. The section of trail connects users from 1st Ave NE to where the bridge takes off across I-5.

## INITIAL ALIGNMENT ALTERNATIVES SCREENING

As mentioned in Section 4, the feasible location for the main-span bridge crossing is heavily constrained by clearance requirements resulting in a limited area in which the structure can be located. Using this as the starting point for the west side trail, three general alignments were considered and screened for their feasibility.

These alignments are described below and are also shown schematically in Figure 11-1.

- Northern alignment: The trail alignment begins at the bridge landing and proceeds north along the eastern edge of the Church of Christ parcel. Once it reaches the northern property line of this parcel, it heads west and makes a connection with 1st Ave NE near the intersection of N 149th Street.
- Southern Alignment: The trail alignment begins at the bridge landing and proceeds south along the eastern edge of the Philippi parcel where it makes a connection with N 147th Street. The trail then proceeds west along N 147th Street until it reaches 1st Ave NE.
- Central Alignment: The trail alignment begins at the bridge landing and proceeds due west between the Church of Christ, Unitarian and Philippi parcels where it makes a connection with 1st Ave NE near the intersection of N 148th Street.





**Figure 11-1: Initial Alignment Screening Options**

An initial screening evaluation of these alignments was made with the intent identifying any fatal-flaws such that they can be eliminated from a more detailed evaluation. This screening evaluation is described below.

### **Northern Alignment**

The primary challenges and concerns with this trail alignment are as follows:

- **User Safety and Security:** One of the primary pieces of feedback from the Church of Christ was that they would like to see a fence installed between their property and the trail. Additionally, a fence and/or railing would likely be required between the trail and WSDOT ROW. Combined with the existing fence that separates the Church of Christ parcel and the Aegis Living Facility, the entirety of the trail would be enclosed on all sides by fencing and/or railing. This would result in a confined experience for trail users and represents a safety concern as it limits egress opportunities.
- **Connectivity and Travel Times:** The traveled distance between where the bridge lands and where the trail connects with 1st Ave NE is approximately 700 feet long. This is approximately 550 feet longer than the central trail alignment. This extra distance increases user travel times and provides a less direct connection when compared to the central alignment.
- **Ease of Stakeholder Approval:** Because the trail makes a less direct connection to the bridge, it is likely that users coming from points south and east of N148th will trespass across the Unitarian and Philippi parcels in order to shorten their travel time. This concern was expressed by Church of Christ, Unitarian and Philippi representatives during project briefings.



- **Ease of Stakeholder Approval:** As shown in Figure 2-15, Thornton Creek enters two, 6-foot diameter culverts just north of the cell phone tower adjacent to the shoulder of southbound I-5. The width of the stream buffer for this above ground portion increases to 75-feet. Any trail improvements in this buffer would need to be mitigated accordingly. Additionally, any changes to the hydrology of the creek as a result of the project would need to be mitigated which would be costly and difficult to permit.

Because of these challenges and concerns, the Northern Alignment was eliminated from further consideration and evaluation.

## **Southern Alignment**

The primary challenges and concerns with this trail alignment are as follows:

- **Project Costs:** Immediately east of the existing church building on the Philippi parcel, the grade slopes steeply toward the freeway. In order to tie-in to the bridge, the trail would need to be elevated on-grade or on structure along this slope. The further east the trail is located, the higher the trail would need to be elevated when compared to the existing grade which increases project costs. Alternatively, the trail could be placed immediately adjacent to the existing building where the grades are more favorable, however, this would divide the parcel thereby rendering the eastern remnant unusable. This remnant parcel would need to be purchased by the City which would increase project costs without providing significant benefit.
- **Connectivity and Travel Times:** The traveled distance between where the bridge lands and where the trail connects with 1st Ave NE is approximately 1000 feet long. This is approximately 750 feet longer than the central trail alignment and 300 feet longer than the northern alignment. This extra distance increases user travel times and provides a less direct connection when compared to the central alignment.
- **Ease of Stakeholder Approval:** Because the trail makes a less direct connection to the bridge, it is likely that users coming from points south and east of N148th will trespass across the Unitarian and Philippi parcels in order to shorten their travel time. This concern was expressed by Church of Christ, Unitarian and Philippi representatives during project briefings.

Because of these challenges and concerns, the Southern Alignment was eliminated from further consideration and evaluation.

## **Central Alignment**

The primary challenges and concerns with this trail alignment are as follows:

- **Ease of Stakeholder Approval:** The trail could impact parking on both the Unitarian and Philippi parcels. Based on feedback received from both these property owners, parking is already at a premium and any lost parking spaces as a result of this project would need to be replaced in-kind.
- **Project Costs:** The existing utility easement along the southern edge of the Church of Christ parcel likely contains buried power and fiber optic infrastructure that feeds the cell phone tower at the southeast corner of the parcel. These utilities may need to be relocated to allow for construction of the trail.

While these challenges will need to be carefully considered during design, they are not considered insurmountable. The Central Alignment was selected for further evaluation and all west side trail options follow this general layout.

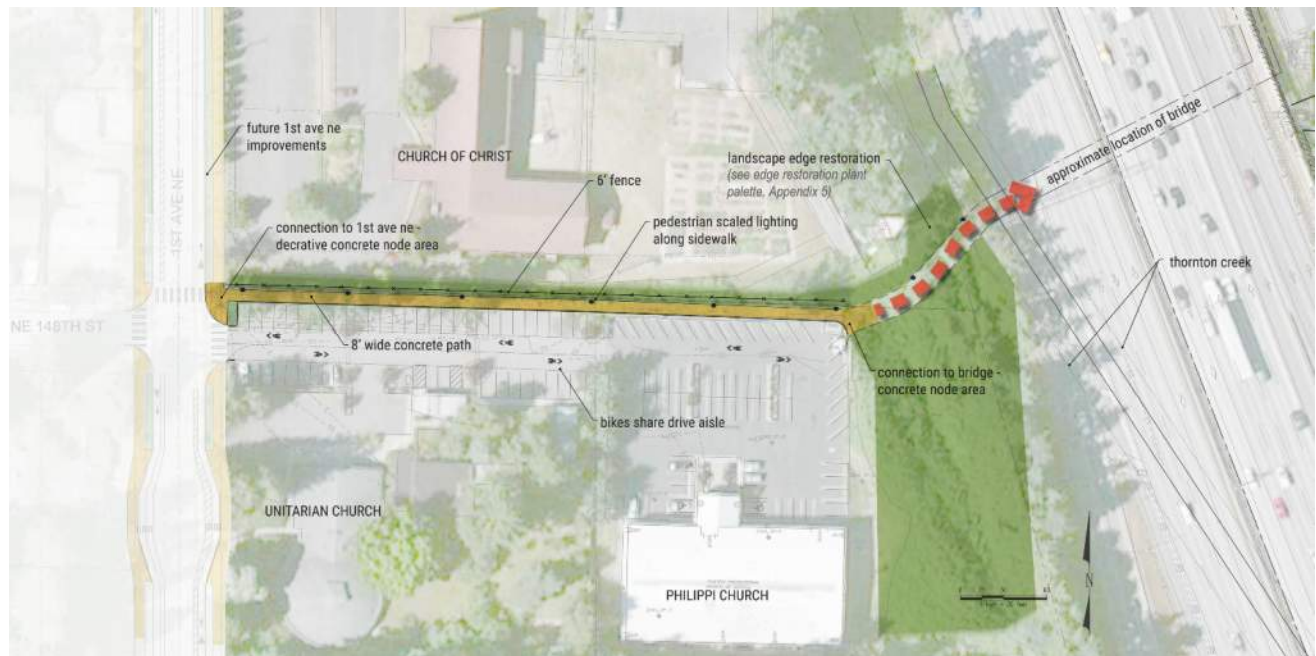
## **WEST SIDE TRAIL ALIGNMENT OPTIONS**

Three west side trail alignment options were evaluated as part of the TS&L process and are described below.

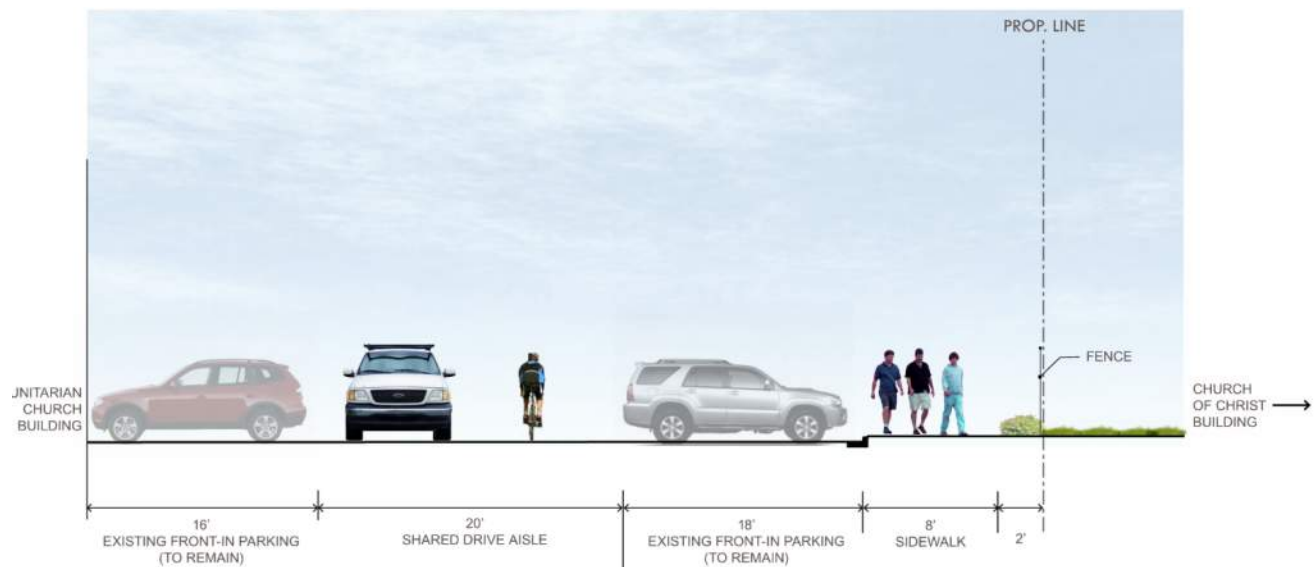


## Option 1 – Minimal Build-Out

Figure 11-2 and Figure 11-3 show the plan-view layout and typical section for this option.



**Figure 11-2: Option 1 – Minimal Build-Out Plan View**



**Figure 11-3: Option 1 – Minimal Build-Out Typical Section**

In this option, pedestrians and bicyclists make the connection from 1st Ave NE to the bridge via two, separate facilities. Pedestrians would utilize an 8-foot wide concrete pathway that is immediately south of the property line between the Church of Christ and the Unitarian and Philippi parcels. Bicycle users make the connection to the bridge via the existing parking lot drive-aisle. Both user groups would be rejoined at the bridge landing at the northeast corner of the Philippi parcel.



This option is identified as the minimal build-out as it would provide a functional connection from 1st Ave NE to the bridge while minimizing impacts to the surrounding properties. It is recommended that the City acquire property rights (i.e. easement or fee purchase) for a future, full trail build-out. With these rights, the City could build the trail at a later date or obligate any future developers to construct a more formal connection at that time. This arrangement could provide flexibility for this developer to integrate the trail into their designs while simultaneously reducing construction costs for the City.

## **Option 1 – Minimal Build-Out Evaluation**

### **User Safety and Security: Very Unfavorable**

With this alternative, bicycle users share the parking lot drive aisle on both the Philippi and Unitarian parcels. This increases the risk of conflict between vehicles and bicyclists. Bicyclists may instead choose to use the 8-foot wide sidewalk as a means of avoiding the parking lot which increases the risk of conflict between pedestrians and bicyclists. The two potential sources of conflict increases the liability of the City and for the church parcel owners.

### **Connectivity and Travel Times: Unfavorable**

With this alternative, bicycle and pedestrian users are separated into two facilities. This may increase confusion which detracts from the sense of connectivity to the main span of the bridge. Additionally, bicycle users may elect to use the sidewalk in lieu of using the shared drive aisle. Because the sidewalk is narrower than a combined multi-use trail, bicyclists would be forced to slow down to navigate amongst the pedestrian users. Pedestrians may also slowdown in order to avoid cyclists. This would likely decrease travel times for both user groups.

### **Ease of Stakeholder Approval: Very Unfavorable**

As mentioned previously, having the bicyclists share the parking lot drive aisle increases the risk of conflict between vehicles and the bicycle users. This concern was expressed by representatives of both the Philippi and Unitarian church properties during project briefings. The representatives were concerned about the safety and liability of their parishioners and may not be willing to accept this risk. One advantage of this option is that permanent parking impacts are eliminated. This benefit is considerably outweighed by the risks mentioned above.

Additionally, an access easement for the use of the drive aisle will be required which further encumbers the Philippi parcel. See the ROW evaluation below for further discussion.

### **ROW Considerations: Very Unfavorable**

With this alternative, two separate easements are required. The first easement is for the future, full build-out of the trail and would be approximately centered on the proposed pedestrian sidewalk. This easement would allow for parking within the existing spaces on both the Unitarian and Philippi parcels that were preserved. Parking for both the Unitarian and Philippi parcels would be allowed within the trail easement. The second easement would be an access easement through the parking lot drive aisles on both the Philippi and Unitarian parcels. This access easement could affect the valuation of both parcels as the properties would have limited use with this type of easement. Additionally, the purchase of these two easements is the highest ROW costs for all alternatives. See the cost evaluation below for further details.

Below is a summary of the estimated ROW needs for this alternative for each affected parcel:

- Church of Christ Parcel: 2,742 square feet of trail easement



- Unitarian Church Parcel: 6,223 square feet of trail easement, 7,379 square feet of access easement
- Philippi Parcel: 6,595 square feet of trail easement, 4,731 square feet of access easement

The ROW needs above do not include temporary construction easements. These have been estimated and included in the project costs which are provided below and in Appendix 4.

**Operations and Maintenance: Favorable**

With this alternative, a smaller facility is constructed as part of this project. This reduces operations and maintenance costs when compared to the other alternatives.

**Aesthetics: Unfavorable**

By its very nature, this alternative is not a fully-realized trail connection to the pedestrian bridge and may be seen as an interim build-out. This may detract from the user experience when compared to the other alternatives.

**Project Costs: Favorable**

The estimated project costs for this alternative are:

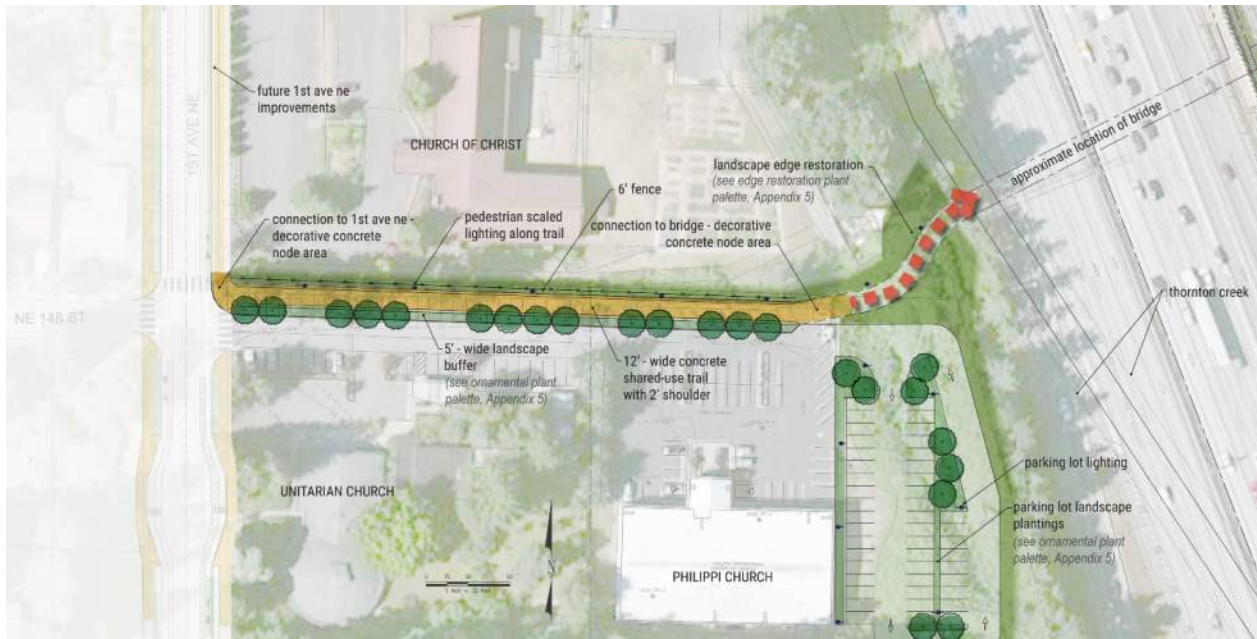
- Construction Costs = \$582,000
- Contingency = \$233,000
- Design, Construction Management (CM) = \$367,000
- ROW Costs = \$1.88M
- Total Costs (incl. contingency, design, CM) = **\$3.06M**

This is the lowest cost alternative. See Section 14 for a more detailed breakdown including all soft costs.

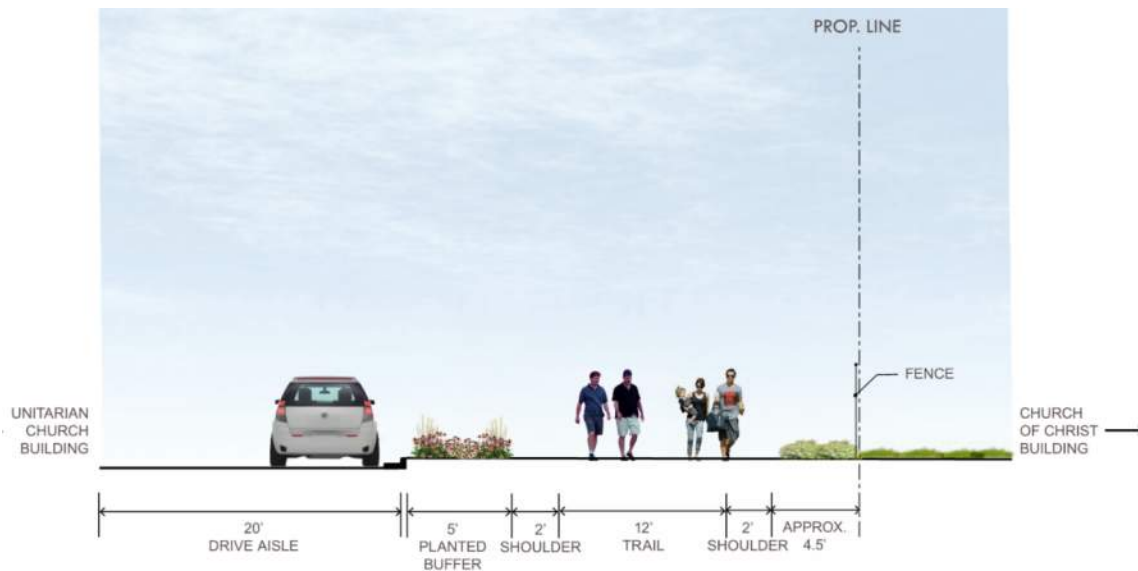
**Option 2 – Full Build-Out South**

Figure 11-4 and Figure 11-5 show the plan-view layout and typical section for this option.





**Figure 11-4: Option 2 – Full Build-Out South Plan View**



**Figure 11-5: Option 2 – Full Build-Out South Typical Section**

In this option, pedestrian users and bicyclists make the connection from 1st Ave NE to the bridge via a shared-use path. The northern edge of the path is essentially aligned with the property line between the Unitarian, Philippi and Church of Christ parcels. The increased width of the trail and associated planted buffer eliminates approximately 32 parking spaces on the Unitarian parcel and 12 parking spaces on the Philippi parcel. In order to mitigate for this lost parking, a parking lot would need to be constructed on the eastern portion of the Philippi parcel.



## **Option 2 – Full Build-Out South Evaluation**

### **User Safety and Security: Favorable**

With this alternative, bicyclists no longer share the drive aisle of the parking lot with vehicles but instead use the multi-use path. The multi-use path is wide enough to accommodate both bicyclists and pedestrians.

### **Connectivity and Travel Times: Favorable**

With this alternative, the connection to the bridge is more formalized and creates a stronger, more obvious visual link when compared to Option 1. This enhances connectivity to the bridge and improves travel times.

### **Ease of Stakeholder Approval: Very Unfavorable**

With this alternative, a significant number of parking spaces on both the Unitarian and Philippi parcels will be lost. While the loss of these parking spaces is mitigated by construction of an additional parking lot to the east of the Philippi church building, an easement between the Philippi and Unitarian property owners would need to be negotiated which would grant the Unitarian property access and parking rights to the Philippi parcel. This agreement may be difficult to reach. See ROW evaluation below for further discussion.

### **ROW Considerations: Very Unfavorable**

It is recommended that the trail be purchased in fee rather than acquire an easement as the cost of the easement would be close to or at fee value.

As mentioned above, the Unitarian and Philippi property owners would need to negotiate an agreement between one another for the access and parking rights on the Philippi parcel. This is a 3<sup>rd</sup> party agreement which the City should not participate in and in which the City has no recourse should the two parties fail to reach an agreement.

Additionally, the parking and access easement that would need to be granted to the Unitarian Church by the Philippi would significantly encumber that parcel from future development. Initial feedback received from the Philippi Church representatives indicated that they were interested in developing their parcel to take advantage of the recent zoning changes. See the cost evaluation below for further details.

Below is a summary of the estimated ROW needs for this alternative for each affected parcel:

- Church of Christ Parcel: 1,919 square feet of fee acquisition
- Unitarian Church Parcel: 6,154 square feet of fee acquisition
- Philippi Parcel: 6,301 square feet of fee acquisition

The ROW needs above do not include temporary construction easements. These have been estimated and included in the project costs which are provided below and in Appendix 4.

### **Operations and Maintenance: Unfavorable**

With this alternative, a larger facility is constructed as part of this project. This increases operations and maintenance costs when compared to Option 1.

### **Aesthetics: Favorable**

This alternative constructs a fully-realized trail connection to the bridge. This has more aesthetic appeal and can be visually linked to the bridge design which adds to the user experience especially when compared to Option 1.



### **Project Costs: Very Unfavorable**

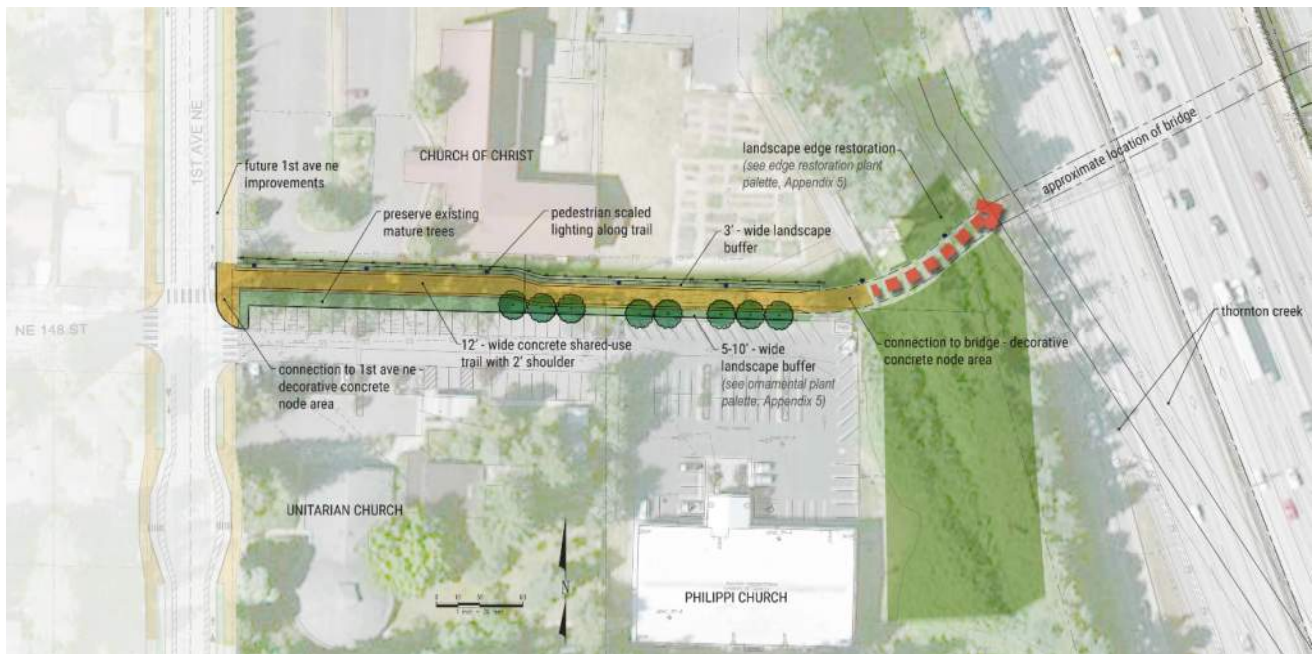
The estimated project costs for this alternative are:

- Construction Costs = \$2.13M
- Contingency = \$852,000
- Design, CM = \$1.34M
- ROW Costs = \$1.31M
- Total Costs = **\$5.63M**

This is the highest cost alternative. See Section 14 for a more detailed breakdown including all soft costs.

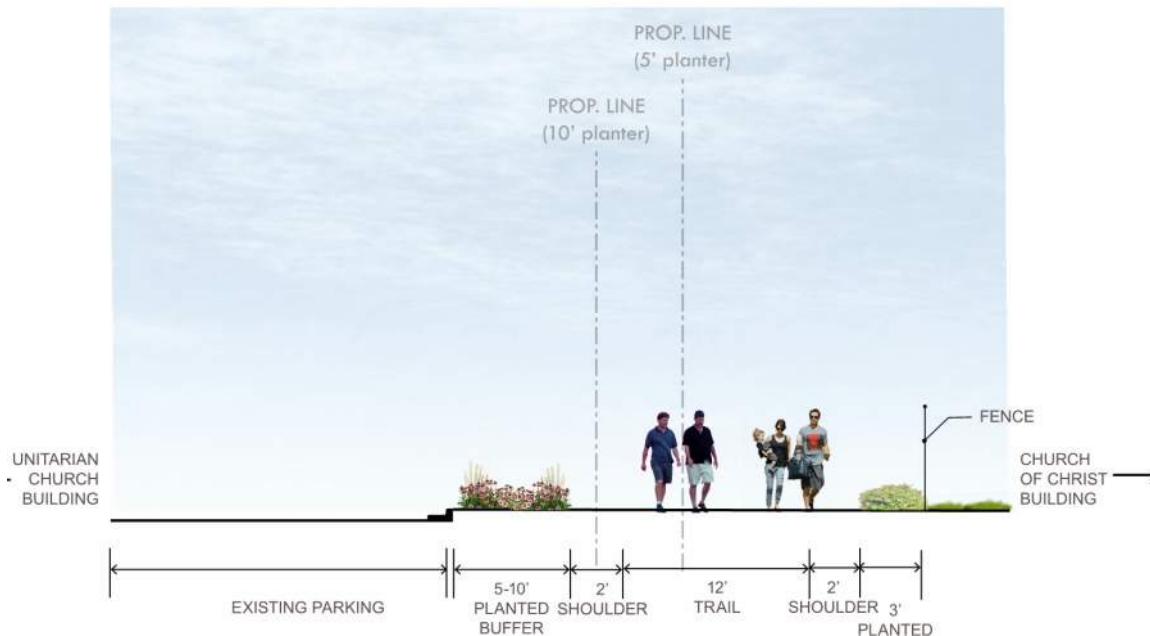
### **Option 3 – Full Build-Out North**

Figure 11-6 and Figure 11-7 show the plan-view layout and typical section for this option.



**Figure 11-6: Option 3 – Full Build-Out North Plan View**





**Figure 11-7: Option 3 – Full Build-Out North Typical Section**

In this option, pedestrian users and bicyclists make the connection from 1st Ave NE to the bridge via a shared-use path. This path has been shifted further to the north onto the Church of Christ parcel in order to eliminate parking impacts on the Unitarian and Philippi parcels. Pushing the trail further to the north also provides an opportunity to preserve some of the existing mature evergreen trees that are along the existing property line.

This option would likely require relocation of the underground utilities and the associated easement further north such that it is located outside of the limits of the trail.

### **Option 3 – Full Build-Out North Evaluation**

#### **User Safety and Security: Favorable**

With this alternative, bicyclists no longer share the drive aisle of the parking lot with vehicles but instead use the multi-use path. The multi-use path is wide enough to accommodate both bicyclists and pedestrians.

#### **Connectivity and Travel Times: Favorable**

With this alternative, the connection to the bridge is more formalized and creates a stronger, more obvious visual link when compared to Option 1. This enhances connectivity to the bridge and improves travel times.

#### **Ease of Stakeholder Approval: Neutral**

With this alternative, parking lot impacts are avoided by shifting the trail further to the north. This will likely be seen as favorable by the Philippi and Unitarian parcel owners but may be seen as unfavorable by the Church of Christ parcel owners.

Additionally, by locating the trail further to the north, the existing underground utility easement and the utilities contained within would need to be relocated. This relocation may not be seen as favorable to either the Church of Christ parcel owners and/or the cell phone tower owner.

These competing interests result in a neutral rating.



**ROW Considerations: Neutral**

It is recommended that the trail be purchased in fee rather than acquire and easement as the cost of the easement would be close to or at fee value. A utility easement on the Church of Christ parcel would need to be purchased in order to relocate the utilities that serve the cell phone tower.

From a ROW cost perspective, this is the least-cost alternative. However, negotiating property rights from the Church of Christ parcel may be challenging.

Below is a summary of the estimated ROW needs for this alternative for each affected parcel:

- Church of Christ Parcel: 8,113 square feet of fee acquisition
- Unitarian Church Parcel: 2,127 square feet of fee acquisition
- Philippi Parcel: 2,830 square feet of fee acquisition

The ROW needs above do not include temporary construction easements. These have been estimated and included in the project costs which are provided below and in Appendix 4.

**Operations and Maintenance: Unfavorable**

With this alternative, a larger facility is constructed as part of this project. This increases operations and maintenance costs when compared to Option 1.

**Aesthetics: Favorable**

This alternative constructs a fully-realized trail connection to the bridge. This has more aesthetic appeal and can be visually linked to the bridge design which adds to the user experience especially when compared to Option 1.

**Project Costs: Neutral**

The estimated project costs for this alternative are:

- Construction Costs = \$1.20M
- Contingency = \$481,000
- Design, CM = \$758,000
- ROW Costs = \$1.14M
- Total Costs = **\$3.58M**

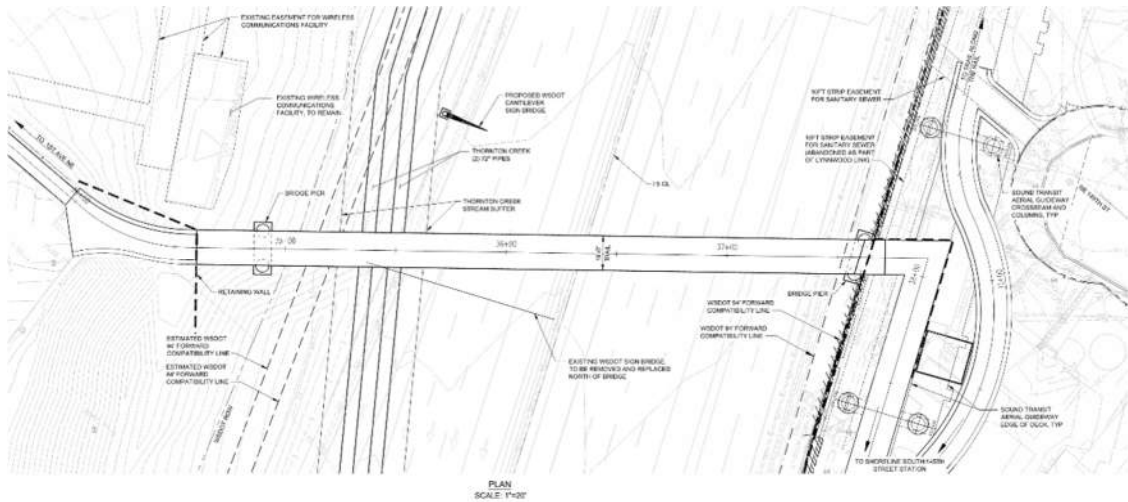
This is the second highest cost alternative. See Section 14 for a more detailed breakdown including all soft costs.



## 12. Main Span Bridge Concepts

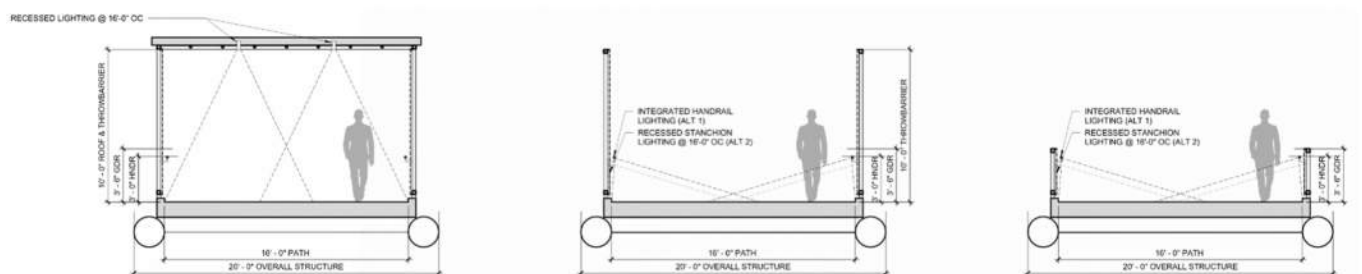
### STRUCTURE DIMENSIONS

Due to the vertical clearance constraints described in Section 4, the bridge structure depth measured from the top of the bridge deck to the soffit of the structure is assumed to be 2-feet. Additionally, the horizontal constraints also described in Section 4 require a clear span length that varies between 250 and 270-feet depending on the east side landing selected (see Section 13). These two constraints are the primary drivers in the selection of the superstructure types considered in this evaluation and discussed below. Figure 12-1 below shows a potential main span bridge layout including foundation locations that meets the aforementioned horizontal and vertical constraints.



**Figure 12-1: Typical Bridge Span Layout**

The same typical section was assumed for each bridge alternative considered. The superstructure will carry a 16-foot wide path. When over WSDOT ROW, a 10-foot tall throw barrier will be included which will have an integrated, 42-inch tall pedestrian railing. When outside the limits of WSDOT ROW, only the 42-inch tall pedestrian railing will be included. Considerations for pathway lighting and a roof or canopy for each bridge type are described below. The roof or canopy, in conjunction with the throw barrier, would help improve user comfort by shielding the people from rain, wind gusts and water spray from the freeway below. The roof or canopy is not included on any of the approach spans or ramps. Figure 12-2 below shows typical sections of the main span which are applicable to all the structure types considered. More detailed bridge layouts and sections are included in Appendix 2.



**Figure 12-2: Bridge Typical Section**



## TIED ARCH

The Tied Arch concept offers the cleanest visual appearance of the designs, utilizing paired arches for the entire span, suspending the deck with cable hangers. The simplicity of the form creates an iconic profile against the sky when seen from I-5, and the slender cables contribute to the overall lightness of the bridge. If the City opts for weather protection over the bridge deck, a potential tensile-fabric canopy is shown that is in keeping with the visual lightness of the overall structure. Pedestrian lighting and the required throw barrier would be integrated with this canopy. Figure 12-3 through Figure 12-6 show rendered views of the tied arch bridge concept both with and without a canopy.



**Figure 12-3: Tied Arch with Canopy – View from Bridge Looking East**



**Figure 12-4: Tied Arch with Canopy – View from I-5 Looking North**





**Figure 12-5: Tied Arch without Canopy – View from Bridge Looking East**



**Figure 12-6: Tied Arch without Canopy – View from I-5 Looking North**



## **Tied Arch Evaluation**

### **User Safety and Security: Neutral**

User safety and security is the same across all bridge types.

### **Connectivity and Travel Times: Neutral**

Connectivity and travel time are the same across all bridge types.

### **Ease of Stakeholder Approval: Neutral**

Ease of stakeholder approval is the same across all bridge types.

### **ROW Considerations: Neutral**

Per Chapter 11 of the WSDOT ROW Manual, the City would need to acquire but would not need to pay for an airspace lease across WSDOT ROW if the bridge is part of a Comprehensive Trail Plan adopted by the City.

ROW requirements are the same across all bridge types.

### **Operations and Maintenance: Favorable**

In general, the tied arch bridge has fewer structural members when compared to the truss and the combined arch. A commitment to periodic and ongoing steel painting regimen carries cost implications, but this structure type offers the fewer members of the presented structure alternatives to maintain and repaint in the future.

### **Aesthetics: Favorable**

Based on feedback from City staff and stakeholders, this bridge is generally seen as having the highest aesthetic value.

### **Project Costs: Neutral**

The estimated project costs for this alternative are:

- Construction Costs = \$6.43M
- Contingency = \$2.57M
- Design, CM = \$4.05M
- ROW Costs = \$0
- Total Costs = **\$13.05M**

As all of the structure alternatives spring from the same generic family of structure configuration and type, the cost differential between the structure alternatives as presented is very minor in relation to overall total project cost. However, this is the least cost alternative for structure cost. See Section 14 for a more detailed breakdown including all soft costs.

## **COMBINED ARCH**

The Combined Arch concept contains elements of the tied arch, with a major arch over the freeway and but with a secondary, smaller arch for the short span to grade on the west. Like the tied arch, this type would present a graceful form when seen from the freeway, with the smaller arch providing additional visual interest. The vertical hangers could be cable or steel sections, and the arches would be oriented vertically, not angled together as in the tied arch. The canopy for this type could also be a simple plane suspended between the



arches, with lighting and throw barrier integrated similar to the truss bridge. Figure 12-7 through Figure 12-10 show rendered views of the combined arch bridge concept both with and without a canopy.



**Figure 12-7: Combined Arch with Canopy – View from Bridge Looking East**



**Figure 12-8: Combined Arch with Canopy – View from I-5 Looking North**





**Figure 12-9: Combined Arch without Canopy – View from Bridge Looking East**



**Figure 12-10: Combined Arch without Canopy – View from I-5 Looking North**



## Combined Arch Evaluation

### **User Safety and Security: Neutral**

User safety and security is the same across all bridge types.

### **Connectivity and Travel Times: Neutral**

Connectivity and travel time are the same across all bridge types.

### **Ease of Stakeholder Approval: Neutral**

Ease of stakeholder approval is the same across all bridge types.

### **ROW Considerations: Neutral**

Per Chapter 11 of the WSDOT ROW Manual, the City would need to acquire but would not need to pay for an airspace lease across WSDOT ROW if the bridge is part of a Comprehensive Trail Plan adopted by the City.

ROW requirements are the same across all bridge types.

### **Operations and Maintenance: Unfavorable**

In general, the combined arch has slightly more steel structural components when compared to the tied arch with the increased mass of the combined arch structure width slightly overbalancing with the reduced mass of the combined arch structure vertical profile. But the slight difference in exposed steel mass does not substantially change the cost implications of the commitment to periodic and ongoing steel painting regimen requirements for exposed steel structure.

### **Aesthetics: Neutral**

Based on feedback from City staff and stakeholders, this bridge was generally seen as having the second highest aesthetic value.

### **Project Costs: Neutral**

The estimated project costs for this alternative are:

- Construction Costs = \$6.91M
- Contingency = \$2.76M
- Design, CM = \$4.35M
- ROW Costs = \$0
- Total Costs = **\$14.03M**

As all of the structure alternatives spring from the same generic family of structure configuration and type, the cost differential between the structure alternatives as presented is very minor in relation to overall total project cost. However, this is the second least structure cost alternative, being slightly higher than for the tied arch alternative, but fairly close in context of overall project cost. See Section 14 for a more detailed breakdown including all soft costs.

## TRUSS

The Truss configuration is the most straightforward and traditional of the structure types under consideration. Harking back to highway and railroad bridges of the past, it creates a robust image on the skyline. The gently



arched top chords of the trusses soften the utilitarian aspect that truss bridges can have and form a strong counterpoint to the adjacent light rail station. If desired, the canopy on this bridge could be a simple planar structure with recessed or pendant downlights. The throw barrier would be attached to the inside faces of the trusses. Figure 12-11 through Figure 12-14 show rendered views of the truss bridge concept.



**Figure 12-11: Truss with Canopy – View from Bridge Looking East**



**Figure 12-12: Truss with Canopy – View from I-5 Looking North**





**Figure 12-13: Truss without Canopy – View from Bridge Looking East**



**Figure 12-14: Truss without Canopy – View from I-5 Looking North**



## Truss Evaluation

### **User Safety and Security: Neutral**

User safety and security is the same across all bridge types.

### **Connectivity and Travel Times: Neutral**

Connectivity and travel time is the same across all bridge types.

### **Ease of Stakeholder Approval: Neutral**

Ease of stakeholder approval is the same across all bridge types.

### **ROW Considerations: Neutral**

Per Chapter 11 of the WSDOT ROW Manual, the City would need to acquire but would not need to pay for an airspace lease across WSDOT ROW if the bridge is part of a Comprehensive Trail Plan adopted by the City.

ROW requirements are the same across all bridge types.

### **Operations and Maintenance: Unfavorable**

In general, the truss has the highest number of structural steel components when compared to the tied arch and combined arch bridge types. This increase of exposed steel mass for the truss bridge type is enough to carry a more noticeable cost implication with the commitment to periodic and ongoing steel painting regimen requirements for exposed steel structure.

### **Aesthetics: Unfavorable**

Based on feedback from City staff and stakeholders, this bridge was generally seen as having the lowest aesthetic value.

### **Project Costs: Unfavorable**

The estimated project costs for this alternative are:

- Construction Costs = \$7.72M
- Contingency = \$3.09M
- Design, CM = \$4.86M
- ROW Costs = \$0
- Total Costs = **\$15.68M**

As all of the structure alternatives spring from the same generic family of structure configuration and type, the cost differential between the structure alternatives as presented is minor in relation to overall project cost. However, this is the highest cost alternative, both for initial construction cost and for ongoing periodic life cycle maintenance costs. See Section 14 for a more detailed breakdown including all soft costs.

## CONSTRUCTION CONSIDERATIONS

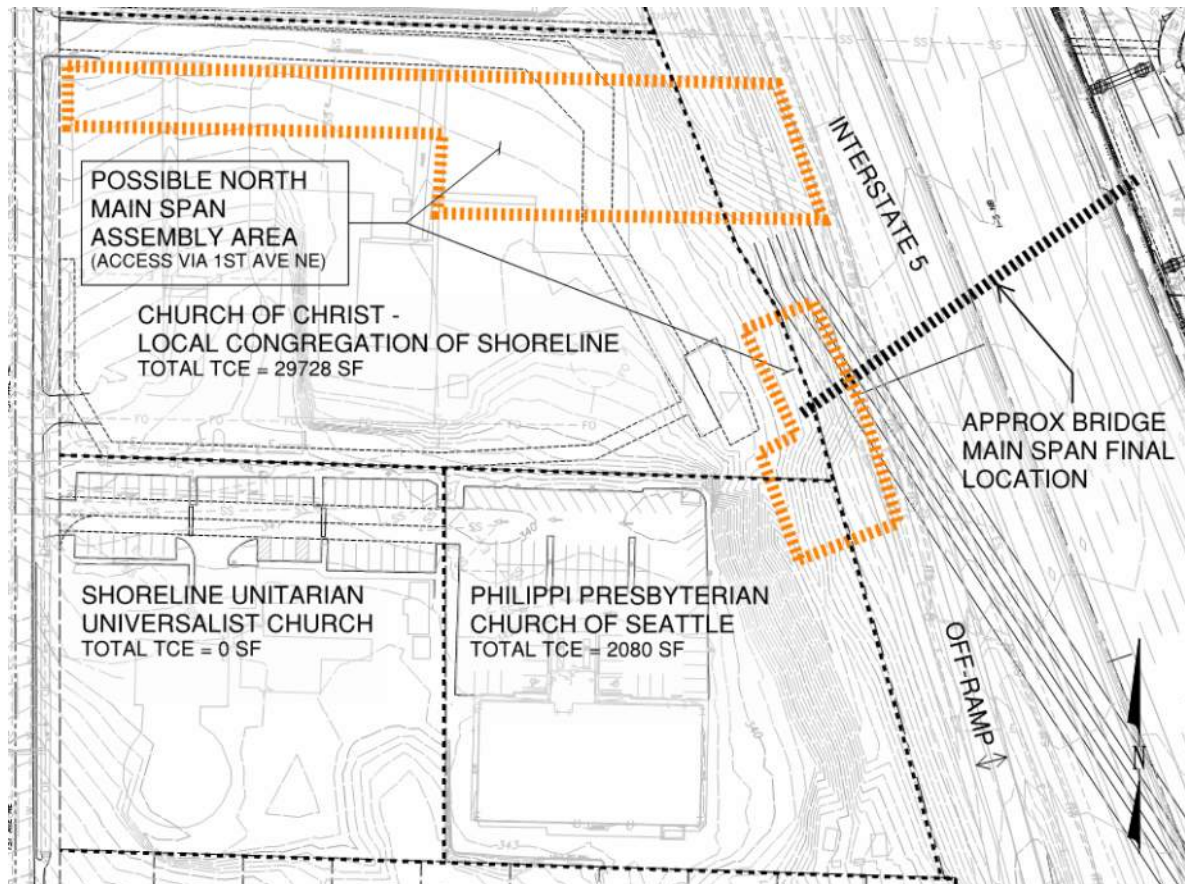
Construction staging will be a significant challenge and will likely drive many of the design decisions and will have substantial impacts on the project costs. Below is a summary of the primary construction constraints and some methods that could be employed to help solve these issues.



## West Side Construction Staging Areas

In order to construct the foundations and assemble the main span, a temporary staging area of considerable size will need to be constructed. There are two potential areas on the west side of I-5 for a staging area that is large enough to accommodate these construction activities.

As shown in Figure 12-15, the easternmost portion of the Church of Christ parcel is currently an open, grassy field and an asphalt parking lot. This area could accommodate the staging required to construct the western bridge pier and assemble the main span. Access to the staging area would be off of 1st Ave NE.



**Figure 12-15: Potential Bridge Construction Staging Area on Church of Christ Parcel**

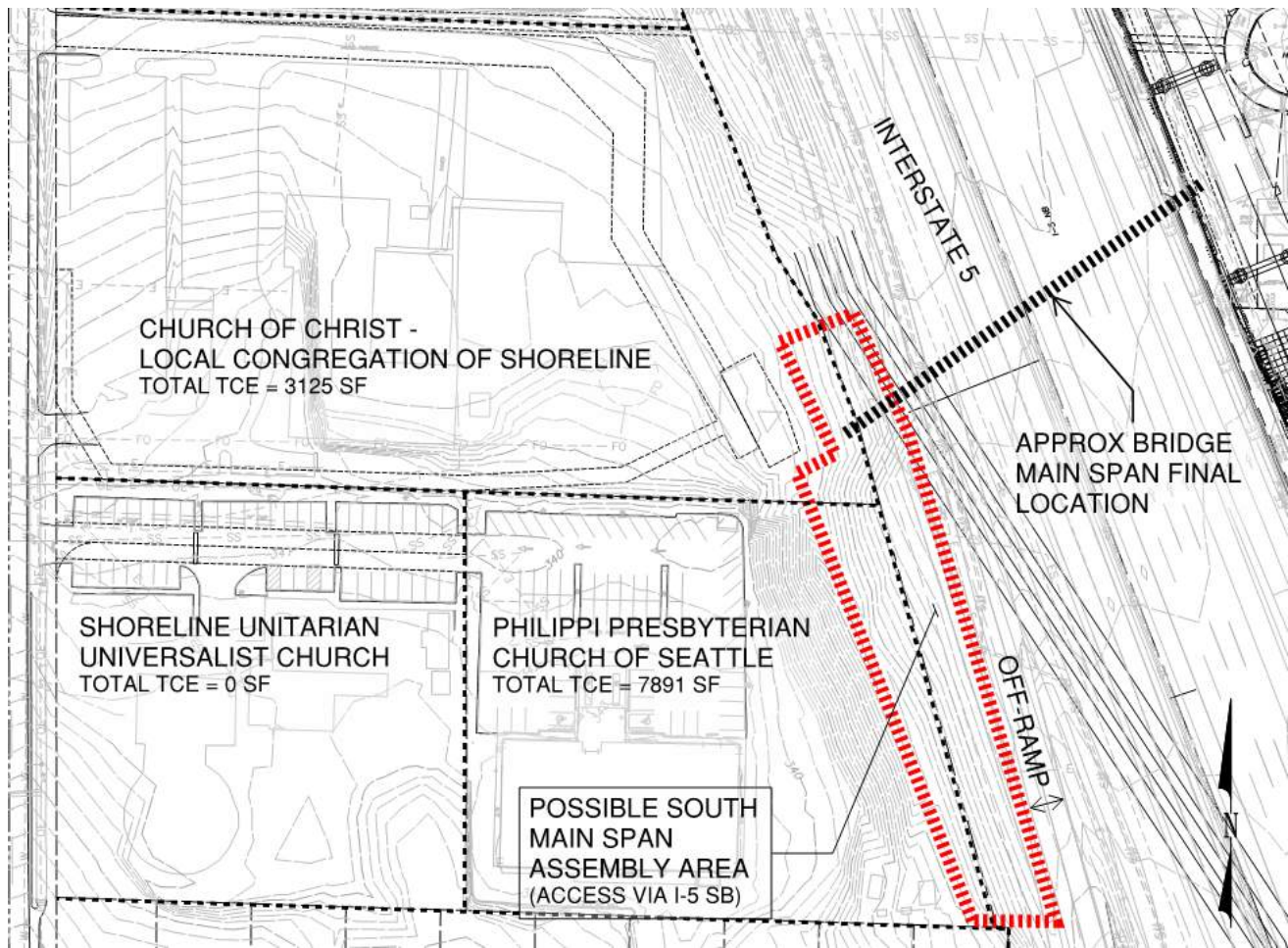
Challenges associated with using this location include:

- **Grade Difference:** The elevation of the Church of Christ parcel is approximately 15-20 feet higher than I-5 in this area. This grade difference would make transportation of the assembled main span to the piers on which it rests difficult. Temporary trestles and or ramps down to the freeway would need to be constructed which would require significant clearing of trees and brush on the existing slope.
- **Thornton Creek:** Thornton Creek would be immediately adjacent to the staging area. Impacts to the creek would need to be minimized and working around the creek could be a significant challenge as temporary work platforms/trestles would need to be constructed to avoid impacting the creek.



- **Property Owner Impacts:** Assembly of the main span and construction of the bridge foundations will require the use of large equipment which may cause disruptions to the owners of the Church of Christ parcel. While efforts would be made to lessen these impacts, the owner may not grant the necessary temporary easements on their property.
- **Cell Phone Tower:** The cell phone tower in the southeast corner of the parcel is a sizable obstruction that would need to be worked around and protected. Finding suitable crane positions that don't interfere with the tower could be difficult.

The second construction staging area that could be used to is shown in Figure 12-16. This area is just east of the church building on the Philippi parcel and extends down to the off-ramp to NE 145th Street. The topography in this area slopes down to the freeway and the hillside is heavily vegetated with brush and trees. Access to this staging area would be from the I-5 off-ramp.



**Figure 12-16: Potential Bridge Construction Staging Area Adjacent to the Philippi Church Parcel**



Challenges associated with using this location include:

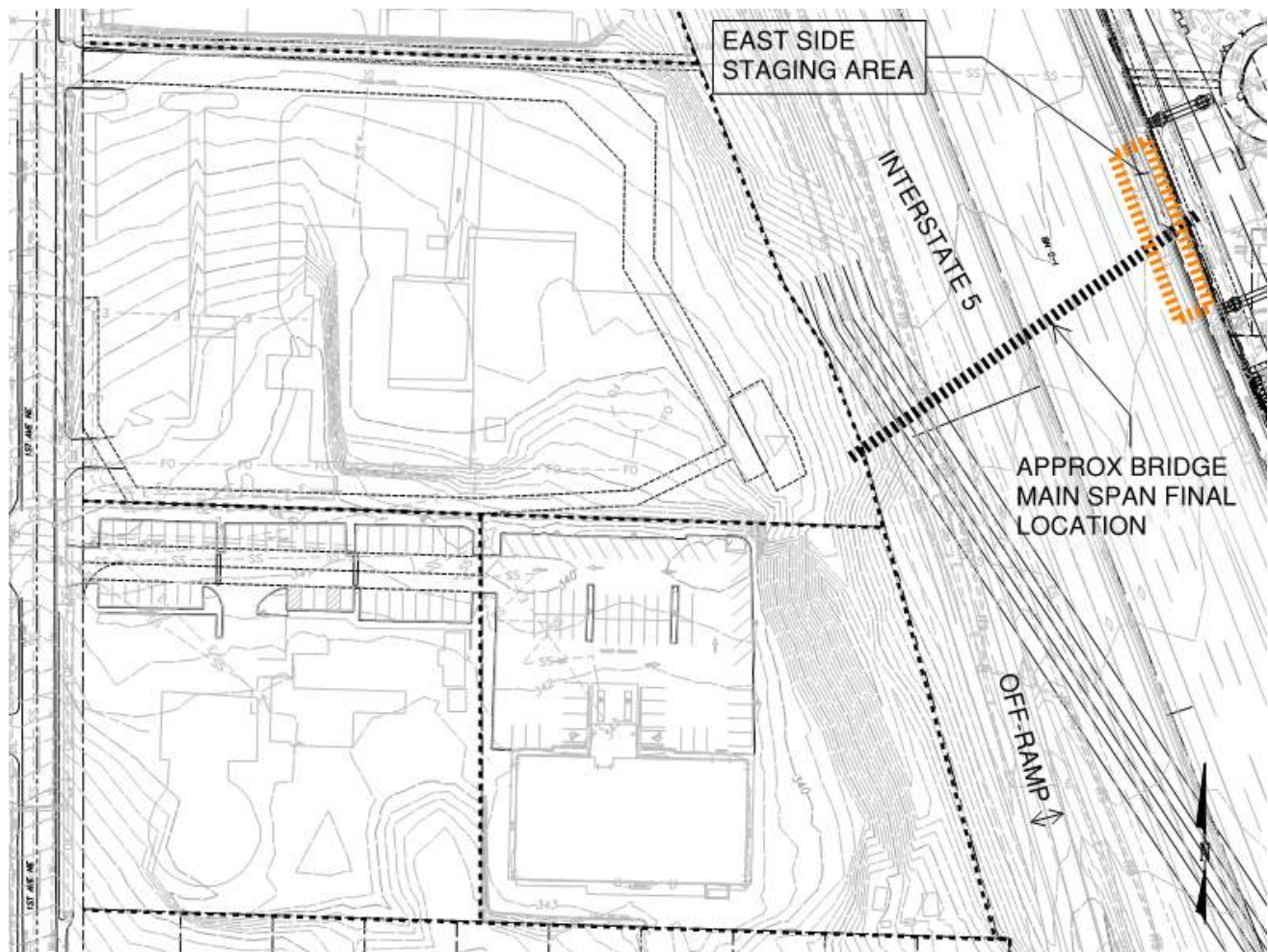
- **Steep Slopes:** In order to create a suitable work area, the staging area would need to be leveled. Because of the slope, this would likely require the use of temporary walls and/or slopes. These elements would need to be removed following construction and the area would need to be restored.
- **Property Owner Impacts:** Assembly of the main span and construction of the bridge foundations will require the use of large equipment which may cause disruptions to the owners of the Philippi parcel and other nearby homes. While efforts would be made to lessen these impacts, the Philippi parcel owners may not grant the necessary temporary easements on their property.

Of the two west side staging areas identified, the one adjacent to the Philippi parcel and the NE 145th Street off-ramp appears to be most promising based on the information available. Access from this area to bridge location is advantageous as the bridge could be transported to the piers without having to navigate slopes or the cell phone tower. Additionally, Thornton Creek in this area is located further east and is contained within two culverts.

### **East Side Staging Areas**

As shown in Figure 12-17, the eastern bridge pier is located between the shoulder of the northbound on-ramp and the noise wall immediately adjacent to the Shoreline South/145th Street Station. The staging area required for the construction of this pier would need to be located west of the noise wall and would need to be a minimum of 25-feet in width. The on-ramp would likely need to be temporarily relocated further west in order to accommodate this staging area. It is likely that the majority of the construction of the eastern pier would be night work.



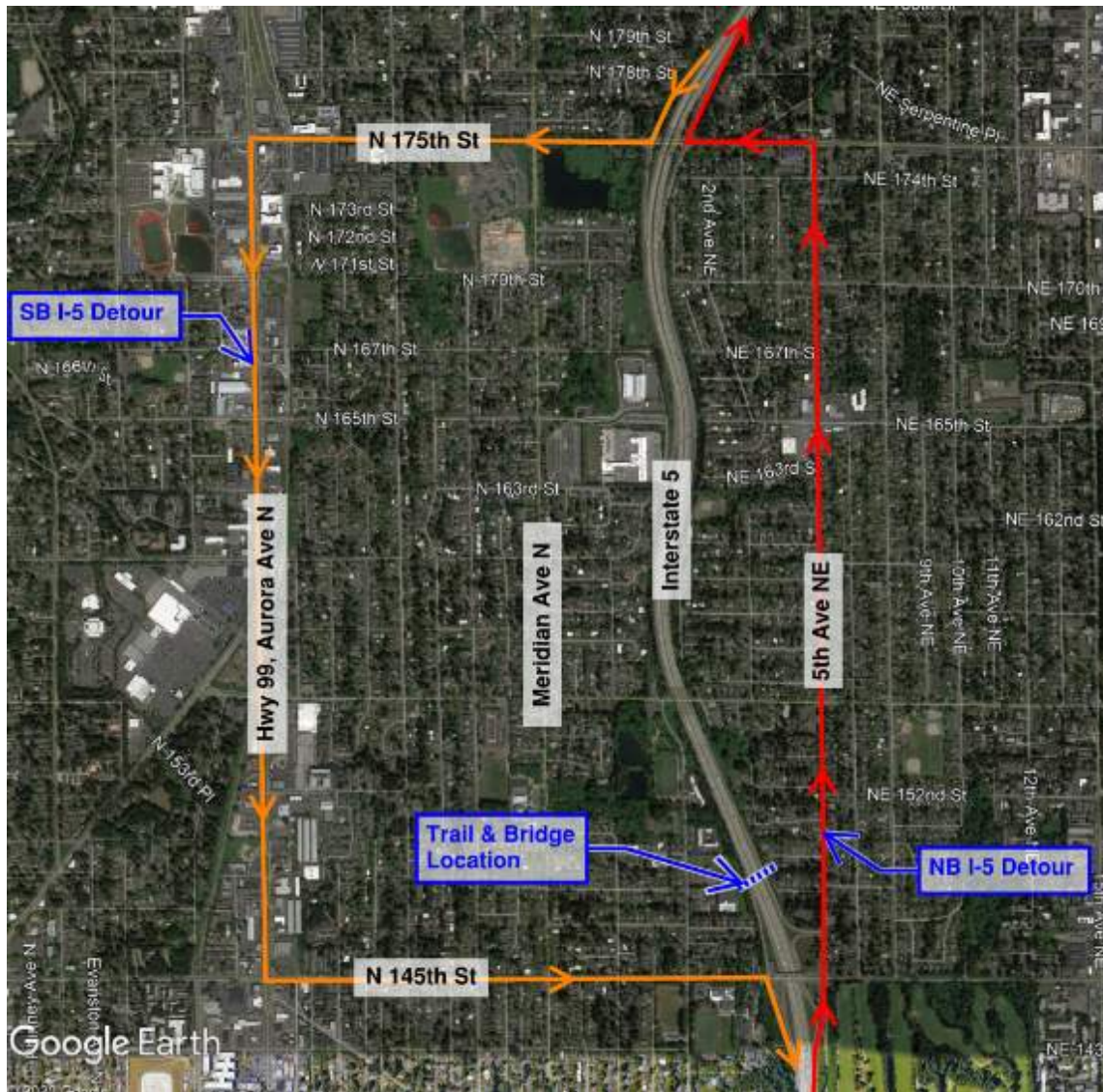


**Figure 12-17: Potential Bridge East Side Construction Staging Area**

### **Working Over I-5**

The erection of the main span will have to occur during an extended closure window of 12-15 hours of both directions of I-5 including both on and off ramps at NE 145th Street. The closure would likely occur during a weekend night. Potential detour routes for northbound and southbound I-5 are shown in Figure 12-18.





**Figure 12-18: Potential I-5 Detour Routes During Full Closure**

During the closure, the assembled main span could be transported from the staging area to the bridge piers using self-propelled modular transporters (SPMTs) and lifted into place using hydraulic cranes. SPMTs utilize a set of connected, hydraulically driven wheeled axles which can carry significant loads by utilizing multiple axles to help spread the weight of the structure over a wide area. This transportation technique was recently utilized on a similar pedestrian bridge project for the City of Everett where a 250-foot long truss was transported across several lines of railroad tracks. In order to transport the structure into place, the median barrier that separates northbound and southbound I-5 would need to be temporarily removed and then restored prior to re-opening the freeway. A schematic construction sequence for the main span is shown

Evening lane closures of I-5 would also be required during certain main span construction like bridge deck concrete pours and other high risk operations.

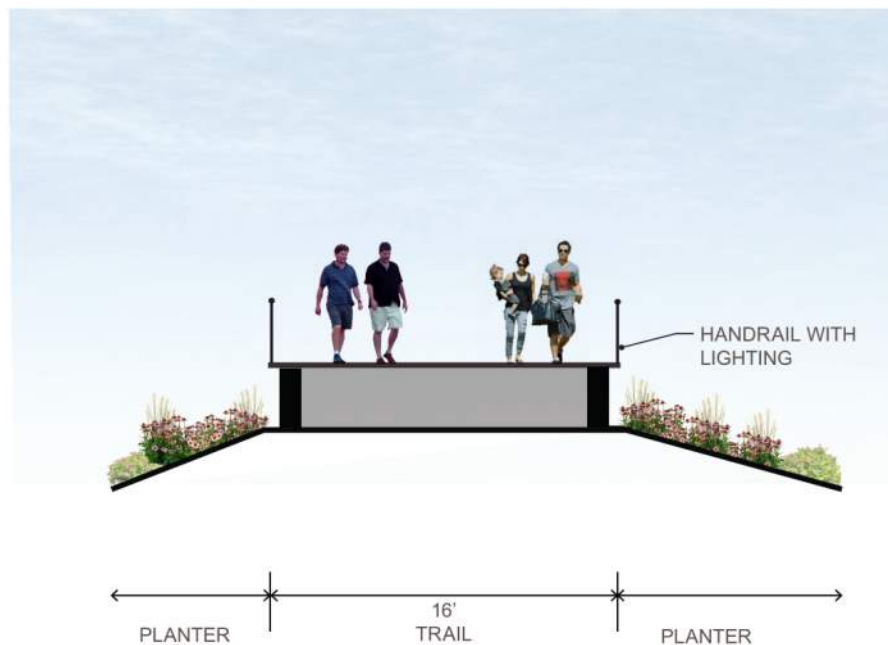


## 13. East Side Landing Alternatives

The primary constraint that drove the design development of the east side landings was maintaining a balance between providing ADA compliant ramp slopes and maximizing the vertical clearance to the aerial guideway structure above. The three options described below all present trade-offs between these competing project requirements.

Additionally, these landing designs need to integrate the Trail-Along-the-Rail (TAR) project which is currently being constructed by Sound Transit as part of the Lynnwood Link Project. The TAR is a multi-use trail that runs parallel to the light rail tracks and will connect the Shoreline South/145th Street Station to NE 155<sup>th</sup> Street. Future phases of the TAR will extend this trail to points north and south.

The typical trail section shown below would be used for all east side landing alternatives.



**Figure 13-1: Typical Trail Section for East Side Landing**

### OPTION A: A-FRAME RAMP

In this option, the main span of the pedestrian bridge is located essentially equidistant between the two sets of columns and crossbeams that support the light rail structure above. Trail users would pass below the light rail structure with a minimum vertical clearance of 8.0 feet. Users then arrive at a landing where they reach their first decision point. Users headed to the light rail station would proceed down a ramp and arrive at the station plaza. Walking users who wish to make a connection to the cul-de-sac at N 149th Street or the TAR would have the option to take a set of stairs. ADA users who wish to make a connection to the TAR or N 149th Street would take the ramp down to the station plaza and then proceed north.

In order to minimize potential impacts to the light rail columns and crossbeams lightweight fill and column silos may be required.



Figure 13-2 and Figure 13-3 below show a plan view and profile of this landing option.



Figure 13-2: Option A – East Side Landing Plan View

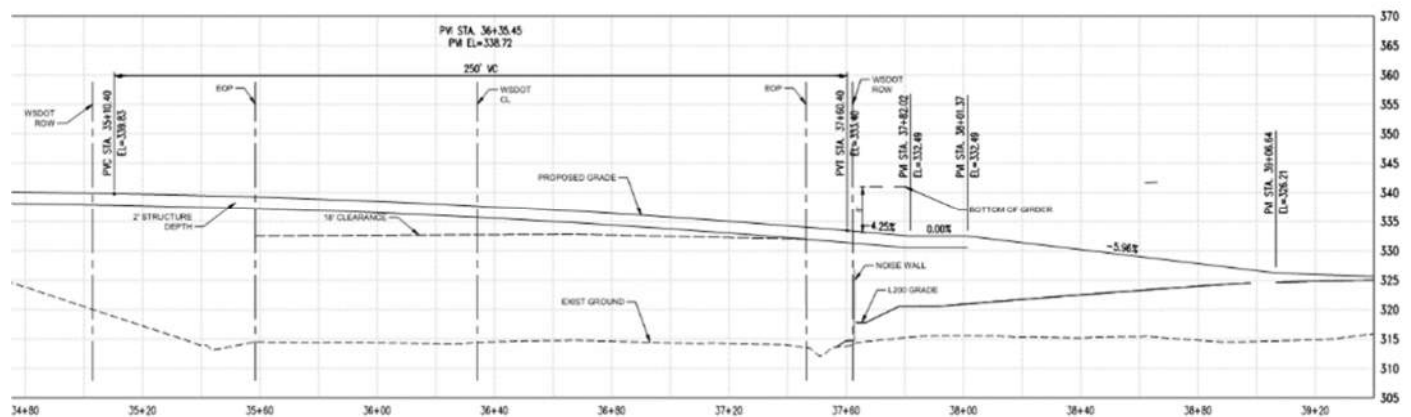


Figure 13-3 : Option A – East Side Landing Profile

### Option A – East Landing Evaluation:

#### User Safety and Security: Neutral

This alternative provides a direct connection to the Shoreline South/145<sup>th</sup> Street Station but a less direct connection between the bridge and the TAR. Less circuitous pathways are often perceived by the user as being more secure. These two offsetting attributes result in a neutral rating.



**Connectivity and Travel Times: Neutral**

This alternative provides a direct connection to the Shoreline South/145<sup>th</sup> Street Station but a less direct connection between the bridge and the TAR. These two offsetting attributes result in a neutral rating.

**Ease of Stakeholder Approval: Unfavorable**

This alternative provides the least vertical clearance between the trail surface to the overhead light rail structure, which is less desirable from a user experience perspective. This will require a deviation from the City's adopted standards. This may also be seen as unfavorable to ST with regard to the safety and security of their aerial guideway structure.

**ROW Considerations: Neutral**

As mentioned previously, the City will own the underlying property in the landing area with a transit way easement to ST. ROW requirements are the same across all landing types

**Operations and Maintenance: Neutral**

This alternative has the second most lineal feet of pathway when compared to the other alternatives. Maintenance and operation costs are assumed to be a function of pathway length.

**Aesthetics: Neutral**

All east landing alternatives have similar aesthetic value.

**Project Costs: Favorable**

The estimated project costs for this alternative are:

- Construction Costs = \$1.81M
- Contingency = \$726,000
- Design, CM = \$1.14M
- ROW Costs = \$0
- Total Costs = **\$3.68M**

This is the least cost alternative. See Section 14 for a more detailed breakdown including all soft costs.

**OPTION B: SWITCHBACK RAMP**

In this option, the main span of the pedestrian bridge lands further to the south. In order to increase the vertical clearance, the trail turns 90 degrees and slopes down to the north prior to turning to the east where it crosses under the light rail track structure. The minimum vertical clearance from the path to the overhead structure is 9.3 feet. Similar to Option A, users headed to the light rail station would proceed down a ramp and arrive at the station plaza. Walking users who wish to make a connection to the cul-de-sac at N 149th Street or the TAR could take a set of stairs which are located midway down the ramp. ADA users who wish to make a connection to the TAR or N 149th Street would take the ramp down to the station plaza and then proceed north.

Similar to Option 1, lightweight fill and column silos may be required in order to minimize impacts to the light rail structures.

Figure 13-4 and Figure 13-5 below show a plan view and profile of this landing option.





**Figure 13-4: Option B – East Side Landing Plan View**







- Contingency = \$923,000
- Design, CM = \$1.45M
- ROW Costs = \$0
- Total Costs = **\$4.69M**

This is the highest cost alternative. See Section 14 for a more detailed breakdown including all soft costs.

### OPTION C: DIRECT RAMP

In this option, the main span of the pedestrian bridge lands further to the south and crosses under the light rail structure with a minimum vertical clearance from the trail to the overhead structure of 8.8 feet. This option varies from Options A & B in that the TAR slopes up to make a direct connection to the trail coming off of the pedestrian bridge. Pedestrian bridge users can choose to head north along the TAR and make a connection to N 149th Street via a spur trail or head south to the station.

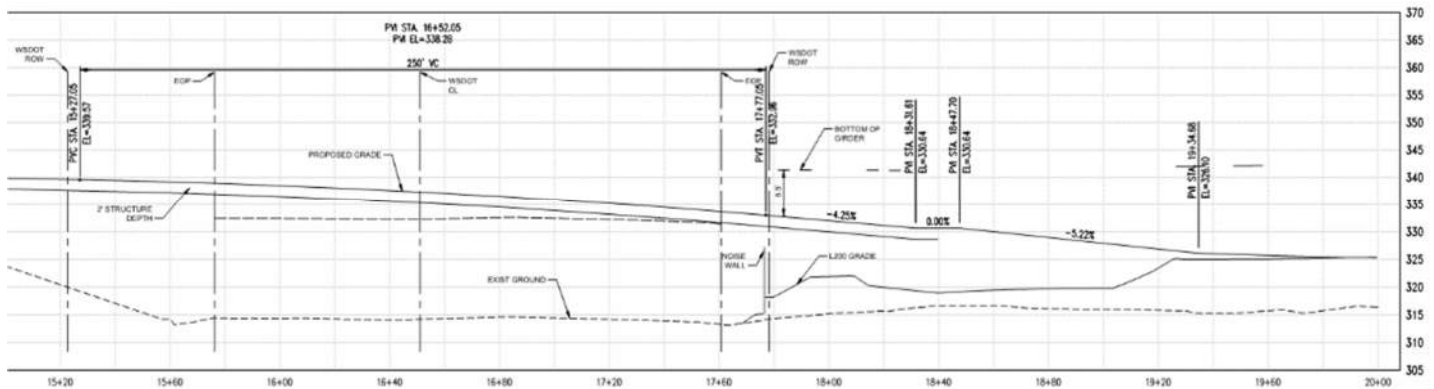
Similar to other options, lightweight fill and column silos may be required in order to minimize impacts to the light rail structures.

Figure 13-6 and Figure 13-7 below show a plan view and profile of this landing option.



**Figure 13-6: Option C – East Side Landing Plan View**





**Figure 13-7 : Option C – East Side Landing Profile**

### **Option C – East Landing Evaluation:**

#### **User Safety and Security: Favorable**

This alternative provides the most direct connection between the bridge, TAR and the Shoreline South/145<sup>th</sup> Street Station of all alternatives considered. More direct connections are often perceived by users as being safer.

#### **Connectivity and Travel Times: Favorable**

This alternative provides the most direct connection between the bridge, TAR and the Shoreline South/145<sup>th</sup> Street Station. This increases connectivity and decreases travel times for all users.

#### **Ease of Stakeholder Approval: Neutral**

This alternative provides the second highest vertical clearance between the trail surface to the overhead light rail structure. This will require a deviation from the City's adopted standards. The vertical clearance may be seen as less desirable to ST.

#### **ROW Considerations: Neutral**

As mentioned previously, the City will own the underlying property in the landing area with a transit way easement to ST. ROW requirements are the same across all landing types

#### **Operations and Maintenance: Favorable**

This alternative has the smallest lineal feet of pathway when compared to the other alternatives. Maintenance and operation costs are assumed to be a function of pathway length.

#### **Aesthetics: Neutral**

All east landing alternatives have similar aesthetic value.

#### **Project Costs: Neutral**

The estimated project costs for this alternative are:

- Construction Costs = \$1.93M
- Contingency = \$770,000
- Design, CM = \$1.21M

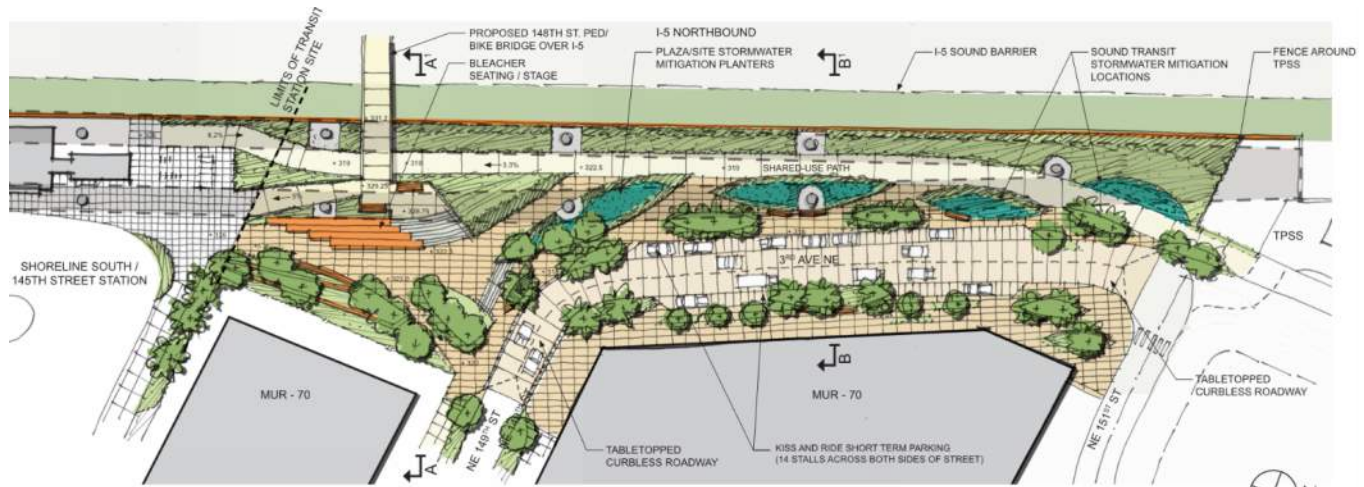


- ROW Costs = \$0
- Total Costs = **\$3.91M**

This is the second highest cost alternative. See Section 14 for a more detailed breakdown including all soft costs.

## EAST LANDING FUTURE VISIONS

In early 2018, the City completed a pre-design study for the 3rd Avenue NE Woonerf Project. As shown in Figure 13-8. This design incorporates a “shared” or “living” street which will connect NE 149th Street to NE 151st Street and interface directly with the east bridge landing.

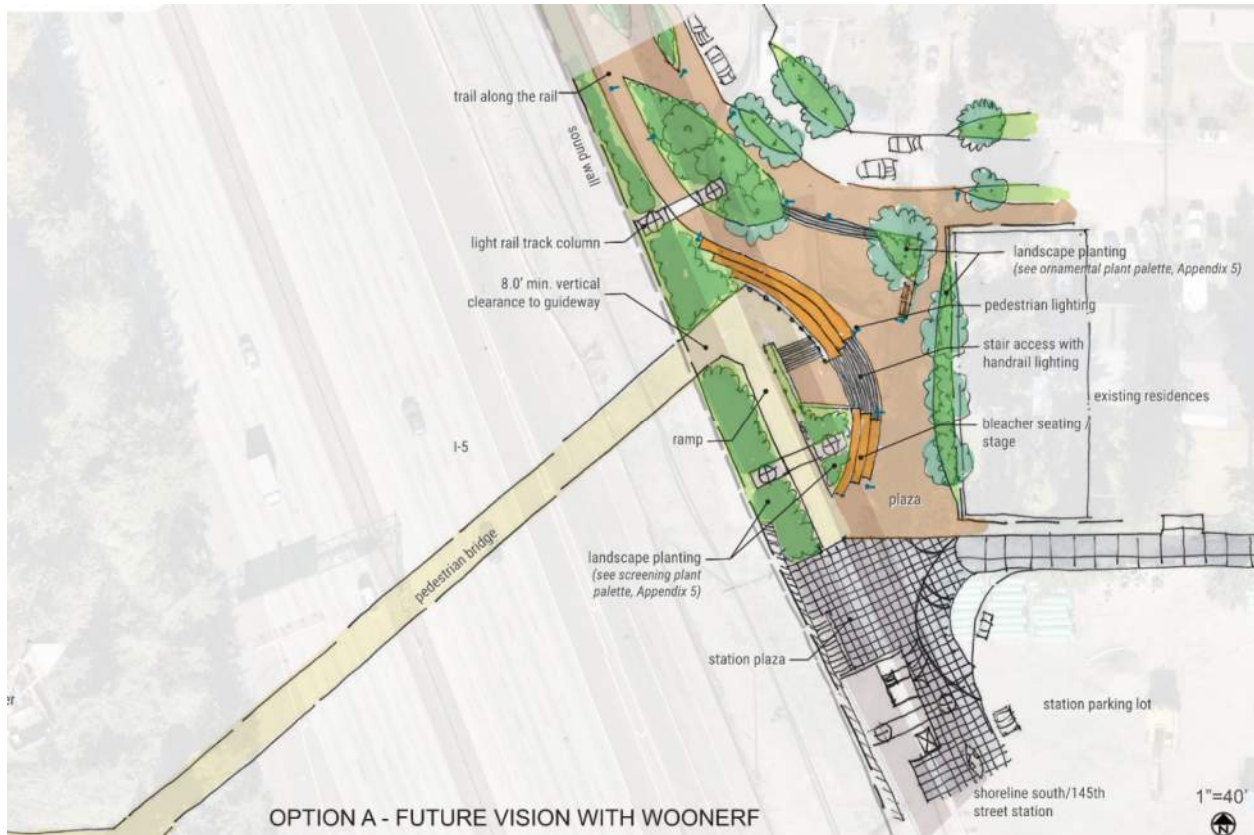


**Figure 13-8: 3<sup>rd</sup> Avenue Woonerf Concept Plan View**

While the 3rd Avenue NE Woonerf Project has not advanced beyond the conceptual design phase, the pedestrian bridge and eastern landing design must not preclude the development of this future vision for this area.

Figure 13-9 through Figure 13-11 shows how the east landing options could be modified to include a plaza space and public gathering area similar to what is shown in the woonerf concept. While these elements will not likely become a part of this project, estimated construction costs for these upgrades have been included in Appendix 4 for planning purposes.



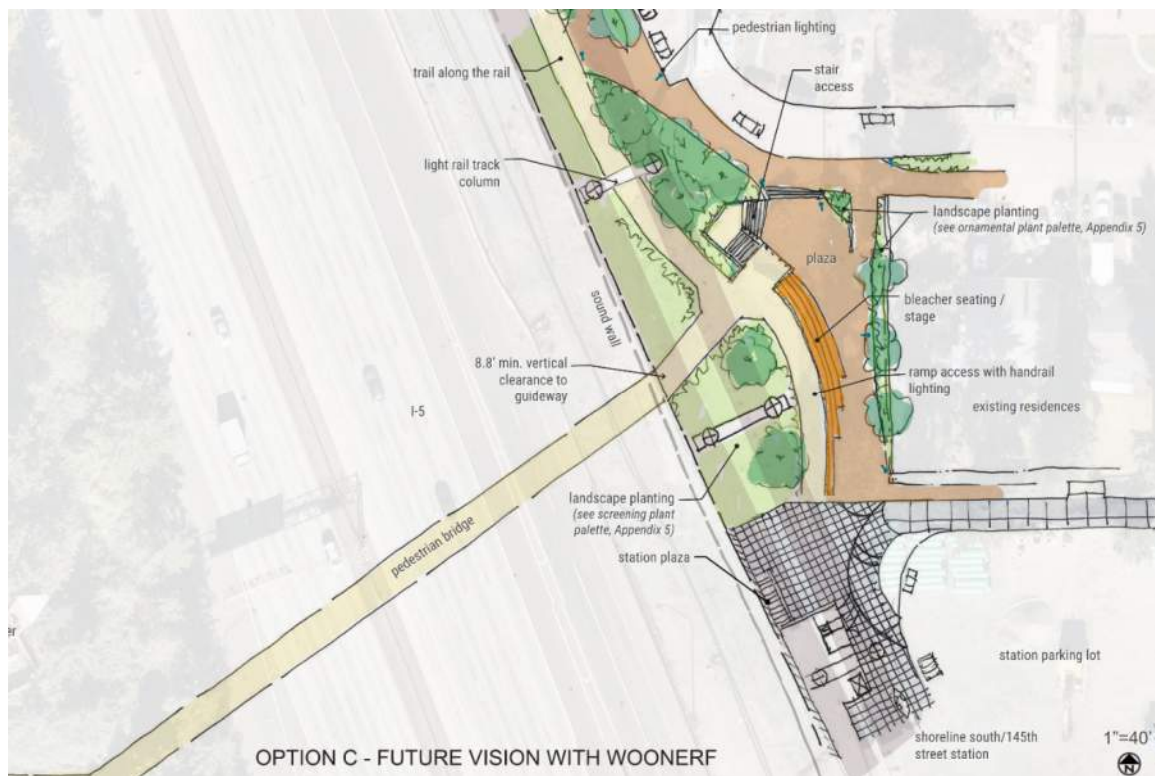


**Figure 13-9: Option A – Future Vision with 3<sup>rd</sup> Avenue NE Woonerf**



**Figure 13-10: Option B – Future Vision with 3<sup>rd</sup> Avenue NE Woonerf**





**Figure 13-11: Option C – Future Vision with 3<sup>rd</sup> Ave NE Woonerf**

## 14. Cost Summary

This section provides a summary of the estimated project costs for all west trail alignments, bridge and east side landing alternatives. As mentioned previously, these alternatives can be combined interchangeably to form a complete project. Appendix 4 provides a detailed cost and quantity breakdown for all alternatives considered including all assumptions.



## WEST SIDE TRAIL ALIGNMENTS ESTIMATED COSTS

Table 14-1 below provides a summary of the estimated project costs for the West Side Trail alignment alternatives.

**Table 14-1: West Side Trail Alignment Alternatives Estimated Costs**

	West Trail Alignments		
	Option 1 - Minimal Build-Out	Option 2 - Full Build-Out South	Option 3 - Full Build-Out North
Construction Costs (incl. Mobilization)	\$582,481	\$2,131,023	\$1,203,208
Contingency (40% of Const. Cost)	\$232,992	\$852,409	\$481,283
Engineering Design (20% of Const. Cost + Contingency)	\$163,095	\$596,687	\$336,898
Construction Management & Administration (25% of Const. Cost + Contingency)	\$203,868	\$745,858	\$421,123
ROW Costs (Including TCE & Administration)	\$1,878,285	\$1,307,235	\$1,140,975
<b>Total Cost</b>	<b>\$3,060,730</b>	<b>\$5,633,220</b>	<b>\$3,583,490</b>

## BRIDGE MAIN SPAN ESTIMATED COSTS

Table 14-2 below provides a summary of the estimated project costs for the Bridge Main Span alternatives.

**Table 14-2: Bridge Main Span Alternatives Estimated Costs**

	Bridge Main Span		
	Tied Arch (without Canopy)	Combined Arch (without Canopy)	Truss (without Canopy)
Construction Costs (incl. Mobilization)	\$6,428,620	\$6,910,420	\$7,721,835
Contingency (40% of Const. Cost)	\$2,571,448	\$2,764,168	\$3,088,734
Engineering Design (20% of Const. Cost + Contingency)	\$1,800,014	\$1,934,918	\$2,162,114
Construction Management & Administration (25% of Const. Cost + Contingency)	\$2,250,017	\$2,418,647	\$2,702,642
ROW Costs (Including TCE & Administration)	-	-	-
<b>Total Cost</b>	<b>\$13,050,100</b>	<b>\$14,028,160</b>	<b>\$15,675,330</b>



## EAST SIDE LANDINGS ESTIMATED COSTS

Table 14-3 below provides a summary of the estimated project costs for the East Side Landing alternatives.

**Table 14-3: East Side Landing Alternatives Estimated Costs**

	East Side Landing		
	Option A	Option B	Option C
<b>Construction Costs</b>	\$1,814,549	\$2,308,136	\$1,925,743
<b>Contingency (40% of Const. Cost)</b>	\$725,820	\$923,254	\$770,297
<b>Engineering Design (20% of Const. Cost + Contingency)</b>	\$508,074	\$646,278	\$539,208
<b>Construction Management &amp; Administration (25% of Const. Cost + Contingency)</b>	\$635,092	\$807,847	\$674,010
<b>ROW Costs (Including TCE &amp; Administration)</b>	-	-	-
<b>Total Cost</b>	<b>\$3,683,540</b>	<b>\$4,259,559</b>	<b>\$3,909,260</b>



## SUMMARY OF ESTIMATED COSTS

Table 14-4, below, provides a summary of the estimated project costs. For this table, the components of the total project cost were adjusted to account for the year in which each cost is expected to occur. The assumptions for this calculation are documented below.

- Construction, Contingency, Construction Management & Administration in 2024, escalated 4% each year from 2020
- Engineering Design in 2022, escalated 4% each year from 2020
- ROW Costs in 2022, escalated 6% each year from 2020

The table provides the estimated project cost for each of the 27 possible combinations of West Side Trail Alignments, Bridge Main Spans, and East Side Landings. For example, the estimated costs for West Side Option 1, Tied Arch Main Span, and East Side Option A is \$23,436,550.

**Table 14-4: Summary of Estimated Costs**

West Side Trail Alignment	Bridge Main Span	East Side Landing		
		Option A	Option B	Option C
<b>Option 1 - Minimum Build-Out</b>  \$ 3,596,320	<b>Tied Arch</b>	\$ 23,436,550	\$ 24,596,530	\$ 23,697,870
	<b>Combination Arch</b>	\$ 24,568,820	\$ 25,728,800	\$ 24,830,140
	<b>Truss</b>	\$ 26,475,730	\$ 27,635,710	\$ 26,737,050
<b>Option 2 - Full Build-Out South</b>  \$ 6,593,920	<b>Tied Arch</b>	\$ 26,434,150	\$ 27,594,130	\$ 26,695,470
	<b>Combination Arch</b>	\$ 27,566,420	\$ 28,726,400	\$ 27,827,740
	<b>Truss</b>	\$ 29,473,330	\$ 30,633,310	\$ 29,734,650
<b>Option 3 - Full Build-Out North</b>  \$ 4,226,650	<b>Tied Arch</b>	\$ 24,066,880	\$ 25,226,860	\$ 24,328,200
	<b>Combination Arch</b>	\$ 25,199,150	\$ 26,359,130	\$ 25,460,470
	<b>Truss</b>	\$ 27,106,060	\$ 28,266,040	\$ 27,367,380

## 15. Project Open House

As part of the larger public outreach effort, the City of Shoreline hosted an online open house between April 10 and May 1, 2020, to share information and gather input on the design of the bridge and how it connects to the neighborhoods on the east and west sides of I-5. A companion in-person open house had been planned, however, due to mandated social distancing associated with the COVID-19 pandemic, this event had to be cancelled. As a substitute for the in-person open house, the City hosted a one hour webinar which included a 20 minute presentation followed by a live question and answer (Q&A) session. A recording of the webinar and the Q&A responses were subsequently made available on the project website. The online open house served as the main avenue by which feedback from the general public was gathered.

When visiting the online open house participants could:

- Learn more about the project need, benefits, and schedule.



- Review the options being considered for each design element and provide feedback on those options.
- Share how they plan to use the bridge and what criteria is most important to them.
- Share demographic information to help determine the effectiveness of the City's outreach.
- Sign up for email updates about this project and others in the N 145th Street corridor

The City used multiple methods to reach audiences and promote the online open house. A postcard advertising the online open house and the webinar was sent to 4,195 addresses in the project area. Information about the online open house was also posted on the project webpage and on social media, and the project team sent emails to project partners, neighborhood organizations, and immediate project stakeholders.

Between April 10 and May 1, 529 individuals visited the online open house. There were 165 survey respondents, who provided:

- 125 responses to bridge structure questions
- 87 responses to the east bridge landing questions
- 113 responses to the west trail connection questions
- 98 responses to evaluation criteria questions
- 110 responses to bridge use and demographic questions
- 33 open-ended comments in response to the question *“Is there anything else you would like to share about the N 148th St Non-Motorized Bridge Project?”*

The following tables summarize the quantitative data from the survey regarding preference for the west trail connection, the main span bridge and the east landing alternatives. All questions were optional. Not all respondents answered every question. The online open house content and a more comprehensive summary of the responses is included in Appendix 6 of this report.

**Table 15-1: Responses to West Trail Connection Preference**

QUESTION: WHICH WEST TRAIL CONNECTION DO YOU PREFER?		
Answers	Percentage	Tally
Option 2: Full Build-Out	57%	57
Option 3: Minimal Build-Out	43%	43
<b>Total</b>	<b>100%</b>	<b>100</b>



**Table 15-2: Responses to Bridge Option Preference**

QUESTION: WHICH BRIDGE OPTION DO YOU PREFER?		
Answers	Percentage	Tally
Option 2: Tied Arch Bridge	57%	63
Option 3: Truss Bridge	26%	28
Option 1: Combined Arch Bridge	17%	19
<b>Total</b>	<b>100%</b>	<b>110</b>

**Table 15-3: Responses to East Bridge Landing Option Preference**

QUESTION: WHICH EAST BRIDGE LANDING DO YOU PREFER?		
Answers	Percentage	Tally
Option 3: Direct Ramp	94%	77
Option 2: Switchback Ramp	5%	4
Option 1: A-Frame Ramp	1%	1
<b>Total</b>	<b>100%</b>	<b>82</b>






















## 16. Alternatives Evaluation and Recommendations

Each trail, bridge, and landing alternative was qualitatively evaluated and compared to one another in the previous sections of this report. These comparisons are consolidated and visually represented in three evaluation criteria matrices (ECM). The purpose of each ECM is to help facilitate the decision making process with the goal of selecting the preferred alternative.

### WEST SIDE TRAIL ALIGNMENT EVALUATION CRITERIA MATRIX

Figure 16-1 below shows the ECM for the West Side Trail Alignments studied.



Evaluation Criteria Matrix - West Side Trail Alignment Options			
	Option 1 - Minimal Build-Out	Option 2 South - Full Build-Out	Option 2 North - Full Build-Out
User Safety and Security			
Connectivity & Travel Times			
Ease of Stakeholder Approval			
ROW Considerations			
Operations and Maintenance			
Aesthetics			
Project Costs			

**KEY**



























 Very Favorable  
 Favorable  
 Neutral  
 Unfavorable  
 Very Unfavorable

Figure 16-1: ECM for the West Side Trail Alignment Alternatives

## BRIDGE MAIN SPAN EVALUATION CRITERIA MATRIX

Figure 16-2 below shows the ECM for the Bridge Main Span options studied.

Evaluation Criteria Matrix - Bridge Main Span Options			
	Tied Arch Bridge	Combined Arch Bridge	Truss Bridge
User Safety and Security			
Connectivity & Travel Times			
Ease of Stakeholder Approval			
ROW Considerations			
Operations and Maintenance			
Aesthetics			
Project Costs			

**KEY**








 Very Favorable  
 Favorable  
 Neutral  
 Unfavorable  
 Very Unfavorable

Figure 16-2: ECM for the Bridge Main Span Options

## EAST SIDE LANDINGS EVALUATION CRITERIA MATRIX

Figure 16-3 below shows the ECM for the East Side Landings alternatives studied.




Evaluation Criteria Matrix - East Side Landing Options			
	Option A	Option B	Option C
User Safety and Security			
Connectivity & Travel Times			
Ease of Stakeholder Approval			
ROW Considerations			
Operations and Maintenance			
Aesthetics			
Project Costs			


**KEY**




Very Favorable



Favorable



Neutral



Unfavorable



Very Unfavorable

**Figure 16-3: ECM for the East Side Landings Alternatives**

## WEST SIDE TRAIL ALIGNMENT RECOMMENDATIONS

Three west side trail alignment alternatives are presented in this report. Each alternative provides the necessary connection from 1<sup>st</sup> Avenue NE to the main bridge span. Each of these alternatives have benefits and trade-offs especially with regard to ease of stakeholder approval, right-of-way, user safety and security and project costs.

Based on the results of this TS&L evaluation and input from the general public through the online open house, Option 3 – Full Build-out North is the recommended preferred alternative for the west side trail alignment. This option best meets the established project criteria and received the most favorable feedback from the public.

## BRIDGE MAIN SPAN RECOMMENDATIONS

Three main span bridge alternatives are presented in this report. These bridges meet the project design requirements, but differ primarily in their costs, aesthetic value and maintenance requirements.

Based on the results of this TS&L evaluation and input from the general public through the online open house, the tied-arch bridge is the recommended preferred alternative for the main span structure. While all bridges met the design criteria and were comparable in their cost, the tied-arch span received the most favorable feedback from the public.

## EAST SIDE LANDING RECOMMENDATIONS

Three east side landing alternatives are presented in this report. These landings provide a connection from the bridge to the Shoreline South/145<sup>th</sup> Street Station, the trail-along-the-rail and the surrounding neighborhood. These alternatives vary primarily in their connectivity, vertical clearance to the overhead light rail structure and costs.

Based on the results of this TS&L evaluation and input from the general public through the online open house, Option 3 – Direct Ramp is the recommended preferred alternative for the east side landing. This option best meets the established project criteria and received the most favorable feedback from the public.



## 17. References

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- <https://geodataservices.wdfw.wa.gov/hp/fishpassage/index.html>. Washington Department of Fish & Wildlife. Accessed February 6.
- WDFW. 2020c. Washington Department of Fish and Wildlife Habitats and Species Map in the Vicinity of T26R04E Section 17. February 7. Olympia, Washington.
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# Appendix 1

West Side Trail Connection



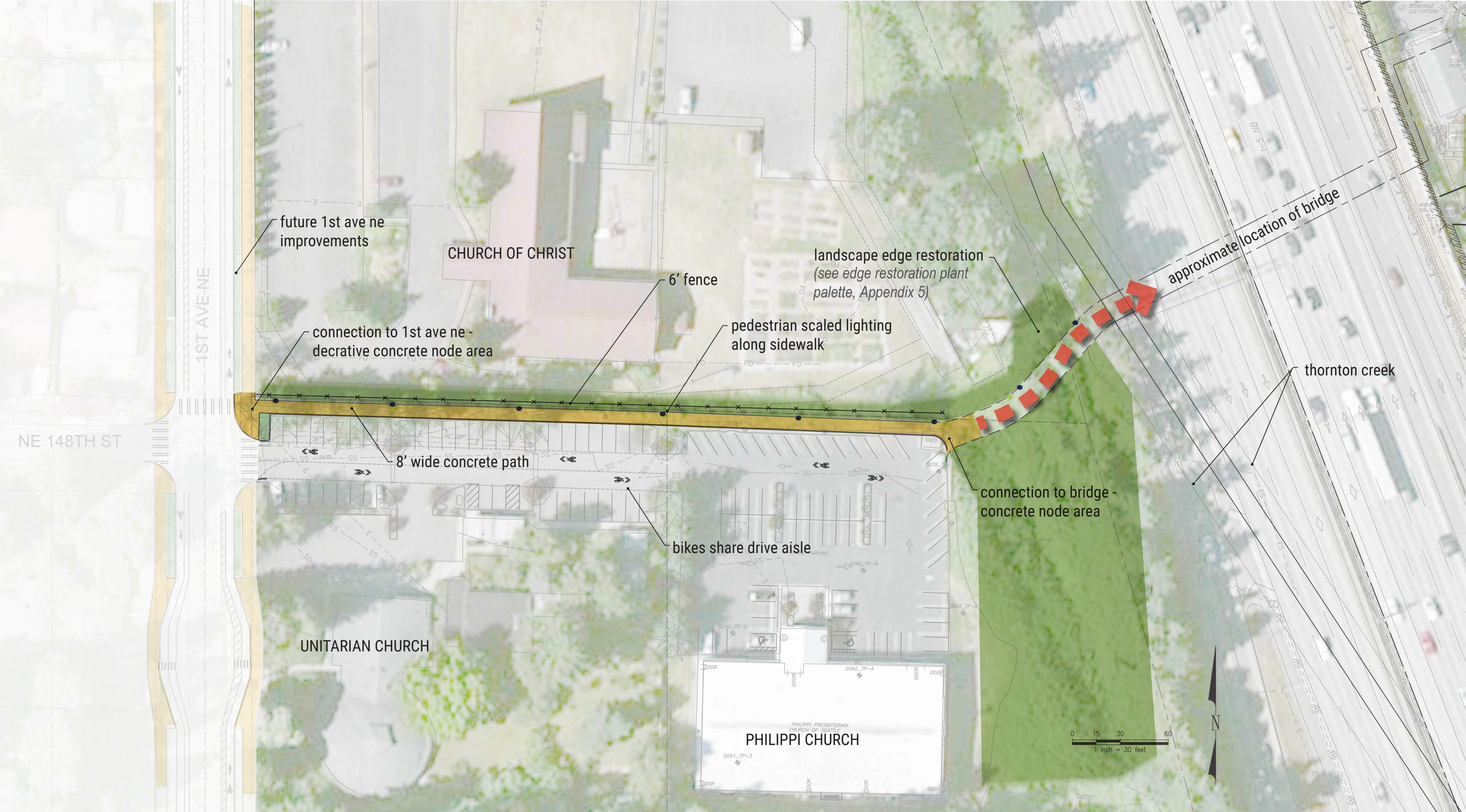
# Appendix 1

## West Side Trail Connection

### Option 1 - Minimal Build-Out

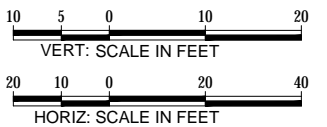


# WEST TRAIL CONNECTION TO 1ST AVENUE NE



OPTION 1 - MINIMAL BUILD-OUT





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N 148 NON-MOTORIZED BRIDGE

WEST OPTION 1, EAST OPTION A



# Appendix 1

## West Side Trail Connection

### Option 2 - Full Build-Out South



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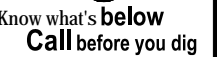
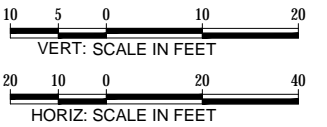
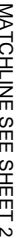


# WEST TRAIL CONNECTION TO 1ST AVENUE NE



OPTION 2 SOUTH - FULL BUILD-OUT



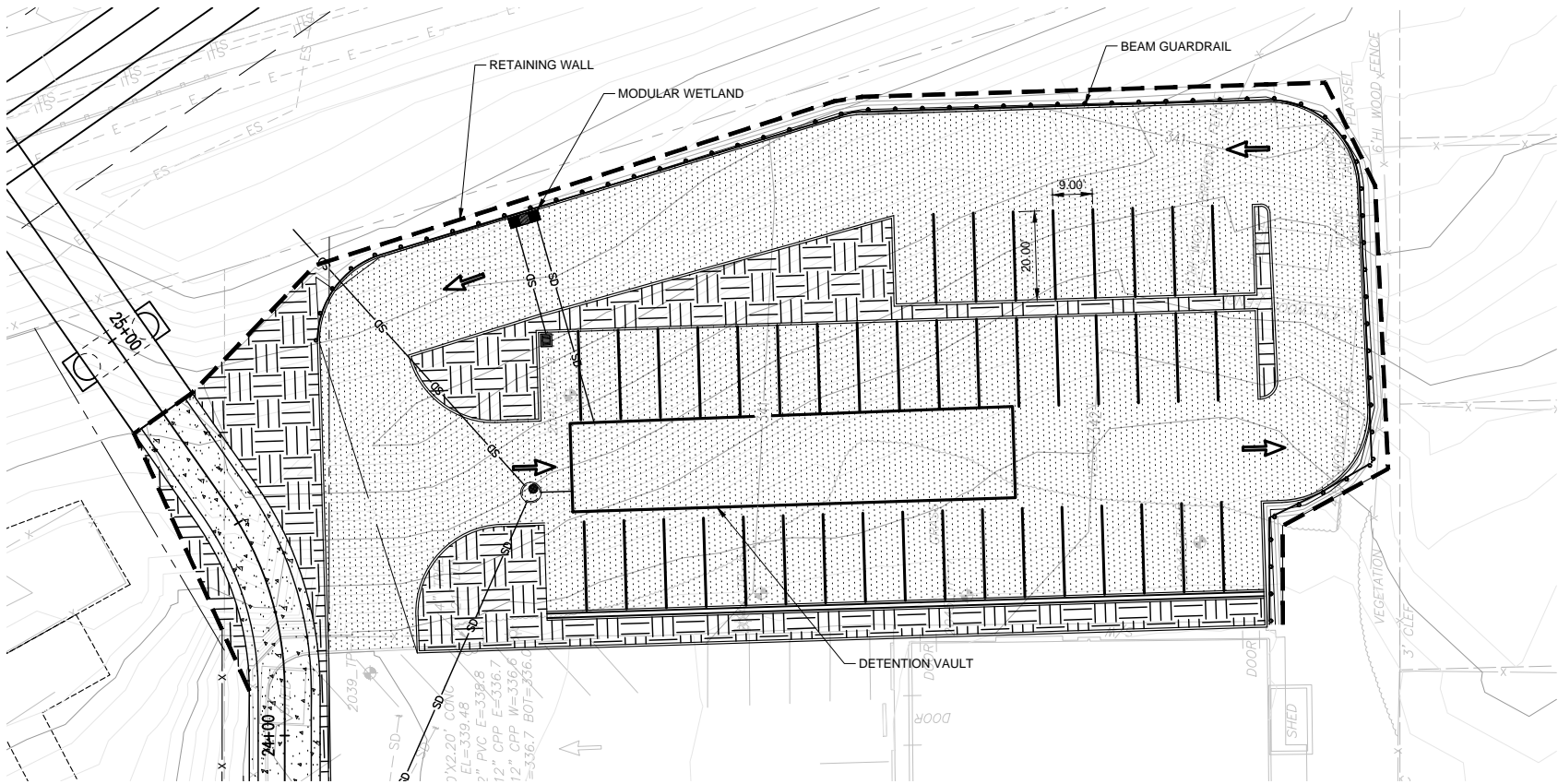


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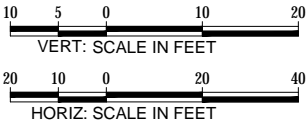
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N 148 NON-MOTORIZED BRIDGE  
WEST OPTION 2 SOUTH,EAST OPTION B

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# Appendix 1

## West Side Trail Connection

### Option 3 - Full Build-Out North



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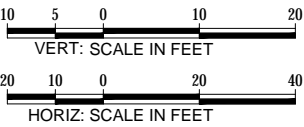
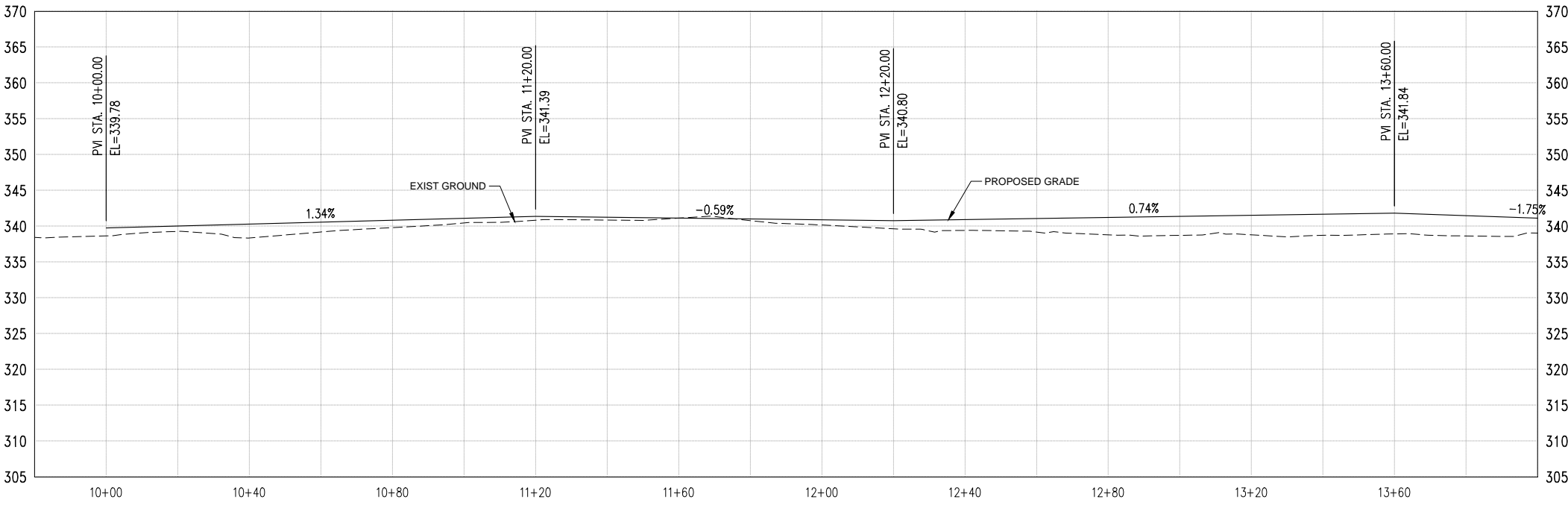
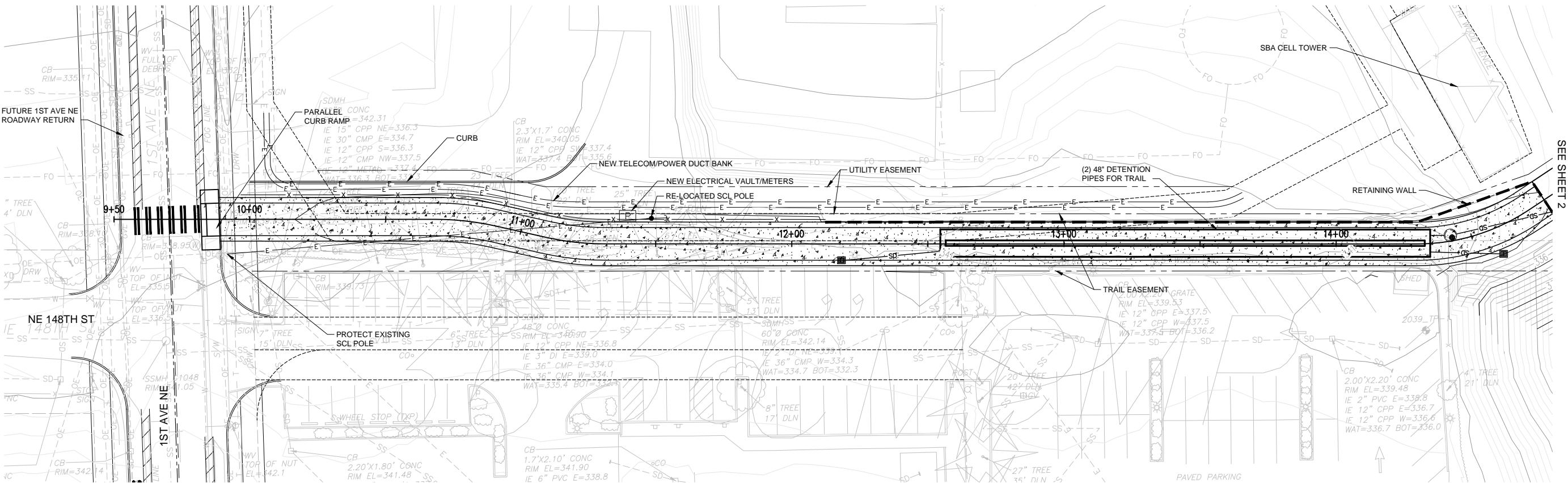


# WEST TRAIL CONNECTION TO 1ST AVENUE NE



OPTION 2 NORTH - FULL BUILD-OUT





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N 148 NON-MOTORIZED BRIDGE  
WEST OPTION 3 NORTH, EAST OPTION C

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# Appendix 1

## West Side Trail Connection

### West Side Trail Sections



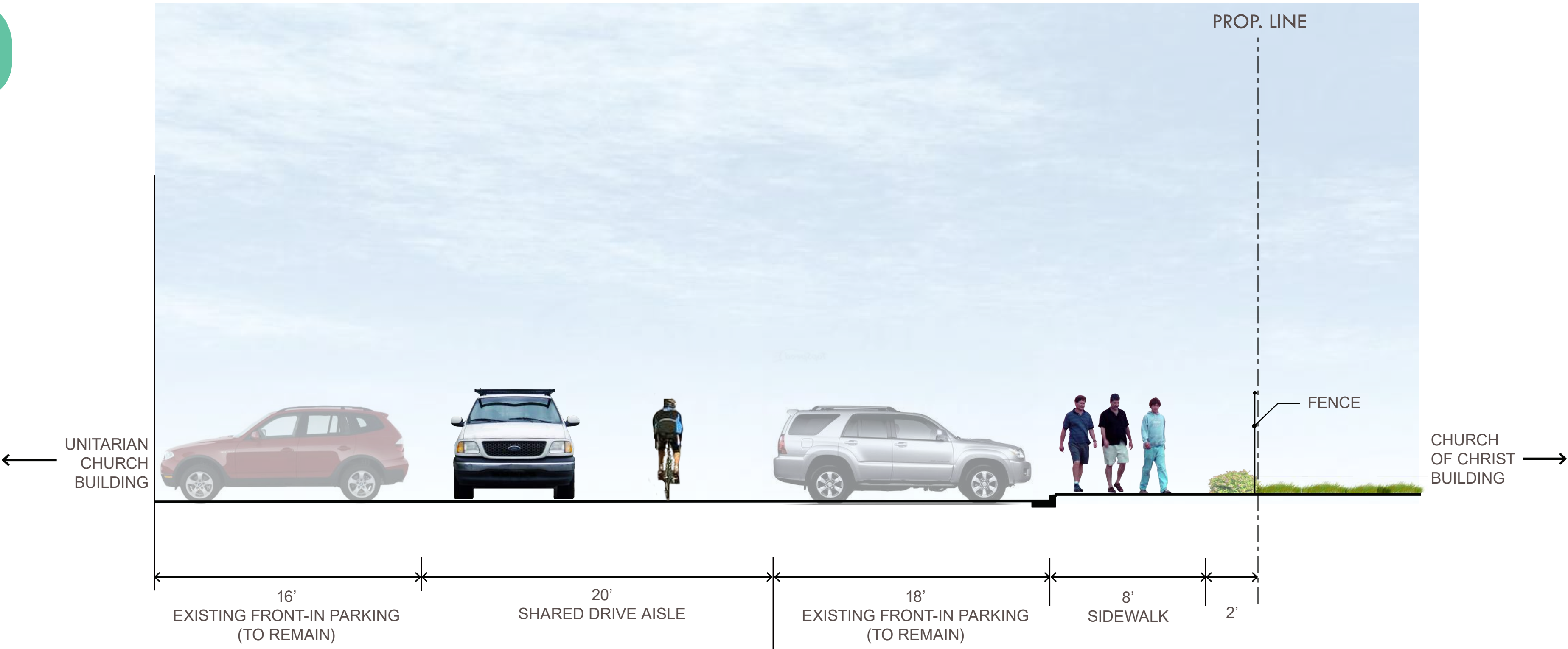
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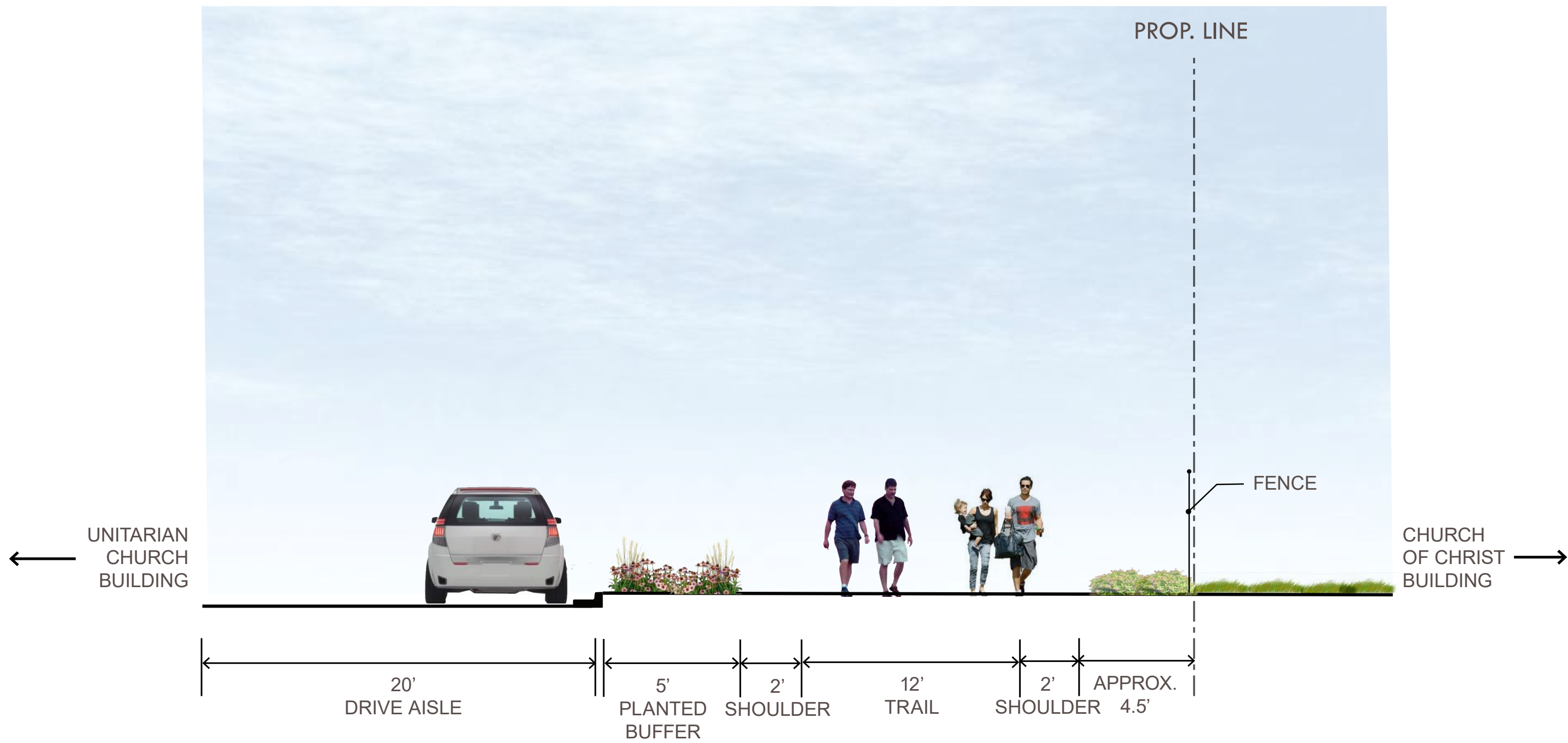
# WEST SIDE TRAIL SECTIONS



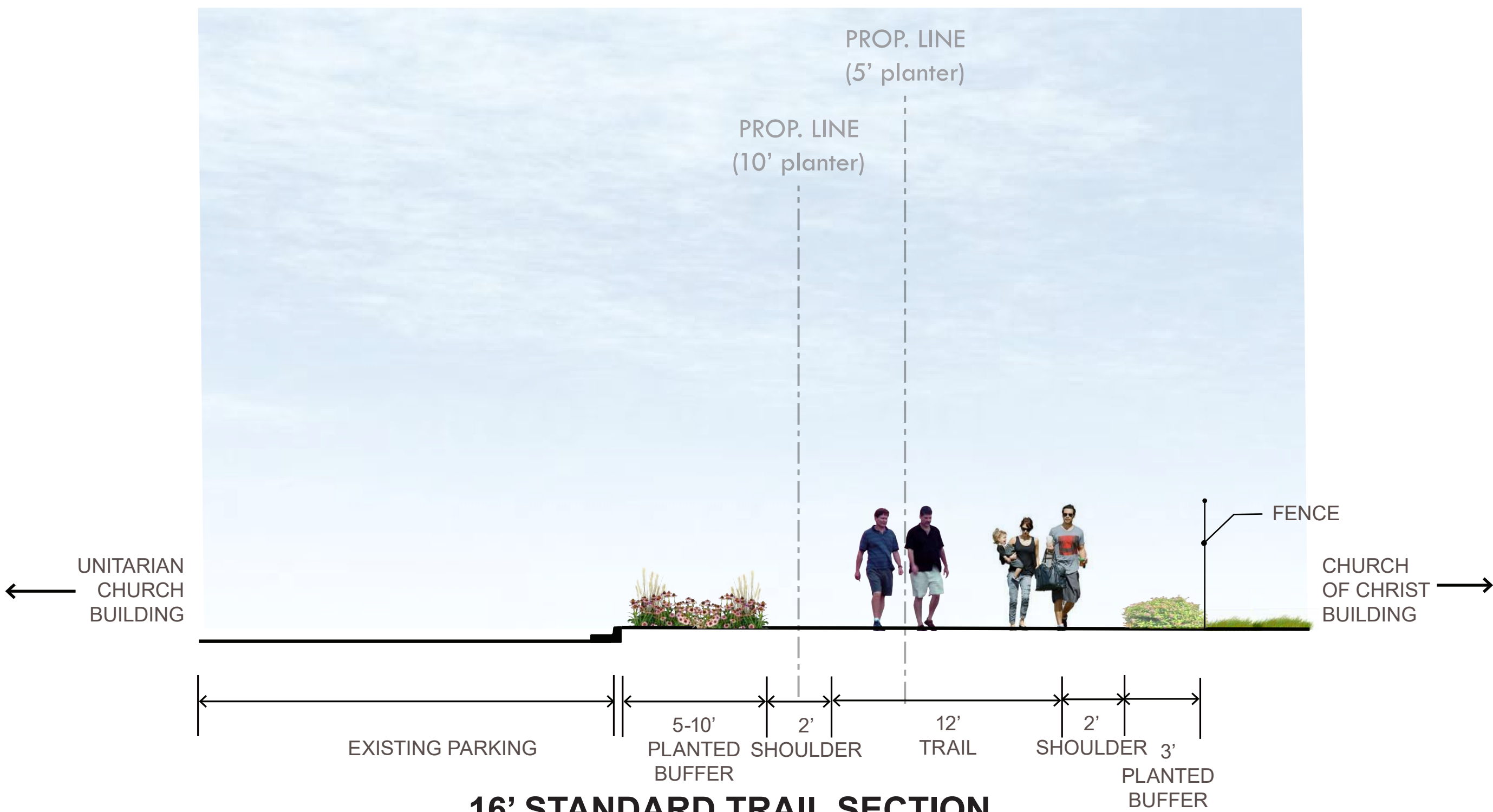
**WEST LANDING TRAIL SECTION  
(CUT @ RAMP ACCESS FROM BRIDGE)**



**20' SHARED DRIVE AISLE / TRAIL SECTION  
OPTION 1 (MINIMAL BUILD-OUT) - LOOKING WEST**



**16' STANDARD TRAIL SECTION  
OPTION 2 (FULL BUILD-OUT SOUTH) - LOOKING WEST**



**16' STANDARD TRAIL SECTION  
OPTION 3 (FULL BUILD-OUT NORTH) - LOOKING WEST**



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# Appendix 2

Main Span Bridge



# Appendix 2

## Main Span Bridge

### Tied Arch Concept



## **N 148th Non-Motorized Bridge, Main Span**

**Tied Arch, without Canopy**

View from Interstate 5, Looking North





**N 148th Non-Motorized Bridge, Main Span**  
**Tied Arch, without Canopy**  
View from Trail, Looking East





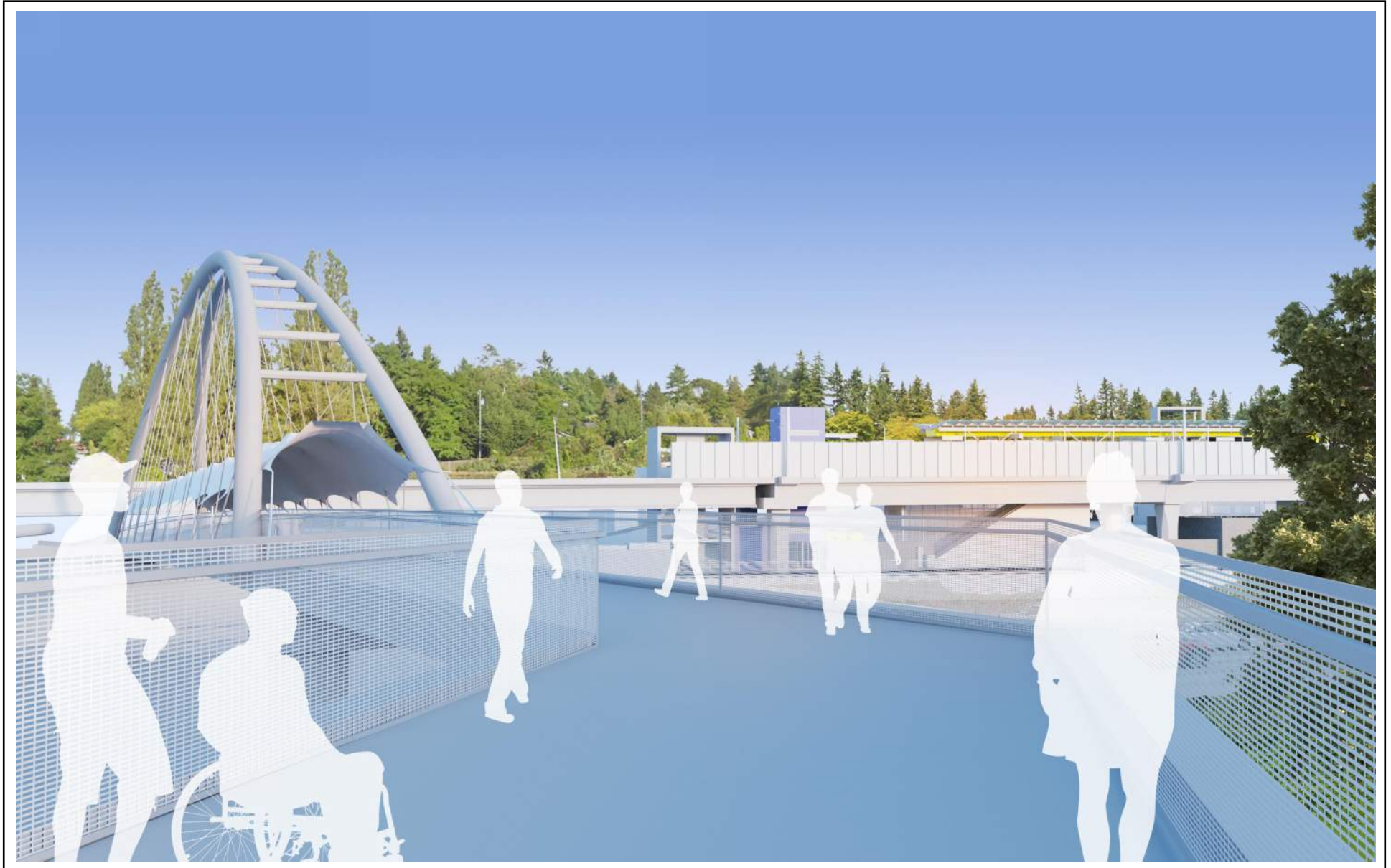
## N 148th Non-Motorized Bridge, Main Span

Tied Arch, with Canopy  
View from Interstate 5, Looking North





**N 148th Non-Motorized Bridge, Main Span**  
Tied Arch, with Canopy  
View from Trail, Looking East





# Appendix 2

## Main Span Bridge

### Combination Arch Concept



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**N 148th Non-Motorized Bridge, Main Span**  
Combination Arch, without Canopy  
View from Interstate 5, Looking North





**N 148th Non-Motorized Bridge, Main Span**  
Combination Arch, without Canopy  
View from Trail, Looking East



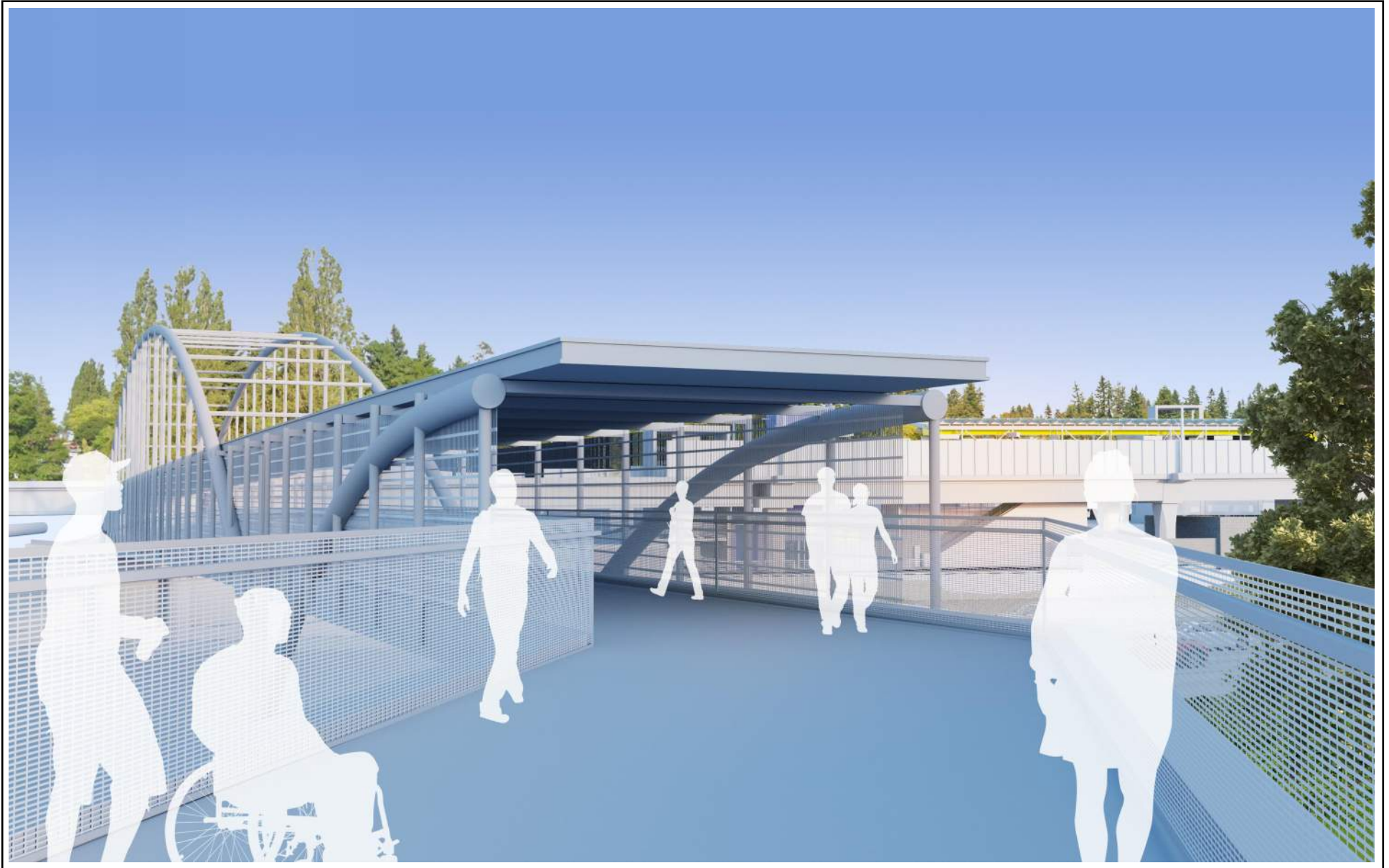


**N 148th Non-Motorized Bridge, Main Span**  
Combination Arch, with Canopy  
View from Interstate 5, Looking North





**N 148th Non-Motorized Bridge, Main Span**  
Combination Arch, with Canopy  
View from Trail, Looking East





# Appendix 2

## Main Span Bridge

### Truss Concept



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## N 148th Non-Motorized Bridge, Main Span

Truss, without Canopy  
View from Interstate 5, Looking North





## N 148th Non-Motorized Bridge, Main Span

Truss, without Canopy

View from Trail, Looking East





**N 148th Non-Motorized Bridge, Main Span**  
Truss, with Canopy  
View from Interstate 5, Looking North





## N 148th Non-Motorized Bridge, Main Span

Truss, with Canopy  
View from Trail, Looking East





# Appendix 2

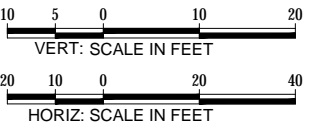
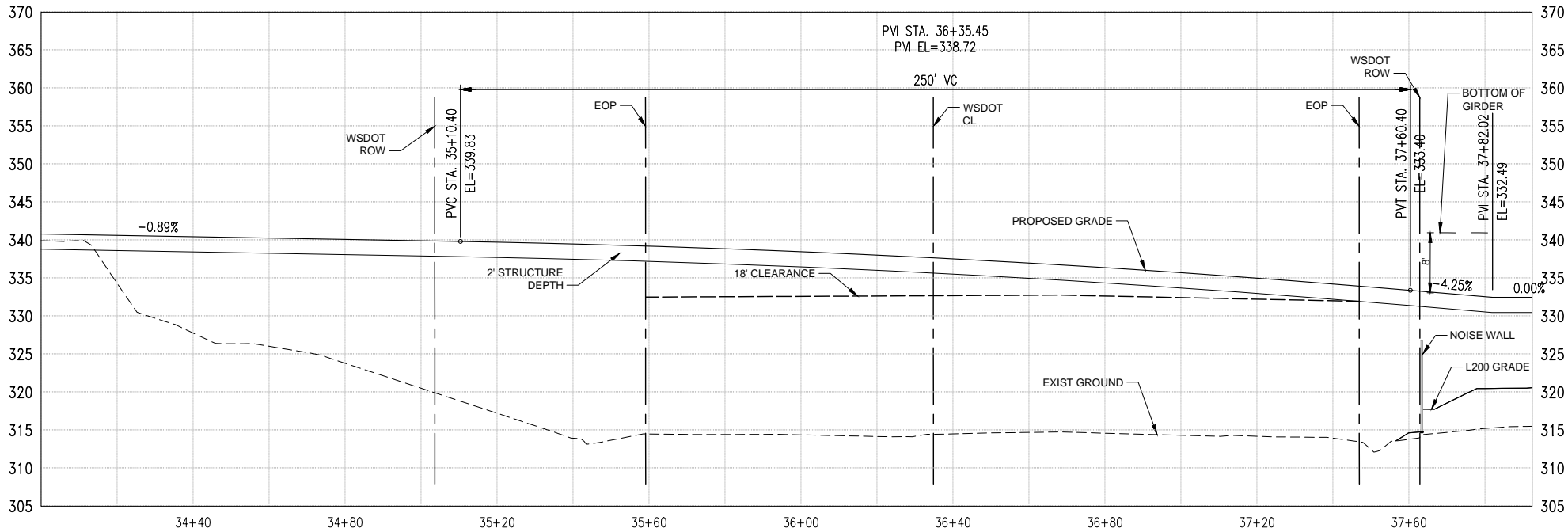
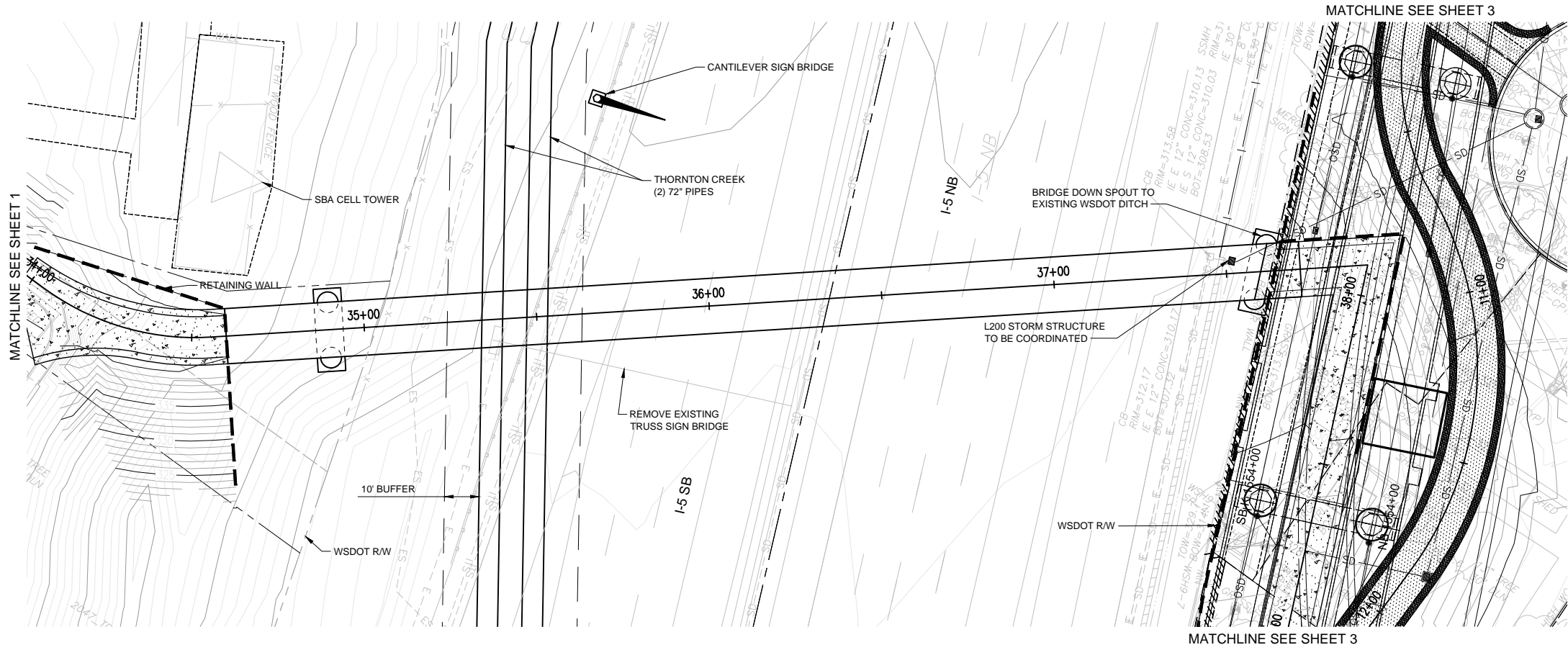
## Main Span Bridge

### Preliminary Engineering Plans



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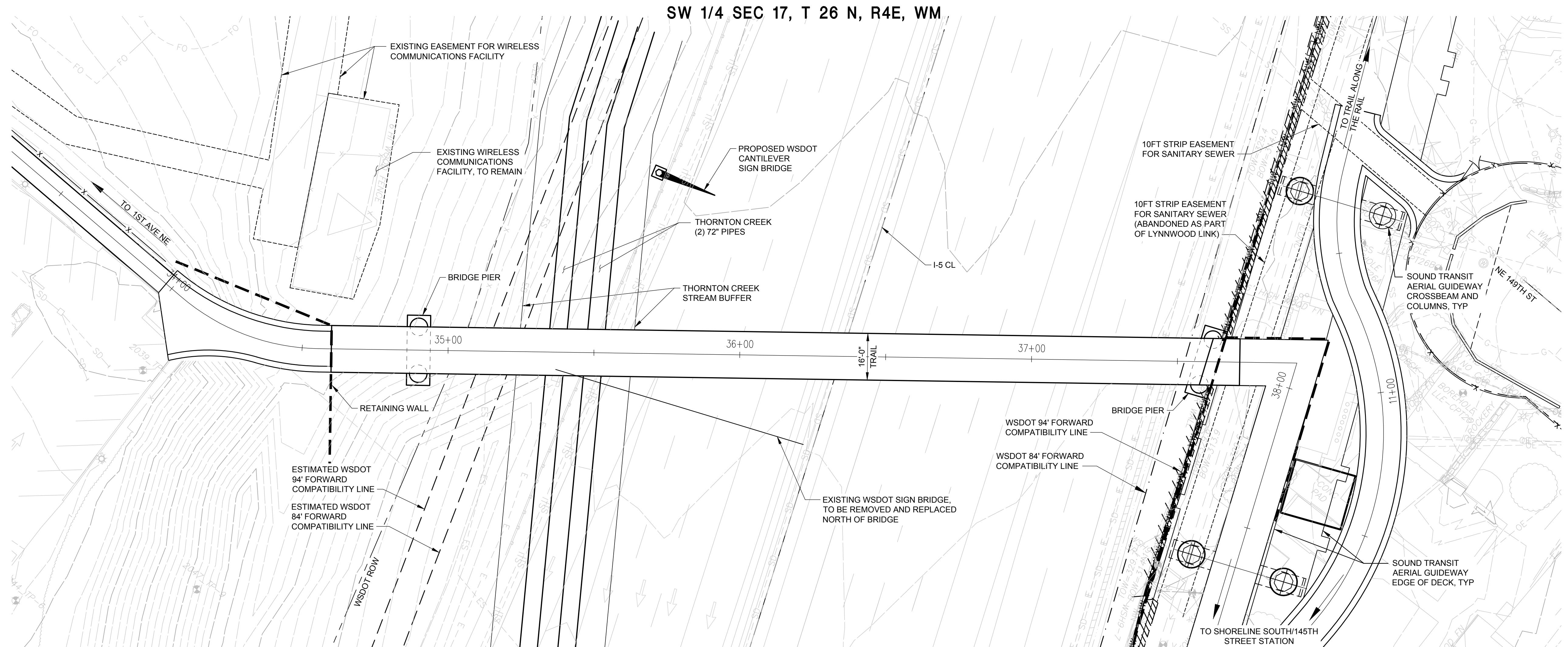
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WEST OPTION 1, EAST OPTION A

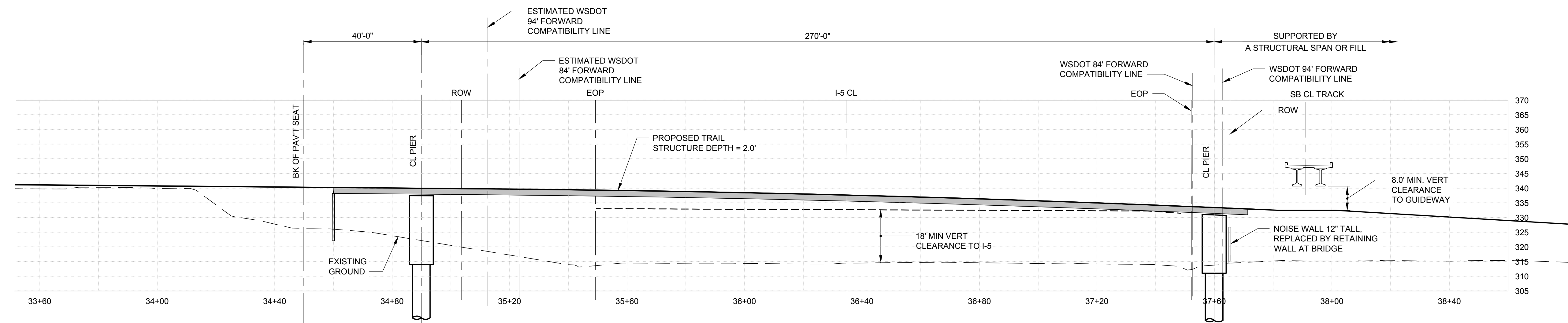
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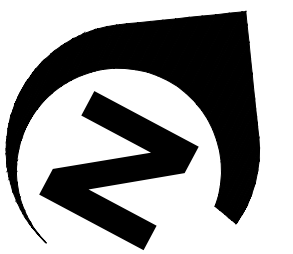
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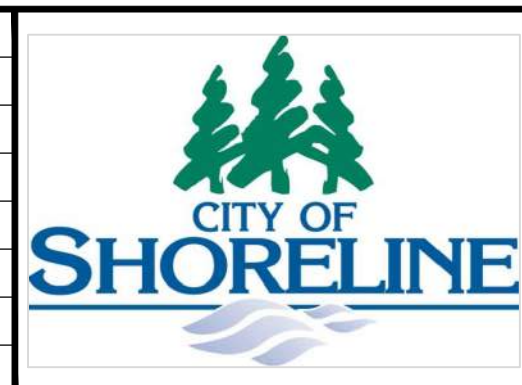


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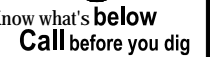
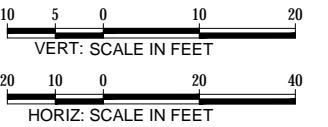
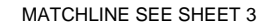


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BRIDGE OPTION A

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**N 148 NON-MOTORIZED BRIDGE**

WEST OPTION 2 SOUTH,EAST OPTION B

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PROJECT NO. 9263

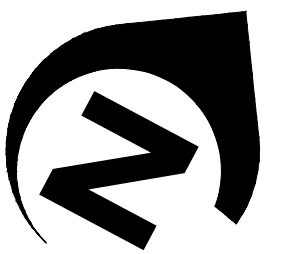
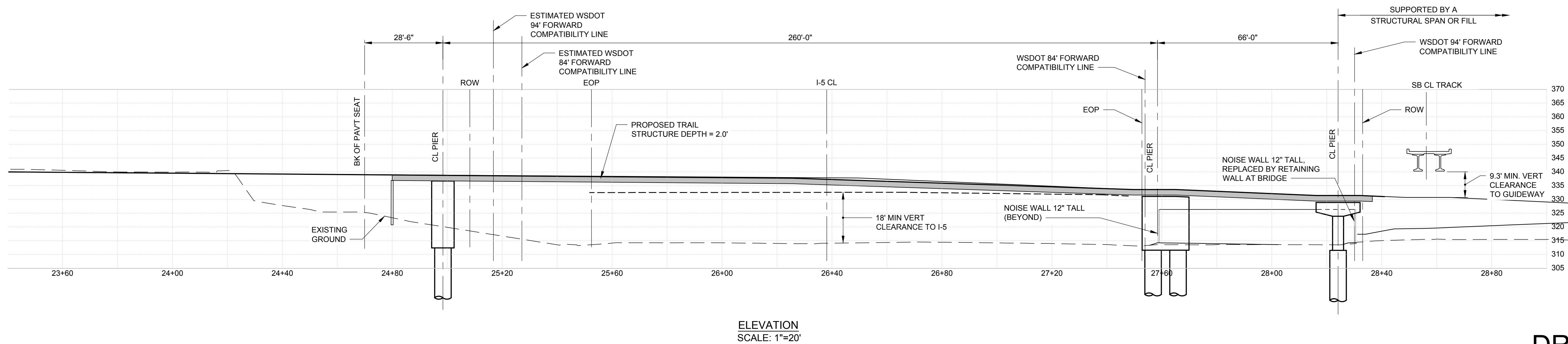
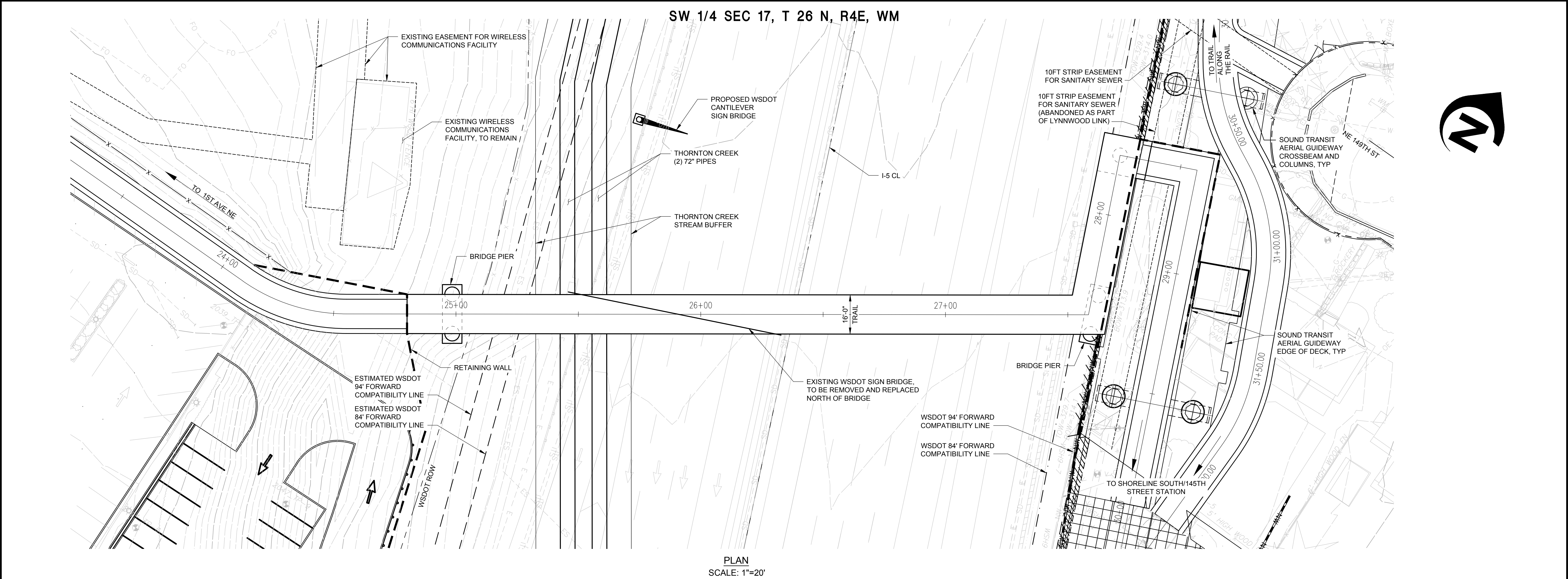
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SHEET NO. #### OF XX



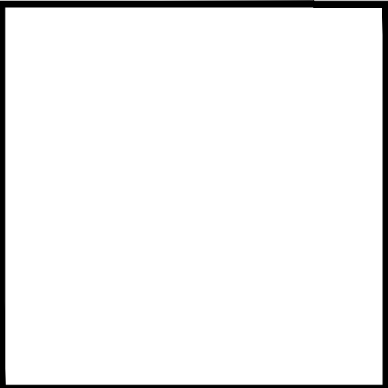
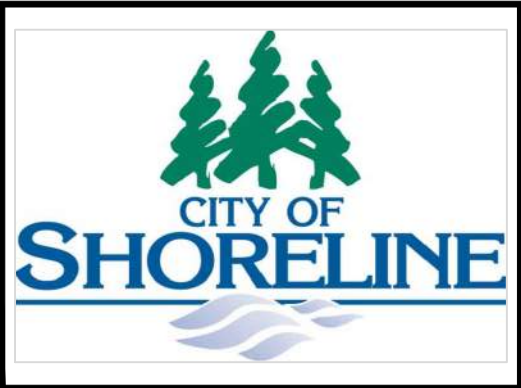
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Know what's below  
Call before you dig

DRAFT TS&L

MARK	REVISION DESCRIPTION	BY	APP.	DATE

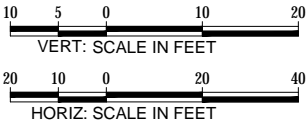
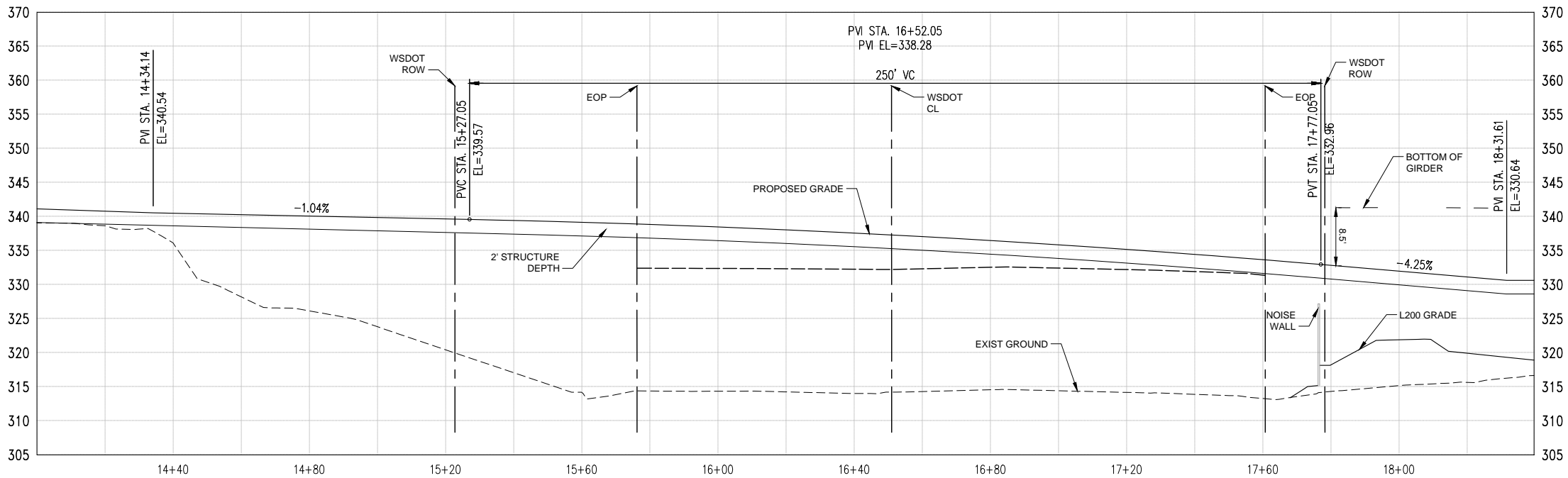
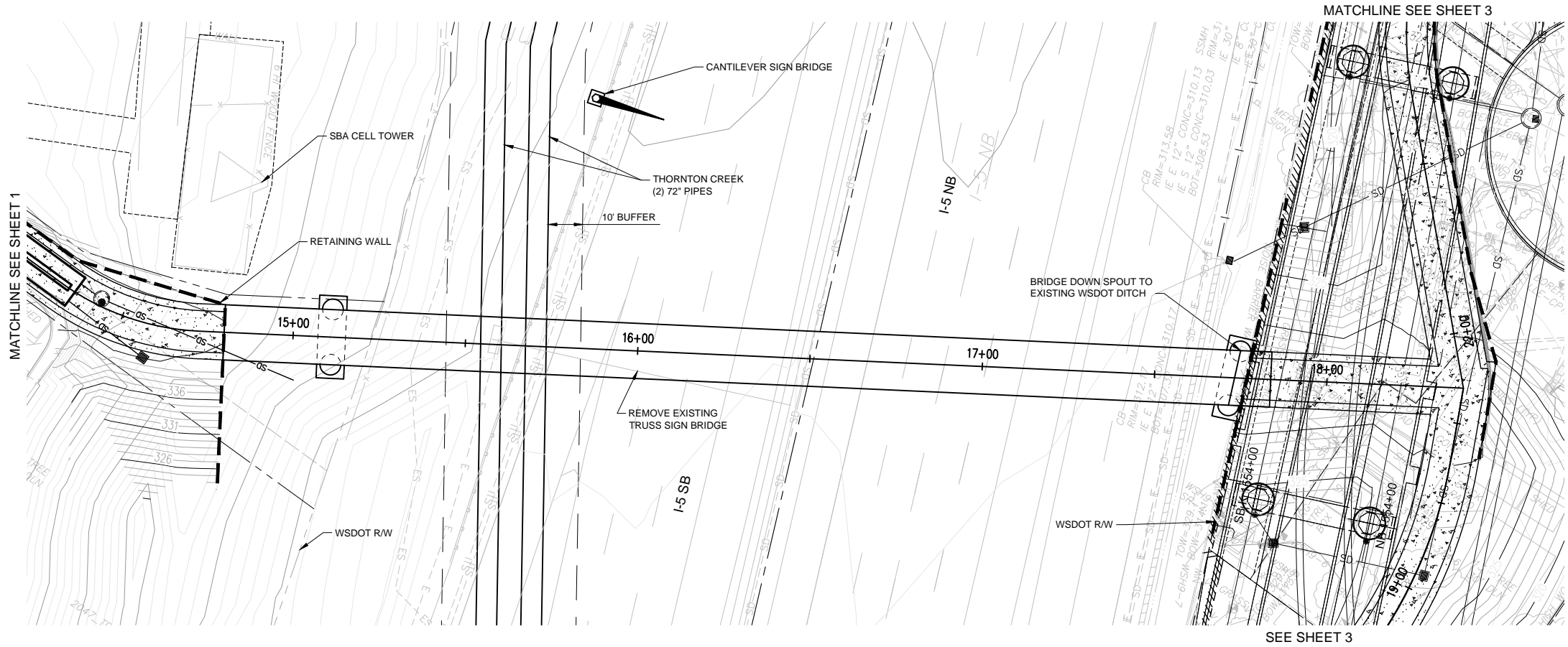


DRAWN BY HDT  
DESIGN BY RCL  
CHECK BY    
PROJ MGR AWO

CITY OF SHORELINE  
**N 148 NON-MOTORIZED BRIDGE**  
BRIDGE OPTION B

DRAWING NO. S-2  
PROJECT NO. 9263  
FED AID NO. XXXX  
DATE: XX  
SHEET NO. X OF XX





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DRAFT TS&L

MARK	REVISION DESCRIPTION	BY	APP.	DATE



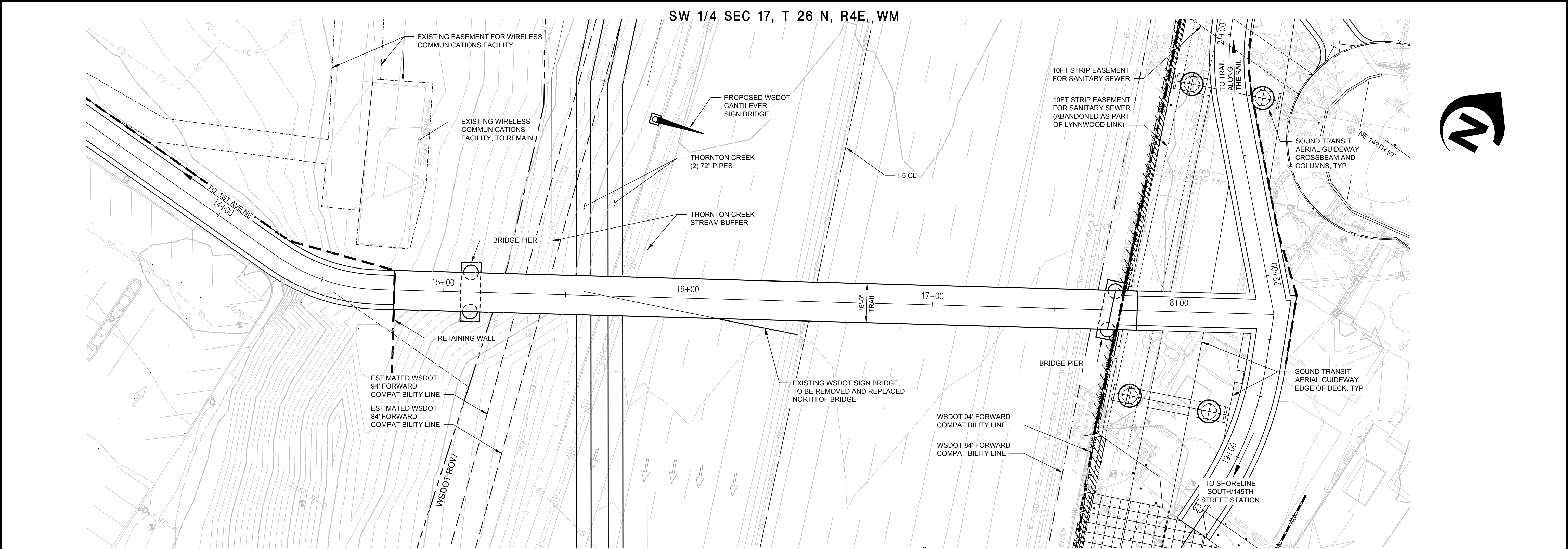
DRAWN BY JS  
DESIGN BY KI  
CHECK BY JM  
PROJ MGR LB

CITY OF SHORELINE  
N 148 NON-MOTORIZED BRIDGE  
WEST OPTION 3 NORTH, EAST OPTION C

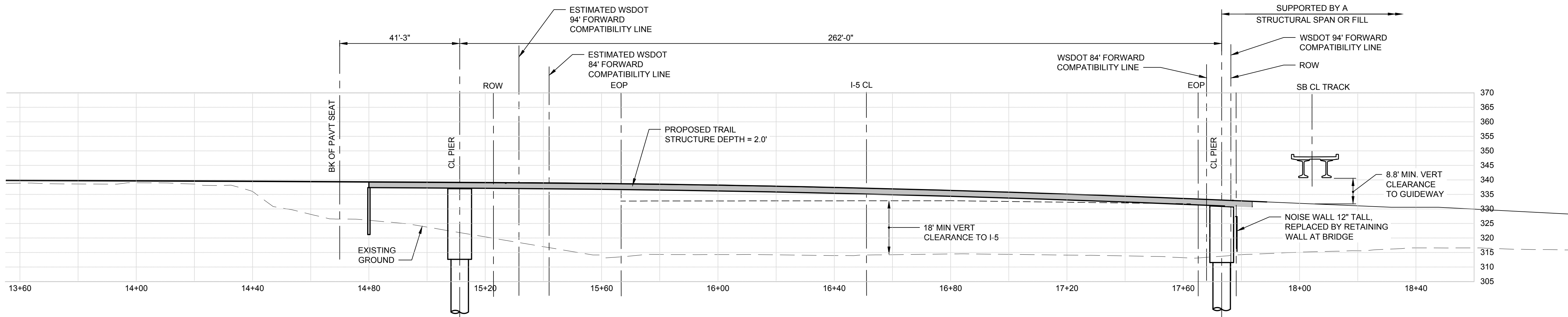
DRAWING NO. C-2  
PROJECT NO. 9263  
FED AID NO. XXXX  
DATE: XXXX  
SHEET NO. ##### OF XX



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PLAN  
SCALE: 1"=20'



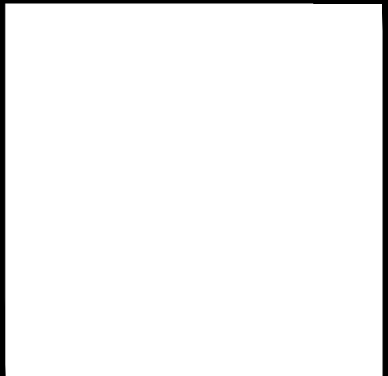
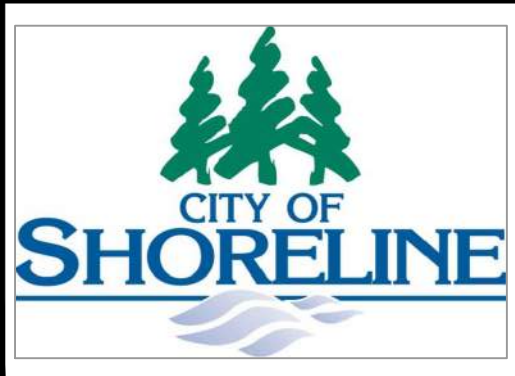
ELEVATION  
SCALE: 1"=20'



Know what's below  
Call before you dig

DRAFT TS&L

MARK	REVISION DESCRIPTION	BY	APP.	DATE



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DESIGN BY	RCL
CHECK BY	
PROJ MGR	AWO

CITY OF SHORELINE

N 148 NON-MOTORIZED BRIDGE

BRIDGE OPTION C

DRAWING NO.	S-3
PROJECT NO.	9263
FED AID NO.	XXXX
DATE:	XX
SHEET NO.	X OF XX







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# Appendix 3

East Side Bridge Landing



# Appendix 3

## East Side Bridge Landing

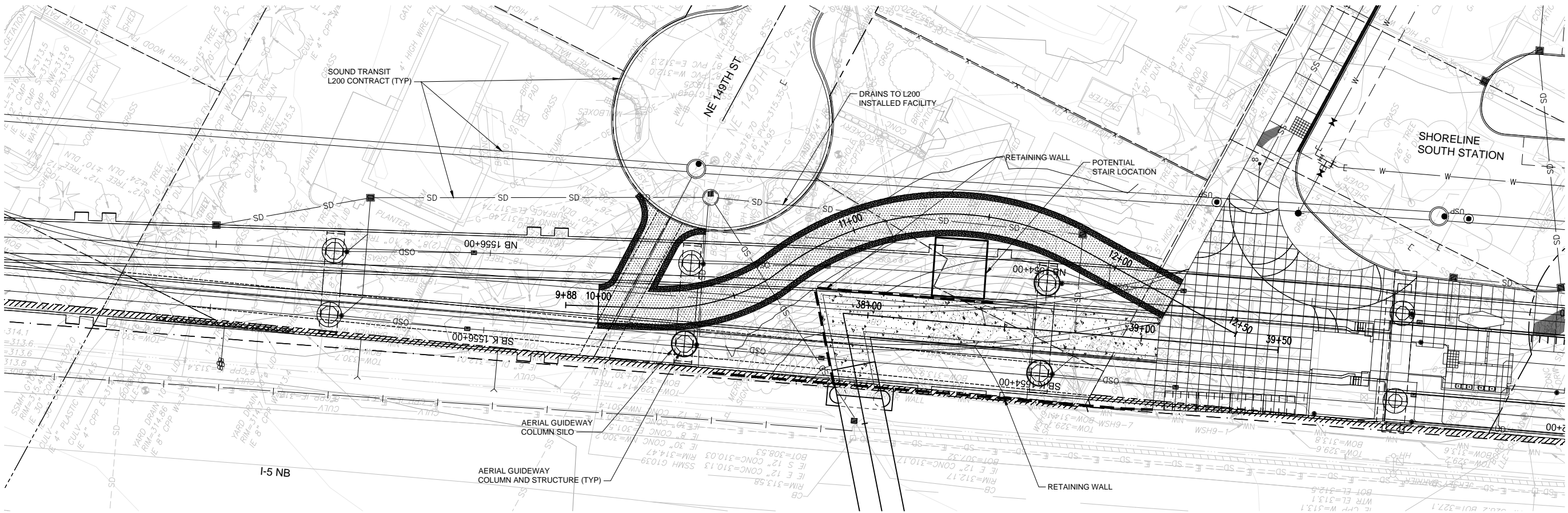
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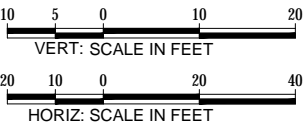
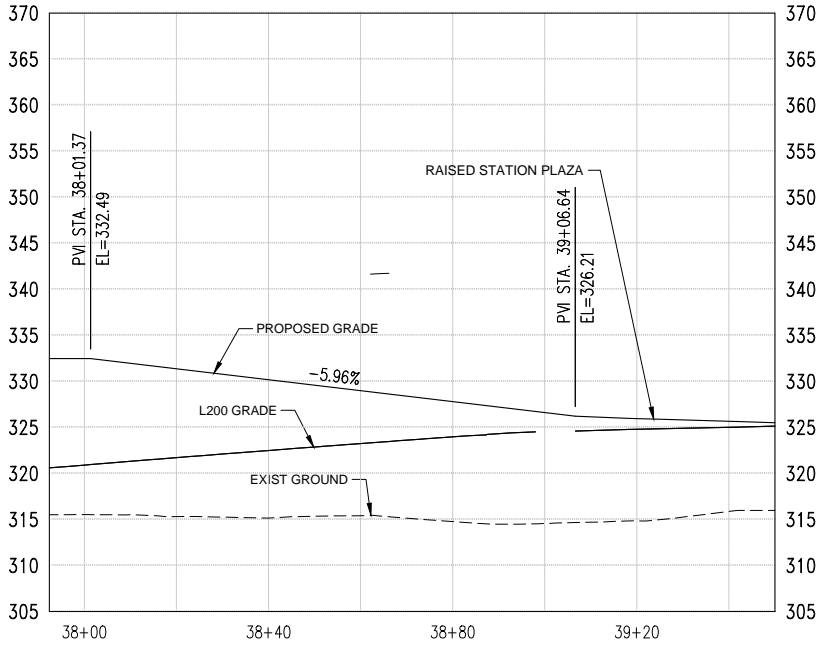
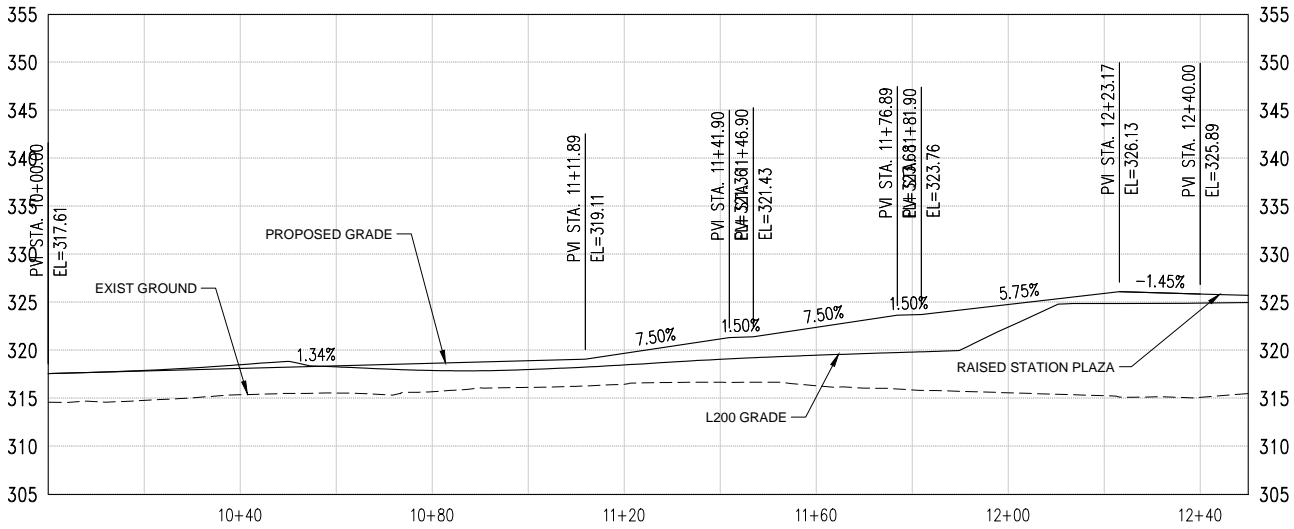
EAST BRIDGE LANDING







MATCHLINE SEE SHEET 2



Know what's below  
Call before you dig

DRAFT TS&L

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MARK	REVISION DESCRIPTION	BY	APP.	DATE



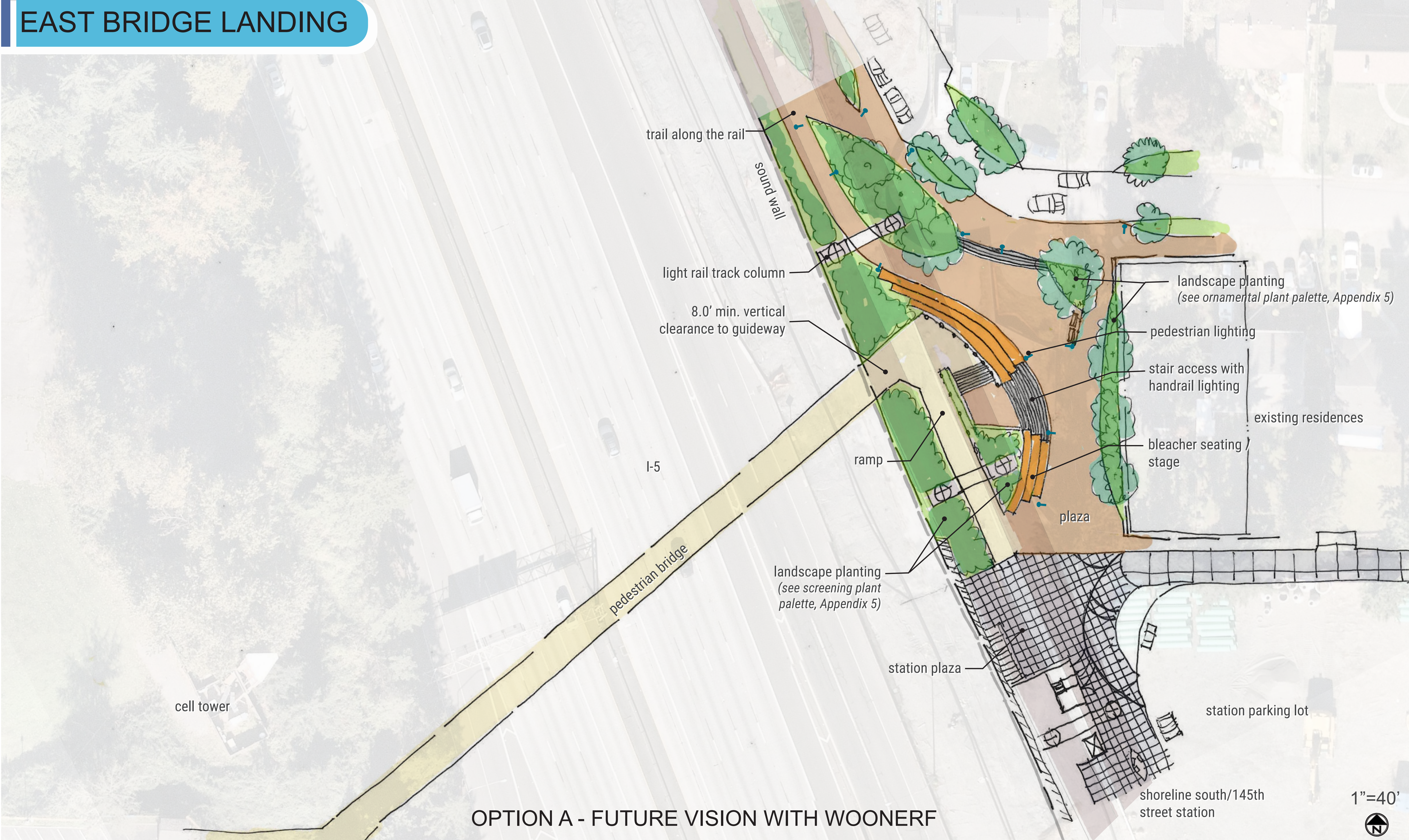
DRAWN BY JS  
DESIGN BY KI  
CHECK BY JM  
PROJ MGR LB

CITY OF SHORELINE  
N 148 NON-MOTORIZED BRIDGE  
WEST OPTION 1, EAST OPTION A

DRAWING NO. C-3  
PROJECT NO. 9263  
FED AID NO. XXXX  
DATE: XXXX  
SHEET NO. #### OF XX



EAST BRIDGE LANDING



OPTION A - FUTURE VISION WITH WOONERF

1"=40'  
N



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# Appendix 3

## East Side Bridge Landing

### Option B



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EAST BRIDGE LANDING



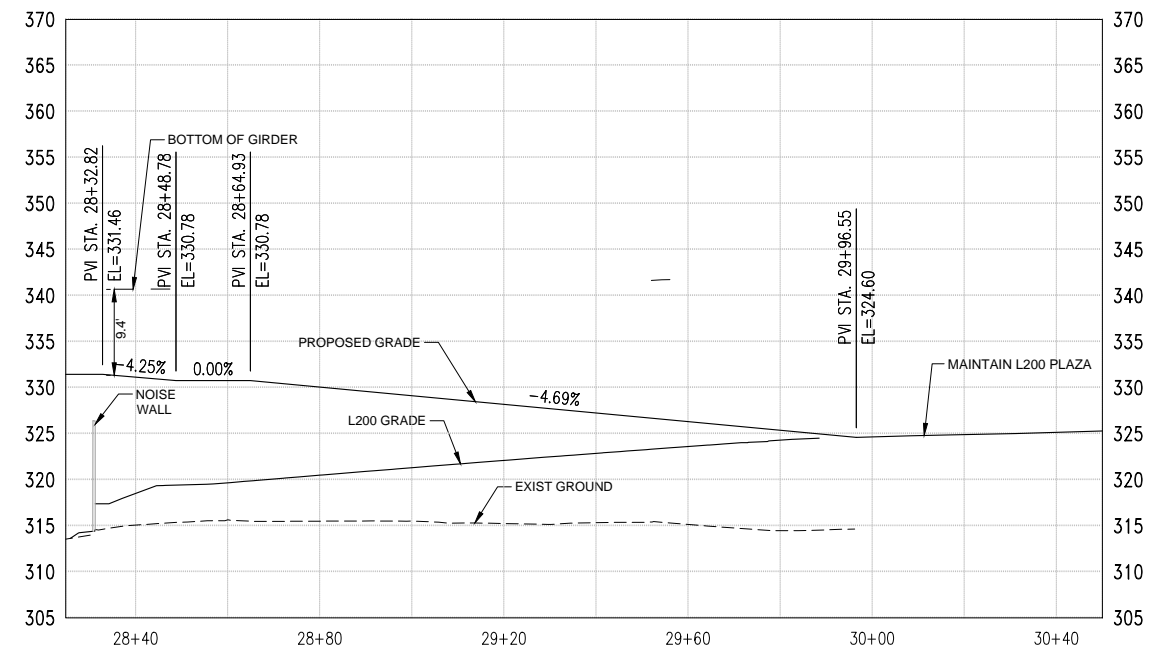
OPTION B

SHORELINE - N 148TH NON-MOTORIZED BRIDGE

FEBRUARY 2020







VERT: SCALE IN FEET

HORIZ: SCALE IN FEET



DRAFT TS&L

DRAWING NO. C-3  
PROJECT NO. 9263  
FED AID NO. XXXX  
DATE: XXXX  
SHEET NO. #### OF XX

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MARK	REVISION DESCRIPTION	BY	APP.	DATE



kpff

DRAWN BY	JS
DESIGN BY	KI
CHECK BY	JM
PROJ MGR	LB

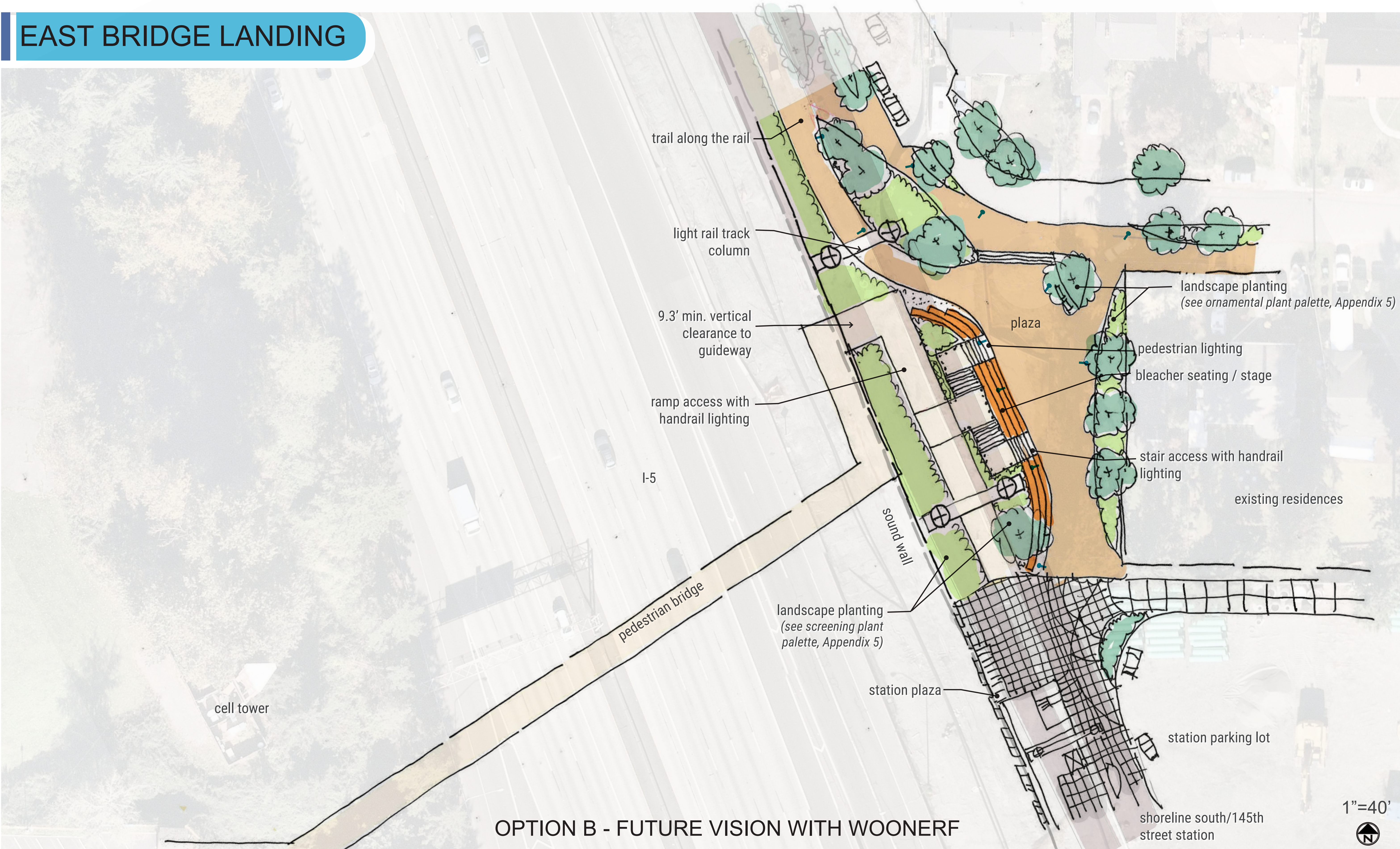
CITY OF SHORELINE

N 148 NON-MOTORIZED BRIDGE

WEST OPTION 2 SOUTH,EAST OPTION B



EAST BRIDGE LANDING



OPTION B - FUTURE VISION WITH WOONERF

SHORELINE - N 148TH NON-MOTORIZED BRIDGE

FEBRUARY 2020





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# Appendix 3

## East Side Bridge Landing

### Option C



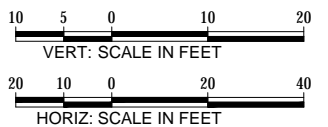
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EAST BRIDGE LANDING







DRAFT TS&L

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PROJECT NO. 9263  
FED AID NO. XXXX  
DATE: XXXX  
SHEET NO. #### OF XX

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MARK	REVISION DESCRIPTION	BY	APP.	DATE



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DRAWN BY	JS
DESIGN BY	KI
CHECK BY	JM
PROJ MGR	LB

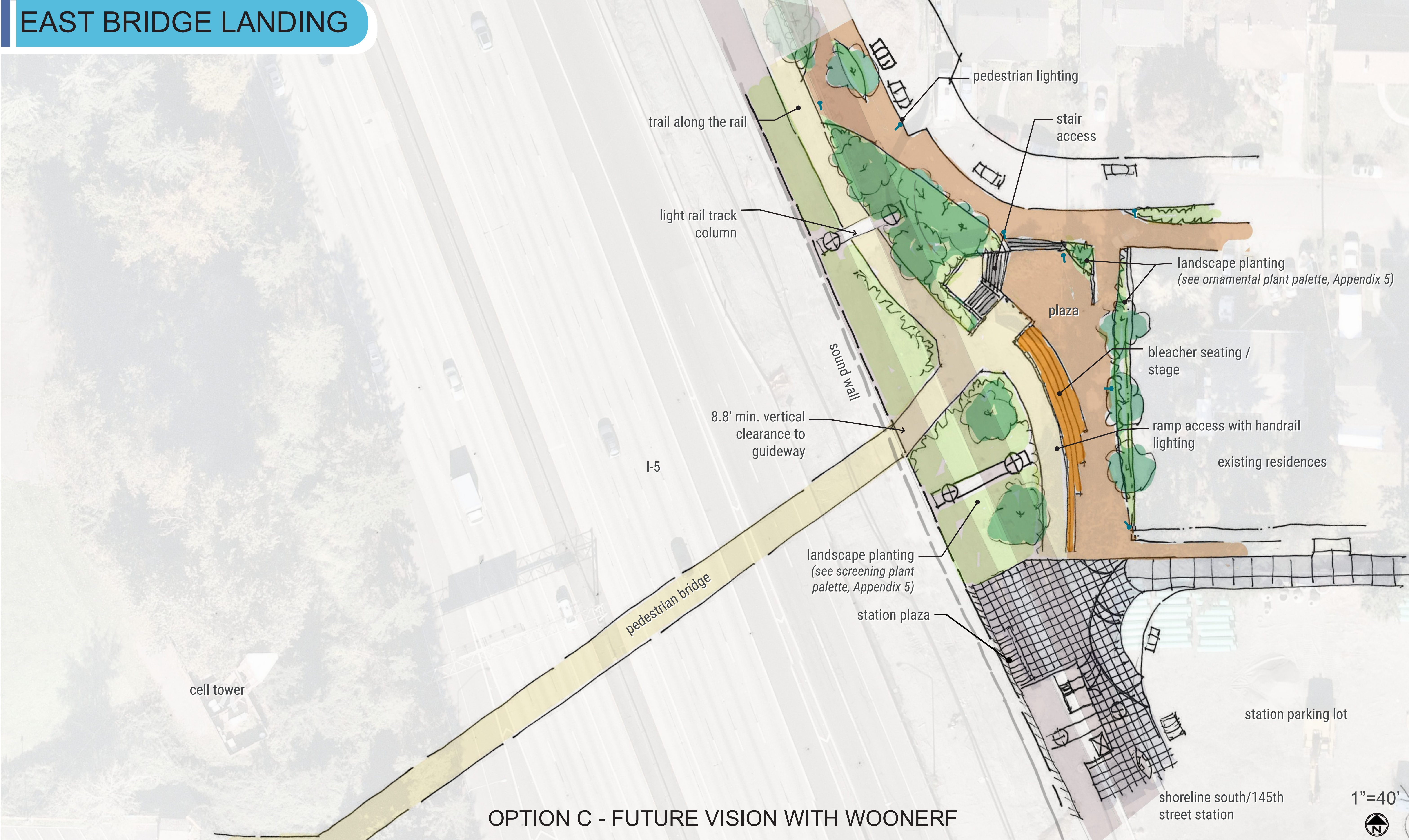
CITY OF SHORELINE

N 148 NON-MOTORIZED BRIDGE

WEST OPTION 3 NORTH, EAST OPTION C



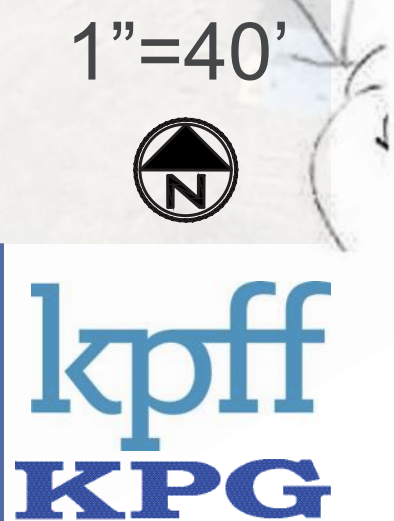
EAST BRIDGE LANDING



OPTION C - FUTURE VISION WITH WOONERF

SHORELINE - N 148TH NON-MOTORIZED BRIDGE

FEBRUARY 2020





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# Appendix 3

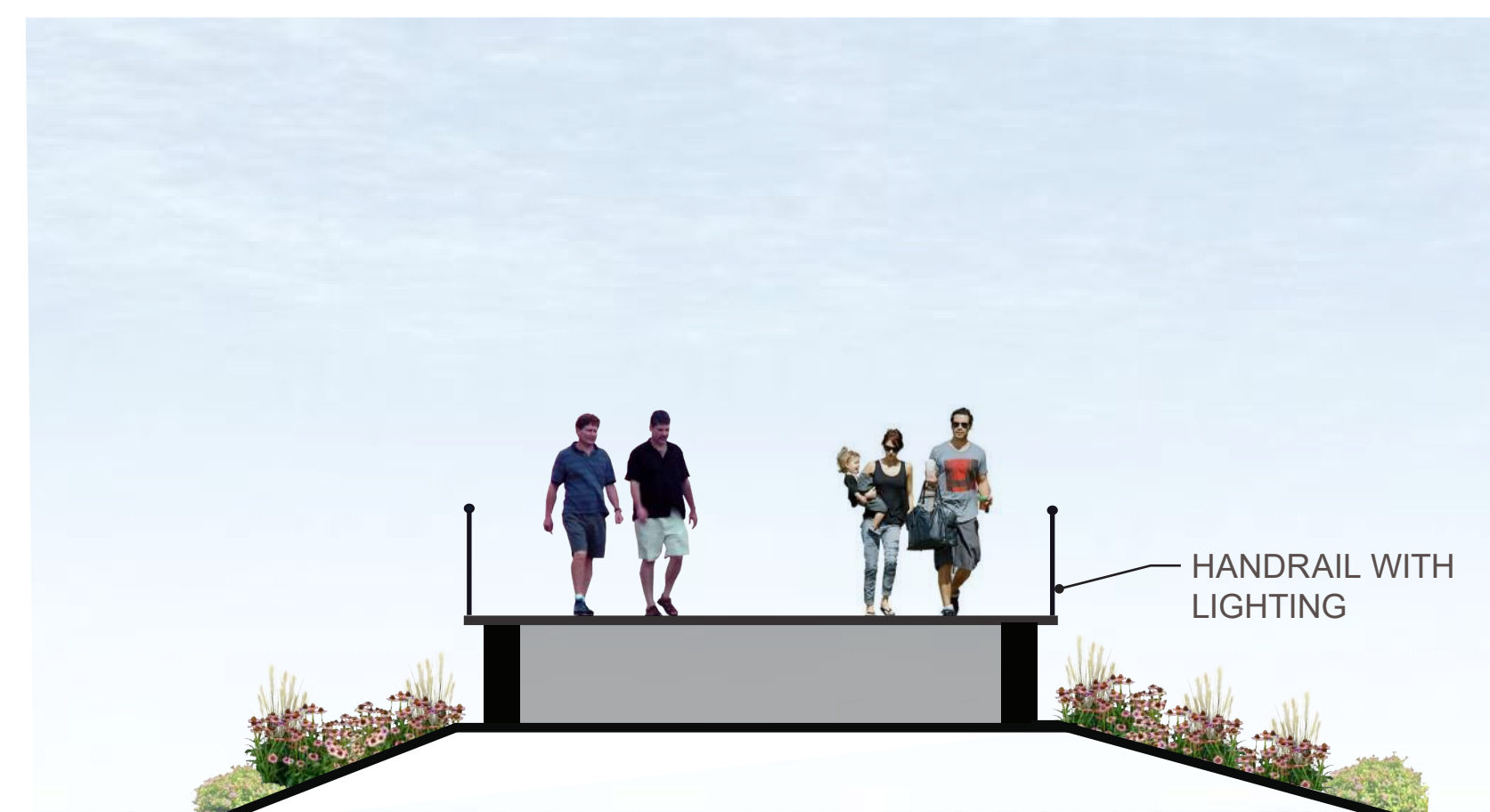
## East Side Bridge Landing

### Bridge Landing Trail Section



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**EAST LANDING TRAIL SECTION**  
 (@ RAMP DOWN FROM BRIDGE)



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# Appendix 4

## Project Cost



# Appendix 4

## Project Cost

### Project Cost Summary



TS&L COST SUMMARY MATRIX  
PREPARED BY: LEB  
DATE: 5/28/2020

YR	%		WEST APPROACH			BRIDGE SPAN			EAST LANDING		
			Min. Build-out	Full Build-out	Full Build-out						
			Option 1	Option 2	Option 3	Tied Arch	Combo Arch	Truss	Option A	Option B	Option C
		Construction	\$ 529,528.00	\$ 1,937,294.00	\$ 1,093,825.00	\$ 5,844,200.00	\$ 6,282,200.00	\$ 7,019,850.00	\$ 1,649,590.00	\$ 2,098,305.00	\$ 1,750,675.00
	10%	Mobilization	\$ 52,952.80	\$ 193,729.40	\$ 109,382.50	\$ 584,420.00	\$ 628,220.00	\$ 701,985.00	\$ 164,959.00	\$ 209,830.50	\$ 175,067.50
	40%	Contingency	\$ 232,992.32	\$ 852,409.36	\$ 481,283.00	\$ 2,571,448.00	\$ 2,764,168.00	\$ 3,088,734.00	\$ 725,819.60	\$ 923,254.20	\$ 770,297.00
		Staging/Laydown	\$ 100,000.00	\$ 100,000.00	\$ 100,000.00	\$ 300,000.00	\$ 300,000.00	\$ 300,000.00	\$ 100,000.00	\$ 100,000.00	\$ 100,000.00
		Construction Subtotal	\$ 915,473.12	\$ 3,083,432.76	\$ 1,784,490.50	\$ 9,300,068.00	\$ 9,974,588.00	\$ 11,110,569.00	\$ 2,640,368.60	\$ 3,331,389.70	\$ 2,796,039.50
2024	4%	Escalated	\$ 1,070,974.07	\$ 3,607,180.21	\$ 2,087,601.49	\$ 10,879,764.16	\$ 11,668,857.15	\$ 12,997,794.25	\$ 3,088,857.81	\$ 3,897,254.76	\$ 3,270,970.74
	20%	Engineering Design	\$ 163,094.62	\$ 596,686.55	\$ 336,898.10	\$ 1,800,013.60	\$ 1,934,917.60	\$ 2,162,113.80	\$ 508,073.72	\$ 646,277.94	\$ 539,207.90
2022	4%	Escalated	\$ 176,403.15	\$ 645,376.17	\$ 364,388.98	\$ 1,946,894.71	\$ 2,092,806.88	\$ 2,338,542.29	\$ 549,532.54	\$ 699,014.22	\$ 583,207.26
	25%	CM	\$ 203,868.28	\$ 745,858.19	\$ 421,122.63	\$ 2,250,017.00	\$ 2,418,647.00	\$ 2,702,642.25	\$ 635,092.15	\$ 807,847.43	\$ 674,009.88
2024	4%	Escalated	\$ 238,497.05	\$ 872,548.59	\$ 492,653.91	\$ 2,632,201.65	\$ 2,829,474.90	\$ 3,161,709.17	\$ 742,967.99	\$ 945,067.23	\$ 788,496.22
		ROW Cost	\$ 1,878,285.00	\$ 1,307,235.00	\$ 1,140,975.00						
2022	6%	Escalated	\$ 2,110,441.03	\$ 1,468,809.25	\$ 1,281,999.51	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		TOTAL	\$ 3,596,315.29	\$ 6,593,914.22	\$ 4,226,643.89	\$ 15,458,860.52	\$ 16,591,138.93	\$ 18,498,045.71	\$ 4,381,358.33	\$ 5,541,336.20	\$ 4,642,674.23
		ROUNDED TOTAL	\$ 3,596,320.00	\$ 6,593,920.00	\$ 4,226,650.00	\$ 15,458,870.00	\$ 16,591,140.00	\$ 18,498,050.00	\$ 4,381,360.00	\$ 5,541,340.00	\$ 4,642,680.00

SUMMARY TABLE		EAST LANDING		
WEST APPROACH	BRIDGE SPAN	Option A	Option B	Option C
Minimum Build-out - Option 1	Tied Arch	\$ 23,436,550.00	\$ 24,596,530.00	\$ 23,697,870.00
\$ 3,596,320.00	Combination Arch	\$ 24,568,820.00	\$ 25,728,800.00	\$ 24,830,140.00
	Truss	\$ 26,475,730.00	\$ 27,635,710.00	\$ 26,737,050.00
Full Build-out - Option 2	Tied Arch	\$ 26,434,150.00	\$ 27,594,130.00	\$ 26,695,470.00
\$ 6,593,920.00	Combination Arch	\$ 27,566,420.00	\$ 28,726,400.00	\$ 27,827,740.00
	Truss	\$ 29,473,330.00	\$ 30,633,310.00	\$ 29,734,650.00
Full Build-out - Option 3	Tied Arch	\$ 24,066,880.00	\$ 25,226,860.00	\$ 24,328,200.00
\$ 4,226,650.00	Combination Arch	\$ 25,199,150.00	\$ 26,359,130.00	\$ 25,460,470.00
	Truss	\$ 27,106,060.00	\$ 28,266,040.00	\$ 27,367,380.00

(Anticipated Preferred Selection)



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# Appendix 4

## Project Cost

### West Side Trail Connection Cost



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N 148th Non-Motorized Bridge						
West Approach, Option 1 Minimal Build Out						
Item No.	Description	Unit	Unit Price	QTY	Total Price	Notes
<b>Preparation</b>						
1	CLEARING AND GRUBBING	ACRE	\$ 60,000	0.22	\$ 12,918	
2	REMOVE CURB	LF	\$ 5	22	\$ 110	
<b>Grading</b>						
3	ROADWAY EXCAVATION INCL. HAUL	CY	\$ 35	30	\$ 1,050	
4	GRAVEL BORROW INCL. HAUL	CY	\$ 40	990	\$ 39,600	
<b>Structure</b>						
5	MSE WALL	SF	\$ 45	1075	\$ 48,375.00	
6	BRIDGE SUPERSTRUCTURE	LS	\$ 46,700	1	\$ 46,700	
7	BRIDGE RAILING	LF	\$ 500	80	\$ 40,000	
<b>Drainage</b>						
8	---	-	\$ -	0	\$ -	
<b>Surfacing</b>						
9	CRUSHED SURFACING TOP COURSE	TON	\$ 60	60	\$ 3,600	
10	CURB RAMP	EA	\$ 6,000	1	\$ 6,000	
11	CEMENT CONCRETE SIDEWALK	SY	\$ 125	520	\$ 65,000	
<b>Erosion Control and Planting</b>						
12	LANDSCAPE EDGE RESTORATION - TRAIL	SY	\$ 45	850	\$ 38,250	
13	IRRIGATION SYSTEM COMPLETE	LS	\$ 35,000	1	\$ 35,000	
<b>Other</b>						
14	LIGHTING - TRAIL, PEDESTRIAN LUMINAIRE AND POLE	EA	\$ 2,200	8	\$ 17,600	
15	LIGHTING - TRAIL, CONDUIT, WIRING & ASSOCIATE ELECTRICAL COMPONENTS	LS	\$ 38,000	1	\$ 38,000	
16	RAILING, AT GRADE	LF	\$ 250	300	\$ 75,000	
17	PAVEMENT TREATMENT	SY	\$ 30	500	\$ 15,000	
18	DECORATIVE NODE PAVEMENT	SY	\$ 300	50	\$ 15,000	
19	BENCH	EA	\$ 3,500	1	\$ 3,500	
20	LITTER RECEPTACLE	EA	\$ 2,500	1	\$ 2,500	
21	WAYFINDING SIGN AND POLE	EA	\$ 3,500	1	\$ 3,500	
22	FENCING - TRAIL	LF	\$ 55	415	\$ 22,825	
<b>TOTAL, Construction Cost, West Approach, Option 1 Minimal Build Out</b>					\$ 529,528	
Construction Cost (including Mobilization)					10%	\$ 582,481
Contingency					40%	\$ 232,992
Construction Cost (including Mobilization, Contingency)						\$ 815,473
Engineering Design					20%	\$ 163,095 (% of Constr Cost incl Mob and Contingency)
Construction Management & Administration					25%	\$ 203,868 (% of Constr Cost incl Mob and Contingency)
ROW Cost (including TCE, ROW Administration)						\$ 1,878,285 (see details below)
<b>TOTAL ESTIMATED COST (2020)</b>						<b>\$ 3,060,730</b>

#### Notes

Total is in 2020 dollars  
 Costs do not include sales tax or cost associated with permitting.  
 Costs assume no cost for TCE on WSDOT property.  
 Costs assume no ROW condemnation will be necessary.

#### ROW Cost Summary

Description	Unit	Unit Price	QTY	Total Price	Notes
ROW ACQUISITION	-	-	-	\$ 1,701,780	Option 1
TEMP CONST EASEMENT (TCE), MAIN SPAN ASSEMBLY	-	-	-	\$ 127,505	11,016 SF on private property
RIGHT OF WAY ADMINISTRATION	-	-	-	\$ 49,000	based on # of parcels
<b>TOTAL, ROW Cost, West Approach, Option 1 Minimal Build Out</b>				\$ 1,878,285	



N 148th Non-Motorized Bridge						
West Approach, Option 2 Full Build Out, South						
Item No.	Description	Unit	Unit Price	QTY	Total Price	Notes
<b>Preparation</b>						
1	CLEARING AND GRUBBING - TRAIL	ACRE	\$ 60,000	0.33	\$ 19,800	
2	CLEARING AND GRUBBING - PARKING MITIGATION	ACRE	\$ 60,000	0.46	\$ 27,414	
3	REMOVE CURB	LF	\$ 5	643	\$ 3,215	
4	REMOVE HMA CONCRETE	SY	\$ 12	610	\$ 7,320	
<b>Grading</b>						
5	ROADWAY EXCAVATION INCL. HAUL	CY	\$ 35	135	\$ 4,725	
6	ROADWAY EXCAVATION INCL. HAUL, PARKING MITIGATION	CY	\$ 35	80	\$ 2,800	
7	GRAVEL BORROW INCL. HAUL	CY	\$ 40	495	\$ 19,800	
8	GRAVEL BORROW INCL. HAUL, PARKING MITIGATION	CY	\$ 40	9915	\$ 396,600	
<b>Structure</b>						
9	MSE WALL - TRAIL	SF	\$ 45	1075	\$ 48,375	
10	MSE WALL - PARKING MITIGATION	SF	\$ 45	5540	\$ 249,300	
11	BRIDGE SUPERSTRUCTURE	LS	\$ 46,700	1	\$ 46,700	
12	BRIDGE RAILING	LF	\$ 500	80	\$ 40,000	
<b>Drainage</b>						
14	DETENTION - PARKING MITIGATION	CY	\$ 15	14000	\$ 210,000	
15	CATCH BASIN, TYPE 1	EA	\$ 2,000	3	\$ 6,000	
16	CATCH BASIN, TYPE 2	EA	\$ 3,500	2	\$ 7,000	
17	MODULAR WETLAND - PARKING MITIGATION	EA	\$ 17,500	1	\$ 17,500	
18	STORM DRAINAGE PIPE, 12" - TRAIL	LF	\$ 70	234	\$ 16,380	
19	STORM DRAINAGE PIPE, 12" - PARKING MITIGATION	LF	\$ 70	247	\$ 17,290	
<b>Surfacing</b>						
20	CRUSHED SURFACING TOP COURSE - TRAIL	TON	\$ 60	100	\$ 6,000	
21	CRUSHED SURFACING TOP COURSE - PARKING MITIGATION	TON	\$ 60	480	\$ 28,800	
22	HMA PAVING - PARKING MITIGATION	TON	\$ 150	530	\$ 79,500	
23	CURB RAMP	EA	\$ 6,000	1	\$ 6,000	
24	CEMENT CONCRETE SIDEWALK	SY	\$ 125	900	\$ 112,500	
25	CEMENT CONCRETE CURB	LF	\$ 75	1614	\$ 121,050	
<b>Erosion Control and Planting</b>						
26	LANDSCAPING - TRAIL	SY	\$ 120	250	\$ 30,000	
27	LANDSCAPING - PARKING MITIGATION	SY	\$ 120	430	\$ 51,600	
28	LANDSCAPE EDGE RESTORATION - TRAIL, PARKING MITIGATION & BRIDGE	SY	\$ 45	900	\$ 40,500	
29	IRRIGATION SYSTEM COMPLETE	LS	\$ 53,000	1	\$ 53,000	
<b>Other</b>						
30	LIGHTING - TRAIL, PEDESTRIAN LUMINAIRE AND POLE	EA	\$ 2,200	10	\$ 22,000	
31	LIGHTING - TRAIL, LIT BOLLARDS	EA	\$ 3,500	4	\$ 14,000	
32	LIGHTING - PARKING MITIGATION, LUMINAIRE AND POLE	EA	\$ 2,800	4	\$ 11,200	
33	LIGHTING - PARKING MITIGATION, DOUBLE LUMINAIRE & POLE	EA	\$ 3,300	4	\$ 13,200	
34	LIGHTING - TRAIL & PARKING MITIGATION, CONDUIT, WIRING & ASSOCIATED ELECTRICAL COMPONENTS	LS	\$ 57,000	1	\$ 57,000	
35	RAILING, AT GRADE	LF	\$ 250	300	\$ 75,000	
36	PAVEMENT TREATMENT - TRAIL	SY	\$ 30	580	\$ 17,400	
37	DECORATIVE NODE PAVEMENT	SY	\$ 300	75	\$ 22,500	
38	BENCH	EA	\$ 3,500	1	\$ 3,500	
39	LITTER RECEPTACLE	EA	\$ 2,500	1	\$ 2,500	
40	WAYFINDING SIGN AND POLE	EA	\$ 3,500	2	\$ 7,000	
41	FENCING - TRAIL	LF	\$ 55	415	\$ 22,825	
<b>TOTAL, Construction Cost, West Approach, Option 2 Full Build Out, South</b>					\$ 1,937,294	
Construction Cost (including Mobilization)			10%		\$ 2,131,023	
Contingency			40%		\$ 852,409	
Construction Cost (including Mobilization, Contingency)					\$ 2,983,433	
Engineering Design			20%		\$ 596,687	(% of Constr Cost incl Mob and Contingency)
Construction Management & Administration			25%		\$ 745,858	(% of Constr Cost incl Mob and Contingency)
ROW Cost (including TCE, ROW Administration)					\$ 1,307,235	(see details below)
<b>TOTAL ESTIMATED COST (2020)</b>					\$ 5,633,220	

#### Notes

Total is in 2020 dollars  
Costs do not include sales tax or cost associated with permitting.  
Costs assume no cost for TCE on WSDOT property.  
Costs assume no ROW condemnation will be necessary.

#### ROW Cost Summary

Description	Unit	Unit Price	QTY	Total Price	Notes
ROW ACQUISITION	-	-	-	\$ 1,130,730	
TEMP CONST EASEMENT (TCE), MAIN SPAN ASSEMBLY	-	-	-	\$ 127,505	11,016 SF on private property
RIGHT OF WAY ADMINISTRATION	-	-	-	\$ 49,000	based on # of parcels
<b>TOTAL, ROW Cost, West Approach, Option 2 Full Build Out, South</b>				\$ 1,307,235	



N 148th Non-Motorized Bridge						
West Approach, Option 3 Full Build Out, North						
Item No.	Description	Unit	Unit Price	QTY	Total Price	Notes
<b>Preparation</b>						
1	CLEARING AND GRUBBING	ACRE	\$ 60,000	0.33	\$ 19,880	
2	REMOVE CURB	LF	\$ 5	22	\$ 110	
3	REMOVE HMA CONCRETE	SY	\$ 12	330	\$ 3,960	
<b>Grading</b>						
4	ROADWAY EXCAVATION INCL. HAUL	CY	\$ 35	10	\$ 350	
5	GRAVEL BORROW INCL. HAUL	CY	\$ 40	800	\$ 32,000	
<b>Structure</b>						
6	CIP WALL	SF	\$ 80	1865	\$ 149,200	
7	BRIDGE SUPERSTRUCTURE	LS	\$ 46,700	1	\$ 46,700	
8	BRIDGE RAILING	LF	\$ 500	80	\$ 40,000	
<b>Drainage</b>						
9	DETENTION	CY	\$ 15	4000	\$ 60,000	
10	CATCH BASIN, TYPE 1	EA	\$ 2,000	2	\$ 4,000	
11	STORM DRAINAGE PIPE, 12"	LF	\$ 70	75	\$ 5,250	
<b>Surfacing</b>						
12	CRUSHED SURFACING TOP COURSE	TON	\$ 60	90	\$ 5,400	
13	CURB RAMP	EA	\$ 6,000	1	\$ 6,000	
14	CEMENT CONCRETE SIDEWALK	SY	\$ 125	880	\$ 110,000	
15	CEMENT CONCRETE CURB	LF	\$ 75	152	\$ 11,400	
<b>Erosion Control and Planting</b>						
16	LANDSCAPING - TRAIL	SY	\$ 120	525	\$ 63,000	
17	LANDSCAPE EDGE RESTORATION - TRAIL & BRIDGE	SY	\$ 45	600	\$ 27,000	
18	IRRIGATION SYSTEM COMPLETE	LS	\$ 35,000	1	\$ 35,000	
<b>Other</b>						
19	LIGHTING - TRAIL, PEDESTRIAN LUMINAIRE AND POLE	EA	\$ 2,200	10	\$ 22,000	
20	LIGHTING - TRAIL, LIT BOLLARDS	EA	\$ 3,500	4	\$ 14,000	
21	LIGHTING - TRAIL, CONDUIT, WIRING & ASSOCIATED ELECTRICAL COMPONENTS	LS	\$ 38,000	1	\$ 38,000	
22	RAILING, AT GRADE	LF	\$ 250	300	\$ 75,000	
23	PAVEMENT TREATMENT	SY	\$ 30	575	\$ 17,250	
24	DECORATIVE NODE PAVEMENT	SY	\$ 300	75	\$ 22,500	
25	BENCH	EA	\$ 3,500	1	\$ 3,500	
26	LITTER RECEPTACLE	EA	\$ 2,500	1	\$ 2,500	
27	WAYFINDING SIGN AND POLE	EA	\$ 3,500	2	\$ 7,000	
28	FENCING - TRAIL	LF	\$ 55	415	\$ 22,825	
29	UTILITY RELOCATION	LS	\$ 250,000	1	\$ 250,000	
<b>TOTAL, Construction Cost, West Approach, Option 3 Full Build Out, North</b>					\$ 1,093,825	
Construction Cost (including Mobilization)				10%	\$ 1,203,208	
Contingency				40%	\$ 481,283	
Construction Cost (including Mobilization, Contingency)					\$ 1,684,491	
Engineering Design				20%	\$ 336,898	(% of Constr Cost incl Mob and Contingency)
Construction Management & Administration				25%	\$ 421,123	(% of Constr Cost incl Mob and Contingency)
ROW Cost (including TCE, ROW Administration)					\$ 1,140,975	(see details below)
<b>TOTAL ESTIMATED COST (2020)</b>					\$ 3,583,490	

#### Notes

Total is in 2020 dollars  
Costs do not include sales tax or cost associated with permitting.  
Costs assume no cost for TCE on WSDOT property.  
Costs assume no ROW condemnation will be necessary.

#### ROW Cost Summary

Description	Unit	Unit Price	QTY	Total Price	Notes
ROW ACQUISITION	-	-	-	\$ 964,470	
TEMP CONST EASEMENT (TCE), MAIN SPAN ASSEMBLY	-	-	-	\$ 127,505	11,016 SF on private property
RIGHT OF WAY ADMINISTRATION	-	-	-	\$ 49,000	based on # of parcels
<b>TOTAL, ROW Cost, West Approach, Option 3 Full Build Out, North</b>				\$ 1,140,975	



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# Appendix 4

## Project Cost

### Main Span Bridge Cost



N 148th Non-Motorized Bridge						
Bridge Main Span, Tied Arch						
Item No.	Description	Unit	Unit Price	QTY	Total Price	Notes
	<b>Structure</b>					
1	BRIDGE SUBSTRUCTURE - MAIN SPAN	LS	\$ 770,000	1	\$ 770,000	
2	BRIDGE SUPERSTRUCTURE - MAIN SPAN	LS	\$ 2,365,000	1	\$ 2,365,000	
3	BRIDGE RAILING & THROW BARRIER	LF	\$ 800	540	\$ 432,000	
	<b>Traffic</b>					
4	MAINTENANCE OF TRAFFIC, MAIN SPAN	LS	\$ 300,000	1	\$ 300,000	
	<b>Other</b>					
5	SIGN BRIDGE	LS	\$ 300,000	1	\$ 300,000	remove existing and replace with new
6	LIGHTING - BRIDGE, SAFETY LIGHTING, NO CANOPY	LS	\$ 204,700	1	\$ 204,700	
7	LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, NO CANOPY	LS	\$ 356,500	1	\$ 356,500	
8	RESTORATION COST, MAIN SPAN ASSEMBLY	SF	\$ 45	24800	\$ 1,116,000	24,800 SF total area
<b>TOTAL, Construction Cost, Bridge Main Span, Tied Arch</b>					\$ 5,844,200	
Construction Cost (including Mobilization)				10%	\$ 6,428,620	
Contingency				40%	\$ 2,571,448	
Construction Cost (including Mobilization, Contingency)					\$ 9,000,068	
Engineering Design				20%	\$ 1,800,014	(% of Constr Cost incl Mob and Contingency)
Construction Management & Administration				25%	\$ 2,250,017	(% of Constr Cost incl Mob and Contingency)
ROW Cost (including TCE, ROW Administration)					\$ -	
<b>TOTAL ESTIMATED COST (2020)</b>					<b>\$ 13,050,100</b>	

#### Notes

Total is in 2020 dollars

Costs do not include sales tax or cost associated with permitting.

#### Cost Difference with Canopy

Description	Unit	Unit Price	QTY	Total Price
BRIDGE CANOPY	LS	\$ 519,000	1	\$ 519,000
<del>LIGHTING - BRIDGE, SAFETY LIGHTING, NO CANOPY</del>	LS	<del>\$ (204,700)</del>	<del>1</del>	<del>\$ (204,700)</del>
<del>LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, NO CANOPY</del>	LS	<del>\$ (356,500)</del>	<del>1</del>	<del>\$ (356,500)</del>
LIGHTING - BRIDGE, SAFETY LIGHTING, W/ CANOPY	LS	\$ 127,650	1	\$ 127,650
LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, W/ CANOPY	LS	\$ 356,500	1	\$ 356,500
<b>TOTAL, Canopy and Associated Lighting</b>				<b>\$ 441,950</b>

Total does not include costs for mobilization, construction management, engineering design, or contingency.



N 148th Non-Motorized Bridge						
Bridge Main Span, Combination Arch						
Item No.	Description	Unit	Unit Price	QTY	Total Price	Notes
	<b>Structure</b>					
1	BRIDGE SUBSTRUCTURE - MAIN SPAN	LS	\$ 770,000	1	\$ 770,000	
2	BRIDGE SUPERSTRUCTURE - MAIN SPAN	LS	\$ 2,803,000	1	\$ 2,803,000	
3	BRIDGE RAILING & THROW BARRIER	LF	\$ 800	540	\$ 432,000	
	<b>Traffic</b>					
4	MAINTENANCE OF TRAFFIC, MAIN SPAN	LS	\$ 300,000	1	\$ 300,000	
	<b>Other</b>					
5	SIGN BRIDGE	LS	\$ 300,000	1	\$ 300,000	remove existing and replace with new
6	LIGHTING - BRIDGE, SAFETY LIGHTING, NO CANOPY	LS	\$ 204,700	1	\$ 204,700	
7	LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, NO CANOPY	LS	\$ 356,500	1	\$ 356,500	
8	RESTORATION COST, MAIN SPAN ASSEMBLY	SF	\$ 45	24800	\$ 1,116,000	24,800 SF total area
<b>TOTAL, Construction Cost, Bridge Main Span, Combination Arch</b>					\$ 6,282,200	
Construction Cost (including Mobilization)				10%	\$ 6,910,420	
Contingency				40%	\$ 2,764,168	
Construction Cost (including Mobilization, Contingency)					\$ 9,674,588	
Engineering Design				20%	\$ 1,934,918	(% of Constr Cost incl Mob and Contingency)
Construction Management & Administration				25%	\$ 2,418,647	(% of Constr Cost incl Mob and Contingency)
ROW Cost (including TCE, ROW Administration)					\$ -	
<b>TOTAL ESTIMATED COST (2020)</b>					\$ 14,028,160	

#### Notes

Total is in 2020 dollars

Costs do not include sales tax or cost associated with permitting.

#### Cost Difference with Canopy

Description	Unit	Unit Price	QTY	Total Price
BRIDGE CANOPY	LS	\$ 216,000	1	\$ 216,000
<del>LIGHTING - BRIDGE, SAFETY LIGHTING, NO CANOPY</del>	LS	<del>\$ (204,700)</del>	<del>1</del>	<del>\$ (204,700)</del>
<del>LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, NO CANOPY</del>	LS	<del>\$ (356,500)</del>	<del>1</del>	<del>\$ (356,500)</del>
LIGHTING - BRIDGE, SAFETY LIGHTING, W/ CANOPY	LS	\$ 127,650	1	\$ 127,650
LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, W/ CANOPY	LS	\$ 356,500	1	\$ 356,500
<b>TOTAL, Canopy and Associated Lighting</b>				<b>\$ 138,950</b>

Total does not include costs for mobilization, construction management, engineering design, or contingency.



N 148th Non-Motorized Bridge						
Bridge Main Span, Truss						
Item No.	Description	Unit	Unit Price	QTY	Total Price	Notes
<b>Structure</b>						
1	BRIDGE SUBSTRUCTURE - MAIN SPAN	LS	\$ 770,000	1	\$ 770,000	
2	BRIDGE SUPERSTRUCTURE - MAIN SPAN	LS	\$ 3,459,000	1	\$ 3,459,000	
3	BRIDGE RAILING & THROW BARRIER	LF	\$ 800	540	\$ 432,000	
<b>Traffic</b>						
4	MAINTENANCE OF TRAFFIC, MAIN SPAN	LS	\$ 300,000	1	\$ 300,000	
<b>Other</b>						
5	SIGN BRIDGE	LS	\$ 300,000	1	\$ 300,000	remove existing and replace with new
6	LIGHTING - BRIDGE, SAFETY LIGHTING, NO CANOPY	LS	\$ 227,700	1	\$ 227,700	
7	LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, NO CANOPY	LS	\$ 415,150	1	\$ 415,150	
8	RESTORATION COST, MAIN SPAN ASSEMBLY	SF	\$ 45	24800	\$ 1,116,000	24,800 SF total area
<b>TOTAL, Construction Cost, Bridge Main Span, Truss</b>					\$ 7,019,850	
Construction Cost (including Mobilization)				10%	\$ 7,721,835	
Contingency				40%	\$ 3,088,734	
Construction Cost (including Mobilization, Contingency)					\$ 10,810,569	
Engineering Design				20%	\$ 2,162,114	(% of Constr Cost incl Mob and Contingency)
Construction Management & Administration				25%	\$ 2,702,642	(% of Constr Cost incl Mob and Contingency)
ROW Cost (including TCE, ROW Administration)					\$ -	
<b>TOTAL ESTIMATED COST (2020)</b>					\$ 15,675,330	

#### Notes

Total is in 2020 dollars  
Costs do not include sales tax or cost associated with permitting.

#### Cost Difference with Canopy

Description	Unit	Unit Price	QTY	Total Price
BRIDGE CANOPY	LS	\$ 216,000	1	\$ 216,000
<del>LIGHTING - BRIDGE, SAFETY LIGHTING, NO CANOPY</del>	LS	<del>\$ (227,700)</del>	<del>1</del>	<del>\$ (227,700)</del>
<del>LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, NO CANOPY</del>	LS	<del>\$ (415,150)</del>	<del>1</del>	<del>\$ (415,150)</del>
LIGHTING - BRIDGE, SAFETY LIGHTING, W/ CANOPY	LS	\$ 127,650	1	\$ 127,650
LIGHTING - BRIDGE, ARCHITECTURAL LIGHTING, W/ CANOPY	LS	\$ 356,500	1	\$ 356,500
<b>TOTAL, Canopy and Associated Lighting</b>				<b>\$ 57,300</b>

Total does not include costs for mobilization, construction management, engineering design, or contingency.



# Appendix 4

## Project Cost

### East Side Bridge Landing Cost



N 148th Non-Motorized Bridge											
East Approach, Option A			Option A				Option A -> Future Vision with Woonerf				Notes
Item No.	Description	Unit	Unit Price	QTY	Total Price	Unit	Unit Price	QTY	Total Price		
	Grading										
1	ROADWAY EXCAVATION INCL. HAUL	CY	\$ 35	40	\$ 1,400						
2	LIGHTWEIGHT FILL	CY	\$ 100	5165	\$ 516,500						
	Structure										
3	WALL - TRAIL	SF	\$ 45	616	\$ 27,720						
4	WALL - I-5 SOUND WALL	SF	\$ 120	2291	\$ 274,920						
5	COLUMN SILO	EA	\$ 75,000	3	\$ 225,000						
	Drainage										
6	DRAINAGE FEATURES	-	\$ -	0	\$ -	LS	\$ 125,000	1	\$ 125,000		
	Surfacing										
7	CRUSHED SURFACING TOP COURSE	TON	\$ 60	100	\$ 6,000						
8	RAMP PAVEMENT TREATMENT	SY	\$ 30	275	\$ 8,250						
9	WOONERF PLAZA PAVEMENT	SY	\$ -	0	\$ -	SY	\$ 250	475	\$ 118,750		
10	DECORATIVE CEMENT CONCRETE PLAZA PAVEMENT	SY	\$ -	0	\$ -	SY	\$ 150	720	\$ 108,000		
11	HMA PAVING	TON	\$ 200	80	\$ 16,000						
12	CEMENT CONCRETE SIDEWALK	SY	\$ 125	260	\$ 32,500						
	Erosion Control and Planting										
13	LANDSCAPE SCREENING (SHRUB AND GROUNDCOVER) - BRIDGE/LANDING STRUCTURE	SY	\$ 70	630	\$ 44,100						
14	LANDSCAPE RESTORATION (SEEDING)	SY	\$ 6	600	\$ 3,600						
15	LANDSCAPE PLANTINGS (TREE, SHRUB AND GROUNDCOVER) - PLAZA	SY	\$ -	0	\$ -	SY	\$ 120	400	\$ 48,000		
16	IRRIGATION SYSTEM COMPLETE	LS	\$ 45,000	1	\$ 45,000	LS	\$ 15,000	1	\$ 15,000		
	Other										
17	LIGHTING, COLUMN LIGHTS	EA	\$ 5,050	5	\$ 25,250	EA	\$ 5,050	13	\$ 65,650		
18	LIGHTING, LINEAR LUMINAIRE STRIP AT SEAT WALL	LF	\$ -	0	\$ -	LF	\$ 115	300	\$ 34,500		
19	LIGHTING, TREE ACCENT UPLIGHTS	EA	\$ 1,300	7	\$ 9,100	EA	\$ 1,300	7	\$ 9,100		
20	LIGHTING, BRIDGE, EAST (HANDRAIL)	LF	\$ 250	440	\$ 110,000	LF	\$ 250	20	\$ 5,000		
21	LIGHTING, CONDUIT, WIRING & ASSOCIATED ELECTRICAL COMPONENTS	LS	\$ 72,000	1	\$ 72,000	LS	\$ 34,000	1	\$ 34,000		
22	LIGHTING, LIT BOLLARDS	EA	\$ 3,500	3	\$ 10,500						
23	RAILING	LF	\$ 250	640	\$ 160,000						
24	LITTER RECEPTACLE	EA	\$ 2,500	2	\$ 5,000	EA	\$ 2,500	1	\$ 2,500		
25	STAIRS	CY	\$ 250	185	\$ 46,250	CY	\$ 250	16	\$ 4,000		
26	WAYFINDING SIGN AND POLE	EA	\$ 3,500	2	\$ 7,000	EA	\$ 3,500	1	\$ 3,500		
27	BLEACHER SEAT WALL	LF	\$ -	0	\$ -	LF	\$ 750	300	\$ 225,000		
28	BENCH	EA	\$ 3,500	1	\$ 3,500						
TOTAL, Construction Cost, East Approach, Option A		Option A			\$ 1,649,590	Option A -> Future Vision with Woonerf			\$ 798,000		
Construction Cost (including Mobilization)		10%			\$ 1,814,549						
Contingency		40%			\$ 725,820						
Construction Cost (including Mobilization, Contingency)					\$ 2,540,369						
Engineering Design		20%			\$ 508,074	(% of Constr Cost incl Mob and Contingency)					
Construction Management & Administration		25%			\$ 635,092	(% of Constr Cost incl Mob and Contingency)					
ROW Cost (including TCE, ROW Administration)					\$ -						
TOTAL ESTIMATED COST (2020)					\$ 3,683,540						

#### Notes

Total is in 2020 dollars  
Costs do not include sales tax or cost associated with permitting.  
Costs assume no cost for TCE on WSDOT property.



N 148th Non-Motorized Bridge										
East Approach, Option B										

#### Notes

Total is in 2020 dollars  
Costs do not include sales tax or cost associated with permitting.  
Costs assume no cost for TCE on WSDOT property.



N 148th Non-Motorized Bridge										
East Approach, Option C										
		Option C				Option C -> Future Vision with Woonerf				
Item No.	Description	Unit	Unit Price	QTY	Total Price	Unit	Unit Price	QTY	Total Price	Notes
	Grading									
1	ROADWAY EXCAVATION INCL. HAUL	CY	\$ 35	15	\$ 525					
2	LIGHTWEIGHT FILL	CY	\$ 100	6425	\$ 642,500					
	Structure									
3	WALL - TRAIL	SF	\$ 45	1640	\$ 73,800					
4	COLUMN SILO	EA	\$ 75,000	3	\$ 225,000					
	Drainage									
5	CATCH BASIN, TYPE 1	EA	\$ 2,000	2	\$ 4,000					
6	STORM DRAINAGE PIPE, 12"	LF	\$ 70	125	\$ 8,750					
7	DRAINAGE FEATURES	-	\$ -	0	\$ -	LS	\$ 125,000	1	\$ 125,000	
	Surfacing									
8	CRUSHED SURFACING TOP COURSE	TON	\$ 60	90	\$ 5,400					
9	RAMP PAVEMENT TREATMENT	SY	\$ 30	730	\$ 21,900					
10	WOONERF PLAZA PAVEMENT	SY	\$ -	0	\$ -	SY	\$ 250	430	\$ 107,500	
11	DECORATIVE CEMENT CONCRETE PLAZA PAVEMENT	SY	\$ -	0	\$ -	SY	\$ 150	650	\$ 97,500	
12	CEMENT CONCRETE SIDEWALK	SY	\$ 125	840	\$ 105,000					
	Erosion Control and Planting									
	LANDSCAPE SCREENING (SHRUB AND GROUNDCOVER) -									
13	BRIDGE/LANDING STRUCTURE	SY	\$ 70	1300	\$ 91,000					
14	LANDSCAPE RESTORATION (SEEDING)	SY	\$ 6	1150	\$ 6,900					
	LANDSCAPE PLANTINGS (TREE, SHRUB AND GROUNDCOVER) -									
15	PLAZA	SY	\$ -	0	\$ -	SY	\$ 120	650	\$ 78,000	
16	IRRIGATION SYSTEM COMPLETE	LS	\$ 80,000	1	\$ 80,000	LS	\$ 20,000	1	\$ 20,000	
	Other									
17	LIGHTING, COLUMN LIGHTS	EA	\$ 5,050	2	\$ 10,100	EA	\$ 5,050	7	\$ 35,350	
18	LIGHTING, LINEAR LUMINAIRE STRIP AT SEAT WALL	LF	\$ -	0	\$ -	LF	\$ 115	370	\$ 42,550	
19	LIGHTING, TREE ACCENT UPLIGHTS	EA	\$ 1,300	11	\$ 14,300	EA	\$ 1,300	7	\$ 9,100	
20	LIGHTING, BRIDGE, EAST (HANDRAIL)	LF	\$ 250	720	\$ 180,000	LF	\$ 250	120	\$ 30,000	
	LIGHTING, CONDUIT, WIRING & ASSOCIATED ELECTRICAL COMPONENTS	LS	\$ 79,000	1	\$ 79,000	LS	\$ 34,000	1	\$ 34,000	
21										
22	LIGHTING, LIT BOLLARDS	EA	\$ 3,500	2	\$ 7,000					
23	RAILING	LF	\$ 250	720	\$ 180,000	LF	\$ 250	120	\$ 30,000	
24	LITTER RECEPTACLE	EA	\$ 2,500	2	\$ 5,000	EA	\$ 2,500	1	\$ 2,500	
25	STAIRS	CY	\$ 250	0	\$ -	CY	\$ 250	225	\$ 56,250	
26	WAYFINDING SIGN AND POLE	EA	\$ 3,500	2	\$ 7,000	EA	\$ 3,500	1	\$ 3,500	
27	BLEACHER SEAT WALL	LF	\$ -	0	\$ -	LF	\$ 750	371	\$ 278,250	
28	BENCH	EA	\$ 3,500	1	\$ 3,500					
TOTAL, Construction Cost, East Approach, Option C		Option C			\$ 1,750,675	Option C -> Future Vision with Woonerf			\$ 949,500	
Construction Cost (including Mobilization)		10%			\$ 1,925,743					
Contingency		40%			\$ 770,297					
Construction Cost (including Mobilization, Contingency)					\$ 2,696,040					
Engineering Design		20%			\$ 539,208	(% of Constr Cost incl Mob and Contingency)				
Construction Management & Administration		25%			\$ 674,010	(% of Constr Cost incl Mob and Contingency)				
ROW Cost (including TCE, ROW Administration)					\$ -					
TOTAL ESTIMATED COST (2020)					\$ 3,909,260					

#### Notes

Total is in 2020 dollars  
Costs do not include sales tax or cost associated with permitting.  
Costs assume no cost for TCE on WSDOT property.



# Appendix 4

## Project Cost

### Basis of Right-of-Way Cost



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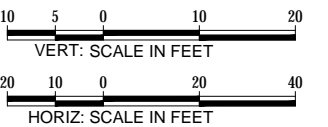


	PARCEL INFORMATION						ESTIMATED ACQUISITION AREAS				ESTIMATED VALUE (\$)					
	Tax Parcel #	OWNER	PARCEL ADDRESS	Zoning	Parcel Lot Size (acres)	Parcel Lot Size (SF)	FEE Acquisition Area (SF)	TCE (SF)	Access Easement (SF)	Existing Improvements	Estimated Land Value (\$/SF)	Est. FEE Acquisition Value	Est. TCE Value	Est. Access Eas. Value	Est. Existing Imprvmnts Value	Total
Opt 1	288170-0340-04	Church of Christ	14800 1st Ave NE	MUR70	3.15	137,214	2,742		0	Trees	\$ 70.00	\$ 191,940	\$ -	\$ -	\$ -	\$ 191,940
	288170-0342-02	Shoreline Unitarian Universalist Church	14724 1st Ave NE	MUR70	1.59	69,103	6,223		7,379	Lanscaping/parking	\$ 80.00	\$ 497,840	\$ -	\$ 295,160	\$ -	\$ 793,000
	288170-0343-01	The Philippi Presbyterian Church of Seattle	14734 1st Ave NE	MUR70	1.83	79,704	6,595		4,731	Lanscaping/parking	\$ 80.00	\$ 527,600	\$ -	\$ 189,240	\$ -	\$ 716,840
	Option 1 Total															\$ 1,701,780
Opt 2 South	288170-0340-04	Church of Christ	14800 1st Ave NE	MUR70	3.15	137,214	1,919		0	Trees	\$ 70.00	\$ 134,330	\$ -	\$ -	\$ -	\$ 134,330
	288170-0342-02	Shoreline Unitarian Universalist Church	14724 1st Ave NE	MUR70	1.59	69,103	6,154		0	Lanscaping/parking	\$ 80.00	\$ 492,320	\$ -	\$ -	\$ -	\$ 492,320
	288170-0343-01	The Philippi Presbyterian Church of Seattle	14734 1st Ave NE	MUR70	1.83	79,704	6,301		0	Lanscaping/parking	\$ 80.00	\$ 504,080	\$ -	\$ -	\$ -	\$ 504,080
	Option 2 South Total															\$ 1,130,730
Opt 3 North	288170-0340-04	Church of Christ	14800 1st Ave NE	MUR70	3.15	137,214	8,113		0	Lanscping/Trees	\$ 70.00	\$ 567,910	\$ -	\$ -	\$ -	\$ 567,910
	288170-0342-02	Shoreline Unitarian Universalist Church	14724 1st Ave NE	MUR70	1.59	69,103	2,127		0	Lanscaping/parking	\$ 80.00	\$ 170,160	\$ -	\$ -	\$ -	\$ 170,160
	288170-0343-01	The Philippi Presbyterian Church of Seattle	14734 1st Ave NE	MUR70	1.83	79,704	2,830		0	Lanscaping/parking	\$ 80.00	\$ 226,400	\$ -	\$ -	\$ -	\$ 226,400
	Option 3 North Total															\$ 964,470

	PARCEL INFORMATION						ESTIMATED ACQUISITION AREAS				ESTIMATED VALUE (\$)					
	Tax Parcel #	OWNER	PARCEL ADDRESS	Zoning	Parcel Lot Size (acres)	Parcel Lot Size (SF)	FEE Acquisition Area (SF)	TCE (SF)	Access Easement (SF)	Existing Improvements	Estimated Land Value (\$/SF)	Est. FEE Acquisition Value	Est. TCE Value	Est. Access Eas. Value	Est. Existing Imprvmnts Value	Total
North Assembly	288170-0340-04	Church of Christ	14800 1st Ave NE	MUR70	3.15	137,214	0	29,728	0	Trees	\$ 70.00	\$ -	\$ 312,144	\$ -	\$ -	\$ 312,144
	288170-0342-02	Shoreline Unitarian Universalist Church	14724 1st Ave NE	MUR70	1.59	69,103	0	0	0	Lanscaping/parking	\$ 80.00	\$ -	\$ -	\$ -	\$ -	\$ -
	288170-0343-01	The Philippi Presbyterian Church of Seattle	14734 1st Ave NE	MUR70	1.83	79,704	0	2,080	0	Lanscaping/parking	\$ 80.00	\$ -	\$ 24,960	\$ -	\$ -	\$ 24,960
	North Assembly Total															\$ 337,104
South Assembly	288170-0340-04	Church of Christ	14800 1st Ave NE	MUR70	3.15	137,214	0	3,125	0	Trees	\$ 70.00	\$ -	\$ 32,812.50	\$ -	\$ -	\$ 32,813
	288170-0342-02	Shoreline Unitarian Universalist Church	14724 1st Ave NE	MUR70	1.59	69,103	0	0	0	Lanscaping/parking	\$ 80.00	\$ -	\$ -	\$ -	\$ -	\$ -
	288170-0343-01	The Philippi Presbyterian Church of Seattle	14734 1st Ave NE	MUR70	1.83	79,704	0	7,891	0	Lanscaping/parking	\$ 80.00	\$ -	\$ 94,692.00	\$ -	\$ -	\$ 94,692
	South Assembly Total															\$ 127,505



SE 1/4 SEC 06, NE 1/4 SEC 07, T 25 N, R6E, WM



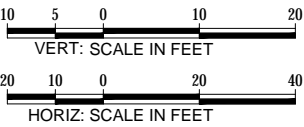
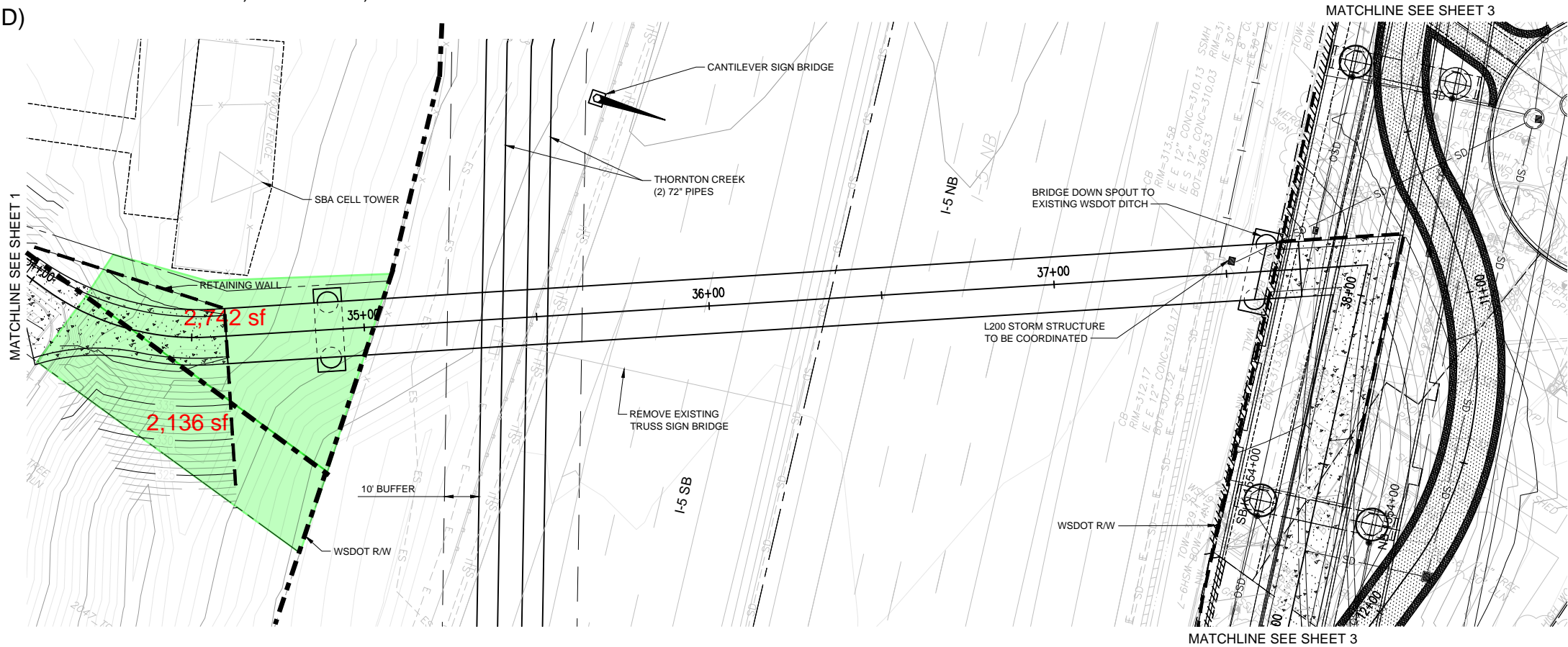
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BASIS FOR RIGHT OF WAY COST, OPTION 1, MINIMAL BUILD  
(CONTINUED)

SE 1/4 SEC 06, NE 1/4 SEC 07, T 25 N, R6E, WM



MARK	REVISION DESCRIPTION	BY	APP.	DATE






DRAWN BY	_____
DESIGN BY	_____
CHECK BY	_____
PROJ MGR	_____

CITY OF SHORELINE

N 148 NON-MOTORIZED BRIDGE

BASIS FOR RIGHT OF WAY COST, OPTION 1

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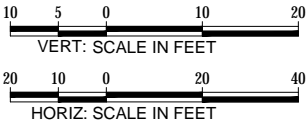
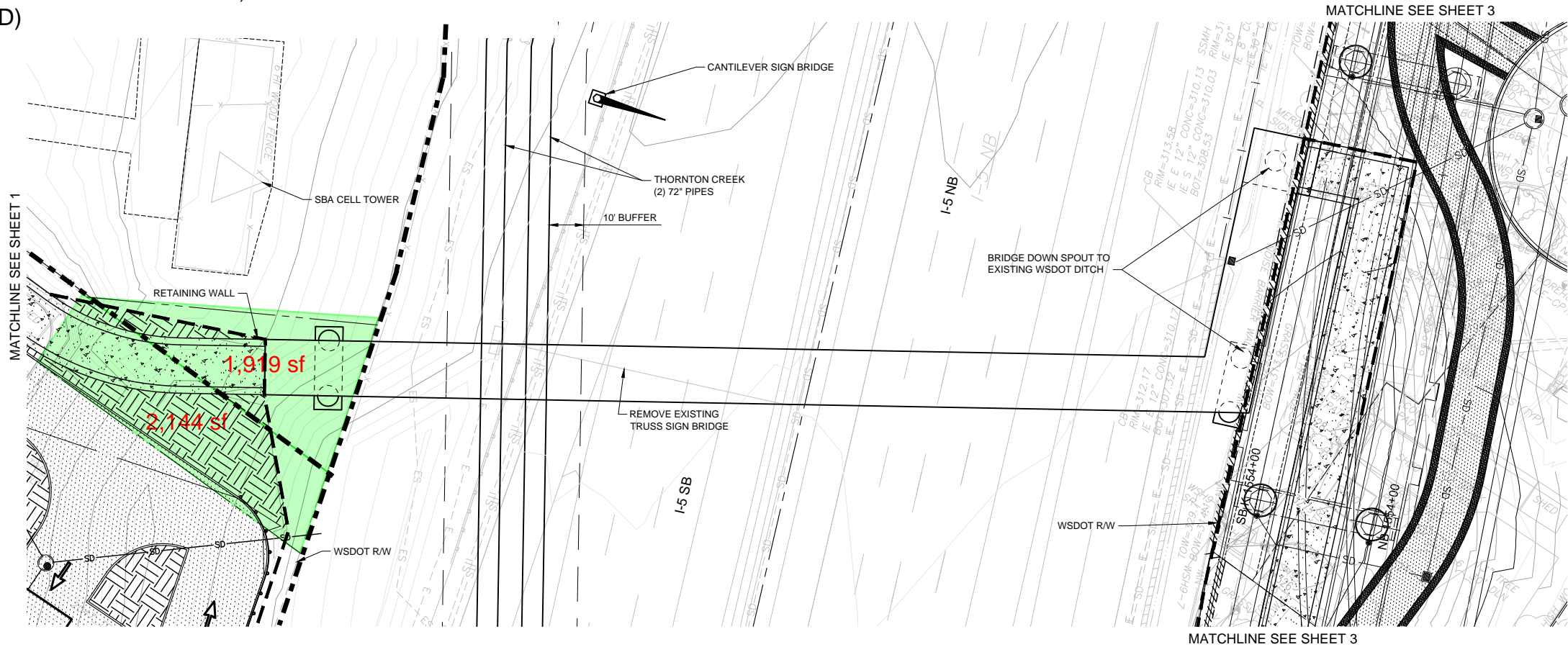






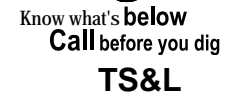
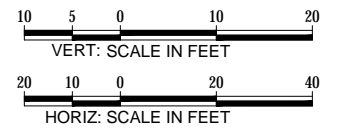
BASIS FOR RIGHT OF WAY COST, OPTION 2 SOUTH  
(CONTINUED)

SE 1/4 SEC 06, NE 1/4 SEC 07, T 25 N, R6E, WM



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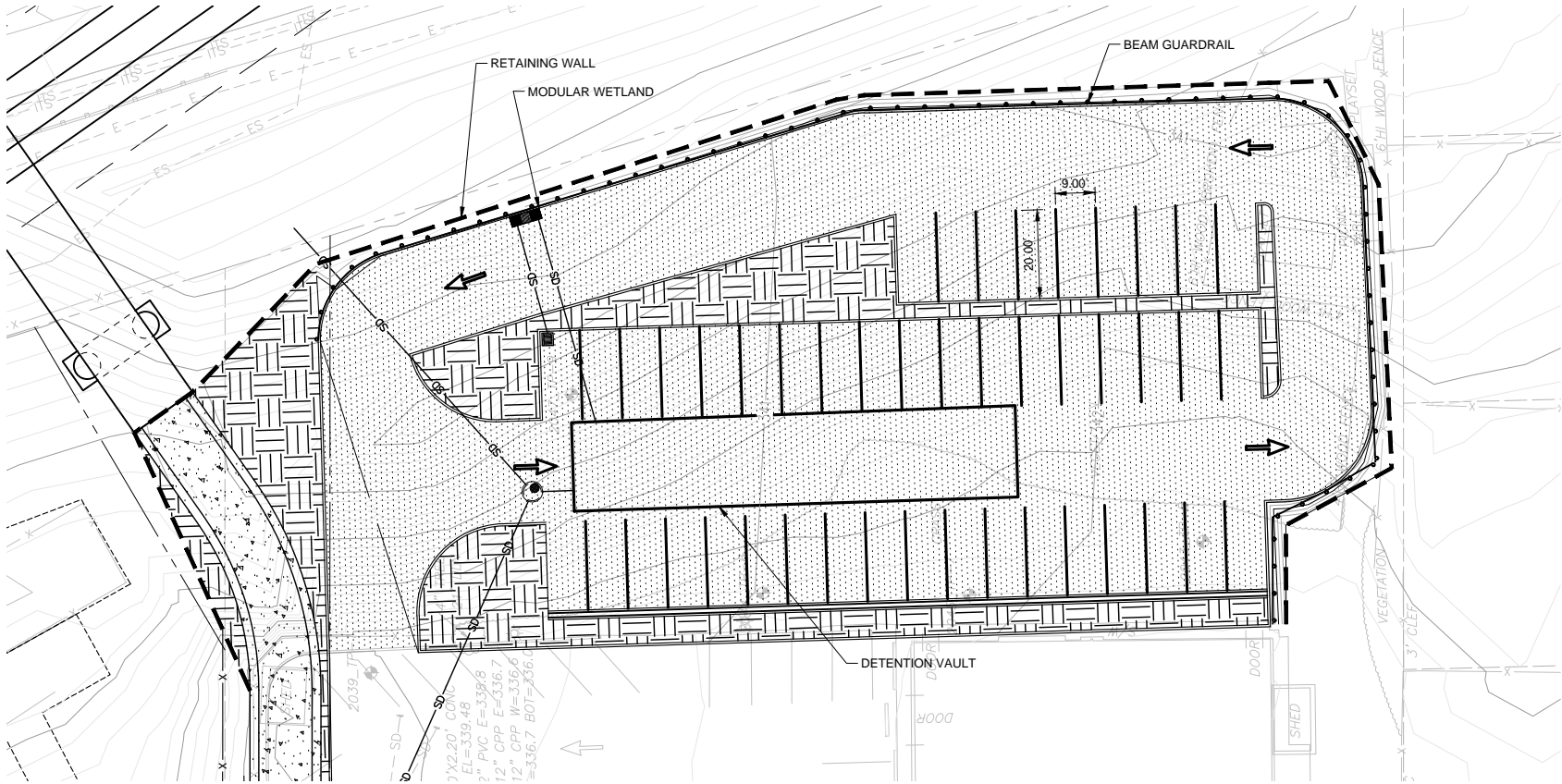
N 148 NON-MOTORIZED BRIDGE  
BASIS FOR RIGHT OF WAY COST, OPTION 2 SOUTH

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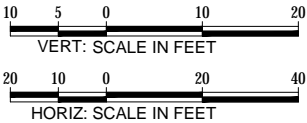
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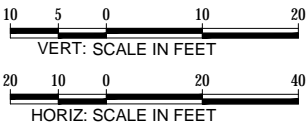
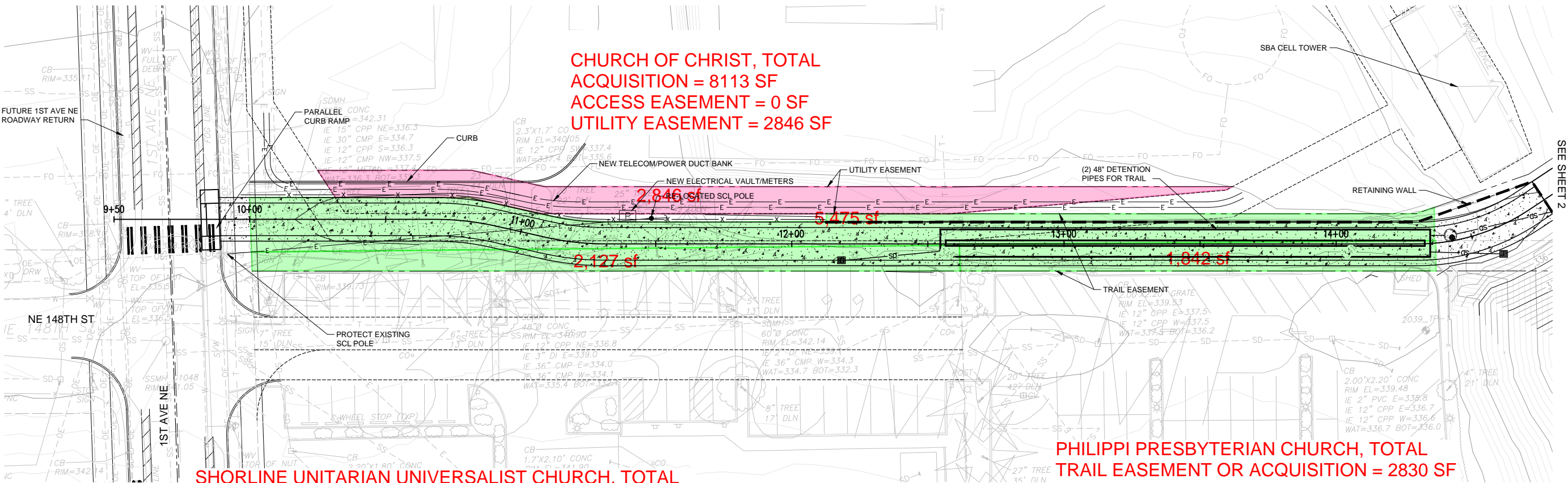
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CITY OF SHORELINE  
  
N 148 NON-MOTORIZED BRIDGE  
BASIS FOR RIGHT OF WAY COST, OPTION 2 SOUTH





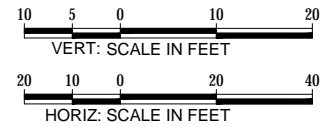
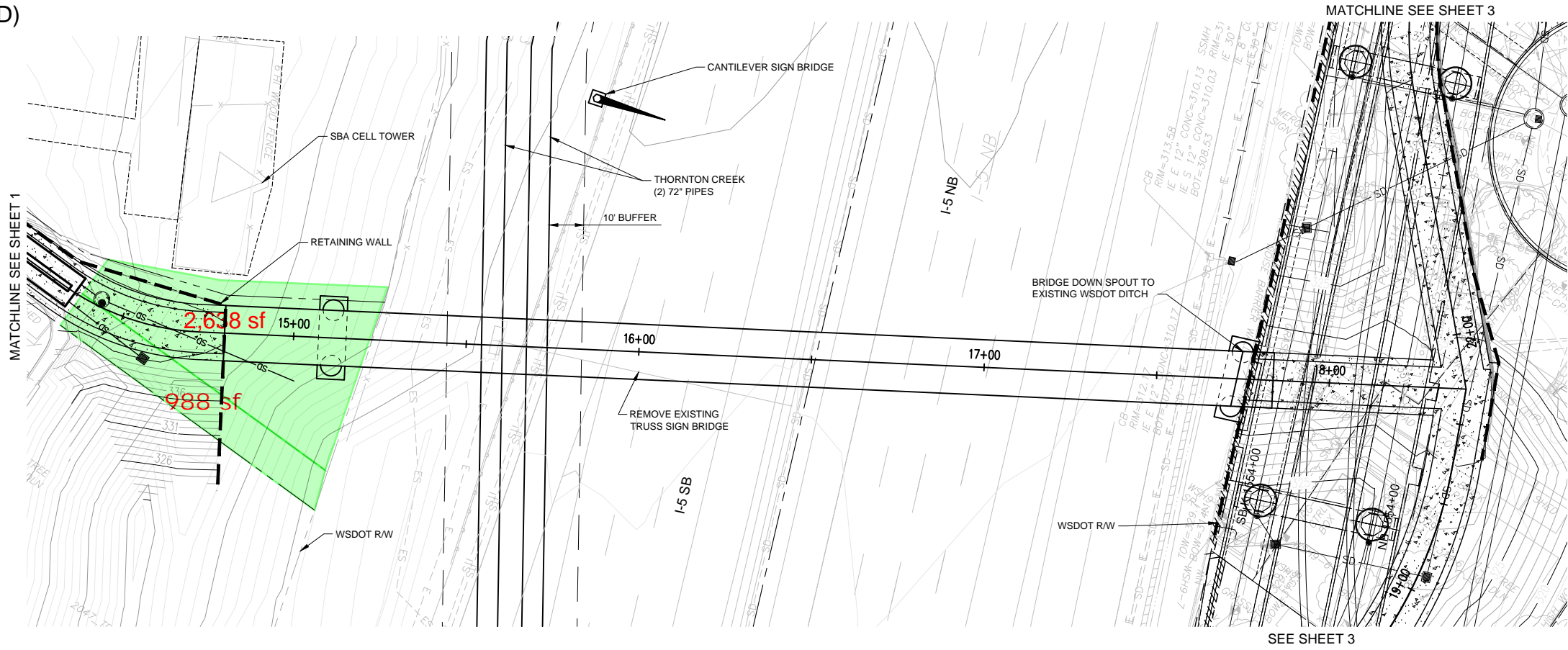
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BASIS FOR RIGHT OF WAY COST, OPTION 3 NORTH  
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CITY OF SHORELINE  
  
N 148 NON-MOTORIZED BRIDGE  
BASIS FOR RIGHT OF WAY COST, OPTION 3 NORTH



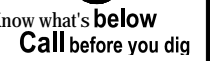
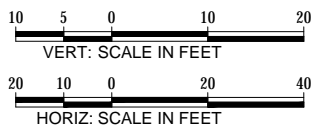
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SE 1/4 SEC 06, NE 1/4 SEC 07, T 25 N, R6E, WM



SEE SHEET 2



TS&amp;L

N 148 NON-MOTORIZED BRIDGE  
BASIS FOR RIGHT OF WAY COST, OPTION 3 NORTH

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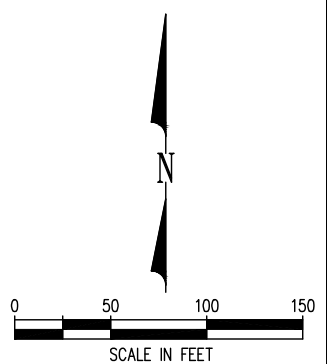


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BASIS OF TEMP CONST EASEMENT (TCE), MAIN SPAN ASSEMBLY  
ASSUME SOUTHERN STAGING AREA  
TOTAL TCE = 11016 SF

SW 1/4 SEC 17, T 26 N, R4E, WM



INTERSTATE 5

CHURCH OF CHRIST -  
LOCAL CONGREGATION OF SHORELINE  
TOTAL TCE = 3125 SF

APPROX BRIDGE  
MAIN SPAN FINAL  
LOCATION

SHORELINE UNITARIAN  
UNIVERSALIST CHURCH  
TOTAL TCE = 0 SF

PHILLIPPI  
PRESBYTERIAN  
CHURCH OF SEATTLE  
TOTAL TCE = 7891 SF

POSSIBLE MAIN  
SPAN ASSEMBLY  
AREA  
(ACCESS VIA I-5 SB)

OFF-RAMP

TS&L

02/24/2020 9:38am V:\1900267 (N 148th NMB)\Design (v2019)\NMB-TRAIL-AREA.dwg

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DESIGN BY RCL  
CHECK BY    
PROJ MGR AWO

CITY OF SHORELINE  
N 148 NON\_MOTORIZED BRIDGE  
STAGING AREAS  
ALL BRIDGE OPTIONS



# Appendix 5

## Project Background Information and Meeting Notes



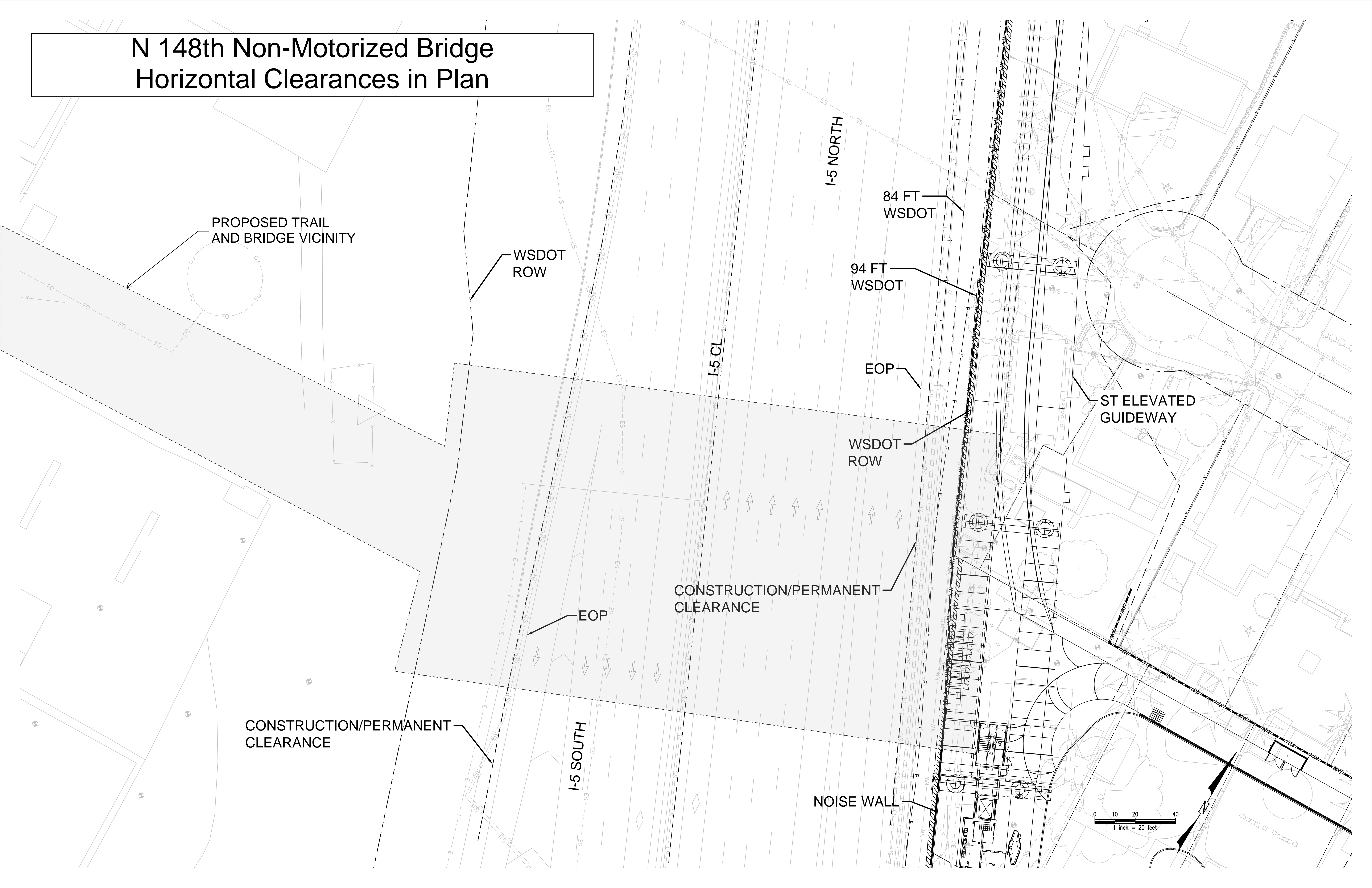
# Appendix 5

## Project Background Information and Meeting Notes

### Design Criteria and Constraints



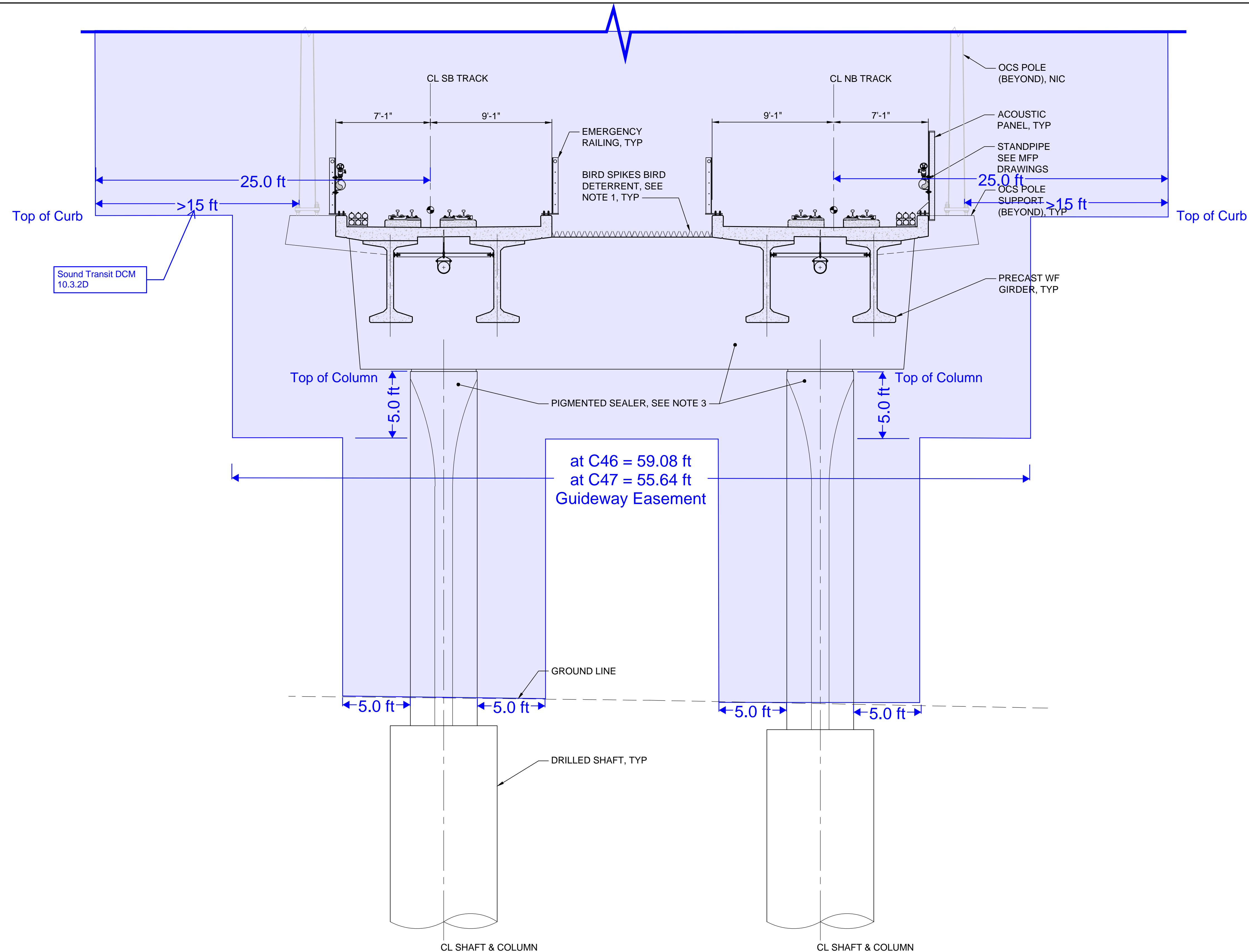
# N 148th Non-Motorized Bridge Horizontal Clearances in Plan





# N 148th Non-Motorized Bridge

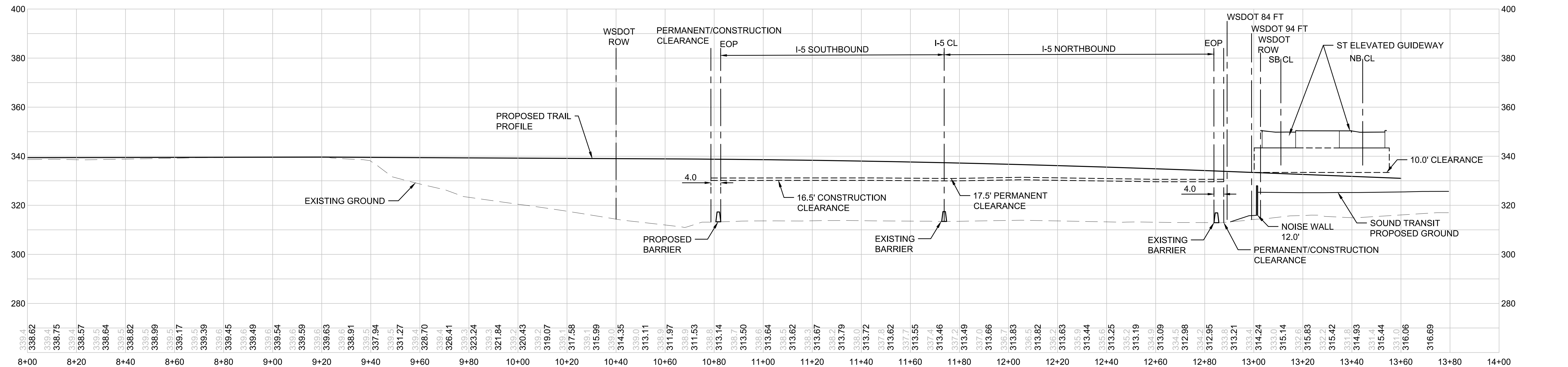
## Horizontal Clearance to Sound Transit Guideway and Shoreline South / 145th Station



**TYPICAL SECTION - SINGLE TRACK**  
SCALE: 1/4" = 1'-0"



# N 148th Non-Motorized Bridge Vertical Clearances





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# Appendix 5

## Project Background Information and Meeting Notes

### Design Charrette Notes



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## MEETING NOTES

Attendees:	Agency/Company:	Date:	11/19/19
Lea Bonebrake	City of Shoreline	KPFF Job	1800398
Nytasha Walters	City of Shoreline	No.:	
Tricia Juhnke	City of Shoreline	Shoreline	9263
Nora Daley-Peng	City of Shoreline	Job No:	
Nathan Daum	City of Shoreline	Task No.:	9.0
Randy Witt	City of Shoreline	Project:	N148th NMB
Aaron Olson	KPFF	Subject:	Project Workshop
Rachel Liberty	KPFF		#3
Keith Ireland	KPFF	Mtg. Place	Shoreline City Hall
Liz Gibson	KPG		
Coreen Schmidt	KPG		
Howard Fitzpatrick	LMN		

The purpose of the meeting was to share and gather input on the design alternatives for the N 148<sup>th</sup> Non-Motorized Bridge project. In general, the project was divided into three segments with multiple design options for each. Below is a summary of items discussed:

### 1<sup>st</sup> Avenue Kiss & Ride Alternatives:

- Preliminary transportation analysis results expect 2-4 kiss & ride users per hour during peak times.
- Option 1: Pullout drop-offs each side of street, trail connection between churches
  - Southbound pullout may encourage people to jay-walk across to the trail. Consider having pullouts only in the northbound direction to avoid potential conflicts
  - Trail location provides most direct connection to bridge
- Option 2: Utilize Unitarian lot spaces for drop-off spots, trail connection between churches
  - Could be used as an interim condition until redevelopment in the area improves 1<sup>st</sup> ave to the EDM standard
  - Would require an agreement from Unitarian Church to use those spaces. They currently have an agreement with ST to provide temporary park and ride in this lot during Lynnwood Link construction
  - Trail location provides most direct connection to bridge
- Option 3A: Drop-off with turnaround, trail connection between churches
  - Largest footprint of all options. Would likely require additional ROW from Iglesia Church.
  - Clear signage and/or gate required to prevent entry into Iglesia Church parking lot
  - Trail location provides most direction connection to bridge
- Option 3B: Drop-off with turnaround, trail connection along north side of Iglesia Church



- Largest footprint of all options. Would likely require additional ROW from Iglesia Church.
  - Trail connection is least direct of all options. Indirect route may encourage cut-through traffic on Unitarian, Phillipi and/or Iglesia church properties.
- Option 4: Redevelopment of Phillipi Church Property, trail connection between churches
  - Initial input from Phillipi Church is that they may be interested in redeveloping their property to take advantage of recent upzone
  - Kiss & Ride facility/turnaround would be pushed all the way to the bridge landing.
  - Trail location would provide most direct connection to bridge
  - Extension of 148<sup>th</sup> street grid to bring this closer to bridge landing. This could be extension of public ROW or a private road built by developer.
- Design team should consider a “no-build/minimal build” option for kiss & ride facility. Providing kiss & ride facility could be considered cross-purpose to the non-motorized bridge
- Design team will consider trail connection that connects south to 147<sup>th</sup> behind Phillipi church.
- The following options will be advanced further for evaluation:
  - Option 1: K&R pullouts with full street build out from N 147<sup>th</sup> to N 149<sup>th</sup>. 16ft trail with northern edge along property line between churches.
  - Option 2: Minimal build option. Add sidewalk from bridge landing to 1<sup>st</sup> Ave, bikes use drive aisle of church lots. K&R facility uses existing parking stalls from Unitarian Church. Minimal improvements to 1<sup>st</sup> Ave
  - Option 3: Trail connection to 149<sup>th</sup> with either the K&R pullouts or the K&R turnaround.
  - Option 4: Extension of 148<sup>th</sup> through church properties including trail. Requires redevelopment of both Unitarian and Phillipi properties.
  - Option 5: Bring trail south along eastern edge of Phillipi property and connect to 147<sup>th</sup>. Minimal sidewalk improvement to 147<sup>th</sup> with bikes using sharrow on 147<sup>th</sup>.

### **Trail & Roadway Sections:**

- Roadway Sections:
  - The team presented several roadway sections options that varied from the EDM prescribed section.
  - While this project may not include any significant improvements to 1<sup>st</sup> Ave, it should not preclude the eventual build-out. Project limits still being discussed within the City.
  - Cycle track section presents issues with driveways, although there are not many driveways present on 1<sup>st</sup> ave. Cycle track is also not compatible with Kiss & Ride pullouts.
- Trail Sections:
  - Utilities that feed the cell phone tower are likely along property line between churches. Title reports indicate that Iglesia church has granted easement to cell



tower owner for operation and maintenance of tower. Utility easements likely present for electrical and communications that feed that tower. Easement mapping is underway.

- Split trail shown to preserve trees @ the west end of the property line between Unitarian Church and Iglesia Church. MUR70 development has no requirement to preserve trees.
- Split trail may also limit parking space impact on Unitarian church property.
- Split trail would need to rejoin as it approaches the bridge as there is a grade difference between the Phillipi Church property and Iglesia church property
- Combined trail within Unitarian & Phillipi properties would eliminate entire row of parking along north edge of lots
- Interim condition could include sidewalk along trees with bicyclists using the drive aisle.

### **East Landing Options:**

- Option 1: This landing brings the ramp north away from the station but provides approximately 9ft of vertical clearance to the guideway soffit for trail users. AASHTO requires 10ft minimum clearance. This would require the City to issue a variance.
- Option 2: Landing is further south to improve vertical clearance for trail users. Landing would be immediately adjacent to the north end of the station.
- Option 3: Landing is further south to improve vertical clearance for trail users and ramp passes through the columns. Landing would be immediately adjacent to the north end of the station.
- Option 4A: Landing is further north, with ramp occurring in the future shoulder of I-5 (between 84ft and 94ft WSDOT compatibility lines). Ramp down occurs between columns of guideway
- Option 4B: Landing is further north, with ramp occurring in the future shoulder of I-5 (between 84ft and 94ft WSDOT compatibility lines). Ramp down occurs east of guideway with Trail along the Rail passing underneath the ramp.
- Option 2 & 3 are eliminated from further evaluation due to their proximity to the station. This would require significant rework of ST's facility.
- Option 4B is eliminated due to complexity and CPTED issues with passing Trail along Rail beneath the ramp.
- The City would like to see further integration of Woonerf plans to see how these options can be integrated into that design.
- Design team to investigate whether raising grades in the Woonerf can help reduce ramp lengths.
- Design team to investigate impact of having significant portions of structure in WSDOT ROW (e.g. clearance to future roadway, location of sound wall, etc).



**Bridge Options:**

- The design team shared four bridge types: Cable stayed, compression arch, network tied arch and a truss.
- Cable stay tower immediately adjacent to the cell tower could be an issue with regard to causing interference. Design team is reaching out to cell tower owner to understand their constraints.
- Selection of bridge type will be highly dependent on cost and constructability
- Design team to investigate relocation of WSDOT sign bridge further north.
- Design team to investigate scale of throw barriers on bridge

**Public Input & Evaluation Criteria:**

- The City and design team will begin assembling a list of criteria for evaluating these options. These will be shared at the next design charrette.
- The City and design team will need to evaluate which components project will be opened up for public input. Where do we inquire and where do we inform?

DRAFT





## MEETING NOTES

Attendees:	Agency/Company:	Date:	12/18/19
Lea Bonebrake	City of Shoreline	KPFF Job	1800398
Nytasha Walters	City of Shoreline	No.:	
Tricia Juhnke	City of Shoreline	Shoreline	9263
Nora Daley-Peng	City of Shoreline	Job No:	
Nathan Daum	City of Shoreline	Task No.:	9.0
Aaron Olson	KPFF	Project:	N148th NMB
Rachel Liberty	KPFF	Subject:	Project Workshop
Keith Ireland	KPFF		#4
Liz Gibson	KPG	Mtg. Place	Shoreline City Hall
Coreen Schmidt	KPG		

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The purpose of the meeting was to share and gather input on the design alternatives for the N 148<sup>th</sup> Non-Motorized Bridge project. In general, the project was divided into three segments with multiple design options for each. Below is a summary of items discussed:

### General Project Updates:

- Initial outreach to Unitarian Church has been made. They are generally receptive/supportive of the project and are interested in increasing visibility of church to trail/bridge users. Parking is their main concern. They would like to see any parking loss mitigated 1:1.
- Initial outreach to Iglesia Church has also been made. Their primary concern is safety/security of their property and keeping people off of their property. They would like to have fencing along trail at their property boundary.
- Sound Transit is currently leasing temporary park-and-ride spaces in the Phillippi and Unitarian parking lots. These spaces need to be maintained until new parking garage is in service at Shoreline South/145<sup>th</sup> station.
- WSDOT kickoff meeting has occurred. Their primary concern is potential impacts to piped section of Thornton Creek in project vicinity. Their suggestion is to avoid impacts to this at all costs. Show stream buffers on plans/graphics. Buffers/setbacks to be confirmed upon receipt of Thornton Creek as-builts.
- The ROW basemap has been updated to show easements on all three church properties. As expected, there is a maintenance and utility easement for cell phone tower at SE corner of Phillippi property. Impacts to this easement should be avoided as relocation of this facility will be costly.

### West-East Side Kiss & Ride and Trail Alternatives:

- Add lighting criteria for all options
- Need to establish limits of project improvement along 1<sup>st</sup> Avenue for TS&L evaluation



- There are mitigation funds available for sidewalk improvements along 1<sup>st</sup> Ave. Preference is to use those funds for sidewalks between 155<sup>th</sup> to Twin Ponds as this area will not redevelop.
- Keep bike connections to 148<sup>th</sup> generic at this point (i.e. do not show bike lane arrows). City to determine bike connections at a later date.

*Option 1: Minimal Build-Out:*

- Avoid calling this interim condition but instead call minimum viable option or similar.
- Minimal parking impacts for this option although parking impacted by construction would need to be mitigated (1:1)
- Unitarian church not particularly thrilled with this option although they would be interested in income from long-term kiss & ride lease from City

*Option 2: Full Trail Build Out with and without Traffic Circle:*

- Traffic circle is not desirable from City perspective as it encroaches on bike lane and adds further complication to the intersection. Traffic circle will be dropped from consideration.
- Show an alternative bike alignment at Kiss & Ride pullouts that has cars crossover bike lanes as a means of reducing ROW width/acquisition.
- Unitarian sign is currently constructed in City ROW.
- Investigate methods for mitigating parking loss due to trail build out.
  - Where can additional spots be gained?
  - Does this option require redevelopment of the Phillippi and Iglesia Church property?

*Option 3: NE 148<sup>th</sup> Street Extension*

- Roadway could be a public or private roadway. City could purchase ROW now or require permanent easement from developer.
- Roadway creates obvious connection to bridge
- Could this option work without redevelopment?
  - Team to investigate methods for mitigating parking loss?
  - Where would access to churches occur? Off of new 148<sup>th</sup> extension? Or move driveway south off of 1<sup>st</sup>?

*Option 4: Connection to 147<sup>th</sup>*

- Turnaround needs to be a cul-de-sac per City code. Team to update figure and determine additional impacts – acquisition/demolition of 4 properties?
- Potential option to have trail connect mid-block of 147<sup>th</sup> and run north between Unitarian and Phillippi properties.
  - Limits Unitarian parking impacts



- Requires additional property acquisition/demolition
- Cul-de-sac/kiss & ride still would be required at end of street.
- Do not advance for now. Keep as potential option for future consideration

**West Side Landings:**

- Clearance diagram provided to show constraints of landing location with regard to vertical clearance for ped/bike users.
- Add Sound Transit station plaza to all graphics
- Tweak woonerf grades and refine landings to get better picture of slopes
- Advance all options (A, B & C) to TS&L phase

*Option A:*

- Where possible, reduce landscaping areas to open up plaza further. This will provide more flexibility for space for future pop-up events.
- Add bleachers north of stairs too

*Option B:*

- Greatest vertical clearance under guideway
- More gentle slopes of all options
- Greatest impact to WSDOT facility (more structure in forward compatibility area).
- Longest bridge structure.

*Option C:*

- More limited plaza space but becomes a quieter connection as trail-along-rail meets up with ped bridge landing.





## MEETING NOTES

Attendees:	Agency/Company:	Date:	01/16/20
Lea Bonebrake	City of Shoreline	KPFF Job	1800398
Nytasha Walters	City of Shoreline	No.:	
Tricia Juhnke	City of Shoreline	Shoreline	9263
Nora Daley-Peng	City of Shoreline	Job No:	
Aaron Olson	KPFF	Task No.:	9.0
Rachel Liberty	KPFF	Project:	N148th NMB
Keith Ireland	KPFF	Subject:	Project Workshop
Liz Gibson	KPG		#5
Coreen Schmidt	KPG	Mtg. Place	Shoreline City Hall
Howard Fitzpatrick	LMN		

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The purpose of the meeting was to share and gather input on the design alternatives for the N 148<sup>th</sup> Non-Motorized Bridge project. In general, the project was divided into three segments with multiple design options for each. Below is a summary of items discussed:

### **General Project Updates:**

- Community briefings with the Phillippi Church and the Parkwood Neighborhood Association (PNA) have been held in recent weeks. Both briefings were met with generally positive reaction to the project. The Phillippi Church is still interested in redevelopment and their largest concern is loss of parking. The PNA is primarily concerned with increased parking congestion in the neighborhood.
- Geotechnical fieldwork was completed last week. Survey was supposed to have been completed during that same timeframe but was delayed due to weather.

### **West Side Kiss & Ride and Trail Alternatives:**

- The group reviewed recent revisions/refinements to the alternatives and selected those that should be advanced to the TS&L phase.
- All improvements to 1<sup>st</sup> avenue should be treated as examples to of how this project may tie into future improvements. These improvements should not be included in the TS&L.
- Below is a summary of the discussion about the alternatives

#### *Option 1: Minimal Build-Out:*

- No significant refinements made since last meeting. Option to be advanced to TS&L

#### *Option 2: Full Trail Build Out with and without Traffic Circle:*



- Newest refinement includes addition of parking lot expansion @ east side of Phillippi parcel to offset parking lost to full trail build-out
- Split this alternative into two, sub-options.
  - Option 2A will stay within the Unitarian and Phillippi properties and will require parking mitigation by adding retained fill to support @ the east end of the Phillippi parcel.
  - Option 2B will push the trail further north onto the Iglesia parcel in order to avoid parking impacts on the Unitarian & Phillippi church parcels. This will require relocation of underground utilities and renegotiation of existing private utility easement.
- Both sub-options will be advanced to TS&L
- Southbound kiss ride to be shifted to be parallel to northbound kiss and ride. This will be installed as part of developers frontage improvements.

*Option 3: NE 148<sup>th</sup> Street Extension*

- The street extension is outside the scope and scale of the project. It should be discussed in the TS&L as “option considered but not advanced”. This option will not be advanced to the TS&L phase.

*Option 4: Connection to 147<sup>th</sup>*

- Newest refinement includes addition of cul-de-sac @ the end of 147<sup>th</sup>.
- This option has significant challenges including building trail adjacent to Thornton Creek, additional fill required to support trail prism and significant ROW acquisition.
- This option will not be advanced to the TS&L but will be addressed in the “option considered but not advanced” section of the report.

**Bridge Alternatives:**

- Updated alternatives including pros & cons for four bridge alternatives. Below is a summary of the discussion about the bridge alternatives.
- Bridge canopy/roof options were also developed for all bridge alternatives

*Option 1: Cable Stayed Bridge:*

- The tower for the cable stay bridge competes visually with the cell phone tower as they are in very close proximity.
- Cable-stay construction will likely require significant amount of work to occur over live traffic on I-5 below. This adds an undue amount of risk to the Contractor and traveling public.
- Cable stay is likely the most costly option
- Cable stay will not be advanced to the TS&L



*Option 2: Compression Arch:*

- Bridge canopy/roof to be added as an alternate option for this bridge. Additional framing members will be required to support a roof/canopy.
- Compression arch bridge to be advanced to TS&L

*Option 3: Tied Arch:*

- Bridge canopy/roof to be added as an alternate option for this bridge. Additional framing members will be required to support a roof/canopy.
- Tied arch bridge to be advanced to TS&L

*Option 4: Truss:*

- Bridge canopy/roof to be added as an alternate option for this bridge. This element can be integrated into the bridge design with little additional structure.
  - Truss arch bridge to be advanced to TS&L
- Bridge awning/roof will be included as an option for all bridge alternatives considered
  - Maintenance/inspection requirements for all alternatives should be discussed in the TS&L evaluation.
  - Throw barrier should be added to all bridge modeling
  - City to follow-up on art requirements for the project. Potential to incorporate art into throw barrier.

**East Side Landings:**

- Refined landing figures were presented. All will be advanced for evaluation in the TS&L report.
- Grades refined a bit more and more accurate picture of slopes and clearances were presented.
- An interim build out condition for the east side landing needs to be considered for all options. Cost estimate should separate out elements of the project that are not necessary to provide a functional project (i.e. minimum viable design). Add-ons like plaza, stair connections, landscaping, etc. can be added later as needed. City provided example of past project where a “menu” of options was created.
- 30% design will likely be to an interim condition as trail-along-the-rail and woonerf have not been designed or funded.

*Option A:*



- This alternative has the smallest vertical clearance from the pathway to the guideway structure @ 8'-0". This is the recommended minimum vertical clearance provided in the AASHTO Ped/Bike facilities guidelines
- This alternative requires raising station plaza grades by ~1ft.

*Option B:*

- Greatest vertical clearance under guideway @ ~9.3ft
- Most gentle slopes of all options
- This alternative requires raising station plaza grades by ~1.5ft.

*Option C:*

- Vertical clearance to guideway is ~8.8ft
- Separates plaza from trail users by separating the two.
- Requires raising station plaza by ~1ft.

**Open House Coordination:**

- A rough draft of the open house outline was shared which includes the following presentation categories:
  - Background Info/Setup
  - Design Constraints/Criteria
  - Alternatives
  - Feedback Opportunities/Next Steps
- It was agreed that a brief presentation should lead the open house to provide people a general overview of the open house layout
  - The facility will need to be able to accommodate a presentation including a screen, seating, etc
- The schedule was reviewed and will be updated to include lead time for translation services. Clear, direct language is required for all materials in order to assure ease of direct translation.
- Graphics will be required for the open house boards and the online open house. Design team will work to support this effort.
- A physical model of the project site will be constructed (approx. 4ft x 4ft). Will include the light rail station and bridge options that can be switched out. Generic landings will be shown @ the east and west side
- During open house development, it needs to be understood to the public where we are asking for input and where we are informing. Balancing qualitative vs. quantitative input is a challenge.
- Allow the public to engage but not "vote" by rating importance of evaluation criteria.
- Ask for quantifiable feedback where possible. Open-ended questions can be difficult to answer/address.



**Evaluation Criteria:**

- The team made some minor edits to the criteria list already developed.
- Criteria should be selected that can differentiate between the options. Some criteria are met by all options and so no comparison can be made.

DRAFT



# Appendix 5

## Project Background Information and Meeting Notes

### Public Outreach and Inter-agency Coordination Notes





## Briefing Notes

### **North 148<sup>th</sup> Street Non-Motorized Bridge Design**

Contract #9263

Consultant: KPFF, Inc.

Iglesia Ni Cristo

December 4, 2019, 3:00 p.m.

#### **1. Briefing Purpose**

- a. Purpose: Update Iglesia Ni Cristo leadership about the project, likely Right-of-Entry (ROE) activities, and secure feedback from church leadership about early design concepts.

#### **2. Attendees**

Lea Bonebrake	City of Shoreline
Aaron Olson	KPFF
Colleen Toomey	Stepherson & Associates
Luvimin Evangelio	Iglesia Ni Cristo Shoreline
Barrington Thompson	Iglesia Ni Cristo (District)
Rex ???	Iglesia Ni Cristo (District)

#### **3. Project Team Presentation: Lea and Aaron provided a brief overview of the project scope and design**

- a. The bridge will need to provide 18 feet in clearance across I-5 and will run under the new Sound Transit light rail tracks at the South Shoreline/N 145th Station
- b. The project team shared five early design concepts reiterated that all options must be considered during this early design phase.
- c. The new bridge will include a walking trail and lighting. Sound Transit security will also staff the station.
- d. Design will also likely include sidewalk improvements on 1st Avenue NE.
- e. The church could also receive compensation for renting field space to contractor for staging.
- f. Right-of-Entry Needs - ROE needs across all three church properties include surveying, permitting and geotechnical activities. Geotechnical activities can be conducted on the other church properties. Surveying and permitting activities will be minimally invasive to Iglesia and will not require large tools.





## Briefing Notes

### 4. Iglesia Ni Cristo Community Comment Summary

- a. ROE
  - i. The Shoreline congregation is part of the larger national church. Church leadership includes a local district, a Western U.S. division and national office. The church has its own team of architects and engineering.
  - ii. All agreements for the ROE and other activities will go through Western U.S. office.
- b. Church schedule and language needs
  - i. The Shoreline congregation has a 10 am service on Sundays and many activities throughout the week.
  - ii. Public outreach materials in English will work well for congregation.
- c. Project benefits
  - i. A new pedestrian and bike bridge could bring new community members to the church and make it easier for current members to travel to church.
- d. Project concerns
  - i. Safety: Iglesia Ni Cristo wants to ensure a safe environment. In October 2018, a man threw a Molotov cocktail into the Rainier Valley location during a worship service. Fortunately, there were no injuries.
  - ii. ROW: Leaders want to ensure there is clear delineation between public right-of-way and private property and alignment does not encourage pedestrians, bicyclists or vehicles to cut through church property.
  - iii. Congestion: With drop-offs in potential kiss-and-ride or roundabouts, church leaders want to ensure that there is no significant congestion or illegal parking for the congregation to contend with. Project team noted parking facilities will be at the station.
- e. Review of Early Concepts
  - i. Option 1 and 2 were the most attractive to the church leaders. The trail pathway between the three churches appeared to offer the best security and would discourage people from cutting through private property to access the bridge. The kiss-and-ride spaces outside of the Iglesia property were most attractive. (This could also include Option 5)
  - ii. Options with the northern trail pathway were less attractive for security reason.





## Briefing Notes

### 5. Next Steps/Action Items

Task	Responsible	DUE
Send revised ROE agreement excluding geotechnically activities to Brother Luvimin. Include PDF of early concepts and project folio.	Lea	DONE (12/6)





## Briefing Notes

### **North 148th Street Non-Motorized Bridge Design**

Contract #9263

Consultant: KPFF, Inc.

Shoreline Unitarian

Universalist Church

December 12, 2019, 4:30 p.m.

#### **1. Briefing Purpose**

- a. Purpose: Update Shoreline Unitarian Universalist Church leadership about the project, likely Right-of-Entry (ROE) activities, and secure feedback from church leadership about early design concepts.

#### **2. Attendees**

Lea Bonebrake	City of Shoreline
Nathan Daum	City of Shoreline
Aaron Olson	KPFF
Colleen Toomey	Stepherson & Associates
Catherine Crain	Shoreline Unitarian Universalist Church Board, President
Ryan Dunne	Shoreline Unitarian Universalist Church Board, VP Finance

#### **3. Project Team Presentation: Lea and Aaron provided a brief overview and answered questions about the project scope and design**

- a. The bridge will need to provide 18 feet in clearance across I-5 and will run under the new Sound Transit light rail tracks at the South Shoreline/N 145th Station.
- b. The project team shared five early design concepts that are focused on the approach/how the path gets users from the bridge landing to 1st Ave NE or NE 147th St.
- c. Other components of the project include the bridge and how the bridge connects to the light rail station on the east side of I-5.
- d. Design will also likely include sidewalk improvements on 1st Avenue NE.
- e. The church could receive compensation for any easements or land purchases.
- f. The new bridge will include a walking trail and lighting. Sound Transit security will also staff the station.
- g. Survey work will be done once the City receives ROE agreements from all three church properties. This work will likely occur in the next month or so.
- h. The Type, Size and Location Report will evaluate four alternatives for the approach, two alternatives for the bridge design and two alternatives for the landing/connection to the light rail station.
- i. Lea explained that the selected option will be recommended by the project team and approved by the City Council.





## Briefing Notes

- j. The goal is to complete final design by the end of 2022, before Sound Transit begins light rail testing on the east side of I-5. Light rail will go through 1 year of testing (2023) with plans to start service in 2024.

#### **4. Shoreline Unitarian Universalist Community Comment Summary**

- a. Church Activities and Parking
  - i. The congregation is busiest on Sundays and during large events like weddings and funerals, however they do also have active weekday programming.
  - ii. Church currently leases the northernmost row of parking in their lot to the Evergreen School and Sound Transit during the week.
- b. Property impacts
  - i. In some concepts, the Church may need to sell or lease property. They would like to negotiate fair compensation for this loss of property.
- c. Review of Early Concepts
  - i. Of the existing options, option 1 and 2 were the most attractive to the church board members. A pathway between the three churches would give users exposure to the Church's message. Option 1 and 2 would also discourage people from cutting through their property to access the bridge.
  - ii. Options 3A and 3B were less attractive because:
    - 1. Might lead to unauthorized parking in their lot.
    - 2. People might cut through church parking lot to get to the bridge creating an added liability. They'd prefer to have the pathway near/adjacent to the church to make use more formalized.
  - iii. Option 5 – Lea explained that the project team is also looking at the option of placing the approach to the east of the Phillipi Church to connect to NE 147th St.
    - 1. Church board members acknowledged that this option would have less of an impact on their parking.
    - 2. Catherine and Ryan asked the project team to look at the option of placing a pathway that runs east from 1st Ave NE, south of their property, turns north between the Unitarian and Phillipi churches and then east again between the Iglesia and Unitarian Church properties.
- d. Outreach
  - i. Catherine and Ryan said they would be interested in participating in a briefing with all three churches.
  - ii. They also said they can help share information about the open house and online open house with their congregation.
  - iii. Aaron offered to give a similar briefing to a larger group at the Church. Ryan and Catherine said they would like to do that.





## Briefing Notes

### 5. Next Steps/Action Items

Task	Responsible	DUE
Send schedule, data/reports (traffic and use projections, walkshed information, etc..) and an electronic version of the concepts to Ryan.	Lea/Kristin	DONE
Set up project briefing/presentation with a larger group of people from the Church.	Kristin	January





## Briefing Notes

### North 148th Street Non-Motorized Bridge Design

Contract #9263

Consultant: KPFF, Inc.

Phillippi Presbyterian Church Briefing

January 3, 2020, 3:00 p.m.

#### 1. Briefing Purpose

Purpose: Update Phillippi Presbyterian Church leadership about the project, provide guidance on development opportunities and secure feedback from church leadership about early design concepts.

#### 2. Attendees

Lea Bonebrake	City of Shoreline
Nathan Daum	City of Shoreline
Caleb Miller	City of Shoreline
Aaron Olson	KPFF
Kristin Anderson	Stepherson & Associates
Han Kim	Phillippi Presbyterian Church Briefing
Cheryl Lee	Phillippi Presbyterian Church Briefing

#### 3. Project Team Presentation: Lea and Aaron provided a brief overview and answered questions about the project scope, design and schedule.

- a. The project team shared four early design concepts that are focused on the approach/how the path gets users from the bridge landing to 1st Ave NE or NE 147th St. Aaron described that these are high-level concepts with the intent of gathering input from key stakeholders early in the process in an effort to create a win-win for all those involved. The options presented included:
  - i. Option 1 – Minimal Build-Out
  - ii. Option 2 – Full Trail Build-Out
  - iii. Option 3 - NE 147th Trail Connection
  - iv. Option 4 - Phillippi Site Redevelopment
- b. Other components of the project include the bridge and how the bridge connects to the light rail station on the east side of I-5.
- c. The new bridge will include a walking trail and lighting. Sound Transit security will also staff the station.
- d. A draft of the Type, Size and Location Report be presented to the City by the end of February. At that time, the project team will also start a broad public outreach effort concurrent to focused outreach with key stakeholders. The preferred alternative will be selected approximately two months after Open House #1 (planned for early April).





## Briefing Notes

- e. The goal is to complete final design by the end of 2022, before Sound Transit begins light rail testing on the east side of I-5. Light rail will go through one year of testing (2023) with plans to start service in 2024.
- f. Based on the feasibility study, the total estimated project cost is \$17 million.

#### **4. Phillippi Presbyterian Church Community Comment Summary**

- a. Church Activities, Development Plans, and Parking
  - i. Church would like to maintain as much parking as possible on its property.
  - ii. Church is hoping to use the sloped area on the east side of its property, potentially for a multi-story parking garage.
  - iii. Cheryl asked if parking will be added as part of the project. Lea responded that parking will not be added as part of this project. The City is intentionally not adding parking but focusing on users who walk and bike. Aaron added Sound Transit will be added a 500-car parking garage on the east side of I-5 near the light rail station.
- b. Review of Early Concepts
  - i. Option 1
    - 1. Cheryl does not think there is enough room for an 8-foot wide path as shown in the drawing (in the strip between the Iglesia property and the parking lots to the south). Aaron shared that the options are schematic and based on aerial surveys. Once survey work is done, the options will be further developed.
  - ii. Option 2
    - 1. Han asked who will maintain the planted buffers shown in this option. Lea said that it's most likely that the City will maintain the plantings, as the City would need to acquire an easement to use that property. Lea will confirm.
  - iii. Option 3
    - 1. Has asked if the path shown will be a raised trail. Aaron responded that it's likely that the trail will be at a raised elevation. This would likely be done with a retaining wall and fill behind it as that is a least-costly option.
    - 2. Han asked what type of development is possible on the sloped area. Caleb responded that steep slopes are considered critical areas. A final decision about what's allowed on the slope will require review of a specific proposal by a professional. Aaron added that Thornton Creek comes through the sloped area in an underground pipe. That pipe/culvert has been identified by WSDOT as a location for a future fish passage project. There are many unknowns about what WSDOT might do and will allow in this area.





## Briefing Notes

3. Cheryl feels this option is too indirect and would require too much walking to get to the bridge from 1st Ave NE. She doesn't think people will use this route.

iv. Option 4

1. This option is contingent on Phillippi site redevelopment.
2. Cheryl said that while this option may not be exactly what the Church wants, she is glad the City is thinking forward and considering growth options.

c. General

- i. The majority of the congregation speaks Korean. Having outreach materials in Korean would be very helpful for communications with the congregation.
- ii. Cheryl stated repeatedly that the City needs a subarea plan for this area. Without a plan, it's difficult to visualize and plan for what could go in at the site.
- iii. Cheryl prefers options that separates pedestrians and bicyclists.
- iv. The Church would like more information on development agreement criteria.
- v. Cheryl is concerned about that more foot traffic in the area may lead to additional crime around the Church in the evenings and the less active times of day

## 5. Next Steps/Action Items

Task	Responsible	DUE
Send Han a PDF version of the trail options to share with the congregation	Lea	DONE
Send Han and Cheryl information about Gethsemane and other Church redevelopments	Lea	DONE
Connect with Han and Cheryl with details of a development agreement	Nate	1/10
Confirm who will maintain planted buffer shown in Option 2	Lea	1/17





## Briefing Notes

Provide briefing to the Church congregation	Lea	TBD
Connect with Han and Cheryl as options are further developed and prior to broader public outreach.	Lea	March
Share survey information with Cheryl and Han	Aaron/Lea	When available (when is that?)





## Briefing Notes

### North 148th Street Non-Motorized Bridge Design

Contract #9263

Consultant: KPFF, Inc.

Parkwood Neighborhood Association Briefing

January 8, 2020, 7:00 p.m.

#### 1. Briefing Purpose

Update the Parkwood Neighborhood Association about the project background, schedule and next steps, and gather feedback on early design concepts.

#### 2. Presenters

Lea Bonebrake	City of Shoreline
Tricia Juhnke	City of Shoreline
Aaron Olson	KPFF
Kristin Anderson	Stepherson & Associates

#### 3. Project Team Presentation: Lea and Aaron provided a brief overview and answered questions about the project scope, design and schedule.

- a. The project team started the presentation by providing background information on the 2017 feasibility study which lead to the identification of the selected bridge alignment at N 148th St.
- b. The project team shared early design concepts for the three parts of the project: the west trail connection 1st Ave NE, the bridge, and the east bridge landing. The team shared that these are high-level concepts with the intent of gathering input from key stakeholders early in the process to create a win-win for all those involved.
- c. The options presented for the west trail connection to 1st Ave NE included:
  - i. Option 1 – Minimal Build-Out
  - ii. Option 2 – Full Trail Build-Out
  - iii. Option 4 – NE 148th St Extension
  - iv. Note: A fourth option, with the trail traveling south adjacent to I-5 and connecting to NE 147th was discussed, but not presented with an exhibit.
- d. The options presented for the bridge included:
  - i. Cable stayed bridge
  - ii. Compression arch bridge
  - iii. Truss bridge
  - iv. Tied arch bridge
- e. The options included for the east bridge landing included:
  - i. Option A
  - ii. Option B
  - iii. Option C
- f. The new bridge will include a walking trail and lighting. Sound Transit security will also staff the station.





## Briefing Notes

- g. A draft Type, Size and Location Memo will be presented to the City by the end of February. At that time, the project team will also start a broad public outreach effort concurrent to focused outreach with key stakeholders. The preferred alternative will be selected approximately two months after Open House #1 (planned for early April).
- h. The goal is to complete final design by the end of 2022, before Sound Transit begins light rail testing on the east side of I-5. Light rail will go through one year of testing (2023) with plans to start service in 2024.

#### **4. Parkwood Neighborhood Association Community Comment Summary**

- a. The group had questions about how the project is being funded and how I-976 impacts the funding of this and other City projects.
  - i. Project funding: Lea shared that based on the feasibility study, the total estimated project cost is \$17 million. This total includes additional contingency and escalation funds. Approximately \$10 million has been secured, including more than 5 million in combined federal funding and Sound Transit funding.
  - ii. I-976 impacts: Tricia said that funding obtained through license tabs are directed to the City's street and sidewalk maintenance and preservation programs. Passage of I-976 represents an annual loss of \$1.7 million towards that fund. Passage of I-976 does not directly impact funding for this project.
- b. The group asked what the critical need for the project was and from where likely users would be coming.
  - i. Aaron shared that the purpose of the bridge is to connect people from the west side of I-5 to the transit center on the east side of I-5.
  - ii. Tricia added that the rezoning in the area will continue to increase the number of people living in the neighborhood. By placing the bridge near N 148th St creates a larger walkshed (the area/distance people are willing to walk). Someone closer to N 150th is more likely to use an I-5 crossing at N 148th than at N 145th.
- c. The group expressed concerns about how rezoning and this project will impact parking in the neighborhood.
  - i. Parking impacts: People using the bridge and transit center might try to use the public parking lots and street parking in the neighborhood. Added density will further strain parking availability in the neighborhood.
  - ii. Parking mitigation: The group asked if there is a plan to mitigate parking impacts resulting from this project?





## Briefing Notes

1. Lea responded that as part of this project, the City is conducting a parking study to assess how the new bridge will impact parking in the neighborhood.
2. Tricia responded that the City is also conducting a broader parking study and plan to address how parking might be managed in the future.
- iii. Use of Church lots for parking: The group asked if the Phillippi and Unitarian Church parking lots will continue to be used as commuter parking.
  1. Tricia answered that when Sound Transit removed the park and ride on the east side of I-5, they replaced that lost parking by leasing parking in the Phillippi Church parking lot. Once the parking garage is open as part of the new light rail station, the Phillippi lot won't be used for commuter parking.
- d. The group had questions about if and how the City would acquire property for the bridge and trail connection to 1st Ave NE.
  - i. Lea said that that the extent of property impacts is yet to be determined, and that discussions are currently being had with the immediately impacted property owners.
- e. Comments and questions about the west trail connection to 1st Ave NE options
  - i. The group did not express a unified preference for any one of the following options.
    1. Option 1 – Minimal Build-Out
    2. Option 2 – Full Trail Build-Out
    3. Option 3 - NE 147th Trail Connection
    4. Option 4 – NE 148th St Extension
- f. Comments and questions about the bridge options
  - i. Some members of the group shared an initial preference for the tied-arch bridge.
  - ii. The group asked if the bridge would have a cover.
    1. Aaron said that it might, but that level of detail has not been decided.
- g. Comments and questions about the east bridge landing
  1. The group did not share a preference for any of the east bridge landings.





## Briefing Notes

### 5. Next Steps/Action Items

Task	Responsible	DUE
<b>Specific request</b>		
Share KC Metro Long-range planning information	Lea	1/17
Share Northgate Pedestrian and Bicycle Bridge information	Lea	1/17
Share webpage/handout describing how the different City projects fit together/connect	Lea	Once complete
<b>Suggested information to share based on questions from group</b>		
Information on I-976 impacts – Team could share the Currents Winter 2019 article on this issue. <a href="http://www.shorelinewa.gov/home/showdocument?id=41307">http://www.shorelinewa.gov/home/showdocument?id=41307</a>	Lea	1/17





## Briefing Notes

### North 148th Street Non-Motorized Bridge Design

Contract #9263

Consultant: KPFF, Inc.

Ridgecrest Neighborhood Association Briefing

January 21, 2020

#### 1. Briefing Purpose

Update the Ridgecrest Neighborhood Association about the project background, schedule and next steps, and gather feedback on early design concepts.

#### 2. Presenters

Bob Earl	City of Shoreline
Nytasha Walters	City of Shoreline
Aaron Olson	KPFF
Colleen Toomey	Stepherson & Associates

#### 3. Project Team Presentation: Bob and Aaron provided a brief overview and answered questions about the project scope, design and schedule.

- a. The project team started the presentation by providing background information on the 2017 feasibility study which lead to the identification of the selected bridge alignment at N 148th St.
- b. The project team shared early design concepts for the three parts of the project: the west trail connection 1st Ave NE, the bridge, and the east bridge landing. The team shared that these are high-level concepts with the intent of gathering input from key stakeholders early in the process to create a win-win for all those involved.
- c. The options presented for the west trail connection to 1st Ave NE included:
  - i. Option 1 – Minimal Build-Out
  - ii. Option 2 – Full Trail Build-Out
- d. The options presented for the bridge included:
  - i. Compression arch bridge
  - ii. Truss bridge
  - iii. Tied arch bridge
- e. The options included for the east bridge landing included:
  - i. Option A
  - ii. Option B
  - iii. Option C
- f. The new bridge will include a walking trail and lighting. Sound Transit security will also staff the station.
- g. A draft Type, Size and Location Memo will be presented to the City by the end of February. At that time, the project team will also start a broad public outreach effort concurrent to focused outreach with key stakeholders. The preferred alternative will be selected approximately two months after Open House #1 (planned for early





## Briefing Notes

April).

- h. The goal is to complete final design by the end of 2022, before Sound Transit begins light rail testing on the east side of I-5. Light rail will go through one year of testing (2023) with plans to start service in 2024.

#### 4. Ridgecrest Neighborhood Association Community Comment Summary

- a. **Parking:** Attendees asked about parking options on the west side.

- i. Bob noted that the city is studying parking options and does not want to overbuild on the west side of the bridge.

- b. **West Approach:**

- i. Option 1: Attendees emphasized the importance in minimizing tree removal. Attendees also asked how Thornton Creek will be impacted by this project. The city does not need to daylight creek currently.
  - ii. Option 2: Attendees provided mixed feedback about this option. Some were concerned it was too wide and other wanted to make sure there would be specific bike lanes along the route. A suggestion was made to update renderings.
    - 1. Colleen reiterated that stakeholders at churches also providing feedback and it is important to them to have a distinct and safe right-of-way that does not encourage people to cut through or wander around church properties.

- c. **East Bridge Landing:** Attendees asked several questions and provided strong feedback about prospective plaza space and other amenities around the Sound Transit station.

- i. Several attendees expressed that the location adjacent to both light rail tracks and a freeway would be too loud to hold any meaningful public programming and that it was not an attractive space for people to sit and have coffee or lunch. Attendees also said a lack of bathrooms was problematic.
    - 1. Aaron and Nytasha noted that current conditions around the area are likely to change with more retail development, restaurants and foot traffic.
    - 2. Nytasha confirmed that there are no bathrooms currently planned for the facilities and noted that bathrooms were very expensive to maintain in these types of public facilities.
    - 3. Bob and Nytasha also confirmed that city does not need to acquire additional property on the east side to accommodate any of the prospective design options. City will take over plaza after Sound Transit construction is complete.

- ii. **Safety:** Attendees had several comments related to design elements under the





## Briefing Notes

Sound Transit track. Several attendees though the clearance was too low and too close to the tracks. One attendee was concerned that design options had too many corners and dark spaces that would create a safety risk, particularly at night.

1. Bob and Aaron reiterated that the project has spatial constraints with both I-5 and the Sound Transit tracks. Bridge and pathways also need to meet ADA accessibility standards. Aaron reiterated that Sound Transit will have security staff on site.
2. Attendees voiced support for Option C and said a more condensed plaza was an okay tradeoff for a more direct route between the bridge and station.

**d. Bridge Options: Attendees asked several questions about the four bridge type options.**

- i. Attendee asked if the bridge will light up like one of the bridges across Aurora Avenue.
  1. Aaron confirmed that we will not be able to do that under WSDOT regulations. Other art options are under consideration.
- ii. Attendees asked which bridge was best designed for seismic activity.
  1. Aaron confirmed that all bridge options will meet that same seismic standards.
  2. Aaron also confirmed that WSDOT will review options.
  3. Bridge will be fabricated off-site to mitigate closure and disruption to I-5.
  4. Attendees responded most positively to the Tied Arch Bridge. One person commented that the Truss Bridge looked too much like a railroad.

**e. Neighborhood travel and access:**

- i. Attendees asked how these pathways related to other open space projects.
  1. Nytasha said the city is working toward greater connection through greenways, that include routes near I-5 and the Burke Gilman Trail. The city will be doing an update of its master transportation plan soon.
- ii. One attendee strongly articulated his concern that neighborhood connectivity is very poor on the east side of the bridge and that there are not enough sidewalks or curbs to get people safely to the light rail. He also felt that the city has done a poor job informing and working with residents.
  1. Nytasha emphasized that there are several other improvement projects related to this area. She said the city could come back to provide overview of projects. She also emphasized that the project team will make sure to put the N 148th Non-Motorized Bridge in context to the greater planning efforts as we go forward.





## Briefing Notes

### 5. Next Steps/Action Items

Task	Responsible	DUE
<b>Specific request</b>		
<b>Suggested information to share based on questions from group</b>		
Send information about other improvement project related to 5th Avenue NE area/walkshed to board contacts.	Nytasha and Lea	2/7





## MEETING NOTES

Attendees:	Agency/Company:	Date:	12/9/19
Lea Bonebrake	City of Shoreline	KPFF Job	1800398
Bob Earl	City of Shoreline	No.:	
Nytasha Walters	City of Shoreline	Shoreline	9263
Juniper Nammi	City of Shoreline	Job No:	
Melanie Vance	WSDOT Local Programs	Task No.:	2.0
Hung Huynh	WSDOT NWR Design	Project:	N148th NMB
Christina Stround	WSDOT		Project
David Narvaez	WSDOT Local Programs	Subject:	Project Kickoff
Mehrdad Moini	WSDOT Local Programs		Meeting WSDOT
Renae Larsen	WSDOT Local Programs	Mtg. Place	Shoreline City Hall
Peter Alm	WSDOT		
Betsy Chase	WSDOT Real Estate		
Dan Hoyt	WSDOT Planning Manager		
Dan Logan	WSDOT Real Estate		
Celeste Gilman	WSDOT RTC		
Lindsey Handel (?)	FHWA		
Aaron Olson	KPFF		
Rachel Liberty	KPFF		
Keith Ireland	KPFF		

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The purpose of the meeting was to re-introduce WSDOT to the scope and purpose of the N 148<sup>th</sup> street Non-Motorized Bridge Project which included discussion of constraints and requirements of a crossing WSDOT's facility.

### **Forward Compatibility/WSDOT ROW:**

#### *East Bridge Landing:*

- The group discussed the 94' and 84' forward compatibility line (FCL) along the east side of I-5 which was used during the Lynnwood Link design project. These guidelines can be used during design development for this project.
- A bridge pier at the east landing will likely need to be placed in the amenity zone (i.e. between the 94' and 84' lines). The bridge pier would need to be able to accommodate future drainage features (e.g. ditches) and other improvements (e.g. ITS, etc).
- Bridge pier locations will be shown in the TS&L and 30% deliverable for WSDOT review and comment.
- The City and Sound Transit currently have an understanding that the City will take possession of parcels @ the 145<sup>th</sup> street station site at the end of construction and that ST will have a transit easement on City property. Once this agreement has been formalized, WSDOT will need this documentation.



- ST and WSDOT currently have an airspace lease agreement at the 145<sup>th</sup> street station. This agreement will need to be modified for the portion of the pedestrian bridge that impacts this area.

West Bridge Landing:

- No FCL along the west side of I-5 was established in this vicinity for the Lynnwood Link project.
- The Lynnwood Link project did establish similar FCL where Sound Transit's guideway transitioned to the west side of the freeway. These guidelines can be applied in pedestrian bridge project area.
- The design team will reach out to Jeff S. of WSDOT's management of mobility team to gather information regarding I-5 planning work and future needs in this area.
- Corridor ITS is present in the SB I-5 shoulder

Airspace/Trail Lease:

- The City will be seeking a trail lease for the aerial crossing of I-5. The bridge will need to be identified in the City's trail/transportation masterplan to qualify.
- Trail lease will take approximately 1 year from submittal of exhibits to executed lease.
- It's possible that NEPA may run concurrently with this process.

**SB I-5 Sign Bridge:**

- The existing sign bridge at the NE 145<sup>th</sup> St exit off of I-5 will be impacted by the proposed pedestrian location.
- The Northgate Way advisory sign is not required by the MUTCD. It's likely that this sign could be relocated to the 145<sup>th</sup> st vehicular bridge (if required). A new sign would need to be provided.
- The exit sign may be relocated further north onto a cantilever sign bridge to accommodate the pedestrian bridge. Horizontal clearance requirements will be dictated by sign bridge maintenance requirements. WSDOT to provide these clearance requirements.

**Thornton Creek:**

- A piped section of Thornton Creek parallels SB I-5 in the vicinity of the pedestrian bridge project
- This section of Thornton Creek may be on the fish passage injunction list. It is unknown at this time if WSDOT has any immediate or future plans for a fish passage project. The design team will coordinate with WSDOT to determine if this is the case.
- It is advised that this pedestrian bridge project avoid impacts to Thornton Creek including drainage discharge
- It is advised that the Muckleshoots be invited to the NEPA kickoff meeting (still to be scheduled)
- The design team will request as-builts for section of Thornton Creek for inclusion in the project basemap.



- Critical areas – 165ft buffer around Thornton Creek

#### Architectural/Structural Requirements:

- It is unknown at this time whether corridor specific WSDOT architectural standards will be adhered to. The design team will follow-up with WSDOT to confirm
- Although the WSDOT Design Manual does not necessarily require throw barriers for all crossings, they will likely be required given the context of the site. BNSF guidelines are often used as a starting point for throw barriers.
- Lighting on the bridge will be required for user safety but should not serve as a distraction to drivers on I-5. Uplighting or other accent lighting should be avoided.
- WSDOT has no known restrictions on structure type (i.e. cable stay, truss, arch, etc). Future maintenance of the structure will need to be considered in structure type selection
- Design team to confirm with Roman Peralta (WSDOT) on routine inspection requirements for pedestrian bridges that cross WSDOT facilities
- A bridge maintenance agreement between the City and WSDOT will be required
- Construction permit from WSDOT will be required. WSDOT inspectors will need to be present during construction

#### Deliverable Review and Communications:

- The City/design team will submit draft TS&L report and 30% to WSDOT for review and comment.
- The basis of design for the project has been recently completed. The City will distribute to WSDOT for review and comment.
- Hung H. and Lee Fanning will serve as primary point of contact between City and WSDOT for coordination items
- A JZ account between WSDOT and the City has already been setup. The City and WSDOT will coordinate to ensure enough funds are obligated to this account for deliverable reviews.

Action Items				
No.	Description	Person(s) Responsible	Due Date	Complete?
1	Contact Jeff S of WSDOT management of mobility team to determine future I-5 plans at 145 <sup>th</sup> interchange	Hung H.	12/31	
2	Define/determine horizontal clearance required for maintenance of proposed 145 <sup>th</sup> off-ramp sign bridge	Hung H.	12/31	



3	Provide as-built plans for pipe section of Thornton Creek in the vicinity of proposed bridge	Hung H.	1/8	
4	Determine whether pipe section of Thornton Creek is on WSDOT fish barrier injunction list and whether there are any plans for replacing this section of the culvert.	Hung H	1/8	
5	Determine bridge inspection requirements with Roman Peralta (WSDOT)	KPFF/Hung H.	1/8	
6	Review and comment on Basis of Design Document	Hung H./WSDOT	1/15	
7	Determine if JZ account needs to be supplemented to account for WSDOT coordination effort	Lea B/Hung H.	1/8	





## Sound Transit Kickoff Meeting Agenda

### **North 148<sup>th</sup> Street Non-Motorized Bridge Design**

Contract #9263

Consultant: KPFF, Inc.

December 19, 2019, 3:00 p.m.

#### **Attendees:**

Lea Bonebrake	City of Shoreline
Bob Earl	City of Shoreline
Taylor Carroll	Sound Transit
Aaron Olson	KPFF

#### **Introductions & Project Roles**

##### **Meeting Objectives**

- 1) Re-introduce project to Sound Transit (ST) including purpose and need
- 2) Discuss constraints of building adjacent to ST facilities
- 3) Establish lines of communication and review

##### **Project Background**

- The 145<sup>th</sup> Multi-modal corridor study and 145<sup>th</sup> Subarea Plan recommendations
- Review feasibility analysis and recommended alignment alternatives

##### **Preliminary Design Review**

- Share current design development

##### **Structural & Architectural Requirements**

- Corridor architecture requirements
- Permissible bridge types
- Inspection & maintenance requirements
- Geotechnical foundation influence zones

##### **Construction Requirements**

- Construction envelopes
- Staging areas
- Construction schedule





## Sound Transit Kickoff Meeting Agenda

### **Sound Transit Coordination**

- ST departmental review
- Main point of contact

### **Deliverables Review**

- Basis of Design
- Bridge/Trail TS&L
- 30% Design & beyond

### **Open Discussion**

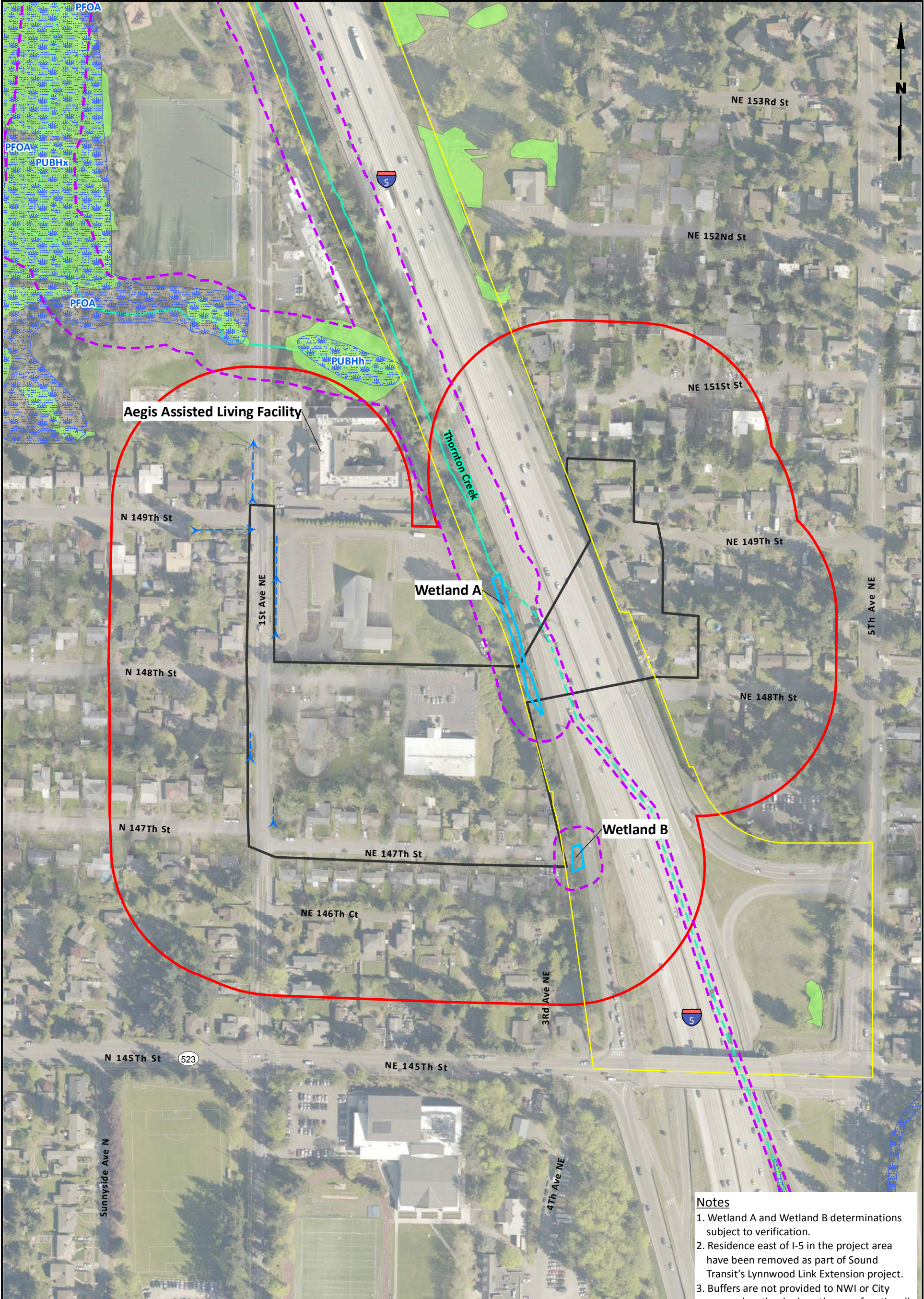


# Appendix 5

## Project Background Information and Meeting Notes

### Environmental Permitting





**Legend**

Ditches

Open Water Course

Piped Water Course

I-5 Right of Way

Project Area

Study Area

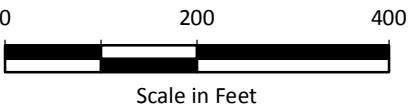
Wetland (NWI)

Wetland (City)

Wetland (Site Reconnaissance)

Wetland/Stream Buffer

LANDAU ASSOCIATES



Data Sources: NFWS; City of Shoreline GIS; King County GIS.

N 148th Street Non-Motorized Bridge Project Shoreline, Washington	<b>Natural Resources Location Map</b>	Figure <b>1</b>
---	---------------------------------------	--------------------

- Notes**

  1. Wetland A and Wetland B determinations subject to verification.
  2. Residence east of I-5 in the project area have been removed as part of Sound Transit's Lynnwood Link Extension project.
  3. Buffers are not provided to NWI or City mapped wetlands since they are functionally separated from the project area by existing development.
  4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



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# Appendix 5

## Project Background Information and Meeting Notes

### Landscaping Plant Palette



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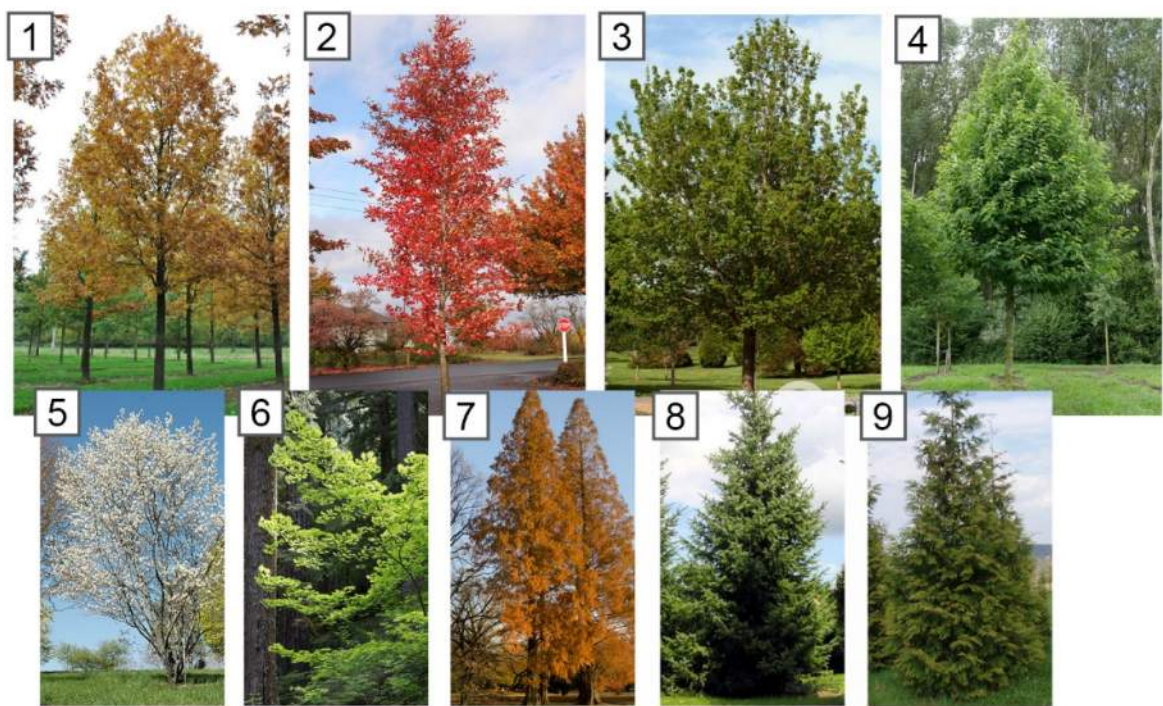


# 1. Plant Palette

## LANDSCAPE SPECIES RECOMMENDATIONS

Table 1-1: TREES

Type	Latin Name	Common Name
1. Large Tree	<i>Quercus frainetto</i> 'Schmidt'	Forest Green Italian Oak
2. Large Tree	<i>Nyssa sylvatica</i> 'David Odom'	Afterburner Tupelo
3. Medium Tree	<i>Acer campestre</i> 'Evelyn'	Queen Elizabeth Hedge Maple
4. Medium Tree	<i>Halesia monticola</i>	Mountain Silverbell
5. Accent Tree	<i>Amelancier grandiflora</i> 'Princess Diana'	Princess Diana Serviceberry
6. Accent Tree	<i>Acer circinatum</i>	Vine Maple
7. Evergreen Tree	<i>Metasequoia glyptostroboides</i>	Dawn Redwood
8. Evergreen Tree	<i>Picea omorika</i>	Serbian Spruce
9. Evergreen Tree	<i>Thuja plicata</i> 'Excelsa'	Excelsa Cedar





**Table 1-2: SCREENING**

Type	Latin Name	Common Name
1. Accent Tree	<i>Acer circinatum</i>	Vine Maple
2. Evergreen Tree	<i>Picea omorika</i>	Serbian Spruce
3. Evergreen Tree	<i>Thuja plicata 'Excelsa'</i>	Excelsa Cedar
4. Shrub	<i>Ribes sanguineum</i>	Flowering Currant
5. Shrub	<i>Myrica californica</i>	Pacific Wax Myrtle
6. Shrub	<i>Vaccinium ovatum 'Thunderbird'</i>	Thunderbird Evergreen Huckleberry
7. Shrub	<i>Mahonia x media 'Winter Sun'</i>	Winter Sun Mahonia
8. Shrub	<i>Spiraea betulifolia 'Tor'</i>	Tor Birchleaf Spirea
9. Shrub	<i>Gaultheria shallon</i>	Salal
10. Shrub	<i>Mahonia nervosa</i>	Cascade Oregon Grape
11. Fern	<i>Polystichum munitum</i>	Sword Fern





**Table 1-3: EDGE RESTORATION**

Type	Latin Name	Common Name
1. Shrub	<i>Symphoricarpos albus</i>	Snowberry
2. Shrub	<i>Mahonia aquifolium</i>	Kelseyi Red Twig Dogwood
3. Shrub	<i>Gaultheria shallon</i>	Salal
4. Shrub	<i>Mahonia nervosa</i>	Cascade Oregon Grape </td
5. Fern	<i>Polystichum munitum</i>	Sword Fern
6. Grass	<i>Deschampsia cespitosa</i>	Tufted Hair Grass
7. Groundcover	<i>Arctostaphylos uva-ursi</i>	Kinnikinnick
8. Groundcover	<i>Fragaria chiloensis</i>	Beach Strawberry





**Table 1-4: ORNAMENTAL PLANTING**

Type	Latin Name	Common Name
1. Shrub	<i>Lonicera pileata</i>	Privet Honeysuckle
2. Shrub	<i>Rhododendron 'Percy Wiseman'</i>	Percy Wiseman Rhododendron
3. Shrub	<i>Deutzia gracilis 'Nikko'</i>	Dwarf Slender Deutzia
4. Shrub	<i>Prunus laurocerasus 'Mt. Vernon'</i>	Mount Vernon Laurel
5. Shrub	<i>Escallonia 'Newport Dwarf'</i>	Newport Dwarf Escallonia
6. Shrub	<i>Berberis thunbergii 'Concorde'</i>	Concord Barberry
7. Shrub	<i>Mahonia repens</i>	Creeping Oregon Grape
8. Grass	<i>Calamagrostis x acutiflora 'Karl Foerster'</i>	Feather Reed Grass
9. Grass	<i>Sesleria autumnalis</i>	Autumn Moor Grass
10. Perennial	<i>Achillea millefolium 'Walther Funcke'</i>	Walther Funke Yarrow
11. Perennial	<i>Geum 'Flames of Passion'</i>	Flames of Passion Avenas
12. Groundcover	<i>Rubus pentalobus</i>	Creeping Bramble
13. Groundcover	<i>Epimedium x perralchicum 'Frohnleiten'</i>	Hybrid Epimedium
14. Vine	<i>Parthenocissus tricuspidata</i>	Boston Ivy





# Appendix 6

Online Open House Report and Content





# **N 148th STREET NON-MOTORIZED BRIDGE PROJECT**

ONLINE OPEN HOUSE FINAL REPORT

APRIL 10-MAY 1, 2020



## SUMMARY

As part of the N 148th Street Non-Motorized Bridge Project, the City of Shoreline hosted an online open house between April 10 and May 1, 2020, to share information and gather input on the design of the bridge and how it connects to the neighborhoods on the east and west sides of I-5.

When visiting the online open house, participants could:

- Learn more about the project need, benefits, and schedule.
- Review the options being considered for each design element and provide feedback on those options.
- Share how they plan to use the bridge and what criteria is most important to them.
- Share demographic information to help determine the effectiveness of the City's outreach.
- Sign up for email updates about this project and others in the N 145th Street corridor.

## Promotions

The City used multiple methods to reach audiences and promote the online open house. A postcard advertising the online open house and the webinar was sent to 4,195 addresses in the project area. Information about the online open house was also posted on the project webpage and on social media, and the project team sent emails to project partners, neighborhood organizations, and project stakeholders. The online open house was available in English, Korean, and Spanish.

## METHODOLOGY

The following report captures qualitative and quantitative data for survey questions. The online open house included 14 questions related to the project design elements and 14 questions related to criteria, travel, and respondent demographics. All questions were optional. Not all respondents answered every question. Many questions allowed respondents to select more than one answer. Questions with more than one answer do not use percentage to calculate any total value or representation.

## Use and Activity

Between April 10 and May 1, 529 individuals visited the online open house. There were 165 survey respondents. Each question received a different number of responses, including:

- 125 responses to bridge structure questions
- 87 responses to the east bridge landing questions
- 113 responses to the west trail connection questions
- 98 responses to evaluation criteria questions
- 110 responses to bridge use and demographic questions
- 33 open-ended comments in response to the question *"Is there anything else you would like to share about the N 148th St Non-Motorized Bridge Project?"*

All survey entries were in English. The online open house received very few views in Spanish and Korean.



## KEY FINDINGS

### Demographics and Priorities

About 31% of online open house visitors completed survey questions. Seventy-nine percent (79%) of respondents who provided a ZIP code listed 98133 or 98155. About 44% of respondents who provided a ZIP code lived on the west side of I-5 and about 56% lived on the east side of I-5. About half of respondents are already planning to use the bridge to connect to light rail and nearby walking/bike trails and most plan to walk or bicycle. One-third were not yet sure if they plan to use the bridge.

Survey respondents who provided demographic information overwhelmingly identified as White or Caucasian and English-speaking. Most respondents were 35 or older, with the largest represented age group being those 65 years or older (22%). Eighty-nine percent (89%) of survey respondents were homeowners.

When considering criteria to evaluate design options, survey respondents identified the following as their top priorities:

- Improve pedestrian travel (e.g., sidewalks, crosswalks) (55%)
- Maintain safe environment for community (44%)
- Shorten travel time to light rail station/transit center (34%)

### Bridge Span

The Tied Arch option was the most popular design; 57% of respondents selected it as their top choice. Respondents liked the overall look design of the Tied Arch, as well as the size. Respondents noted that minimizing cost, ensuring aesthetic appeal, and maximizing safety were all important factors to consider when selecting a bridge option. Regardless of where they live or what mode of travel they plan to use, participants preferred the Tied Arch option.

### East Bridge Landing

More than 90% of survey respondents preferred the Direct Ramp option, regardless of where they live or what mode of travel they use. Respondents liked the overall layout, the connection to the Trail Along the Rail, and the connection to the light rail station. Accessibility and safety were key considerations. Many respondents noted that the more angular shapes of the other two options would present challenges for those on bicycles and those using assisted modes of travel.

Respondents noted that the corner angles in both the A-Frame and Switchback options would create blind spots and risk of collisions.



## West Trail Connection

Fifty-seven percent (57%) of respondents preferred the Full Build-Out option. Respondents liked the overall design and the shared path for pedestrian and bicyclists. Safety was an important consideration for respondents. With the Minimal Build-Out option, respondents worried that the shared use of the drive aisle by vehicles and bicycles would create an increased risk for collisions, as well as liability for the neighboring churches.

Although respondents preferred the Full Build-Out option, many also listed loss of parking and loss of mature trees as concerns for any work being done on this portion of the project.

The Full Build-Out option was the most popular among respondents, regardless of where they live. Those who selected walking as a mode of travel had a slight preference for the Minimal Build-Out option; this option would include a designated path for pedestrians.

## OTHER KEY THEMES

**Maintain mature trees:** Throughout each section of the survey, respondents emphasized the importance of maintaining mature trees in the project area wherever possible.

**Manage project costs:** Many respondents noted that managing project costs was an important factor, and some recommended the project team should select the least expensive design for each section of the project.

**Delineated areas of travel:** Participants also noted that it will be important throughout each project section to have clear signage and painted lanes to distinguish pedestrian pathways from bicycle/wheeled pathways.

**Other street improvements:** Throughout each section of the survey, participants noted the need for street improvements around the project area, such as 1st Avenue NE and N 145th Street. Many noted that there was a need to improve pedestrian travel and safety on N 145th Street, regardless of how the bridge connects to N 148th Street.

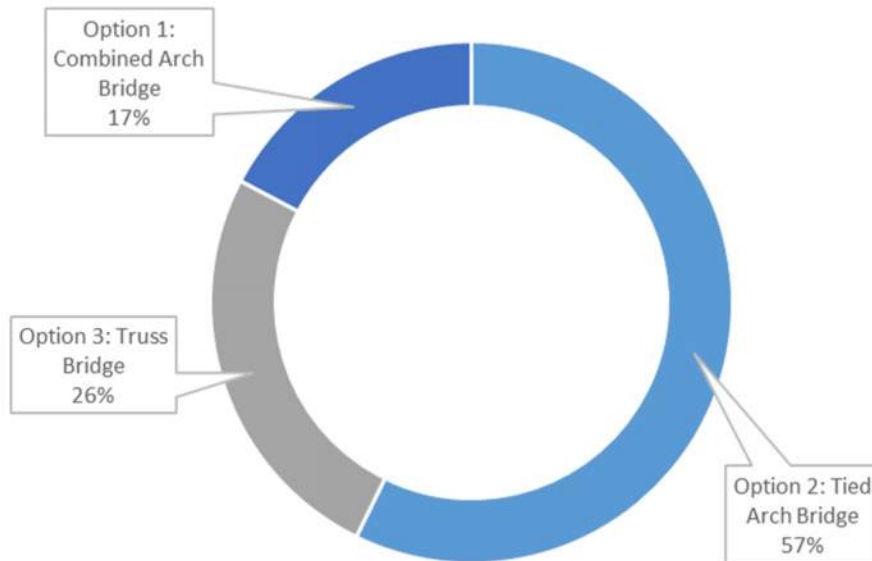
## NEXT STEPS

Public input is one of several key factors the project team is considering as they identify a preferred option for the project design. The project team will recommend a preferred option to Shoreline City Council in June 2020 for approval. Once approved, the project team will continue to refine the overall design and move toward 30% design in fall 2020. More opportunities for public input will be provided during summer and fall 2020.



## BRIDGE

### WHICH BRIDGE OPTION DO YOU PREFER?



Answers	Percentage	Tally
Option 2: Tied Arch Bridge	57%	63
Option 3: Truss Bridge	26%	28
Option 1: Combined Arch Bridge	17%	19
Total	100%	110

### OPTION 1: COMBINED ARCH BRIDGE

What do you like about this option? Select all that apply.

Answers	Tally
Overall look and design	57
Size	25
Other	6

Respondents: 67



**What do you dislike about this option? Select all that apply.**

Answers	Tally
Overall look and design	23
Size	12
Other	6

Respondents: 38

## **OPTION 2: TIED ARCH BRIDGE**

**What do you like about this option? Select all that apply.**

Answers	Tally
Overall look and design	82
Size	31
Other	11

Respondents: 86

**What do you dislike about this option? Select all that apply.**

Answers	Tally
Size	18
Overall look and design	12
Other	5

Respondents: 29

## **OPTION 3: TRUSS BRIDGE**

**What do you like about this option? Select all that apply.**

Answers	Tally
Overall look and design	25
Size	20
Other	9

Respondents: 38

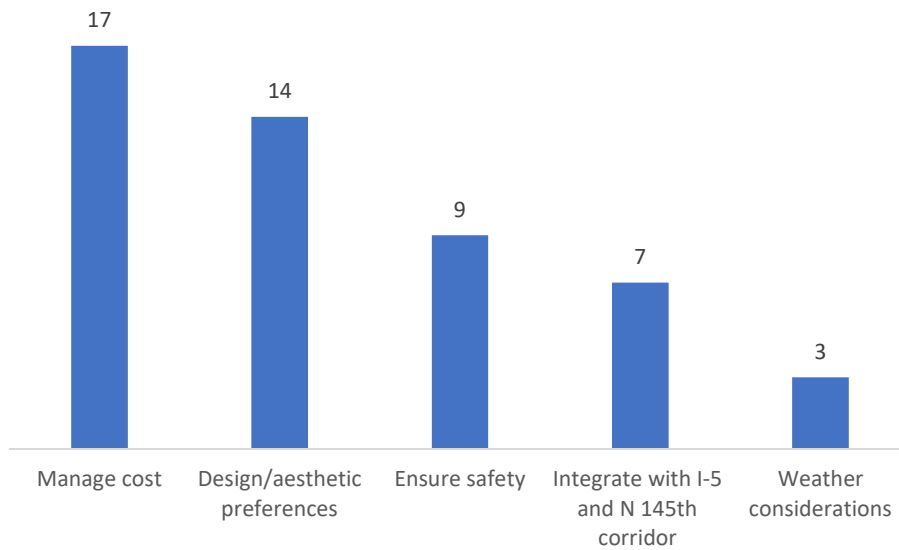


**What do you dislike about this option? Select all that apply.**

Answers	Tally
Overall look and design	68
Size	17
Other	14

Respondents: 75

**Is there anything you think we should consider while evaluating these bridge options? (*Write-in response*)**



Recurring Themes	Tally
Manage cost	17
Design/aesthetic considerations	14
Maintain safety	9
Integrate with I-5 and N 145th corridor	7
Weather considerations	3

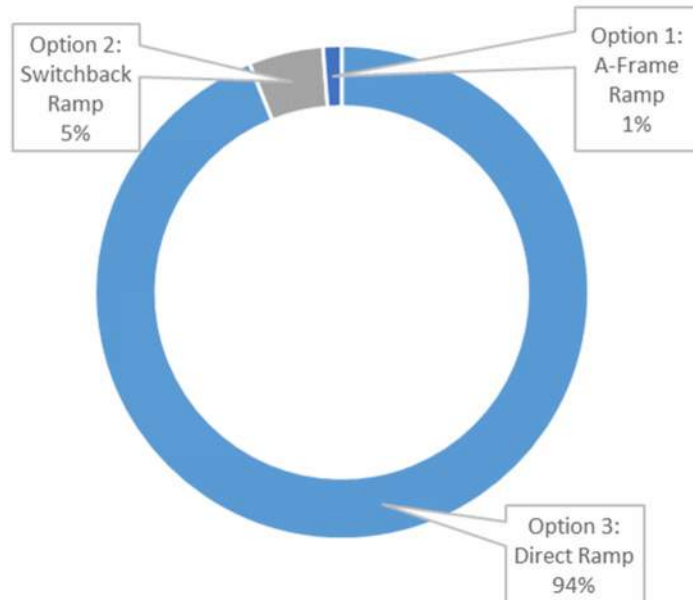
*Other comments included ensuring bridge was easy to access, limiting bike and pedestrian interactions and ensuring the protection of mature trees.*

Respondents: 48



## EAST BRIDGE LANDING

### WHICH OPTION DO YOU PREFER?



Answers	Percentage	Tally
Option 3: Direct Ramp	94%	77
Option 2: Switchback Ramp	5%	4
Option 1: A-Frame Ramp	1%	1
<b>Total</b>	<b>100%</b>	<b>82</b>

### OPTION 1: A-FRAME RAMP

What do you like about this option? Select all that apply.

Answers	Tally
Stair access to station	22
Connection to light rail station	19
Pedestrian and bicycle pathways	17
Ramp layout	12
Connection to Trail Along the Rail	12
Other	3
Height clearance from Sound Transit tracks	2

Respondents: 31



**What do you dislike about this option? Select all that apply.**

Answers	Tally
Height clearance from Sound Transit tracks	36
Ramp layout	29
Connection to Trail Along the Rail	16
Other	15
Stair access to station	12
Pedestrian and bicycle pathways	5
Connection to light rail station	4

Respondents: 57

## **OPTION 2: SWITCHBACK RAMP**

**What do you like about this option? Select all that apply.**

Answers	Tally
Height clearance from Sound Transit tracks	25
Connection to light rail station	14
Ramp layout	12
Pedestrian and bicycle pathways	11
Stair access to station	11
Connection to Trail Along the Rail	7
Other	5

Respondents: 40

**What do you dislike about this option? Select all that apply.**

Answers	Tally
Ramp layout	34
Connection to Trail Along the Rail	21
Stair access to station	18
Connection to light rail station	7
Pedestrian and bicycle pathways	7
Height clearance from Sound Transit tracks	6
Other	6

Respondents: 48



### OPTION 3: DIRECT RAMP

What do you like about this option? Select all that apply.

Answers	Tally
Ramp layout	53
Connection to Trail Along the Rail	50
Connection to light rail station	48
Height clearance from Sound Transit tracks	34
Pedestrian and bicycle pathways	33
No stair access to station	29
Other	8

Respondents: 66

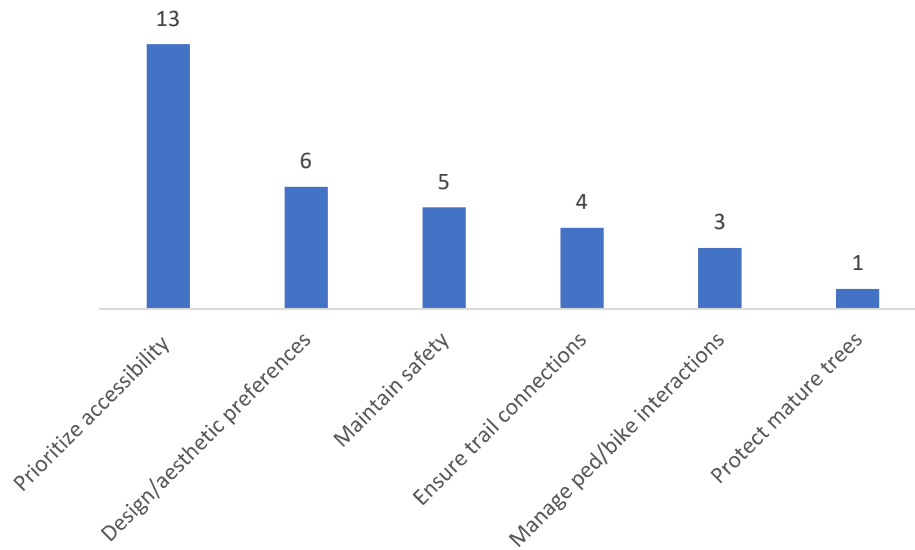
What do you dislike about this option? Select all that apply.

Answers	Tally
No stair access to station	15
Height clearance from Sound Transit tracks	6
Ramp layout	4
Pedestrian and bicycle pathways	3
Other	3
Connection to Trail Along the Rail	2
Connection to light rail station	1

Respondents: 24



**Is there anything you think we should consider while evaluating these options for the East Bridge Landing? (*Write-in response*)**



Recurring Themes	Tally
Prioritize accessibility	13
Design/aesthetic preferences	6
Maintain safety	5
Ensure trail connections	4
Manage ped/bike interactions	3
Protect mature trees	1

Respondents: 24



## WEST TRAIL CONNECTION

### WHICH OPTION DO YOU PREFER?



Answers	Percentage	Tally
Option 2: Full Build-Out	57%	57
Option 1: Minimal Build-Out	43%	43
<b>Total</b>	<b>100%</b>	<b>100</b>

### OPTION 1: MINIMAL BUILD-OUT

What do you like about this option? Select all that apply.

Answers	Tally
Separation between bicyclists and pedestrians	47
Parking options	33
Trail design	26
Other	11

Respondents: 68



**What do you dislike about this option? Select all that apply.**

Answers	Tally
Separation between bicyclists and pedestrians	31
Trail design	28
Other	26
Parking options	11

Respondents: 65

## **OPTION 2: FULL BUILD-OUT**

**What do you like about this option? Select all that apply.**

Answers	Tally
Trail design	51
Shared bicycle and pedestrian path	49
Other	9
Parking options	5

Respondents: 63

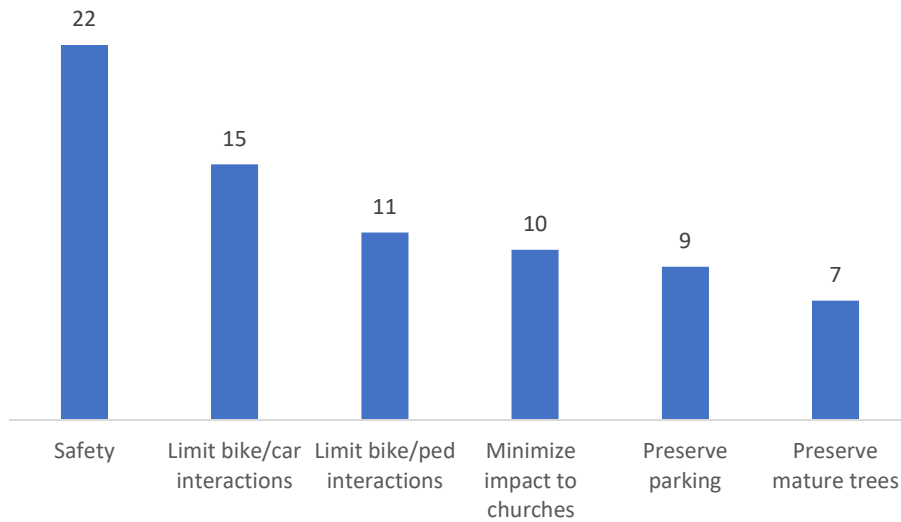
**What do you dislike about this option? Select all that apply.**

Answers	Tally
Shared bicycle and pedestrian path	39
Parking options	34
Other	13
Trail design	12

Respondents: 61



**Is there anything you think we should consider while evaluating these options for the West Trail Connection? (Write-in response)**



Recurring Themes	Tally
Safety	22
Limit bike/car interactions	15
Limit bike/ped interactions	11
Minimize impact to churches	10
Preserve parking	9
Preserve mature trees	7

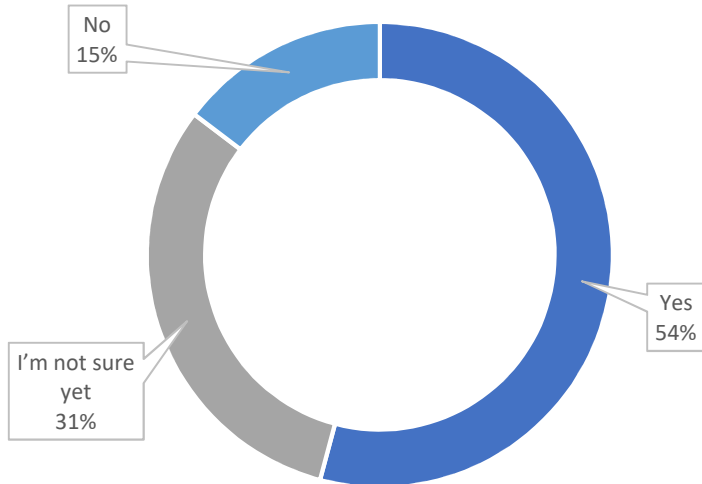
*Other comments included requests for more detailed plans, recommendations for landscaping, and the need to manage traffic flow into the area.*

Respondents: 45



## DEMOGRAPHIC INFORMATION

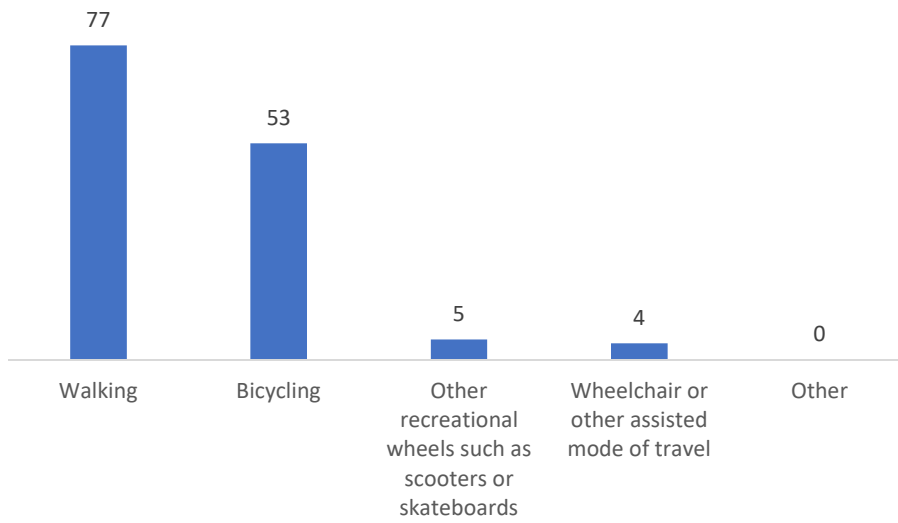
Do you plan to use the new N 148th Street Non-Motorized Bridge?



Answers	Percentage	Tally
Yes	54%	59
I'm not sure yet	31%	34
No	15%	16
Total	100%	109



If you do plan to use the bridge, what modes of travel do you plan to use? Select all that apply.

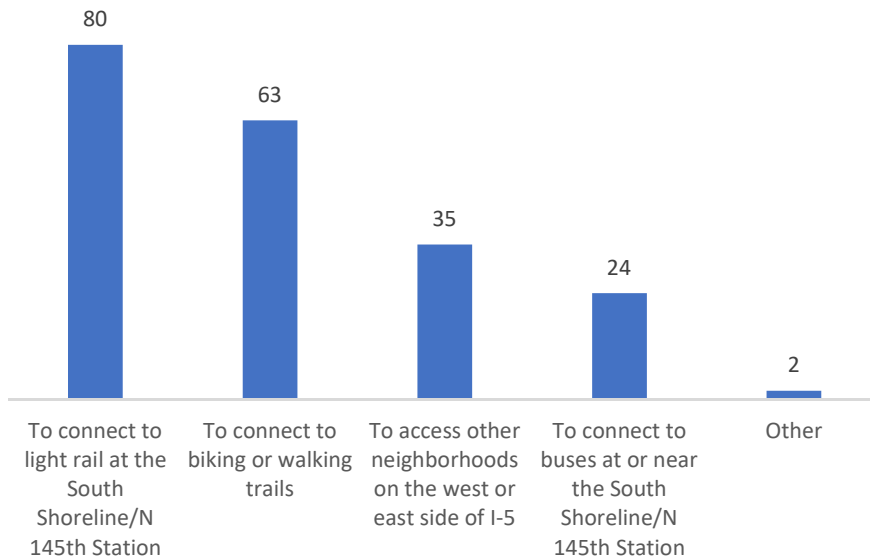


Answers	Tally
Walking	77
Bicycling	53
Other recreational wheels such as scooters or skateboards	5
Wheelchair or other assisted mode of travel	4
Other	0

Respondents: 92



If you do plan to use the bridge, what will be the purpose of your travel? Select all that apply.



Answers	Tally
To connect to light rail at the South Shoreline/N 145th Station	80
To connect to biking or walking trails	63
To access other neighborhoods on the west or east side of I-5	35
To connect to buses at or near the South Shoreline/N 145th Station	24
Other	2

Respondents: 91



Please select the top three criteria that are most important to you for this project.



**IMPROVE  
PEDESTRIAN TRAVEL**

**55%**



**MAINTAIN SAFE  
ENVIRONMENT**

**44%**



**SHORTEN TRAVEL TIME**

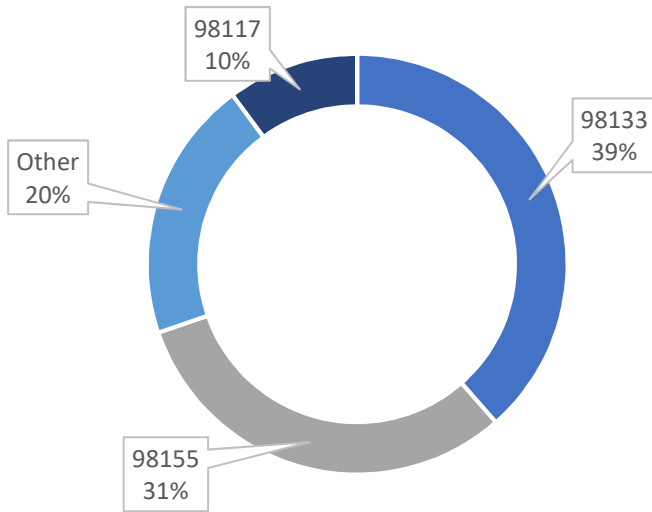
**34%**

Answers	Percentage	Tally
Improve pedestrian travel (e.g., sidewalks, crosswalks)	55%	59
Maintain safe environment for community	44%	47
Shorten travel time to light rail station/transit center	34%	36
Improve bicycle travel	33%	35
Protect mature trees	27%	29
Visual design and overall look	21%	23
Manage project costs	17%	18
Minimize impacts to neighboring properties	15%	16
Maintain existing parking options	13%	14
Limit city acquisition of private property	9%	10

Respondents: 107

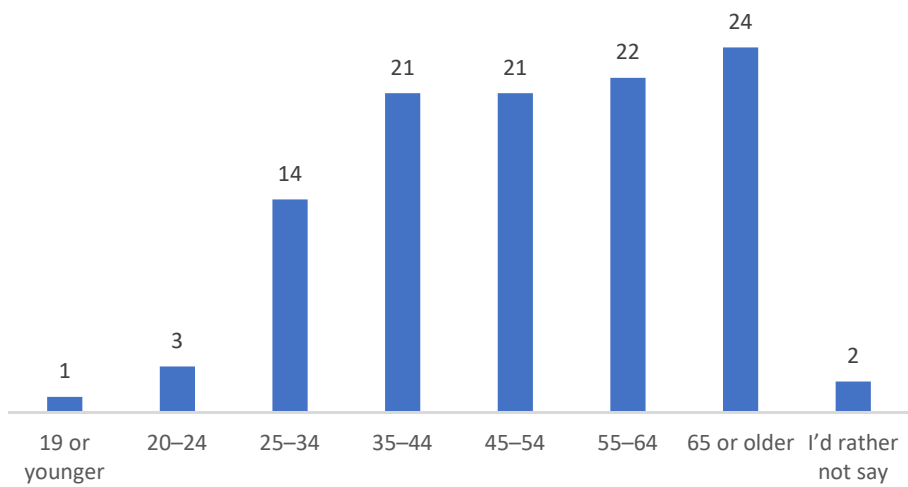


### What is your ZIP code?



Answers	Percentage	Tally
98133	39%	42
98155	31%	34
Other	20%	22
98117	10%	11
<b>Total</b>	<b>100%</b>	<b>109</b>

### What is your age?

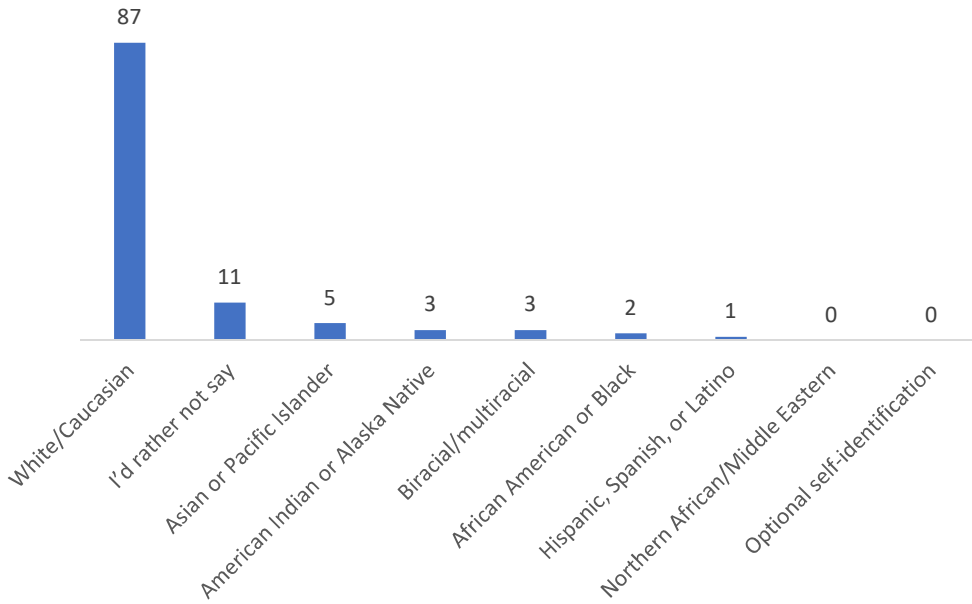




Answers	Percentage	Tally
19 or younger	1%	1
20–24	3%	3
25–34	13%	14
35–44	19%	21
45–54	19%	21
55–64	20%	22
65 or older	22%	24
I'd rather not say	2%	2
<b>Total</b>	100%	108



**What is your race/ethnicity? Select all that apply.**



Answers	Tally
White/Caucasian	87
I'd rather not say	11
Asian or Pacific Islander	5
American Indian or Alaska Native	3
Biracial/multiracial	3
African American or Black	2
Hispanic, Spanish, or Latino	1
Northern African/Middle Eastern	0
Optional self-identification	0

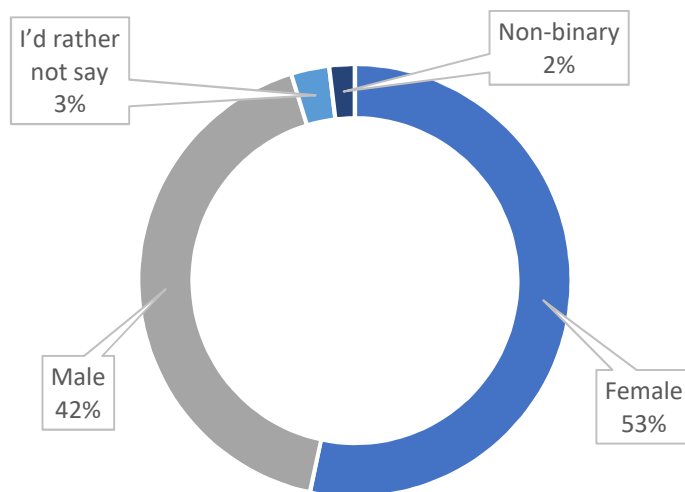
Respondents: 107



**What is the primary language spoken in your home?**

Answers	Percentage	Tally
English	100%	107
Amharic/Tigrinya	0%	0
Korean	0%	0
Mandarin/Cantonese	0%	0
Spanish	0%	0
Tagalog	0%	0
Vietnamese	0%	0
Other	0%	0
<b>Total</b>	<b>100%</b>	<b>107</b>

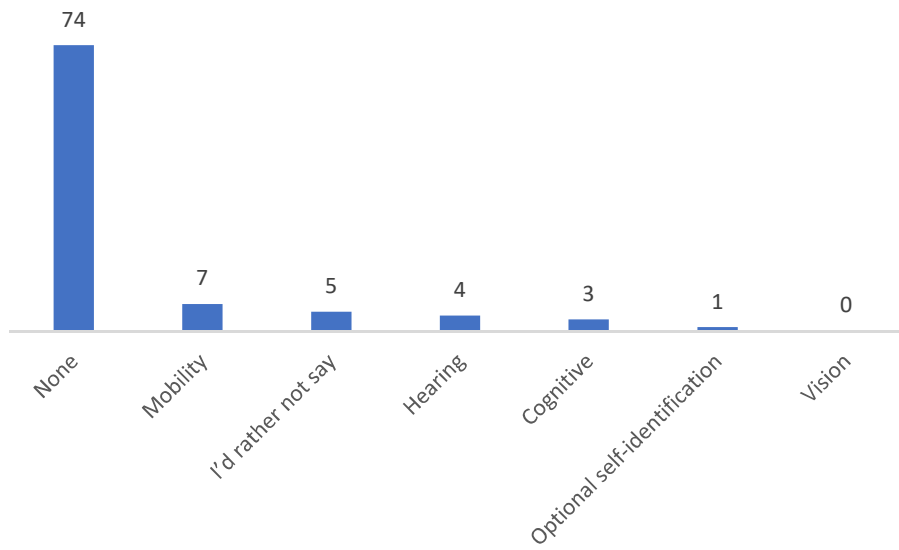
**What gender do you identify as?**



Answers	Percentage	Tally
Female	53%	56
Male	42%	44
I'd rather not say	3%	3
Non-binary	2%	2
Optional self-identification	0%	0
<b>Total</b>	<b>100%</b>	<b>105</b>



**Do you have a disability? Select all that apply.**

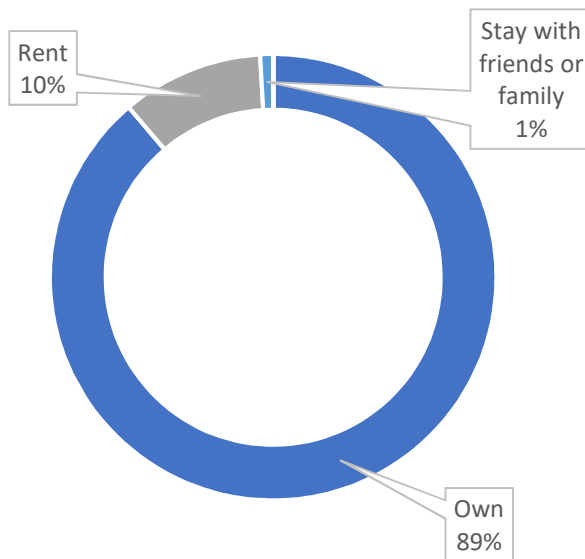


Answers	Tally
None	74
Mobility	7
I'd rather not say	5
Hearing	4
Cognitive	3
Optional self-identification	1
Vision	0

Respondents: 94



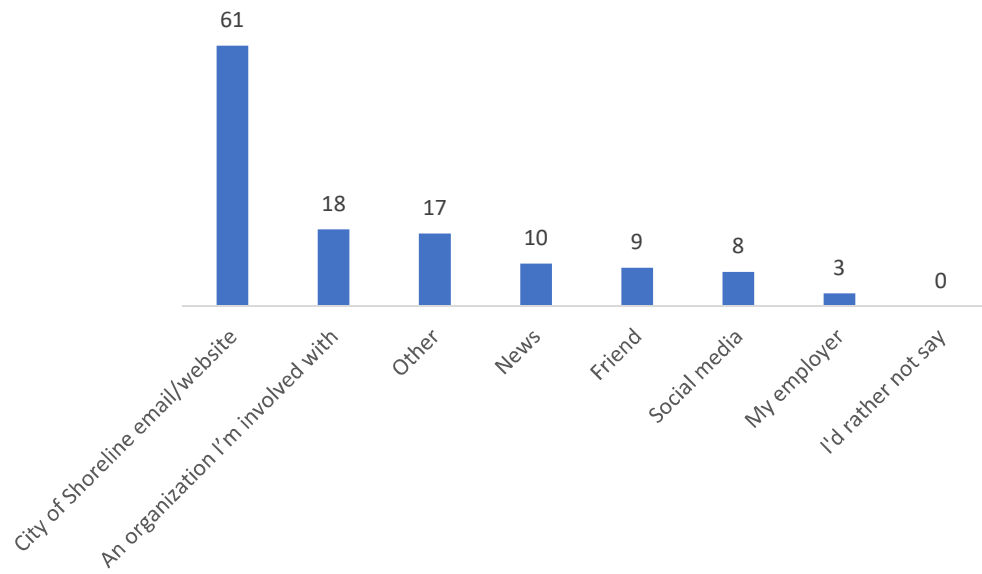
### What is your current housing situation?



Answers	Percentage	Tally
Own	89%	95
Rent	10%	11
Stay with friends or family	1%	1
Without housing	0%	0
Other	0%	0
I'd rather not say	0%	0
<b>Total</b>	<b>100%</b>	<b>107</b>



How did you learn about this project? Select all that apply.



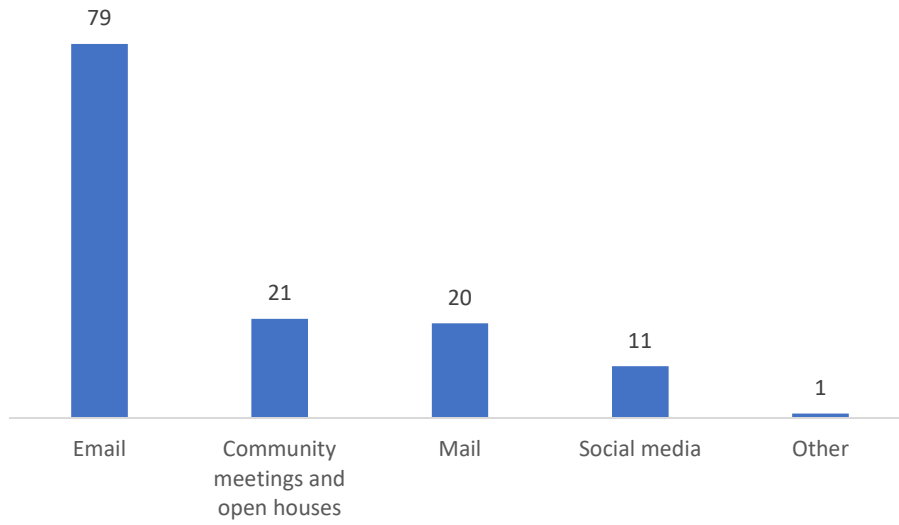
Answers	Tally
City of Shoreline email/website	61
An organization I'm involved with	18
Other	17
News	10
Friend	9
Social media	8
My employer	3

Respondents: 107

*\*\*Reporting Note: This question unintentionally omitted "mailer" as an option. Several people who responded with "other" said they received a mailer from the City of Shoreline.*



**What is the best way to stay in touch with you about this project? Select all that apply.**

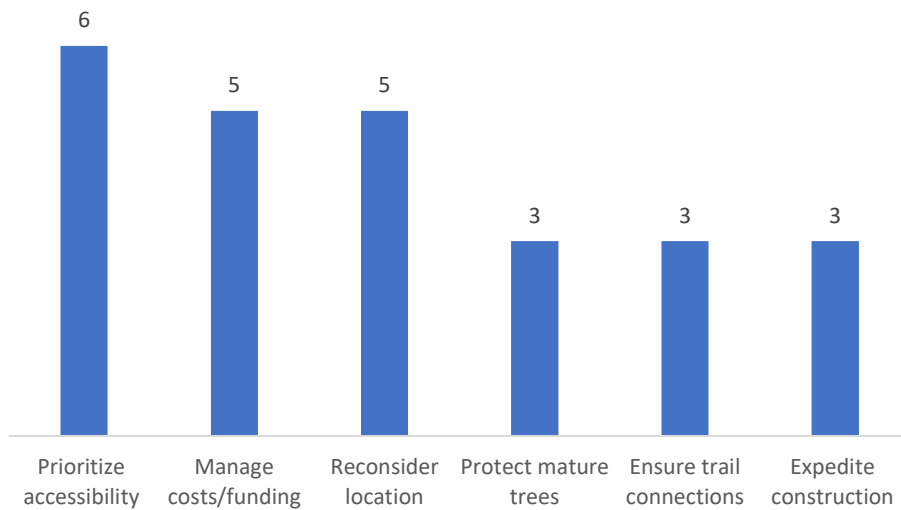


Answers	Tally
Email	79
Community meetings and open houses	21
Mail	20
Social media	11
Other	1

Respondents: 99



**Is there anything else you would like to share about the N 148th Non-Motorized Bridge Project?**  
*(Write-in response)*



Recurring Themes	Tally
Prioritize accessibility	6
Manage costs/funding	5
Reconsider location	5
Protect mature trees	3
Ensure trail connections	3
Expedite construction	3

*Other comments included prioritizing safety, minimizing impacts to churches, and comments on other City of Shoreline projects.*

Respondents: 33



## WEB ACTIVITY REPORT

**URL:** 148bridge.infocommunity.org

### **Users | 529**

Total number of individual IP addresses that visited the online open house at least once.

### **Sessions | 692**

The number of individual visits to online open house from all users.

### **Total Pageviews | 2,454**

The total number of times all pages within the online open house were viewed, inclusive of English, Spanish, and Korean pages.

### **Unique Pageviews | 2,138**

This number aggregates multiple visits to a page within a single browsing session. Example: If a user viewed the Bridge page five times within one browsing session, the total number of unique views of that page would be one. If a user viewed the online open house on a Thursday and then came back to view again on a Friday, those visits are counted as multiple browsing sessions.

### **Pages Visited Per Session | 3.55**

The average number of pages a user visited during a session.

### **Session Duration | 5 minutes, 20 seconds**

The average time a user spent viewing the online open house during a session.

### **Device Use | Desktop (75%), Mobile (22%), Tablet (3%)**

### **Top Traffic Sources | Direct Entry of URL (61%), City of Shoreline website (21%), Facebook (8%)**



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# Appendix 6

## Online Open House Content



# N 148th Street Non-Motorized Bridge

A ped/bike bridge connecting people to neighborhoods and regional transit

HOME

PROJECT  
OVERVIEW

SCHEDULE

BRIDGE

WEST TRAIL  
CONNECTION

EAST BRIDGE  
LANDING

GIVE MORE  
FEEDBACK

WHAT'S  
NEXT?

## ONLINE OPEN HOUSE

## Welcome to the online open house for the N 148th Street Non-Motorized Bridge!

Shoreline is growing and changing. With the coming arrival of Sound Transit light rail, the new Shoreline South/145th Station for light rail and bus transit, and new development, residents need new ways to connect to these growing services and facilities and to an expanding pedestrian and bike network.

To meet these needs, the City of Shoreline will build a new pedestrian and bike bridge crossing over Interstate 5 (I-5) at N 148th Street. The N 148th Street Non-Motorized Bridge will improve safety for everyone and reduce travel times for people walking and biking between the east and west sides of I-5 in Shoreline.

The purpose of this online open house is to provide a chance for you to:

- Learn more about this project.
- Share what's important to you and give feedback on the key parts of this project.

### How to use this online open house

- To advance through this open house, scroll down to read each page, then click the "Next Page" button at the bottom of the page, or select the tab you want at the top.
- Within this online open house, you will be asked questions and can provide feedback. The online open house and questionnaire will take only a few minutes to complete.

Thank you for your participation!

### JOIN US FOR A WEBINAR

This live online presentation will take place on:

Thursday, April 23, 2020  
12:00–1:00 p.m.

Click [here](#) to register.

### Stay Connected

Sign up for updates and engagement opportunities about this project and others in the N 145th Street Corridor.

First Name

Last Name

Email \*

\*Email is Required

SUBMIT

> GO TO NEXT PAGE

#### TRANSLATION SERVICES:

If you would like to communicate with the City of Shoreline or review a document in another language, please send your request along with your contact information to [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) or call 206-801-2700.

Si quisiera comunicarse con la ciudad de Shoreline o revisar un documento en otro idioma, envíe su solicitud junto con su información de contacto a [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) o llame al 206-801-2700.

如果您想與 City of Shoreline 進行交流或檢視以另一種語言提供的文件，請將您的請求連同您的聯絡資訊發送到 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) 或請致電 206-801-2700。

쇼어라인 시에 연락하고 싶거나 다른 언어로 된 문서를 검토하려면 연락처 정보와 함께 요청서를 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) 로 제출하거나 206-801-2700번으로 전화해 주십시오.

#### CONTACT US:

Lea Bonebrake, P.E., City of Shoreline, Project Manager  
[lbonebrake@shorelinewa.gov](mailto:lbonebrake@shorelinewa.gov) | 206-801-2475

For additional project information, visit [shorelinewa.gov/148thbridge](https://www.shorelinewa.gov/148thbridge)

Nếu quý vị muốn liên hệ với Thành phố Shoreline hoặc đọc tài liệu bằng ngôn ngữ khác, vui lòng gửi yêu cầu cùng với thông tin liên hệ tới địa chỉ [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) hoặc gọi 206-801-2700.

Kung gusto mong makipag-usap sa Lungsod ng Shoreline o suriin ang isang dokumento sa ibang wika, pakipadala ang iyong kahilingan kasama ng iyong impormasyon sa pakikipag-ugnayan sa [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) o tumawag sa 206-801-2700.

የሽርላይን ከተማ ጋር ለመገናኘት ከፈለጉ ወይም እንድን ሰነድ በሌላ ቋንቋ ለመከለስ ከፈለጉ ጥያቄዎን ከመገኛ መረጃዎ ጋር በማድረግ በ [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) ላይ ኢሜይል ያድርጉ ወይም በ 206-801-2700 ላይ ስልክ ይደውሉ።

ምስ ከተማ ሸርላይን ከትዘራረቡ ወይ ድማ ሰነዳትኩም ብከልእ ቋንቋ ከተገምግሙ ምስ እትደልዩ፣ ጠለባትኩም ምስናይ ናይ መርከቢ ሓበሬታኹም ናብ [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) ስደዱ ወይ ድማ ብጅጽረ 206-801-2700 ደውሉ።

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# N 148th Street Non-Motorized Bridge

A ped/bike bridge connecting people to neighborhoods and regional transit

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ONLINE OPEN HOUSE

## Project Overview

### Need and Benefits

The N 148th Street Non-Motorized Bridge will address several community needs, both current and future, and provide many benefits, including:

**TRANSPORTATION OPTIONS FOR A CHANGING NEIGHBORHOOD.** In 2016, the City developed the 145th Street Station Subarea Plan to address future land use and transportation needs near the new light rail and transit station. As the area changes, the bridge will help serve residents, business owners, retail customers, and commuters. The bridge is part of the City of Shoreline's greater planning efforts for the N 145th Street corridor and new Sound Transit light rail station. You can learn more about other related projects in the area by visiting the [Destination 2024 website](#).

**LINK LIGHT RAIL ACCESS.** By 2024, the Shoreline South/145th Station will open, bringing light rail and increased bus rapid transit service to Shoreline. Of Shoreline residents who work, more than 80% travel outside of the city to reach their places of employment, with almost two-thirds commuting to Seattle. Traffic in the station area is projected to increase by more than 25%.

**IMPROVED SAFETY AND REDUCED TRAVEL TIMES.** Paths that are separated from the road and designate space for pedestrians and bicyclists increase safety and help reduce the risk of collisions with motor vehicles.

Shoreline is currently divided by a nine-lane interstate (I-5). A new bridge will make it easier to travel through Shoreline and decrease travel times by at least ten minutes for those walking and biking in the area. The new bridge will also improve bike routes to the Interurban Trail, the future Trail along the Rail, the existing Burke-Gilman Trail, and potential future regional bicycle networks.

### Location

The new bridge will go across Interstate 5 (I-5) at N 148th Street. The project consists of three main parts: the bridge span over I-5, West Trail Connection, and East Bridge Landing.



[Click here to enlarge.](#)



### Projected Cost

Design	\$2.8–3.8 million
Right-of-Way	\$1.5–2.1 million
Construction	\$18.1–24.9 million
<b>TOTAL PROJECT COST</b>	<b>\$23–30.2 million</b>

The City has secured \$10 million in federal, regional, and county funding. With a total project cost currently estimated at \$23–30.2 million (costs will be further refined during the design process), the City continues to actively seek funding to complete construction.

[GO TO NEXT PAGE](#)[GO TO PREVIOUS PAGE](#)

#### CONTACT US:

Lea Bonebrake, P.E., City of Shoreline, Project Manager  
[lbonebrake@shorelinewa.gov](mailto:lbonebrake@shorelinewa.gov) | 206-801-2475

For additional project information, visit [shorelinewa.gov/148thbridge](https://shorelinewa.gov/148thbridge)

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## ONLINE OPEN HOUSE

## Schedule

The design phase of the project started in 2019 and will continue through 2021. Community members will have an opportunity to provide input through both in-person and online open houses during design and environmental review throughout 2020. Construction is scheduled to begin in 2022 and to be complete in 2023 before the new light rail station opens.

Feasibility Study 2017 <i>Completed</i>	Design/Environmental Review 2019–2021			Right-of-Way 2021–2022	Construction 2022–2023
	Alternative Evaluation	Preferred Alternative Selection	30% Design Completion		
	September 2019–June 2020	Summer 2020	Summer/Fall 2020		
	<b>DECEMBER–MARCH</b> Property owner briefings	Property owner briefings	Property owner briefings		
	Community briefings and presentations	Community briefings and presentations	Possible community briefings and presentations		
	<b>APRIL</b> Online open house, survey, and presentation	Online and in-person open house	Possible online and in-person open house		

## Research and Planning

In 2016 and 2017, the City of Shoreline did a study to evaluate and recommend options for linking the communities on the west side of I-5 to the future Sound Transit Shoreline South/145th Station. City of Shoreline staff, Shoreline City Council, and consulting engineers evaluated five options. Public comment was provided at Shoreline City Council meetings.

The City estimated the location at N 148th Street would cost the least to construct, likely draw the most users, and of the routes possible, provide the shortest and most direct access to the Shoreline South/145th Station. The City also reviewed WSDOT and Sound Transit regulations in order to address safety needs around and across I-5. Shoreline City Council approved this location in February 2017.

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### CONTACT US:

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[lbonebrake@shorelinewa.gov](mailto:lbonebrake@shorelinewa.gov) | 206-801-2475

For additional project information, visit [shorelinewa.gov/148thbridge](https://shorelinewa.gov/148thbridge)

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# N 148th Street Non-Motorized Bridge

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## ONLINE OPEN HOUSE

## Bridge

The bridge will carry pedestrians and bicyclists across I-5 between the Parkwood neighborhood on the west side and the new Shoreline South/N 145th Station on the east. The bridge will be wide enough for pedestrians and bicyclists and built to comply with Americans with Disabilities Act (ADA) standards. All bridge options will be designed to the same safety standards and include pedestrian/bicycle railings, lighting, and screening (throw barrier) to protect drivers on the interstate below from falling objects.

### Option 1: Combined Arch Bridge



[Click here to enlarge.](#)

- **DESIGN:** The combined arch bridge would have a major arch over I-5 and smaller arch on the short connection to the trail on the west side of the bridge.
- **SIZE:** The arches would have steel support pieces overhead and vertical support pieces that could be cable or steel.
- **SAFETY:** The throw barrier would be attached to the inside of the vertical support pieces to prevent things from falling onto the interstate below.

### Option 2: Tied Arch Bridge



[Click here to enlarge.](#)

- **DESIGN:** The tied arch bridge would have two side-by-side arches titled toward each other with attached supporting cables.
- **SIZE:** The higher arch and slender cables would create more space and light than the other bridge options.
- **SAFETY:** The throw barrier could be attached on either side of the cables to prevent things from falling onto the interstate below.

### Option 3: Truss Bridge



[Click here to enlarge.](#)

- **DESIGN:** A truss bridge has connected pieces that form a triangle or "truss."
- **SIZE:** Compared to the other bridge types, the truss bridge would be slightly shorter at its highest point, have more structural pieces overhead, and the outside supports would be wider.
- **SAFETY:** The throw barrier would be attached to the inside of the trusses to prevent things from falling onto the interstate below.

Are you on a shared or public computer? If you see someone else's survey responses, click on the reset button to start your own survey.

[RESET](#)

## Share your thoughts on bridge design options:

### Option 1: Combined Arch Bridge

What do you like about this option? *SELECT ALL THAT APPLY.*

- ☐ Size
- ☐ Overall look and design
- ☐ Other *WRITE IN:*

What do you dislike about this option? *SELECT ALL THAT APPLY.*

- ☐ Size
- ☐ Overall look and design
- ☐ Other *WRITE IN:*

### Option 2: Tied Arch Bridge

What do you like about this option? *SELECT ALL THAT APPLY.*

- ☐ Size
- ☐ Overall look and design
- ☐ Other *WRITE IN:*

What do you dislike about this option? *SELECT ALL THAT APPLY.*

- ☐ Size
- ☐ Overall look and design
- ☐ Other *WRITE IN:*

### Option 3: Truss Bridge

What do you like about this option? *SELECT ALL THAT APPLY.*

- ☐ Size
- ☐ Overall look and design
- ☐ Other *WRITE IN:*

What do you dislike about this option? *SELECT ALL THAT APPLY.*

- ☐ Size
- ☐ Overall look and design
- ☐ Other *WRITE IN:*

### Summary

Which bridge option do you prefer?

- ☐ Option 1: Combined Arch Bridge
- ☐ Option 2: Tied Arch Bridge
- ☐ Option 3: Truss Bridge

Is there anything you think we should consider while evaluating these bridge options?

[SUBMIT](#)

Please make sure to click on the submit button before you leave the page.

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#### CONTACT US:

Lea Bonebrake, P.E., City of Shoreline, Project Manager  
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For additional project information, visit [shorelinewa.gov/148thbridge](https://shorelinewa.gov/148thbridge)

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# N 148th Street Non-Motorized Bridge

A ped/bike bridge connecting people to neighborhoods and regional transit

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[EAST BRIDGE LANDING](#)
[GIVE MORE FEEDBACK](#)
[WHAT'S NEXT?](#)

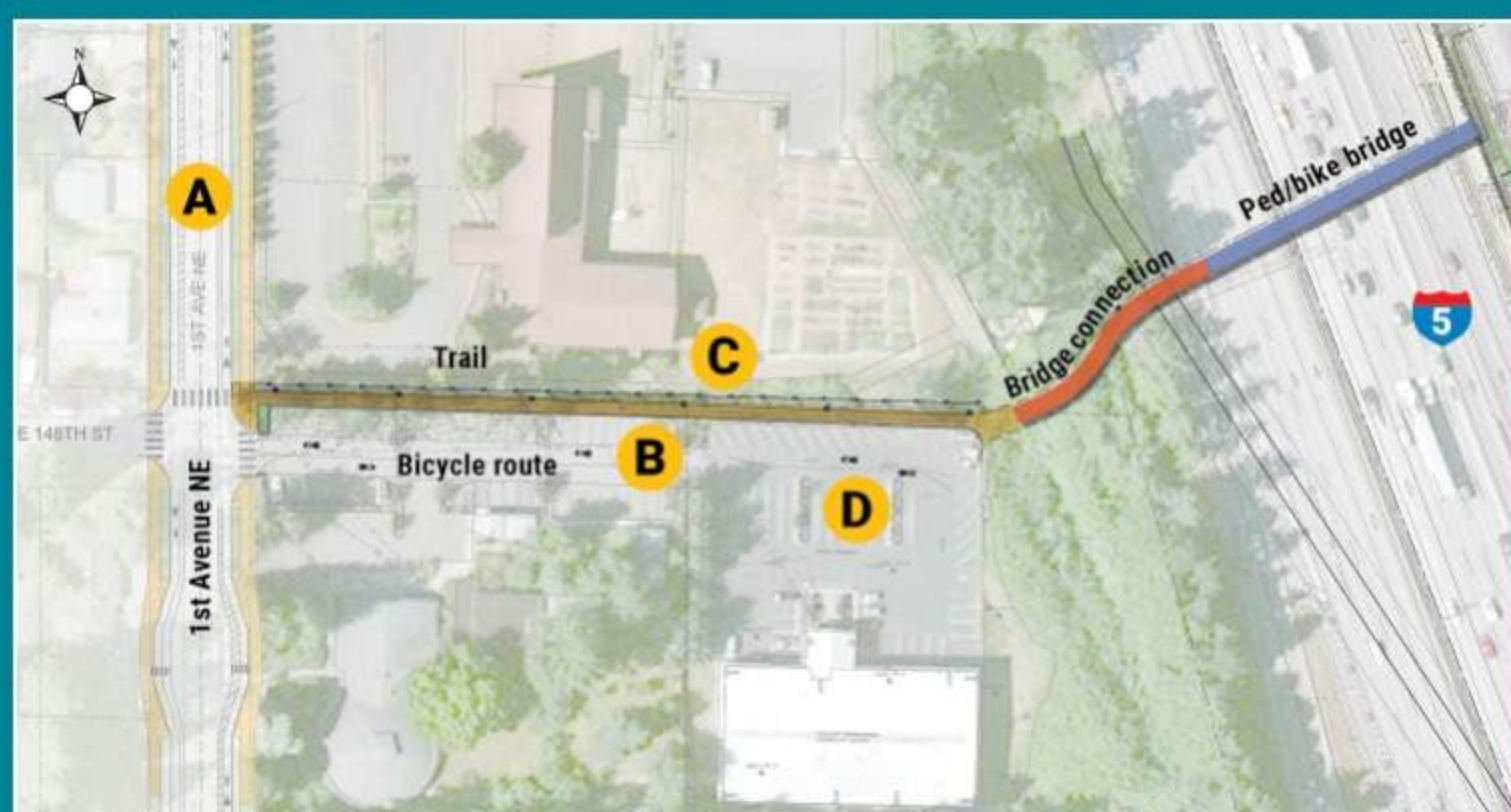
## ONLINE OPEN HOUSE

### West Trail Connection

The western ramp and approach to the bridge will be on the west side of I-5 in the Parkwood neighborhood. The project team is working with immediate neighborhoods, including three places of worship, to identify their priorities and ensure that the design and construction of the bridge will limit disruption. With all options, the City aims to preserve existing mature trees in the project area, wherever possible.

#### Option 1: Minimal Build-Out

##### OVERHEAD VIEW



##### KEY

- A 1ST AVENUE NE:** Improvements to 1st Avenue NE might be built as a separate future project.
- B BICYCLES:** Bicycles will share the parking lot with vehicles and then connect to the bridge.
- C TRAIL:** Trail will be an 8-foot-wide pedestrian sidewalk between 1st Avenue NE and the bridge and will include lighting.
- D PARKING:** Parking in church lots will not change.

[Click here to enlarge overhead view.](#)

##### TYPICAL CROSS-SECTION

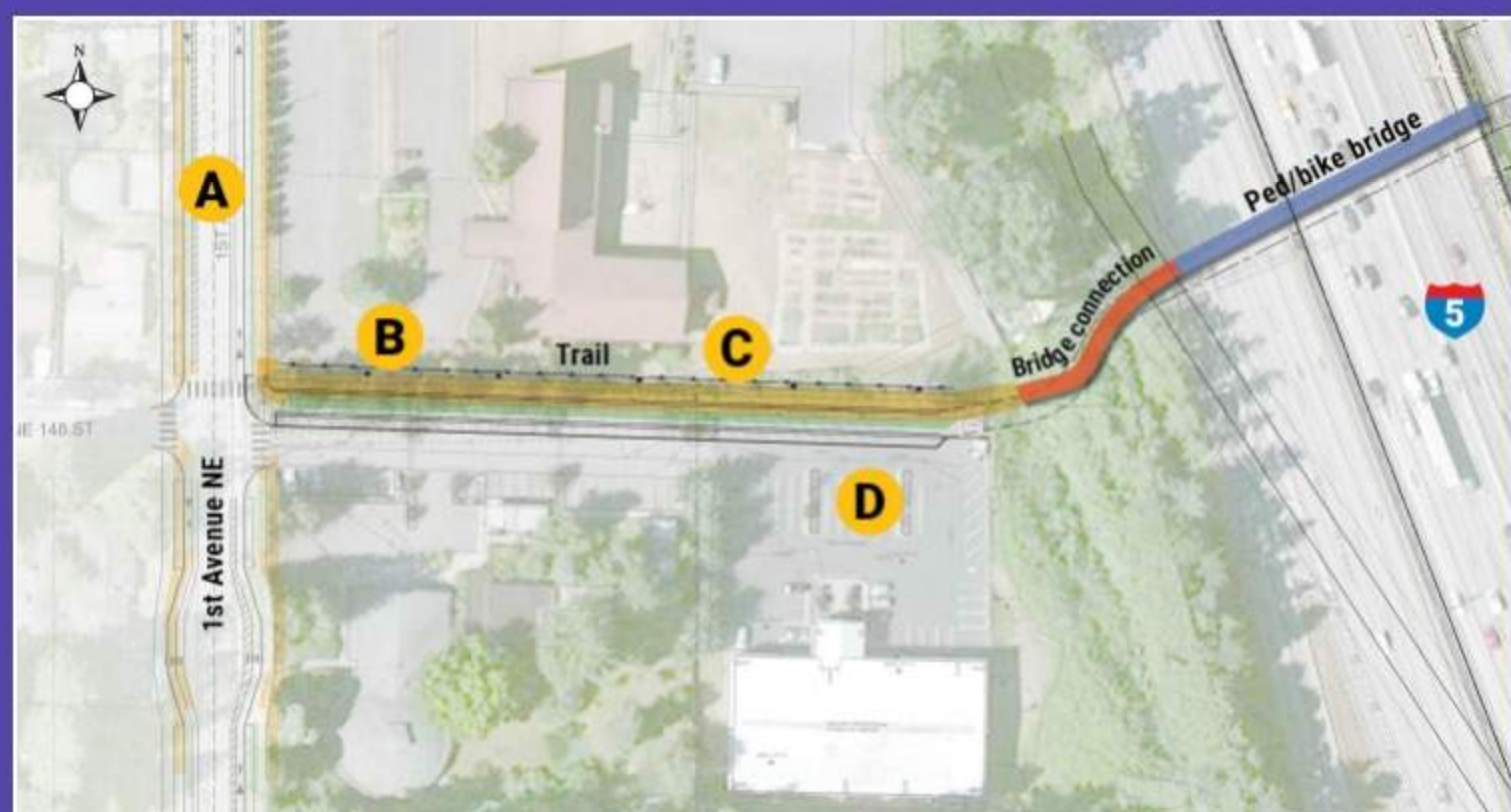
Looking west towards 1st Avenue NE



[Click here to enlarge cross-section.](#)

#### Option 2: Full Build-Out

##### OVERHEAD VIEW



##### KEY

- A 1ST AVENUE NE:** Improvements to 1st Avenue NE might be built as a separate future project.
- B BICYCLES:** Bicycles will share the trail with pedestrians.
- C TRAIL:** Pedestrians and bicycles will use a 16-foot shared path that connects to the bridge with a landscaping border and lighting between the path and church properties. This option means the City would have to access additional property from the adjacent churches.
- D PARKING:** In order to create a wider trail, some parking spaces may be removed. The City is looking at options for where to relocate parking on the west side of the bridge.

[Click here to enlarge overhead view.](#)

##### TYPICAL CROSS-SECTION

Looking west towards 1st Avenue NE



[Click here to enlarge cross-section.](#)

Are you on a shared or public computer? If you see someone else's survey responses, click on the reset button to start your own survey.

[RESET](#)

#### Share your thoughts on the West Trail Connection design:

##### Option 1: Minimal Build-Out

What do you like about this option? *SELECT ALL THAT APPLY.*

- ☐ Trail design
- ☐ Separation between bicyclists and pedestrians
- ☐ Parking options
- ☐ Other *WRITE IN:*

What do you dislike about this option? *SELECT ALL THAT APPLY.*

- ☐ Trail design
- ☐ Separation between bicyclists and pedestrians
- ☐ Parking options
- ☐ Other *WRITE IN:*

##### Option 2: Full Build-Out

What do you like about this option? *SELECT ALL THAT APPLY.*

- ☐ Trail design
- ☐ Shared bicycle and pedestrian path
- ☐ Parking options
- ☐ Other *WRITE IN:*

What do you dislike about this option? *SELECT ALL THAT APPLY.*

- ☐ Trail design
- ☐ Shared bicycle and pedestrian path
- ☐ Parking options
- ☐ Other *WRITE IN:*

##### Summary

Which West Trail Connection option do you prefer?

- ☐ Option 1: Minimal Build-Out
- ☐ Option 2: Full Build-Out

Is there anything you think we should consider while evaluating these options for the West Trail Connection?

[SUBMIT](#)

Please make sure to click on the submit button before you leave the page.

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##### CONTACT US:

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# N 148th Street Non-Motorized Bridge

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## ONLINE OPEN HOUSE

### East Bridge Landing

The East Bridge Landing, on the east side of I-5, will take travelers to the future South Shoreline/N 145th Station where they can hop on Sound Transit light rail or buses or connect with the future Trail Along the Rail by foot or bicycle. The Sound Transit station will include bicycle parking. All design options will include:

- A bridge and ramp that will cross under the Sound Transit light rail tracks.
- Compliance with Americans with Disabilities Act (ADA) standards.
- A permanent noise wall below the bridge adjacent to the freeway.
- Connections to the Trail Along the Rail.
- All outdoor pathways, ramps, and stairs around the station will have lighting.
- Sound Transit light rail parking garage will provide space for 500 vehicles.

#### Option 1: A-Frame Ramp



##### KEY

- A** Ramp: This ramp option has an angular shape and steeper slope than the other options (average grade of 6.5% down to the station).
- B** Stairs: People can also take stairs down to the station.
- C** Sound Transit light rail tracks will run above the ramp and stairs to the station. At its lowest point, the clearance between the bridge and light rail tracks is approximately 8 feet.

[Click here to enlarge.](#)

#### Option 2: Switchback Ramp



##### KEY

- A** Ramp: A switchback allows for a more gradual ramp (approximately 4% grade) down to the station.
- B** Stairs: People can also take stairs down to the station.
- C** Sound Transit light rail tracks will run above the ramp and stairs to the station. At its lowest point, the clearance between the bridge and light rail tracks is slightly over 9 feet.

[Click here to enlarge.](#)

#### Option 3: Direct Ramp



##### KEY

- A** Ramp: This ramp offers direct connections to both the station and adjacent Trail Along the Rail. The ramp is also less steep (4% grade) than Option 1. This design doesn't require stairs to the station.
- B** Sound Transit light rail tracks will run above the ramp to the station. At its lowest point, the clearance between the bridge and light rail tracks is between 8.5 and 9 feet.

[Click here to enlarge.](#)

Are you on a shared or public computer? If you see someone else's survey responses, click on the reset button to start your own survey.

[RESET](#)

### Share your thoughts on the East Bridge Landing design:

#### Option 1: A-Frame Ramp

What do you like about this option? *SELECT ALL THAT APPLY.*

- ☐ Ramp layout
- ☐ Height clearance from Sound Transit tracks
- ☐ Connection to light rail station
- ☐ Connection to Trail Along the Rail
- ☐ Pedestrian and bicycle pathways
- ☐ Stair access to station
- ☐ Other *WRITE IN:*

What do you dislike about this option? *SELECT ALL THAT APPLY.*

- ☐ Ramp layout
- ☐ Height clearance from Sound Transit tracks
- ☐ Connection to light rail station
- ☐ Connection to Trail Along the Rail
- ☐ Pedestrian and bicycle pathways
- ☐ Stair access to station
- ☐ Other *WRITE IN:*

#### Option 2: Switchback Ramp

What do you like about this option? *SELECT ALL THAT APPLY.*

- ☐ Ramp layout
- ☐ Height clearance from Sound Transit tracks
- ☐ Connection to light rail station
- ☐ Connection to Trail Along the Rail
- ☐ Pedestrian and bicycle pathways
- ☐ Stair access to station
- ☐ Other *WRITE IN:*

What do you dislike about this option? *SELECT ALL THAT APPLY.*

- ☐ Ramp layout
- ☐ Height clearance from Sound Transit tracks
- ☐ Connection to light rail station
- ☐ Connection to Trail Along the Rail
- ☐ Pedestrian and bicycle pathways
- ☐ Stair access to station
- ☐ Other *WRITE IN:*

#### Option 3: Direct Ramp

What do you like about this option? *SELECT ALL THAT APPLY.*

- ☐ Ramp layout
- ☐ Height clearance from Sound Transit tracks
- ☐ Connection to light rail station
- ☐ Connection to Trail Along the Rail
- ☐ Pedestrian and bicycle pathways
- ☐ No stair access to station
- ☐ Other *WRITE IN:*

What do you dislike about this option? *SELECT ALL THAT APPLY.*

- ☐ Ramp layout
- ☐ Height clearance from Sound Transit tracks
- ☐ Connection to light rail station
- ☐ Connection to Trail Along the Rail
- ☐ Pedestrian and bicycle pathways
- ☐ No stair access to station
- ☐ Other *WRITE IN:*

#### Summary

Which East Bridge Landing option do you prefer?

- ☐ Option 1: A-Frame Ramp
- ☐ Option 2: Switchback Ramp
- ☐ Option 3: Direct Ramp

Is there anything you think we should consider while evaluating these options for the East Bridge Landing?

[SUBMIT](#)

Please make sure to click on the submit button before you leave the page.

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#### CONTACT US:

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[lbonebrake@shorelinewa.gov](mailto:lbonebrake@shorelinewa.gov) | 206-801-2475

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# N 148th Street Non-Motorized Bridge

A ped/bike bridge connecting people to neighborhoods and regional transit

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## ONLINE OPEN HOUSE

## Give More Feedback

Public input will be essential to the design of the bridge and how the ramps or approaches will look, function, and integrate into the communities on both sides of I-5. Community members will have several opportunities to give feedback throughout the design process. We want to be sure that the bridge design and planning effort addresses your priorities, while also meeting the technical needs of the project.

Are you on a shared or public computer? If you see someone else's survey responses, click on the reset button to start your own survey.

[RESET](#)

### Your Feedback

Do you plan to use the new N 148th Street Non-Motorized Bridge?

- ☐ Yes  
☐ No  
☐ I'm not sure yet

If you do plan to use the bridge, what modes of travel do you plan to use? *SELECT ALL THAT APPLY.*

- ☐ Walking  
☐ Bicycling  
☐ Other recreational wheels such as scooters or skateboards  
☐ Wheelchair or other assisted mode of travel  
☐ Other *WRITE IN:*

If you do plan to use the bridge, what will be the purpose of your travel? *SELECT ALL THAT APPLY.*

- ☐ To connect to light rail at the South Shoreline/N 145th Station  
☐ To connect to buses at or near the South Shoreline/N 145th Station  
☐ To access other neighborhoods on the west or east side of I-5  
☐ To connect to biking or walking trails  
☐ Other *WRITE IN:*

Please select the top *three* criteria that are most important to you for this project. *YOUR FEEDBACK WILL HELP OUR PROJECT TEAM AS WE EVALUATE EACH DESIGN OPTION.*

- ☐ Maintain safe environment for community  
☐ Maintain existing parking options  
☐ Minimize impacts to neighboring properties  
☐ Manage project costs  
☐ Minimize construction impacts  
☐ Protect mature trees  
☐ Improve pedestrian travel (e.g., sidewalks, crosswalks)  
☐ Improve bicycle travel  
☐ Shorten travel time to light rail station/transit center  
☐ Visual design and overall look  
☐ Limit city acquisition of private property

*Please tell us a little bit more about yourself so that we can understand how inclusive our community outreach has been.*

What is your ZIP code?

- ☐ 98133  
☐ 98155  
☐ 98160  
☐ 98177  
☐ Other *WRITE IN:*

What is your age?

- ☐ 19 or younger  
☐ 20–24  
☐ 25–34  
☐ 35–44  
☐ 45–54  
☐ 55–64  
☐ 65 or older  
☐ I'd rather not say

What is your race/ethnicity? *SELECT ALL THAT APPLY.*

- ☐ African American or Black  
☐ American Indian or Alaska Native  
☐ Asian or Pacific Islander  
☐ Biracial/multiracial  
☐ Hispanic, Spanish, or Latino  
☐ Northern African/Middle Eastern  
☐ White/Caucasian  
☐ Optional self-identification *WRITE IN:*  
☐ I'd rather not say

What is the primary language spoken in your home?

- ☐ Amharic/Tigrinya  
☐ English  
☐ Korean  
☐ Mandarin/Cantonese  
☐ Spanish  
☐ Tagalog  
☐ Vietnamese  
☐ Other *WRITE IN:*

What gender do you identify as?

- ☐ Female  
☐ Male  
☐ Non-binary  
☐ Optional self-identification *WRITE IN:*  
☐ I'd rather not say

Do you have a disability? *SELECT ALL THAT APPLY.*

- ☐ Cognitive  
☐ Hearing  
☐ Mobility  
☐ None  
☐ Vision  
☐ Optional self-identification *WRITE IN:*  
☐ I'd rather not say

What is your current housing situation?

- ☐ Rent  
☐ Own  
☐ Stay with friends or family  
☐ Without housing  
☐ Other *WRITE IN:*  
☐ I'd rather not say

How did you learn about this project? *SELECT ALL THAT APPLY.*

- ☐ City of Shoreline email/website  
☐ News  
☐ Social media  
☐ Friend  
☐ My employer  
☐ An organization I'm involved with  
☐ Other *WRITE IN:*  
☐ I'd rather not say

What is the best way to stay in touch with you about this project? *SELECT ALL THAT APPLY.*

- ☐ Email  
☐ Social media  
☐ Community meetings and open houses  
☐ Mail  
☐ Other *WRITE IN:*

Is there anything else you would like to share about the N 148th Non-Motorized Bridge Project?

[SUBMIT](#)

Please make sure to click on the submit button before you leave the page.

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#### CONTACT US:

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For additional project information, visit [shorelinewa.gov/148thbridge](http://shorelinewa.gov/148thbridge)

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# N 148th Street Non-Motorized Bridge

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ONLINE OPEN HOUSE

## What's Next?

### How to Stay Involved

#### THANK YOU FOR VISITING THE ONLINE OPEN HOUSE AND GIVING FEEDBACK.

Along with technical research and evaluations, your feedback will help the City design the bridge for the community. We will report back what we heard from the public through community meetings and online open houses throughout 2020.

**LEARN MORE ABOUT THIS PROJECT** on the [N 148th Street Non-Motorized Bridge website](#).

### Destination 2024

The N 148th Non-Motorized Bridge is one of eight Destination 2024 projects led by the City of Shoreline.

In preparation for two new Sound Transit light rail stations in Shoreline, we have been planning for changes that will come with these new facilities. The City Council has increased zoning densities around the two future stations (Shoreline South/145th and Shoreline North/185th) so that new housing and development can be focused around transit. To support future development, the City is also planning for transportation improvements to help get people to light rail and around the station areas.

Learn more about the other projects below or visit the [Destination 2024 website](#) and check out our new interactive map.

- [145th Corridor Project \(I-5 to Aurora\)](#)
- [145th/I-5 Interchange Project](#)
- [1st Avenue NE Sidewalks \(145th to 155th Streets\)](#)
- [5th Avenue Rechannelization](#)
- [Off-Corridor Bike Network](#)
- [SR 522/523 BRT Project \(Bothell/Lake City Way and 145th Street Bus Rapid Transit\)](#)
- [Trail Along the Rail](#)

[← GO TO PREVIOUS PAGE](#)

#### CONTACT US:

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For additional project information, visit [shorelinewa.gov/148thbridge](https://shorelinewa.gov/148thbridge)

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# N 148번가 차 없는 다리

사람들을 주변 지역 및 지역 대중교통과 연결하는 보행자/자전거 전용 다리

홈

프로젝트 개요

일정

다리

서쪽 트레일 연결부

다리 동쪽 진출입부

추가 의견 제공

향후 계획?

## 온라인 오픈 하우스

## N 148번가 차 없는 다리(N 148th Street Non-Motorized Bridge)의 온라인 오픈 하우스에 오신 것을 환영합니다!

쇼어라인이 변화 및 성장을 거듭하고 있습니다. 사운드 트랜짓(Sound Transit) 경전철의 개통, 경전철 및 버스 환승을 위한 새로운 쇼어라인 사우스/145번가 역(Shoreline South/145th Station)의 건설 및 기타 발전과 함께 주민들은 이런 증가하는 서비스 및 시설과 확장되는 보행자 및 자전거 네트워크로 연결되는 새로운 방법이 필요해졌습니다.

이런 요구 사항을 충족시키기 위해 쇼어라인 시는 N 148번가에 주간 고속도로 5(I-5) 위를 지나는 새로운 보행자 및 자전거용 육교를 건설할 계획입니다. N 148번가 차 없는 다리는 모든 사람들의 안전을 향상시키고, 쇼어라인에서 I-5의 동쪽과 서쪽을 건너자 자전거를 타고 이동하는 사람들의 이동 시간을 단축시킬 것입니다.

이 온라인 오픈 하우스의 목적은 시민들에게 다음과 같은 기회를 제공하는 것입니다.

- 이 프로젝트에 대해 자세히 알아봅니다.
- 시민 여러분에게 중요한 정보를 공유하고, 이 프로젝트의 주요 부분에 대한 의견을 제공합니다.

### 이 온라인 오픈 하우스를 이용하는 방법

- 이 오픈 하우스를 이용하려면 아래로 스크롤하여 각 페이지를 읽은 후 페이지 하단에 있는 “다음 페이지” 버튼을 클릭하거나 상단에서 원하는 탭을 선택하십시오.
- 이 온라인 오픈 하우스 내에서 질문을 받고 의견을 제공할 수 있습니다. 이 온라인 오픈 하우스 및 설문지를 완료하는 데는 몇 분 밖에 걸리지 않습니다.

**참여해 주셔서 감사합니다!**

### 웹 세미나에 참석하세요

이 라이브 온라인 프리젠테이션 실행 시간:

**2020년 4월 23일 목요일  
12:00-1:00(오후)**

등록하려면 [여기를](#) 클릭하십시오.

### 계속 관심을 가져 주세요.

N 145번가에서 진행되는 이 프로젝트와 기타 프로젝트에 대한 업데이트 및 참여 기회를 원하시면 신청하십시오.

이름

성

이메일 \*

\* 이메일이 필요합니다.

제출

> 다음 페이지로 이동

연락하기:

쇼어라인 시와 통신을 교환하거나 다른 언어로 된 문서를 보시려면 귀하의 연락처 정보와 함께 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov)로 요청하거나 206-801-2700번으로 전화해 주십시오.

Lea Bonebrake, P.E., 쇼어라인 프로젝트 매니저  
[lbonebrake@shorelinewa.gov](mailto:lbonebrake@shorelinewa.gov) | 206-801-2475

For additional project information, visit [shorelinewa.gov/148thbridge](https://shorelinewa.gov/148thbridge)

이 웹사이트 공유:



저희를 팔로잉하세요:





# N 148번가 차 없는 다리

사람들을 주변 지역 및 지역 대중교통과 연결하는 보행자/자전거 전용 다리

홈

프로젝트 개요

일정

다리

서쪽 트레일 연결부

다리 동쪽 진출입부

추가 의견 제공

향후 계획?

온라인 오픈 하우스

## 프로젝트 개요

### 필요성과 혜택

N 148번가 차 없는 다리는 현재와 미래에 지역사회의 여러 가지 요구 사항을 해결하고, 다음을 포함한 많은 혜택을 제공할 것입니다.

#### 변화하는 인근 지역을 위한 교통 옵션.

2016년에 시는 새로운 경전철 및 환승역 인근의 향후 토지 이용 및 교통 요구 사항을 해결하기 위해 145번가 전철역 구역 계획을 수립했습니다. 이 지역이 변화함에 따라 이 다리는 주민, 사업자, 소매 고객 및 통근 직장 인들이 이용하게 될 것입니다. 이 다리는 N 145번가 지역과 새로운 사운드 트랜짓 경전철역을 위한 쇼어라인 시의 보다 큰 계획의 일부입니다. 이 지역의 다른 관련 프로젝트에 대한 자세한 내용은

**Destination 2024 웹 사이트를 방문하십시오.**

#### 링크 경전철 이용법에서 확인할 수 있습니다

2024년이 되면 쇼어라인 사우스/145번가 역이 개통하여 쇼어라인에 경전철이 들어오고 쇼어라인으로의 빠른 버스 환승 서비스가 제공될 것입니다. 직장에 다니는 쇼어라인 시민 중 80% 이상이 직장에 가기 위해 도시 밖으로 나가며, 거의 2/3가 시애틀로 통근합니다. 역 인근의 교통량이 25% 이상 증가할 것으로 예상됩니다.

#### 안전 향상 및 이동 시간 단축.

도로와 분리된 통행로 및 보행자와 자전거 이용자를 위한 지정 공간은 안전을 높이고 자동차와의 충돌 위험을 줄이는 데 도움이 됩니다.

쇼어라인은 현재 9차선 주간 고속도로(I-5)로 나뉘어 있습니다. 새로운 다리가 놓이면 쇼어라인을 보다 쉽게 통과할 수 있을 것이며, 이 지역에서 걸거나 자전거를 이용하는 사람들의 이동 시간이 최소 10분 이상 단축될 것입니다. 이 새로운 다리는 또한 인터어번 트레일(Interurban Trail), 미래의 트레일 얼롱 더 레일(Trail along the Rail), 기존의 버크-길먼 트레일(Burke-Gilman Trail) 및 잠재적인 미래의 지역 자전거 네트워크로 이어지는 자전거 노선도 개선할 것입니다.

### 위치

새로운 다리는 N 148번가에서 주간 고속도로 5(I-5)를 가로지르게 됩니다. 이 프로젝트는 I-5의 위를 지나는 교량 경간, 서쪽 트레일 연결부(West Trail Connection) 및 다리 동쪽 진출입부(East Bridge Landing) 등 3개 주요 부분으로 구성됩니다.



확대하려면 여기를 클릭하십시오.



### 예상 비용

설계	\$2.8–3.8 million
허가 취득 및 부지 확보	\$1.5–2.1 million
건설	\$18.1–24.9 million
총 프로젝트 비용	\$23–30.2 million

시는 연방, 지역 및 카운티 자금으로 1천만 달러를 확보했습니다. 총 프로젝트 비용은 현재 2,300–3,020만 달러로 추산되었으며(설계 과정에서 비용이 추가로 조정될 것임), 시는 공사를 완료하기 위해 계속해서 적극적으로 자금을 확보하고 있습니다.

> 다음 페이지로 이동

< 이전 페이지로 이동

#### 연락하기:

쇼어라인 시와 통신을 교환하거나 다른 언어로 된 문서를 보시려면 귀하의 연락처 정보와 함께 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov)로 요청하거나 206-801-2700번으로 전화해 주십시오.

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For additional project information, visit [shorelinewa.gov/148thbridge](https://shorelinewa.gov/148thbridge)

#### 이 웹사이트 공유:



#### 저희를 팔로잉하세요:





# N 148번가 차 없는 다리

사람들을 주변 지역 및 지역 대중교통과 연결하는 보행자/자전거 전용 다리

홈

프로젝트 개요

일정

다리

서쪽 트레일 연결부

다리 동쪽 진출입부

추가 의견 제공

향후 계획?

## 온라인 오픈 하우스

## 일정

이 프로젝트의 설계 단계는 2019년에 시작되어 2021년까지 계속될 것입니다. 주민들은 2020년에 실시될 설계 및 환경 영향 평가 중에 오프라인 및 온라인 오픈 하우스를 통해 의견을 제공할 수 있는 기회를 갖게 될 것입니다. 공사는 2022년에 시작되어 2023년에 새로운 경전철역이 개통되기 전에 완료될 예정입니다.

타당성 조사 2017년 완료됨	설계/환경 영향 평가 2019-2021년			허가 취득 및 부지 확보 2021-2022년	건설 2022-2023
	방안 평가	선호되는 방안 선택	30% 설계 완료		
	2019년 9 월 - 2020년 6 월	2020년 여름	2020년 여름/가을		
	12월 - 3월 부지 소유주 브리핑	부지 소유주 브리핑	부지 소유주 브리핑		
	지역사회 브리핑 및 프레젠테이션	지역사회 브리핑 및 프레젠테이션	지역사회 브리핑 및 프레젠테이션(미정)		
	4월 온라인 오픈 하우스, 설문 조사 및 프레젠테이션	온라인 및 오프라인 오픈 하우스	온라인 및 오프라인 오픈 하우스(미정)		

## 연구 및 계획 수립

2016년과 2017년에 쇼어라인 시는 I-5 서쪽 지역을 미래의 사운드 트랜짓 쇼어라인 사우스/145번가 역과 연결하기 위한 옵션들을 평가하고 제안하는 연구를 수행했습니다. 쇼어라인 시 직원, 쇼어라인 시의회 및 컨설팅 엔지니어들이 5가지 옵션을 평가했습니다. 쇼어라인 시의회에서 주민 의견 청취가 실시되었습니다.

시는 N 148번가 역의 위치가 건설 비용이 가장 적게 들며, 가장 많은 이용자가 이용할 수 있고, 가능한 경로들 중에서 쇼어라인 사우스/145번가 역까지 가장 짧고 직접적인 접근로를 제공할 것으로 예상했습니다. 시는 또한 I-5 주변에서의 안전 요구 사항을 해결하기 위해 WSDOT 및 사운드 트랜짓 규정도 검토했습니다. 쇼어라인 시의회는 2017년 2월에 이 위치를 승인했습니다.

> 다음 페이지로 이동

< 이전 페이지로 이동

### 연락하기:

쇼어라인 시와 통신을 교환하거나 다른 언어로 된 문서를 보시려면 귀하의 연락처 정보와 함께 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov)로 요청하거나 206-801-2700번으로 전화해 주십시오.

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### 이 웹사이트 공유:



### 저희를 팔로잉하세요:





# N 148번가 차 없는 다리

사람들을 주변 지역 및 지역 대중교통과 연결하는 보행자/자전거 전용 다리

홈

프로젝트 개요

일정

다리

서쪽 트레일 연결부

다리 동쪽 진출입부

추가 의견 제공

향후 계획?

온라인 오픈 하우스

## 다리

이 다리는 서쪽의 파크우드(Parkwood) 지역과 동쪽의 새로운 쇼어라인 사우스/N 145번가 역 사이에 있는 I-5를 가로질러서 보행자와 자전거 이용자를 이동시킬 것입니다. 다리는 보행자와 자전거 이용자들을 수용할 수 있도록 충분히 넓을 것이며, ADA(미국 장애인법) 표준을 준수하여 건설될 것입니다. 모든 교량 옵션들은 동일한 안전 표준에 따라 설계되며, 보행자/자전거 레일, 조명 및 아래의 고속도로를 이용하는 운전자들을 낙하물로부터 보호하기 위한 방벽 난간(투기 방지벽)이 설치될 것입니다.

### 옵션 1: 복합 아치교



확대하려면 여기를 클릭하십시오.

- **설계:**  
복합 아치교는 I-5 위에 놓이는 주 아치와 다리 서쪽의 트레일과 연결되는 짧은 연결로에 놓이는 보다 작은 아치로 이루어집니다.
- **크기:**  
아치에는 상공에 강철 지지부가 있고, 케이블 또는 강철로 된 수직 지지부가 있습니다.
- **안전:**  
물건이 아래의 주간 고속도로에 떨어지는 것을 방지하기 위해 방벽 난간이 수직 지지부의 내부에 설치됩니다.

### 옵션 2: 결합 아치교



확대하려면 여기를 클릭하십시오.

- **설계:**  
결합 아치교에서는 2개의 아치교가 서로를 향해 기울어진 형태로 나란히 설치되고 지지 케이블이 연결됩니다.
- **크기:**  
보다 높은 아치와 가느다란 케이블은 다른 교량 옵션들보다 더 많은 공간과 조명을 제공할 것입니다.
- **안전:**  
물건이 아래의 주간 고속도로에 떨어지는 것을 방지하기 위해 케이블 양쪽에 방벽 난간이 설치될 수 있습니다.

### 옵션 3: 트러스교



확대하려면 여기를 클릭하십시오.

- **설계:**  
트러스교는 삼각형의 “트러스”를 형성하는 연결 부분들로 이루어집니다.
- **크기:**  
다른 교량에 비해 트러스교는 가장 높은 지점에서 약간 짧고, 구조적 부분들이 더 많으며, 외부 지지대가 더 넓습니다.
- **안전:**  
물건이 아래의 주간 고속도로에 떨어지는 것을 방지하기 위해 트러스 내부에 방벽 난간이 설치됩니다.

공유 또는 공공 컴퓨터를 사용하고 계십니까? 다른 사람의 설문조사 응답을 보고 있다면 재설정 버튼을 클릭하여 자신의 설문조사를 시작하십시오.

재설정

### 다리 설계 옵션에 대한 귀하의 의견을 공유해 주십시오.

#### 옵션 1: 복합 아치교

이 옵션에서 만족스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 크기
- ☐ 전체적인 외형과 설계
- ☐ 기타 적절 기입:

이 옵션에서 불만스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 크기
- ☐ 전체적인 외형과 설계
- ☐ 기타 적절 기입:

#### 옵션 2: 결합 아치교

이 옵션에서 만족스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 크기
- ☐ 전체적인 외형과 설계
- ☐ 기타 적절 기입:

이 옵션에서 불만스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 크기
- ☐ 전체적인 외형과 설계
- ☐ 기타 적절 기입:

#### 옵션 3: 트러스교

이 옵션에서 만족스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 크기
- ☐ 전체적인 외형과 설계
- ☐ 기타 적절 기입:

이 옵션에서 불만스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 크기
- ☐ 전체적인 외형과 설계
- ☐ 기타 적절 기입:

#### 요약

귀하는 어떤 다리 옵션을 선호하십니까?

- ☐ 옵션 1: 복합 아치교
- ☐ 옵션 2: 결합 아치교
- ☐ 옵션 3: 트러스교

이 다리 옵션들을 평가할 때 시가 고려해야 할 사항이 있습니까?

제출

> 다음 페이지로 이동

< 이전 페이지로 이동

연락하기:

쇼어라인 시와 통신을 교환하거나 다른 언어로 된 문서를 보시려면 귀하의 연락처 정보와 함께 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov)로 요청하거나 206-801-2700번으로 전화해 주십시오.

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For additional project information, visit [shorelinewa.gov/148thbridge](https://shorelinewa.gov/148thbridge)

이 웹사이트 공유:



저희를 팔로우하세요:





# N 148번가 차 없는 다리

사람들을 주변 지역 및 지역 대중교통과 연결하는 보행자/자전거 전용 다리

[홈](#)[프로젝트 개요](#)[일정](#)[다리](#)[서쪽 트레일 연결부](#)[다리 동쪽 진출입부](#)[추가 의견 제공](#)[향후 계획?](#)[온라인 오픈 하우스](#)

## 서쪽 트레일 연결부

서쪽 경사로와 다리 접근로는 I-5 서쪽의 파크우드 지역에 위치할 것입니다. 프로젝트 팀은 3개의 종교 시설을 포함한 인접 지역과 협력하여 그들의 우선적 요구 사항을 파악하고, 다리의 설계와 공사로 인한 불편을 최소화 할 것입니다. 모든 옵션에서 시는 가능하면 프로젝트 지역에 있는 성장한 나무들을 보존하는 것을 목표로 합니다.

### 옵션 1: 최소 건설

#### 조감도



#### 기호 설명

- A 1번 대로 NE:**  
1번 대로 NE의 개선은 미래에 별도 프로젝트로 실시될 수 있습니다.
- B 자전거:**  
자전거는 주차장을 자동차와 공유하며, 이곳을 지나 다리로 갈 수 있습니다.
- C 트레일:**  
트레일은 1번 대로 NE와 다리 사이에 8피트(약 2.4m) 폭으로 만들어지며 조명이 설치됩니다.
- D 주차:**  
교회 부지에 주차하는 것은 바뀌지 않습니다.

조감도를 확대하려면 여기를 클릭하십시오.

#### 일반적인 단면도

1번 대로 NE를 동쪽에서 바라본 모습



단면도를 확대하려면 여기를 클릭하십시오.

공유 또는 공공 컴퓨터를 사용하고 계십니까? 다른 사람의 설문조사 응답을 보고 있다면 재설정 버튼을 클릭하여 자신의 설문조사를 시작하십시오.

[재설정](#)

### 서쪽 트레일 연결부 설계에 대한 의견을 공유해 주십시오.

#### 옵션 1: 최소 건설

이 옵션에서 만족스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 트레일 설계
- ☐ 자전거 이용자와 보행자의 분리
- ☐ 주차 옵션
- ☐ 기타 적절 기입:

이 옵션에서 불만스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 트레일 설계
- ☐ 자전거 이용자와 보행자의 분리
- ☐ 주차 옵션
- ☐ 기타 적절 기입:

#### 옵션 2: 전면 건설

이 옵션에서 만족스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 트레일 설계
- ☐ 공유 자전거 및 보행자 도로
- ☐ 주차 옵션
- ☐ 기타 적절 기입:

이 옵션에서 불만스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 트레일 설계
- ☐ 공유 자전거 및 보행자 도로
- ☐ 주차 옵션
- ☐ 기타 적절 기입:

#### 요약

귀하는 어떤 서쪽 트레일 연결부 옵션을 선호하십니까?

- ☐ 옵션 1: 최소 건설
- ☐ 옵션 2: 전면 건설

서쪽 트레일 연결부에 대한 이런 옵션들을 평가할 때 시가 고려해야 할 사항이 있습니까?

[제출](#)[다음 페이지로 이동](#)[이전 페이지로 이동](#)

연락하기:

쇼어라인 시와 통신을 교환하거나 다른 언어로 된 문서를 보시려면 귀하의 연락처 정보와 함께 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov)로 요청하거나 206-801-2700번으로 전화해 주십시오.

Lea Bonebrake, P.E., 쇼어라인 프로젝트 매니저  
[lbonebrake@shorelinewa.gov](mailto:lbonebrake@shorelinewa.gov) | 206-801-2475

For additional project information, visit [shorelinewa.gov/148thbridge](http://shorelinewa.gov/148thbridge)

이 웹사이트 공유:



저희를 팔로잉하세요:





# N 148번가 차 없는 다리

사람들을 주변 지역 및 지역 대중교통과 연결하는 보행자/자전거 전용 다리

[홈](#)[프로젝트 개요](#)[일정](#)[다리](#)[서쪽 트레일 연결부](#)[다리 동쪽 진출입부](#)[추가 의견 제공](#)[향후 계획?](#)[온라인 오픈 하우스](#)

## 다리 동쪽 진출입부:

I-5 동쪽에 위치한 다리 동쪽 진출입부는 미래의 사우스 쇼어라인/N 145번가 역으로 사람들을 연결하며, 이곳에서 사운드 트랜짓 경전철 또는 버스에 오르거나 도보 또는 자전거를 이용하여 미래의 트레일 얼롱 더 레일로 갈 수 있습니다. 사운드 트랜짓 역에는 자전거 주차장이 만들어질 것입니다. 모든 설계 옵션에는 다음이 포함됩니다.

- 사운드 트랜짓 경전철 트랙 아래를 지나는 다리와 경사로.
- 미국 장애인법(ADA) 표준 준수.
- 고속도로에 인접한 다리 아래의 영구적 방음벽.
- 트레일 얼롱 더 레일 연결로.
- 역 주변의 모든 야외 통행로, 경사로 및 계단에는 조명이 설치됩니다.
- 사운드 트랜짓 경전철 주차장은 차량 500대의 주차 공간을 제공합니다.

### 옵션 1: A-프레임 램프



#### 기호 설명

- A** 경사로: 이 경사로는 각이 진 형태이며, 다른 옵션들보다 경사가 더 가파릅니다(여까지의 평균 경사도 6.5%).
- B** 계단: 사람들은 계단을 내려가서 여까지 갈 수도 있습니다.
- C** 사운드 트랜짓 경전철 트랙은 경사로와 계단 위를 지나서 역으로 연결됩니다. 가장 낮은 지점에서 다리와 경전철 트랙 사이의 간격은 약 8피트(약 2.4m)입니다.

확대하려면 여기를 클릭하십시오.

### 옵션 2: 스위치백 램프



#### 기호 설명

- A** 경사로: 스위치백은 여까지 내려가는 보다 점진적인 경사로(경사도 약 4%)를 제공합니다.
- B** 계단: 사람들은 계단을 내려가서 여까지 갈 수도 있습니다.
- C** 사운드 트랜짓 경전철 트랙은 경사로와 계단 위를 지나서 역으로 연결됩니다. 가장 낮은 지점에서 다리와 경전철 트랙 사이의 간격은 9피트(약 2.7m)를 약간 넘습니다.

확대하려면 여기를 클릭하십시오.

### 옵션 3: 다이렉트 램프



#### 기호 설명

- A** 경사로: 이 경사로는 전철역 및 인접한 트레일 얼롱 더 레일로 직접 연결됩니다. 이 경사로도 옵션 1보다 덜 가파릅니다(경사도 4%). 이 설계에는 역으로 가는 계단이 필요하지 않습니다.
- B** 사운드 트랜짓 경전철 트랙은 이 경사로 위를 지나서 역으로 연결됩니다. 가장 낮은 지점에서 다리와 경전철 트랙 사이의 간격은 8.5 - 9피트(약 2.7m)입니다.

확대하려면 여기를 클릭하십시오.

공유 또는 공공 컴퓨터를 사용하고 계십니까? 다른 사람의 설문조사 응답을 보고 있다면 재설정 버튼을 클릭하여 자신의 설문조사를 시작하십시오.

[재설정](#)

## 다리 동쪽 진출입부의 설계에 대한 의견을 공유해 주십시오.

### 옵션 1: A-프레임 램프

이 옵션에서 만족스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 경사로 배치
- ☐ 사운드 트랜짓 트랙과의 간격(높이)
- ☐ 경전철역 연결로
- ☐ 트레일 얼롱 더 레일 연결로
- ☐ 보행자 및 자전거 통행로
- ☐ 계단을 통해 역에 접근
- ☐ 기타 직접 기입:

이 옵션에서 불만스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 경사로 배치
- ☐ 사운드 트랜짓 트랙과의 간격(높이)
- ☐ 경전철역 연결로
- ☐ 트레일 얼롱 더 레일 연결로
- ☐ 보행자 및 자전거 통행로
- ☐ 계단을 통해 역에 접근
- ☐ 기타 직접 기입:

### 옵션 2: 스위치백 램프

이 옵션에서 만족스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 경사로 배치
- ☐ 사운드 트랜짓 트랙과의 간격(높이)
- ☐ 경전철역 연결로
- ☐ 트레일 얼롱 더 레일 연결로
- ☐ 보행자 및 자전거 통행로
- ☐ 계단을 통해 역에 접근
- ☐ 기타 직접 기입:

이 옵션에서 불만스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 경사로 배치
- ☐ 사운드 트랜짓 트랙과의 간격(높이)
- ☐ 경전철역 연결로
- ☐ 트레일 얼롱 더 레일 연결로
- ☐ 보행자 및 자전거 통행로
- ☐ 계단을 통해 역에 접근
- ☐ 기타 직접 기입:

### 옵션 3: 다이렉트 램프

이 옵션에서 만족스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 경사로 배치
- ☐ 사운드 트랜짓 트랙과의 간격(높이)
- ☐ 경전철역 연결로
- ☐ 트레일 얼롱 더 레일 연결로
- ☐ 보행자 및 자전거 통행로
- ☐ 역으로 가는 계단 없음.
- ☐ 기타 직접 기입:

이 옵션에서 불만스러운 점은 무엇입니까? 해당되는 모든 것을 고르십시오.

- ☐ 경사로 배치
- ☐ 사운드 트랜짓 트랙과의 간격(높이)
- ☐ 경전철역 연결로
- ☐ 트레일 얼롱 더 레일 연결로
- ☐ 보행자 및 자전거 통행로
- ☐ 역으로 가는 계단 없음.
- ☐ 기타 직접 기입:

### 요약

귀하는 어느 다리 동쪽 진출입부 옵션을 선호하십니까?

- ☐ 옵션 1: A-프레임 램프
- ☐ 옵션 2: 스위치백 램프
- ☐ 옵션 3: 다이렉트 램프

다리 동쪽 진출입부에 대한 이런 옵션들을 평가할 때 시가 고려해야 할 사항이 있습니까?

[제출](#)[다음 페이지로 이동](#)[이전 페이지로 이동](#)

연락하기:

쇼어라인 시와 통신을 교환하거나 다른 언어로 된 문서를 보시려면 귀하의 연락처 정보와 함께 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov)로 요청하거나 206-801-2700번으로 전화해 주십시오.

Lea Bonebrake, P.E., 쇼어라인 프로젝트 매니저  
[lbonebrake@shorelinewa.gov](mailto:lbonebrake@shorelinewa.gov) | 206-801-2475

For additional project information, visit [shorelinewa.gov/148thbridge](http://shorelinewa.gov/148thbridge)

이 웹사이트 공유:



저희를 팔로잉하세요:





# N 148번가 차 없는 다리

사람들을 주변 지역 및 지역 대중교통과 연결하는 보행자/자전거 전용 다리

홈

프로젝트 개요

일정

다리

서쪽 트레일 연결부

다리 동쪽 진출입부

추가 의견 제공

향후 계획?

온라인 오픈 하우스

## 추가 의견 제공

다리 설계와 함께 경사로나 접근로의 외형 및 기능과 I-5 양쪽 지역으로의 통합 방식에 대한 주민 의견은 필수적입니다. 주민들은 설계 과정 중에 의견을 낼 수 있는 여러 번의 기회를 갖게 될 것입니다. 저희는 다리 설계 및 계획 수립에서 주민 여러분의 우선적 요구 사항을 해결하면서 프로젝트의 기술적 요구 사항도 충족시킬 수 있기를 바랍니다.

공유 또는 공공 컴퓨터를 사용하고 계십니까? 다른 사람의 설문조사 응답을 보고 있다면 재설정 버튼을 클릭하여 자신의 설문조사를 시작하십시오.

재설정

### 주민 의견

귀하는 새로운 N 148번가 차 없는 다리를 이용하시겠습니까?

- ☐ 예  
☐ 아니요  
☐ 아직 확실하지 않음

귀하가 이 다리를 이용하신다면 어떤 방법으로 이용하시겠습니까?  
*해당되는 모든 것을 고르십시오.*

- ☐ 걷기  
☐ 자전거 타기  
☐ 스쿠터 또는 스케이트 보드와 같은 기타 레저용 이동 수단  
☐ 휠체어 또는 기타 보조 이동 수단  
☐ 기타 *적절 기입:*

귀하가 이 다리를 이용하신다면 어떤 목적으로 이용하시겠습니까?  
*해당되는 모든 것을 고르십시오.*

- ☐ 쇼어라인 사우스/N 145번가 역에서 경전철 이용  
☐ 쇼어라인 사우스/N 145번가 역 또는 근처의 버스로 이동  
☐ I-5 서쪽 또는 동쪽의 다른 지역으로 이동  
☐ 자전거 도로 또는 산책로 연결  
☐ 기타 *적절 기입:*

이 프로젝트에서 귀하에게 가장 중요한 3 개 기준을 선택해 주십시오. 귀하의 의견은 시가 각 설계안을 평가할 때 프로젝트 팀에 도움이 될 것입니다.

- ☐ 지역사회를 위한 안전한 환경 유지  
☐ 기존 주차 옵션 유지  
☐ 인근 지역에 대한 영향 최소화  
☐ 프로젝트 비용 관리  
☐ 건설 영향 최소화  
☐ 성숙한 나무 보호  
☐ 보행자 이동 개선(예: 보도, 횡단보도)  
☐ 자전거 이용 개선  
☐ 경전철역/환승 센터까지의 이동 시간 단축  
☐ 시각적 설계 및 전체적 외양  
☐ 시의 사유 재산 취득 제한

**시의 주민 의견 청취가 얼마나 포괄적이었는지 판단할 수 있도록 귀하에 대해 조금 더 자세히 알려주십시오.**

귀하의 우편번호는 무엇입니까?

- ☐ 98133  
☐ 98155  
☐ 98160  
☐ 98177  
☐ 기타 *적절 기입:*

귀하의 나이가 어떻게 되십니까?

- ☐ 19세 이하  
☐ 20-24  
☐ 25-34  
☐ 35-44  
☐ 45-54  
☐ 55-64  
☐ 65세 이상  
☐ 밝히고 싶지 않음

귀하의 인종/민족은 무엇입니까? *해당되는 모든 것을 고르십시오.*

- ☐ 아프리카계 미국인 또는 흑인  
☐ 아메리칸 인디언 또는 알래스카 원주민  
☐ 아시안 또는 태평양 제도  
☐ 이인종/다인종  
☐ 히스패닉, 스페인계 또는 라틴계  
☐ 북아프리카/중동  
☐ 백인  
☐ 선택적 자기 인식 *적절 기입:*  
☐ 밝히고 싶지 않음

귀하의 가정에서 사용되는 기본 언어는 무엇입니까?

- ☐ 암하라어/티그리나어  
☐ 영어  
☐ 한국어  
☐ 중국어/광둥어  
☐ 스페인어  
☐ 타갈로그어  
☐ 베트남어  
☐ 기타 *적절 기입:*

귀하의 성별은 무엇입니까?

- ☐ 여자  
☐ 남자  
☐ 논바이너리  
☐ 선택적 자기 인식 *적절 기입:*  
☐ 밝히고 싶지 않음

**Do you have a disability?** *해당되는 모든 것을 고르십시오.*

- ☐ 인지  
☐ 청각  
☐ 이동 능력  
☐ 없음  
☐ 시각  
☐ 선택적 자기 인식 *적절 기입:*  
☐ 밝히고 싶지 않음

귀하의 현재 주거 상황은 어떻습니까?

- ☐ 임대  
☐ 소유  
☐ 친구나 가족과 함께 거주  
☐ 주거 없음  
☐ 기타 *적절 기입:*  
☐ 밝히고 싶지 않음

귀하는 이 프로젝트에 대해 어떻게 알게 되었습니까? *해당되는 모든 것을 고르십시오.*

- ☐ 쇼어라인 시 이메일/웹 사이트  
☐ 뉴스  
☐ 소셜 미디어  
☐ 친구  
☐ 직장으로  
☐ 소속 단체로  
☐ 기타 *적절 기입:*  
☐ 밝히고 싶지 않음

이 프로젝트에 대해 귀하와 연락할 수 있는 가장 좋은 방법은 무엇입니까? *해당되는 모든 것을 고르십시오.*

- ☐ 이메일  
☐ 소셜 미디어  
☐ 지역사회 모임 및 오픈 하우스  
☐ 우편  
☐ 기타 *적절 기입:*

**N 148번가 차 없는 다리 프로젝트에 대해 귀하가 공유하고 싶은 다른 사항이 있습니까?**

제출

> 다음 페이지로 이동

< 이전 페이지로 이동

연락하기:

쇼어라인 시와 통신을 교환하거나 다른 언어로 된 문서를 보시려면 귀하의 연락처 정보와 함께 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov)로 요청하거나 206-801-2700번으로 전화해 주십시오.

Lea Bonebrake, P.E., 쇼어라인 프로젝트 매니저  
[lbonebrake@shorelinewa.gov](mailto:lbonebrake@shorelinewa.gov) | 206-801-2475

For additional project information, visit [shorelinewa.gov/148thbridge](http://shorelinewa.gov/148thbridge)

이 웹사이트 공유:



저희를 팔로잉하세요:





# N 148번가 차 없는 다리

사람들을 주변 지역 및 지역 대중교통과 연결하는 보행자/자전거 전용 다리

홈

프로젝트 개요

일정

다리

서쪽 트레일 연결부

다리 동쪽 진출입부

추가 의견 제공

향후 계획?

온라인 오픈 하우스

## 향후 계획?

### 참여 방법

온라인 오픈 하우스를 방문하여 의견을 주셔서 감사합니다.

기술적 연구 및 평가와 함께 주민 여러분의 의견은 시가 이 지역을 위한 다리를 설계하는 데 도움이 될 것입니다. 시는 2020년까지 지역사회 모임과 온라인 오픈 하우스를 통해 주민 의견을 듣고 그 내용을 다시 보고할 것입니다.

#### 이 프로젝트에 대해

자세히 알아보려면

[N 148번가 차 없는 다리 웹 사이트를 방문하십시오.](#)

### Destination 2024

N 148번가 차 없는 다리는 쇼어라인 시가 진행하는 8개의 Destination 2024 프로젝트 중 하나입니다.

쇼어라인에 2개의 새로운 사운드 트랜짓 경전철역을 준비하면서 저희는 이런 새로운 시설들과 함께 이루어질 변화를 위한 계획을 세웠습니다. 시의회는 미래의 2개 역(쇼어라인 사우스/145번가 및 쇼어라인 노스/185가) 주변의 구역 밀도를 증가시켜 새로운 주택 건설과 개발이 대중 교통에 초점이 맞춰질 수 있도록 했습니다. 향후 개발을 지원하기 위해 시는 또한 사람들이 경전철과 역 주변을 이용할 수 있도록 교통 개선 계획도 수립하고 있습니다.

아래에서 다른 프로젝트들에 대해 자세히 알아보거나

#### [Destination 2024 웹 사이트](#)

를 방문하여 새로운 대화식 지도를 확인하십시오.

- [145th Corridor Project \(I-5 to Aurora\)](#)
- [145번가/I-5 인터체인지 프로젝트](#)
- [1st Avenue NE Sidewalks \(145th to 155th Streets\)](#)
- [5번 대로 재도류화](#)
- [도로 옆 자전거 네트워크](#)
- [SR 522/523 BRT 프로젝트\(Bothell/Lake City Way 및 145th Street Bus Rapid Transit\)](#)
- [트레일 얼롱 더 레일](#)

[← 이전 페이지로 이동](#)

#### 연락하기:

쇼어라인 시와 통신을 교환하거나 다른 언어로 된 문서를 보시려면 귀하의 연락처 정보와 함께 [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov)로 요청하거나 206-801-2700번으로 전화해 주십시오.

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#### 이 웹사이트 공유:



#### 저희를 팔로잉하세요:





# Puente para vehículos no motorizados en N 148th Street

Un puente para peatones y ciclistas que conecta a las personas con vecindarios y transporte público regional

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## JORNADA ABIERTA EN LÍNEA

### ¡Bienvenido a la jornada abierta en línea del puente para vehículos no motorizados en N 148th Street!

Shoreline está en crecimiento y evolución. Con la próxima llegada del tren ligero de Sound Transit, la nueva estación Shoreline South/145th del tren ligero y los autobuses públicos, y los nuevos desarrollos, los residentes necesitan nuevas maneras de conectarse con estos servicios e instalaciones en crecimiento y a una red de vías para peatones y ciclistas en expansión.

Para satisfacer estas necesidades, la ciudad de Shoreline construirá un nuevo puente para peatones y ciclistas que cruzará la carretera interestatal 5 (I-5) en N 148th Street. El puente para vehículos no motorizados en N 148th Street mejorará la seguridad de todos y disminuirá los tiempos de recorrido de los peatones y ciclistas que transitan entre los lados este y oeste de la I-5 en Shoreline.

El propósito de esta jornada abierta en línea es proporcionarle una oportunidad para:

- Obtener más información sobre este proyecto
- Expresar lo que es importante para usted y dar su opinión sobre los aspectos clave de este proyecto

#### Cómo usar esta jornada abierta en línea

- Para avanzar en esta jornada abierta, desplácese hacia abajo para leer cada página, y luego haga clic en el botón "Siguiente" en la parte inferior de la página o seleccione la pestaña deseada en la parte superior.
- En esta jornada abierta en línea, se le harán preguntas y podrá dar su opinión. Le llevará solo unos cuantos minutos para concluir tanto la jornada abierta como el cuestionario en línea.

**¡Agradecemos su participación!**

#### ACOMPÁÑENOS EN NUESTRO SEMINARIO WEB

Esta presentación en vivo y en línea se llevará a cabo el:

**Jueves, 23 de abril de 2020  
12:00–1:00 p.m.**

Haga clic [aquí](#) para registrarse.

#### Permanezca conectado

Suscríbase para recibir actualizaciones sobre este y otros proyectos en el Corredor de N 145th Street, así como para enterarse de oportunidades para participar.

Nombre

Apellido

Correo electrónico \*

\*El correo electrónico es obligatorio

ENVIAR

> SIGUIENTE

#### CONTACTO:

Si desea comunicarse con la ciudad de Shoreline o consultar un documento en otro idioma, envíe su solicitud junto con su información de contacto a [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) o llame al 206-801-2700.

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#### COMPARTIR ESTE SITIO:



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# Puente para vehículos no motorizados en N 148th Street

Un puente para peatones y ciclistas que conecta a las personas con vecindarios y transporte público regional

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## JORNADA ABIERTA EN LÍNEA

## Descripción general del proyecto

### Necesidad y beneficios

El puente para vehículos no motorizados en N 148th Street abordará varias necesidades comunitarias actuales y futuras, y ofrecerá varios beneficios, por ejemplo:

**OPCIONES DE TRANSPORTE PARA UN VECINDARIO EN EVOLUCIÓN.** En 2016, la ciudad desarrolló el Plan de la subzona para la estación de 145th Street a fin de atender el uso futuro del suelo y las necesidades de transporte cerca de la nueva estación de tren ligero y autobuses públicos. Conforme la zona vaya cambiando, el puente dará acceso a los residentes, comerciantes, clientes minoristas y personas que cotidianamente viajan entre su casa y el trabajo. El puente es parte de otros esfuerzos de planeación de la ciudad de Shoreline para el corredor vial y la nueva estación de tren ligero de Sound Transit de N 145th Street. Puede obtener más información sobre otros proyectos relacionados en la zona visitando el [sitio web de Destination 2024](#).

**ACCESO A LA ESTACIÓN DE TREN LIGERO.** Para 2024, se inaugurará la estación Shoreline South/145th, la cual prestará el servicio de tren ligero y de más autobuses de tránsito rápido a Shoreline. Más del 80 % de los residentes de Shoreline que trabajan salen de la ciudad para llegar a su empleo y casi dos terceras partes de ellos se trasladan a Seattle. Se prevé que el tránsito en la zona donde se ubica la estación aumentará en más del 25 %.

**MEJOR SEGURIDAD Y MENORES TIEMPOS DE RECORRIDO.** Los caminos que están separados de la calle y el espacio destinado para los peatones y ciclistas aumentan la seguridad y ayudan a disminuir el riesgo de choques con vehículos motorizados.

Actualmente, Shoreline está dividida por una carretera interestatal de nueve carriles (I-5). Un nuevo puente facilitará el traslado en Shoreline y reducirá los tiempos de recorrido de peatones y ciclistas que transiten por la zona, por al menos diez minutos. El nuevo puente también mejorará las rutas de las ciclovías al sendero interurbano, al futuro proyecto Trail Along the Rail, al sendero Burke-Gilman actual y a posibles redes de ciclovías regionales futuras.

### Ubicación

El nuevo puente cruzará la Interestatal 5 (I-5) en N 148th Street. El proyecto constará de tres partes principales: la arcada del puente sobre la I-5, la conexión del sendero oeste y el rellano este del puente.



Haga clic aquí para agrandar la imagen.



### Proyección de costos

Diseño	\$2.8–3.8 million
Servidumbre	\$1.5–2.1 million
Construcción	\$18.1–24.9 million
<b>COSTO TOTAL DEL PROYECTO</b>	<b>\$23–30.2 million</b>

La ciudad obtuvo \$10 millones en fondos federales, regionales y del condado. Con un costo total estimado actualmente en \$23–30.2 millones (los costos se puntualizarán durante el proceso de diseño), la ciudad sigue buscando financiamiento para concluir la obra.

> SIGUIENTE

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#### COMPARTIR ESTE SITIO:



#### SÍGANOS:





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## JORNADA ABIERTA EN LÍNEA

## Calendario

La fase de diseño del proyecto inició en 2019 y continuará hasta 2021. Los integrantes de la comunidad tendrán oportunidad de dar su opinión a través de jornadas abiertas presenciales y en línea durante la revisión del diseño y del aspecto ambiental durante 2020. La obra está programada para iniciar en 2022 y concluir en 2023 antes de que se inaugure la nueva estación del tren ligero.

Estudio de factibilidad 2017 <i>Concluido</i>	Revisión ambiental y del diseño 2019–2021			Servidumbre 2021–2022	Construcción 2022–2023
	<b>Evaluación de alternativas</b> <i>Septiembre de 2019-junio de 2020</i>	<b>Selección de alternativas preferidas</b> <i>Verano 2020</i>	<b>30 % de avance en el diseño</b> <i>Verano/otoño de 2020</i>		
	<b>DICIEMBRE-MARZO</b> Sesiones informativas para dueños de propiedades	Sesiones informativas para dueños de propiedades	Sesiones informativas para dueños de propiedades		
	Sesiones informativas y presentaciones comunitarias	Sesiones informativas y presentaciones comunitarias	Posibles sesiones informativas y presentaciones comunitarias		
	<b>ABRIL</b> Jornada abierta en línea, encuesta y presentación	Jornada abierta en línea y presencial	Posible jornada abierta en línea y presencial		

## Investigación y planeación

En 2016 y 2017, la ciudad de Shoreline llevó a cabo un estudio para evaluar y recomendar opciones para conectar a las comunidades del lado oeste de la I-5 con la futura estación Shoreline South/145th de Sound Transit. Los funcionarios de la ciudad de Shoreline, el concejo municipal e ingenieros consultores analizaron cinco opciones. La ciudadanía hizo comentarios en las asambleas del concejo municipal de la ciudad de Shoreline.

La ciudad estimó que la obra en N 148th Street sería la más económica, beneficiaría a la mayor cantidad de usuarios y, de las rutas posibles, es la que proporcionaría el acceso más directo a la estación Shoreline South/145th. Asimismo, revisó los reglamentos del Departamento de Transporte del Estado de Washington (Washington State Department of Transportation o WSDOT) y de Sound Transit a fin de abordar las necesidades de seguridad en el cruce de la I-5 y las zonas aledañas. El concejo municipal de la ciudad de Shoreline aprobó esta obra en febrero de 2017.

[➤ SIGUIENTE](#)[➤ ANTERIOR](#)

### CONTACTO:

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### COMPARTIR ESTE SITIO:



### SÍGANOS:





# Puente para vehículos no motorizados en N 148th Street

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## JORNADA ABIERTA EN LÍNEA

## Puente

El puente ayudará a los peatones y ciclistas a cruzar la I-5 entre el vecindario Parkwood del lado oeste y la nueva estación Shoreline South/N 145th del lado este. El puente será lo suficientemente ancho para que transiten peatones y ciclistas, y cumplirá con las normas de la Ley de estadounidenses con discapacidades (ADA, por sus siglas en inglés). Todas las opciones de puentes se diseñarán conforme a las mismas normas de seguridad e incluirán barandales para los peatones y ciclistas, iluminación y blindaje (barrera de seguridad) para proteger a los conductores que transiten por la carretera interestatal de abajo de objetos que podrían caerse.

### Opción 1: Puente con arcos combinados



Haga clic aquí para agrandar la imagen.

- **DISEÑO:** El puente con arcos combinados tendría un gran arco sobre la I-5 y un arco más pequeño en la conexión con el sendero del lado oeste del puente.
- **TAMAÑO:** Los arcos contarían con piezas de soporte de acero en la parte de arriba y piezas de soporte vertical que podrían ser de cable o acero.
- **SEGURIDAD:** La barrera de seguridad se uniría al interior de las piezas verticales de soporte para evitar que caigan objetos a la carretera interestatal de abajo.

### Opción 2: Puente con arcos atados



Haga clic aquí para agrandar la imagen.

- **DISEÑO:** El puente con arcos atados tendría dos arcos, uno al lado del otro, y uno inclinado sobre el otro, con cables de soporte conectados.
- **TAMAÑO:** El arco más pronunciado y los cables delgados crearían más espacio y permitirían que pasara más luz que las otras opciones de puentes.
- **SEGURIDAD:** La barrera de seguridad podría sujetarse a ambos lados de los cables para evitar que caigan objetos a la carretera interestatal de abajo.

### Opción 3: Puente de armadura



Haga clic aquí para agrandar la imagen.

- **DISEÑO:** Este tipo de puente tiene piezas conectadas que forman un triángulo o "armadura".
- **TAMAÑO:** Comparado con otros tipos de puente, el puente de armadura sería ligeramente más corto en su punto más alto, tendría más piezas estructurales en la parte de arriba y los soportes del exterior serían más anchos.
- **SEGURIDAD:** La barrera de seguridad estaría sujeta al interior de las armaduras para evitar que caigan objetos a la carretera interestatal de abajo.

¿Está usando una computadora compartida o pública? Si puede ver las respuestas que alguien más dio a la encuesta, haga clic en el botón de reiniciar para comenzar su propia encuesta.

REINICIAR

## Comparta su opinión sobre las opciones de diseño del puente:

### Opción 1: Puente con arcos combinados

¿Qué le agrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Tamaño
- ☐ Aspecto y diseño generales
- ☐ Otro *ESPECIFIQUE:*

¿Qué le desagrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Tamaño
- ☐ Aspecto y diseño generales
- ☐ Otro *ESPECIFIQUE:*

### Opción 2: Puente con arcos atados

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- ☐ Aspecto y diseño generales
- ☐ Otro *ESPECIFIQUE:*

### Opción 3: Puente de armadura

¿Qué le agrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Tamaño
- ☐ Aspecto y diseño generales
- ☐ Otro *ESPECIFIQUE:*

¿Qué le desagrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Tamaño
- ☐ Aspecto y diseño generales
- ☐ Otro *ESPECIFIQUE:*

## Resumen

¿Cuál opción de puente prefiere?

- ☐ Opción 1: Puente con arcos combinados
- ☐ Opción 2: Puente con arcos atados
- ☐ Opción 3: Puente de armadura

¿Hay algo que cree que deberíamos tomar en cuenta al evaluar estas opciones de puentes?

ENVIAR

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< ANTERIOR

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## COMPARTIR ESTE SITIO:



## SÍGANOS:





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SENDERO OESTE](#)[RELLANO ESTE  
DEL PUENTE](#)[SU OPINIÓN ES  
MUY IMPORTANTE](#)[¿CUÁL ES EL  
SIGUIENTE PASO?](#)

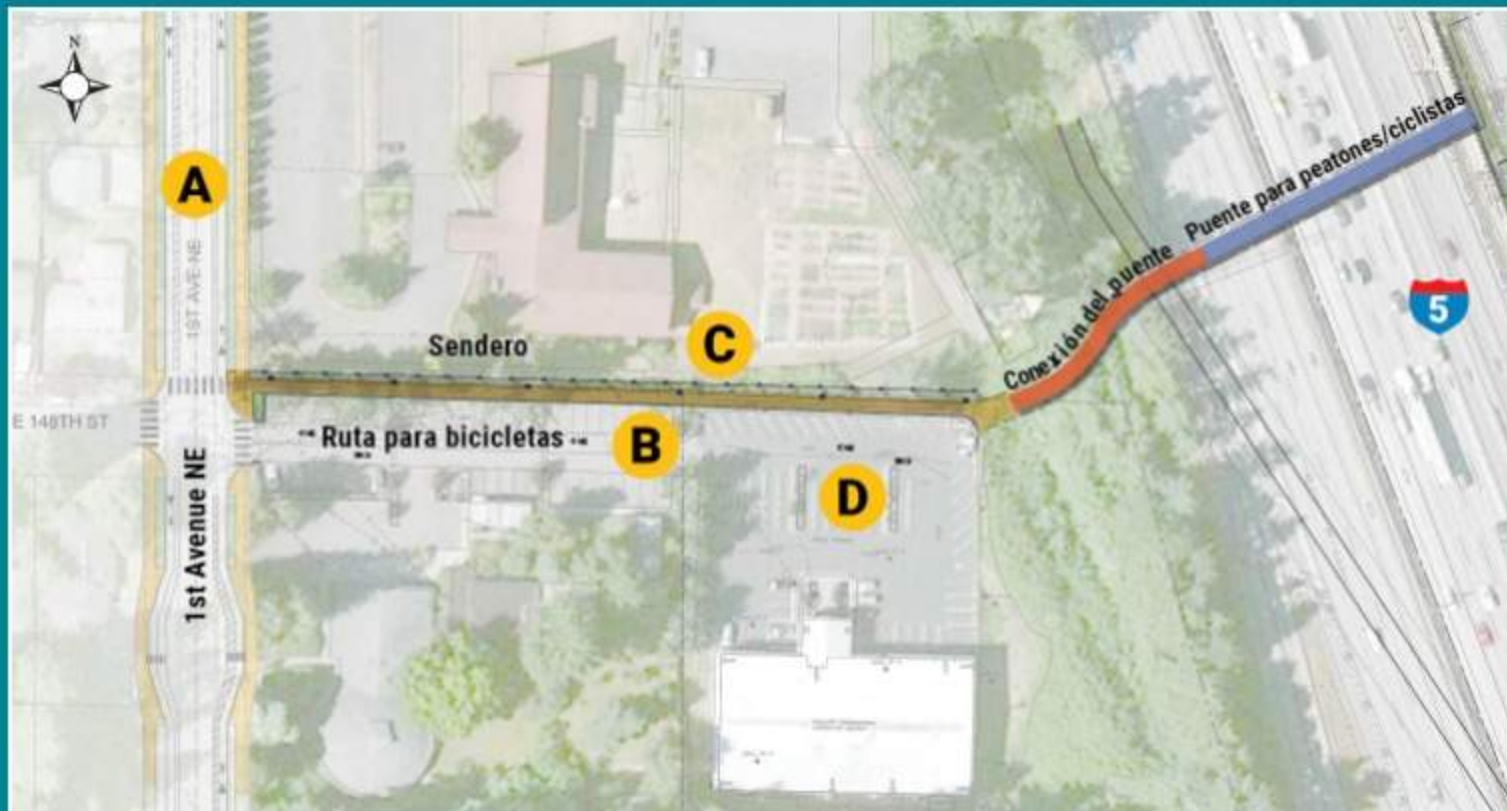
## JORNADA ABIERTA EN LÍNEA

## Conexión del sendero oeste

La rampa oeste y el acceso al puente estarán del lado oeste de la I-5 en el vecindario Parkwood. El equipo del proyecto está trabajando con los vecindarios aledaños, incluidos tres lugares de culto, para identificar sus prioridades y asegurar que se limiten las interrupciones durante el diseño y la construcción del puente. Con todas las opciones, la ciudad pretende conservar los árboles maduros que haya en la zona del proyecto, siempre que sea posible.

### Opción 1: Construcción mínima

#### VISTA DESDE ARRIBA



#### LEYENDA

- A 1ST AVENUE NE:** Las mejoras a 1st Avenue NE podrían llevarse a cabo como un proyecto independiente en el futuro.
- B BICICLETAS:** Las bicicletas compartirán el estacionamiento con los vehículos y luego se conectarán al puente.
- C SENDERO:** El sendero será una acera peatonal de 2.4 metros entre 1st Avenue NE y el puente, y contará con iluminación.
- D ESTACIONAMIENTO:** El estacionamiento en las iglesias no cambiará.

Haga clic aquí para agrandar la vista desde arriba.

#### SECCIÓN REPRESENTATIVA TÍPICA

Con vista al oeste hacia 1st Avenue NE



Haga clic aquí para agrandar la sección representativa.

¿Está usando una computadora compartida o pública? Si puede ver las respuestas que alguien más dio a la encuesta, haga clic en el botón de reiniciar para comenzar su propia encuesta.

[REINICIAR](#)

### Comparta su opinión sobre el diseño de la conexión del sendero oeste:

#### Opción 1: Construcción mínima

¿Qué le agrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño del sendero
- ☐ Separación entre ciclistas y peatones
- ☐ Opciones de estacionamiento
- ☐ Otro *ESPECIFIQUE:*

¿Qué le desagrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño del sendero
- ☐ Separación entre ciclistas y peatones
- ☐ Opciones de estacionamiento
- ☐ Otro *ESPECIFIQUE:*

#### Opción 2: Construcción completa

¿Qué le agrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño del sendero
- ☐ Camino compartido para ciclistas y peatones
- ☐ Opciones de estacionamiento
- ☐ Otro *ESPECIFIQUE:*

¿Qué le desagrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño del sendero
- ☐ Camino compartido para ciclistas y peatones
- ☐ Opciones de estacionamiento
- ☐ Otro *ESPECIFIQUE:*

#### Resumen

¿Cuál opción para la conexión del sendero oeste prefiere?

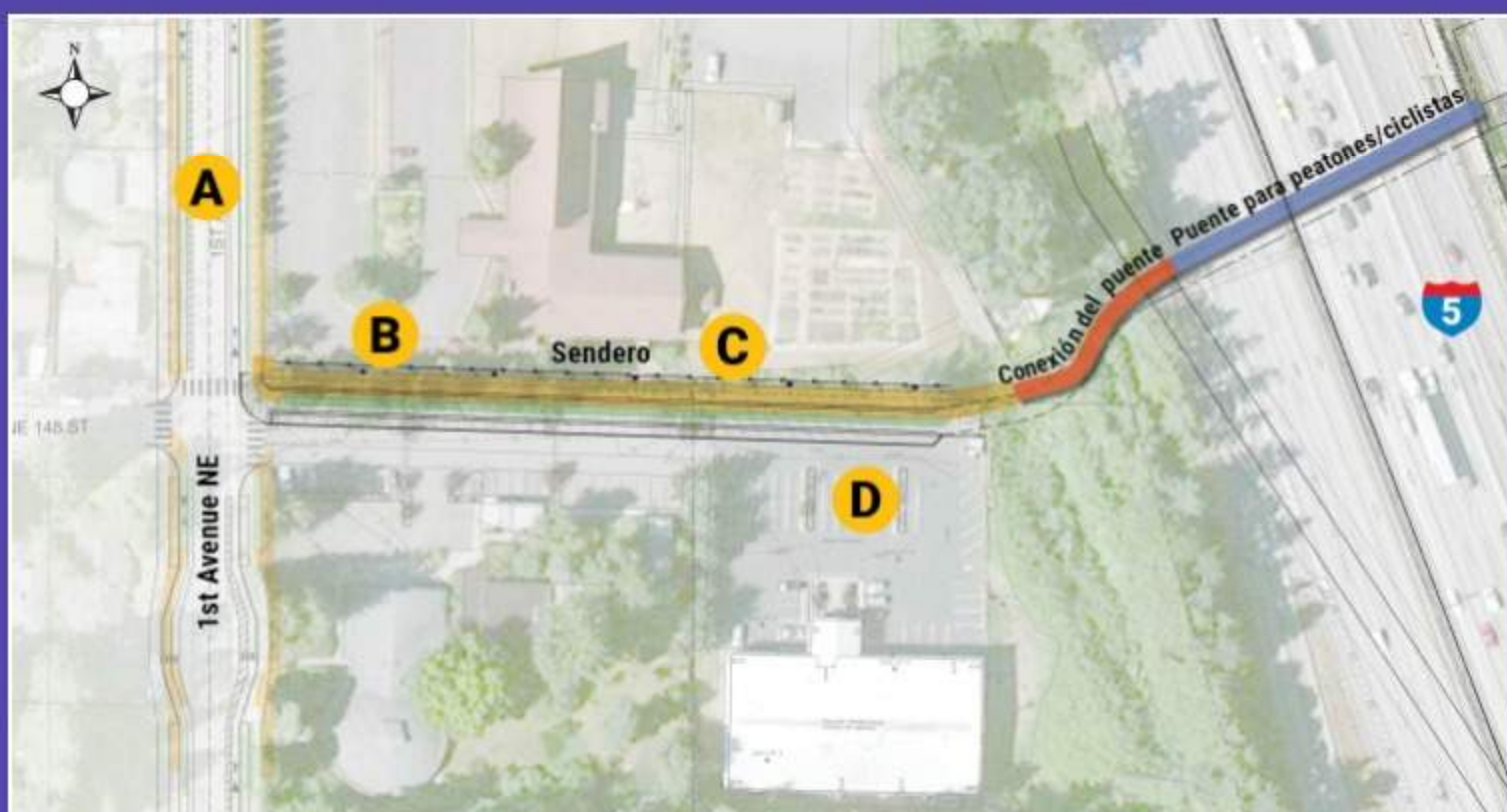
- ☐ Opción 1: Construcción mínima
- ☐ Opción 2: Construcción completa

¿Hay algo que cree que deberíamos tomar en cuenta al evaluar estas opciones para la conexión del sendero oeste?

[ENVIAR](#)[> SIGUIENTE](#)[< ANTERIOR](#)

### Opción 2: Construcción completa

#### VISTA DESDE ARRIBA



#### LEYENDA

- A 1ST AVENUE NE:** Las mejoras a 1st Avenue NE podrían llevarse a cabo como un proyecto independiente en el futuro.
- B BICICLETAS:** Las bicicletas compartirán el sendero con los peatones.
- C SENDERO:** Los peatones y ciclistas usarán un camino compartido de 4.8 metros que se conecta al puente y que tiene un borde de paisajismo e iluminación entre el camino y las instalaciones de la iglesia. Con esta opción, la gente tendría que ingresar a las secciones de las instalaciones de las iglesias contiguas.
- D ESTACIONAMIENTO:** Para crear un sendero más ancho, es posible que se eliminen algunos cajones de estacionamiento. La ciudad está buscando opciones para reubicar el estacionamiento del lado oeste del puente.

Haga clic aquí para agrandar la vista desde arriba.

#### SECCIÓN REPRESENTATIVA TÍPICA

Con vista al oeste hacia 1st Avenue NE



Haga clic aquí para agrandar la sección representativa.

#### CONTACTO:

Si desea comunicarse con la ciudad de Shoreline o consultar un documento en otro idioma, envíe su solicitud junto con su información de contacto a [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) o llame al 206-801-2700.

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#### COMPARTIR ESTE SITIO:



#### SÍGANOS:





# Puente para vehículos no motorizados en N 148th Street

Un puente para peatones y ciclistas que conecta a las personas con vecindarios y transporte público regional

[INICIO](#)[DESCRIPCIÓN GENERAL DEL PROYECTO](#)[CALENDARIO](#)[PUENTE](#)[CONEXIÓN DEL SENDERO OESTE](#)[RELLANO ESTE DEL PUENTE](#)[SU OPINIÓN ES MUY IMPORTANTE](#)[¿CUÁL ES EL SIGUIENTE PASO?](#)

## JORNADA ABIERTA EN LÍNEA

## Rellano este del puente

El rellano este del puente, del lado este de la I-5, llevará a los transeúntes a la futura estación South Shoreline/N 145th, donde podrán subirse al tren ligero o los autobuses de Sound Transit o acceder al futuro proyecto Trail Along the Rail a pie o en bicicleta. La estación de Sound Transit incluirá estacionamiento para bicicletas. Todas las opciones de diseño incluirán:

- Un puente y una rampa que cruzarán las vías del tren ligero de Sound Transit por abajo.
- Cumplimiento con las normas de la Ley de estadounidenses con discapacidades (ADA).
- Un muro permanente a prueba de ruido por debajo del puente, contiguo a la carretera.
- Conexiones con el proyecto Trail Along the Rail.
- Todos los senderos, rampas y escaleras exteriores que estén en la zona de la estación tendrán iluminación.
- El estacionamiento del tren ligero de Sound Transit tendrá espacio para 500 vehículos.

### Opción 1: Rampa en "A"



#### LEYENDA

- A** Rampa: Esta opción de rampa tiene una forma angular y una pendiente más pronunciada que las otras opciones (pendiente promedio del 6.5 % hacia la estación).
- B** Escaleras: La gente también puede bajar por las escaleras para llegar a la estación.
- C** Las vías del tren ligero de Sound Transit pasarán por arriba de la rampa y las escaleras hacia la estación. En su punto más bajo, el espacio entre el puente y las vías del tren ligero es de aproximadamente 2.4 metros.

Haga clic aquí para agrandar la imagen.

### Opción 2: Rampa en zigzag



#### LEYENDA

- A** Rampa: Una rampa en zigzag es una rampa más gradual (con una pendiente de aproximadamente el 4 %) hacia la estación.
- B** Escaleras: La gente también puede bajar por las escaleras para llegar a la estación.
- C** Las vías del tren ligero de Sound Transit pasarán por arriba de la rampa y las escaleras hacia la estación. En su punto más bajo, el espacio entre el puente y las vías del tren ligero es de un poco más de 2.7 metros.

Haga clic aquí para agrandar la imagen.

### Opción 3: Rampa directa



#### LEYENDA

- A** Rampa: Esta rampa ofrece conexiones directas tanto a la estación como al proyecto contiguo Trail Along the Rail. La rampa también está menos empujada (pendiente del 4 %) que la opción 1. El diseño no requiere escaleras para llegar a la estación.
- B** Las vías del tren ligero de Sound Transit pasarán por arriba de la rampa hacia la estación. En su punto más bajo, el espacio entre el puente y las vías del tren ligero es de aproximadamente entre 2.6 y 2.7 metros.

Haga clic aquí para agrandar la imagen.

¿Está usando una computadora compartida o pública? Si puede ver las respuestas que alguien más dio a la encuesta, haga clic en el botón de reiniciar para comenzar su propia encuesta.

[REINICIAR](#)

## Comparta su opinión sobre el diseño del rellano este del puente:

### Opción 1: Rampa en "A"

¿Qué le agrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño de la rampa
- ☐ Altura libre desde las vías de Sound Transit
- ☐ Conexión a la estación del tren ligero
- ☐ Conexiones al proyecto Trail Along the Rail
- ☐ Senderos para peatones y ciclistas
- ☐ Acceso a la estación por las escaleras
- ☐ Otro *ESPECIFIQUE:*

¿Qué le desagrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño de la rampa
- ☐ Altura libre desde las vías de Sound Transit
- ☐ Conexión a la estación del tren ligero
- ☐ Conexiones al proyecto Trail Along the Rail
- ☐ Senderos para peatones y ciclistas
- ☐ Acceso a la estación por las escaleras
- ☐ Otro *ESPECIFIQUE:*

### Opción 2: Rampa en zigzag

¿Qué le agrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño de la rampa
- ☐ Altura libre desde las vías de Sound Transit
- ☐ Conexión a la estación del tren ligero
- ☐ Conexiones al proyecto Trail Along the Rail
- ☐ Senderos para peatones y ciclistas
- ☐ Acceso a la estación por las escaleras
- ☐ Otro *ESPECIFIQUE:*

¿Qué le desagrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño de la rampa
- ☐ Altura libre desde las vías de Sound Transit
- ☐ Conexión a la estación del tren ligero
- ☐ Conexiones al proyecto Trail Along the Rail
- ☐ Senderos para peatones y ciclistas
- ☐ Acceso a la estación por las escaleras
- ☐ Otro *ESPECIFIQUE:*

### Opción 3: Rampa directa

¿Qué le agrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño de la rampa
- ☐ Altura libre desde las vías de Sound Transit
- ☐ Conexión a la estación del tren ligero
- ☐ Conexiones al proyecto Trail Along the Rail
- ☐ Senderos para peatones y ciclistas
- ☐ Que no haya acceso a la estación por las escaleras
- ☐ Otro *ESPECIFIQUE:*

¿Qué le desagrada de esta opción? MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.

- ☐ Diseño de la rampa
- ☐ Altura libre desde las vías de Sound Transit
- ☐ Conexión a la estación del tren ligero
- ☐ Conexiones al proyecto Trail Along the Rail
- ☐ Senderos para peatones y ciclistas
- ☐ Que no haya acceso a la estación por las escaleras
- ☐ Otro *ESPECIFIQUE:*

### Resumen

¿Cuál opción para el rellano este del puente prefiere?

- ☐ Opción 1: Rampa en "A"
- ☐ Opción 2: Rampa en zigzag
- ☐ Opción 3: Rampa directa

¿Hay algo que cree que deberíamos tomar en cuenta al evaluar estas opciones para el rellano este del puente?

[ENVIAR](#)[SIGUIENTE](#)[ANTERIOR](#)

#### CONTACTO:

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#### COMPARTIR ESTE SITIO:



#### SÍGANOS:





# Puente para vehículos no motorizados en N 148th Street

Un puente para peatones y ciclistas que conecta a las personas con vecindarios y transporte público regional

[INICIO](#)[DESCRIPCIÓN GENERAL DEL PROYECTO](#)[CALENDARIO](#)[PUENTE](#)[CONEXIÓN DEL SENDERO OESTE](#)[RELLANO ESTE DEL PUENTE](#)[SU OPINIÓN ES MUY IMPORTANTE](#)[¿CUÁL ES EL SIGUIENTE PASO?](#)

JORNADA ABIERTA EN LÍNEA

## Su opinión es muy importante

La opinión pública será fundamental para el diseño del puente y cómo lucirán, funcionarán e integrarán las rampas y los accesos en las comunidades en ambos lados de la I-5. Los miembros de la comunidad tendrán varias oportunidades para dar su opinión a lo largo del proceso de diseño. Queremos asegurarnos de que la labor de diseño y planeación del puente atienda sus prioridades y, a la vez, satisfaga las necesidades técnicas del proyecto.

*¿Está usando una computadora compartida o pública? Si puede ver las respuestas que alguien más dio a la encuesta, haga clic en el botón de reiniciar para comenzar su propia encuesta.*

[REINICIAR](#)

### Su opinión

¿Piensa usar el nuevo puente para vehículos no motorizados en N 148th Street?

- ☐ Sí
- ☐ No
- ☐ Aún no sé

Si piensa usar el puente, ¿qué medios de transporte planea usar? *MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.*

- ☐ Caminar
- ☐ Bicicleta
- ☐ Otros dispositivos recreativos con ruedas, como monopatines o patinetas
- ☐ Silla de ruedas u otro medio de transporte con asistencia
- ☐ Otro *ESPECIFIQUE:*

Si piensa usar el puente, ¿cuál será el motivo de sus recorridos? *MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.*

- ☐ Acceder al tren ligero en la estación South Shoreline/N 145th
- ☐ Acceder a los autobuses que están en o cerca de la estación South Shoreline/N 145th
- ☐ Acceder a otros vecindarios del lado oeste o este de la I-5
- ☐ Acceder a los senderos para ciclistas o peatones
- ☐ Otro *ESPECIFIQUE:*

Seleccione los tres criterios principales que son los más importantes para usted respecto a este proyecto. *SU OPINIÓN AYUDARÁ AL EQUIPO DEL PROYECTO A MEDIDA QUE EVALUAMOS CADA OPCIÓN DE DISEÑO.*

- ☐ Mantener un entorno seguro para la comunidad
- ☐ Mantener las opciones actuales de estacionamiento
- ☐ Minimizar el impacto a las propiedades aledañas
- ☐ Gestionar los costos del proyecto
- ☐ Minimizar el impacto de la obra
- ☐ Proteger los árboles maduros
- ☐ Mejorar los recorridos de los peatones (por ejemplo, las aceras y los cruces peatonales)
- ☐ Mejorar los recorridos en bicicleta
- ☐ Disminuir el tiempo de recorrido hacia la estación del tren ligero y la zona de autobuses
- ☐ Diseño visual y aspecto general
- ☐ Limitar la adquisición de la ciudad de propiedades privadas

*Comparta con nosotros un poco más de información sobre usted para que podamos entender qué tan incluyente ha sido nuestro contacto con la comunidad.*

¿Cuál es su código postal?

- ☐ 98133
- ☐ 98155
- ☐ 98160
- ☐ 98177
- ☐ Otro *ESPECIFIQUE:*

¿Qué edad tiene?

- ☐ 19 años o menos
- ☐ 20–24
- ☐ 25–34
- ☐ 35–44
- ☐ 45–54
- ☐ 55–64
- ☐ 65 o más
- ☐ Prefiero no decirlo

¿Cuál es su raza u origen étnico?

*MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.*

- ☐ Afroamericano o negro
- ☐ Indígena estadounidense o nativo de Alaska
- ☐ Asiático u originario de las islas del Pacífico
- ☐ Multirracial o birracial
- ☐ Hispano, español o latino
- ☐ Norteafricano o del Medio Oriente
- ☐ Blanco o caucásico
- ☐ Autoidentificación opcional
- ESPECIFIQUE:*
- ☐ Prefiero no decirlo

¿Cuál es el idioma principal que habla en su hogar?

- ☐ Américo o tigríña
- ☐ Inglés
- ☐ Coreano
- ☐ Mandarín o cantonés
- ☐ Español
- ☐ Tagalo
- ☐ Vietnamita
- ☐ Otro *ESPECIFIQUE:*

¿Con qué género se identifica?

- ☐ Mujer
- ☐ Hombre
- ☐ No binario
- ☐ Autoidentificación opcional
- ESPECIFIQUE:*
- ☐ Prefiero no decirlo

Do you have a disability? *MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.*

- ☐ Cognitiva
- ☐ Auditiva
- ☐ De movilidad
- ☐ Ninguna
- ☐ De la vista
- ☐ Autoidentificación opcional
- ESPECIFIQUE:*
- ☐ Prefiero no decirlo

¿Cuál es su situación de vivienda actual?

- ☐ Renta
- ☐ Vivienda propia
- ☐ Me quedo con amigos o parientes
- ☐ Sin vivienda
- ☐ Otro *ESPECIFIQUE:*
- ☐ Prefiero no decirlo

¿Cómo se enteró de este proyecto?

*MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.*

- ☐ Correo electrónico o sitio web de la ciudad de Shoreline
- ☐ Boletín de noticias
- ☐ Redes sociales
- ☐ Amigo(a)
- ☐ Mi empleador
- ☐ Una organización de la que formo parte
- ☐ Otro *ESPECIFIQUE:*
- ☐ Prefiero no decirlo

¿Cuál es la mejor manera de mantenernos en contacto con usted con relación a este proyecto? *MARQUE TODAS LAS RESPUESTAS QUE CORRESPONDAN.*

- ☐ Correo electrónico
- ☐ Redes sociales
- ☐ Asambleas comunitarias y jornadas abiertas
- ☐ Correo postal
- ☐ Otro *ESPECIFIQUE:*

¿Hay algo más que quisiera comentar acerca del proyecto del puente para vehículos no motorizados en N 148th?

[ENVIAR](#)[➤ SIGUIENTE](#)[➤ ANTERIOR](#)

#### CONTACTO:

Si desea comunicarse con la ciudad de Shoreline o consultar un documento en otro idioma, envíe su solicitud junto con su información de contacto a [clk@shorelinewa.gov](mailto:clk@shorelinewa.gov) o llame al 206-801-2700.

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#### COMPARTIR ESTE SITIO:



#### SÍGANOS:





# Puente para vehículos no motorizados en N 148th Street

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## JORNADA ABIERTA EN LÍNEA

## ¿Cuál es el siguiente paso?

### Cómo mantenerse involucrado

**GRACIAS POR VISITAR LA JORNADA ABIERTA EN LÍNEA Y DARNOS SU OPINIÓN.** Junto con las investigaciones y evaluaciones técnicas, su opinión ayudará a la ciudad a diseñar el puente para la comunidad. Le comunicaremos lo que dijo el público en asambleas comunitarias y jornadas abiertas en línea durante 2020.

**CONOZCA MÁS SOBRE ESTE PROYECTO** en el [sitio web del puente para vehículos no motorizados en N 148th Street](#).

### Destination 2024

El puente para vehículos no motorizados en N 148th Street es uno de los ocho proyectos de Destination 2024 dirigidos por la ciudad de Shoreline.

Con el fin de prepararnos para dos estaciones nuevas del tren ligero de Sound Transit en Shoreline, hemos planeado los cambios que se harán con la llegada de estas nuevas instalaciones. El concejo municipal ha incrementado las densidades de zonificación alrededor de las dos estaciones futuras de Shoreline South/145th y Shoreline North/185th para que las viviendas y los desarrollos se concentren en la zona de transporte. Para apoyar el desarrollo posterior, la ciudad también piensa hacer mejoras al transporte a fin de ayudar a la gente a llegar a la zona del tren ligero y alrededor de la estación.

Conozca más sobre los proyectos a continuación o visite el [sitio web de Destination 2024](#) y consulte nuestro nuevo mapa interactivo.

- [Proyecto del corredor de 145th \(I-5 a Aurora\)](#) (en inglés)
- [Proyecto para la intersección de 145th/I-5](#) (en inglés)
- [Aceras de 1st Avenue NE \(d ela calle 145th a la calle 155th\)](#) (en inglés)
- [Recanalización de 5th Avenue](#) (en inglés)
- [Red de ciclovías fuera del corredor vial](#) (en inglés)
- [Proyecto de autobuses de tránsito rápido \(BRT\) en las rutas estatales \(SR\) 522/523 \(autobuses de tránsito rápido en Bothell/Lake City Way y 145th Street\)](#) (en inglés)
- [Sendero a lo largo de las vías](#) (en inglés)

[< ANTERIOR](#)

### CONTACTO:

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### COMPARTIR ESTE SITIO:



### SÍGANOS:

