



Design Memorandum

Date: Tuesday, July 02, 2024

Project: Spring Boulevard: Zone 3 (124th - 130th) Temporary Bicycle Path

To: Marina Arakelyan, PE, City of Bellevue, Project Manager

From: Scott Johnson, PE, HDR
Paul Ferrier, PE, HDR

Purpose

The purpose of this memorandum is to provide an assessment of a low-cost alternative for establishing a temporary bicycle path between 124th Avenue NE and 130th Avenue NE, until funding becomes available for the full Spring Boulevard Zone 3 roadway construction (CIP PW-R-210). The memorandum documents the conceptual level design completed and provides a preliminary opinion of construction cost for the temporary bicycle path. The memorandum will outline the project areas, design descriptions of each area with benefits and drawbacks, and describe the risks present with this alternative.

Direction and Guidance for the Low-Cost Bicycle Path Concept

This design is intended to serve as an interim bicycle connection currently lacking in the existing condition. Therefore, the goal of the initial design concept was to determine a low initial cost alternative that would utilize existing pavement and existing gravel roadways where possible. Forward compatibility with the long-term vision for this corridor was not considered. The primary users for this facility are cyclists and the design is evaluating use by only cyclists. ADA compliance for pedestrians is not considered with the concept as it is intended solely for bicycles. The City of Bellevue Mobility and Implementation Plan (April 2022, Resolution No. 10085) is used as a guiding document for the types of facilities considered and while the area is not yet an arterial, level of service and level of traffic stress are considered relative to the existing use of existing pavement and access needs for vehicles on both the existing Spring Boulevard extension east of 124th Ave NE and Sound Transit access west of 130th Avenue NE. The intent of the bicycle path concept is to establish this connection as soon as possible by utilizing existing infrastructure and right-of-way when present in each area.

Project Areas and Design Description

An exhibit showing the bicycle path route and physical limits of each designated area for the low-cost alternative is included as Appendix A.

Area 1: NE Spring Blvd: Adding Sharrows on Existing Pavement

Area 1 is bounded by 124th Ave NE to the west and extends approximately 500' east until the City ROW ends. The proposed design makes use of the existing pavement on NE Spring Blvd and



does not include any roadway reconstruction. The installation of “sharrows”, a painted lane marking indicating bicycles and motorized users share the roadway. The access mixes both directions of bicycles with existing vehicular traffic to the Safeway and Coca Cola distribution facilities, and the City of Bellevue maintenance facility and pump station. Typical vehicles in this area are semi-trucks, delivery trucks, and passenger vehicles. The number of truck trips present throughout the day are approximately 300 round trips (in and out equals 1 trip).

The benefits of this design are the minimal cost and disruption to the existing condition. Pavement markings are relatively easy and quick to install and can be refreshed regularly with little cost and do not need regular maintenance. Signing would also be added to convey the use of the pavement by all users. Unlike a roadway reconstruction or construction of a separated Multi-Purpose-Pathway (MPP), the installation time is minimal for adding the sharrows and will not require any lengthy closures of Spring Blvd which could cause disruptions to the commercial traffic to Safeway and Coca Cola.

Drawbacks are generally safety and operations related. Due to the nature of sharrows, bicycles are mixed with vehicular traffic which can increase the likelihood of conflicts. This segment of NE Spring Blvd is mainly used for commercial purposes which includes semi-trailers which have larger turn radii and larger blind spots than typical passenger vehicles. This paired with a larger volume of bicycle traffic increases the risk for cyclists. The regular operations of the Safeway and Coca-Cola facilities could also be inhibited as commercial vehicles would be required to yield to non-motorized users as they navigate through this area.

Area 2: Safeway Parcel A: 12' Wide Asphalt Bicycle Trail

Area 2 is bounded by NE Spring Blvd to the west and the West Tributary to Kelsey Creek to the east. The proposed alignment for the bicycle trail follows along an existing maintenance access road to a City of Bellevue dam across the West Tributary. Because the existing access road is gravel, a full depth reconstruction to install an asphalt bicycle path is recommended through this area. The proposed bicycle path is 12-foot wide with an additional 2-foot gravel shoulder on each side for a total width of 16 feet. Along this segment, bi-directional bike lane pavement markings will be installed as well as lighting, as the area is not currently lit.

The benefits of this design are that it uses an existing roadbed so minimal regrading would be required and the same vertical profile as existing ground will be used. This road is currently used as a maintenance access road for the dam across the West Tributary and access will need to be maintained either by use of the bicycle path or, if roadbed width allows, the access vehicles could utilize what remains of the existing gravel access. Very infrequent vehicle use is expected in this area.

Drawbacks in this area are the ninety-degree corner at the transition point between Area 1 and Area 2. Bicycles would need to greatly reduce speed at this turn to navigate it. The addition of new pavement also presents a challenge for stormwater compliance and flow control regulations.

Area 3: Temporary 125' Span Bridge: 12' Wide Asphalt Bicycle Trail



Area 3 consists of a temporary 125' span prefabricated bridge. This bridge is required to span over the West Tributary to Kelsey Creek and the adjacent critical areas. The bottom of the bridge is required to be at a height required by fish passage guidance. There is also a grade difference on either side of the tributary which will be made up by the bridge between Area 2 and Area 4. The bridge will have approach slabs on either end and will be paved with asphalt pavement over the bridge deck and railings on either side of the bridge. Concrete abutments will be required as well as stemwall and wingwalls made of eco-blocks.

Benefits of this design include a consistent pathway width from Area 2 through the bridge. The bridge also provides a direct crossing of the stream and limits the distance someone needs to travel between 124th Avenue NE and 130th Avenue NE. There is no vehicular access across the bridge required and the bridge would be for bicycle access only.

Drawbacks in this area are limited to the cost of a prefabricated bridge structure and the potential impacts to wetland buffer that would need to be mitigated through the City's critical area permit process. The mitigation for wetland buffer impacts is expected to be development or creation of new buffer or enhancements to existing lower quality buffer within the same general project area.

Area 4: Evans Industrial Park: Adding Sharrows on Existing Pavement

Area 4 extends from the West Tributary to Kelsey Creek on the west to the 130th Avenue roadway on the east. There is existing pavement on the southern edge of the Sound Transit owned parcel that would be used for the access. The existing pavement has existing access easement rights for the Evans Industrial Park parcel underlying Sound Transit's ownership of this pavement. The proposed design makes use of the existing pavement and does not include any roadway reconstruction. The installation of "sharrows", a painted lane marking indicating bicyclists and motorized users sharing the roadway, are included in the proposed design to indicate to all users the cycling pathway. Lighting is proposed in this area due to the existing condition being poorly lit.

The benefits of this design are the minimal cost and disruption to the existing condition. Pavement markings are relatively easy and quick to install and can be refreshed regularly with little cost and do not need regular maintenance. Signing would also be added to convey the use of the pavement by all users. Unlike a roadway reconstruction or construction of a separated Multi-Purpose-Pathway (MPP), the installation time is minimal for adding the sharrows and will not require any lengthy closures of the access driveway which could cause disruptions to the commercial traffic to Evans Industrial Park and Sound Transit's site.

Drawbacks are safety and operations related. Due to the nature of sharrows, bicycles are mixed with vehicular traffic which can increase the likelihood of conflicts between users. This segment of the industrial park is used for commercial purposes which includes semi-trailers which have larger turn radii and larger blind spots than typical passenger vehicles. The business park has multiple access points along the area that are not well defined. Paired with a larger volume of bicycle traffic, the presence of the access points and commercial vehicles increase the risk for users. The regular operations of the business park could also be inhibited as commercial vehicles would be required to yield to bicycles as they navigate through this area. Another drawback is



the potential complications with the underlying access easement rights that Evans Industrial Park owns on the parcel. There is added right-of-way acquisition risk due to these underlying rights and it could extend the schedule and/or add cost to the acquisition of access rights to place a City owned bicycle path on this existing pavement.

Area 5: Connection to NE Spring Blvd: 12' Wide Asphalt Bicycle Trail

Area 5 is a short segment which runs north-south and connects the non-motorized route to 130th Ave NE with a segment of new 12-foot-wide asphalt trail with 2-foot gravel shoulders on each side and supported by a gravel embankment to the west. This connection is required due to the directional nature of the 130th Avenue NE bicycle facilities. The area 5 design will connect users to the crosswalks across 130th Avenue to complete the bicycle connection.

Benefits to this area include higher level of safety for cyclists due to being separated from vehicular traffic, as well as providing a logical connection to the existing bicycle facilities to the east.

Drawbacks to this design are where it connects to 130th Avenue relative to the bicycle facilities present at 130th Avenue and the designated bicycle crossings of 130th Avenue to reach Spring Boulevard to the east. The difference is approximately 100 feet of distance and to route cyclists properly includes ninety-degree corners in the bicycle route for transitioning from Area 4 to Area 5 along 130th Avenue and then to cross 130th Avenue. To implement this area bicycle route also requires construction of an embankment due to grade differences along 130th Avenue.

Risk Evaluation

ROW Acquisition

A significant source of risk with this alternative is the process of ROW Acquisition. ROW appraisal and acquisition can be a costly and lengthy process which could delay implementation of this design alternative. ROW is required from the Bellevue Parks parcel for Area 2 and Area 3 and from Sound Transit for Area 4 and Area 5. While the ROW need is for access easement rights and not full acquisition, there is still cost and schedule risk. Further complicating the ROW acquisition process, the Sound Transit parcel paved area identified in Area 4 has an underlying access easement right for the Evans Industrial Park parcel. The Evans parcel would need to be involved in the acquisition process. A secondary risk is that the City Parks Department is in early planning for a Park project on their parcel. There could be conflict between the implementation of a bicycle pathway and the Parks department plans for the area. This conflict could impact the ROW negotiation process.

Safety

As stated above, the bicycle path design proposed in area 1 and area 4 are not dedicated bicycle spaces and are mixed with motor vehicles. In Areas 1 and 4, sharrows are proposed through areas with high percentages of heavy vehicles and commercial traffic which could have high risk to cyclist safety and could cause delay in operations at both the Safeway and Coca-Cola bottling facilities and the Evans Industrial Park. The facility is designed solely for bicycles, but it is



expected that pedestrians may try to use the facility as well. The facility is not designed for pedestrian ADA accommodations and results in additional safety risks that would be difficult to prevent in practical design.

Lighting

Lighting levels for dedicated trail facilities are not present at any point along this alternative. The alternative recommends lighting be added in areas 2, 3, and 4 at a minimum to provide a measure of safety outside of typical daylight hours. Additional lighting in Area 1 may also be considered for increased safety as there is some existing lighting but it isn't meeting city standards.

Environmental Approvals

The bridge over West Tributary will span the stream and most of the existing buffer on either side of the stream. This is anticipated to lessen the risk of environmental approvals. However, there is still a level of schedule risk, and the changing requirements of environmental permits pose a risk to the project schedule as well.

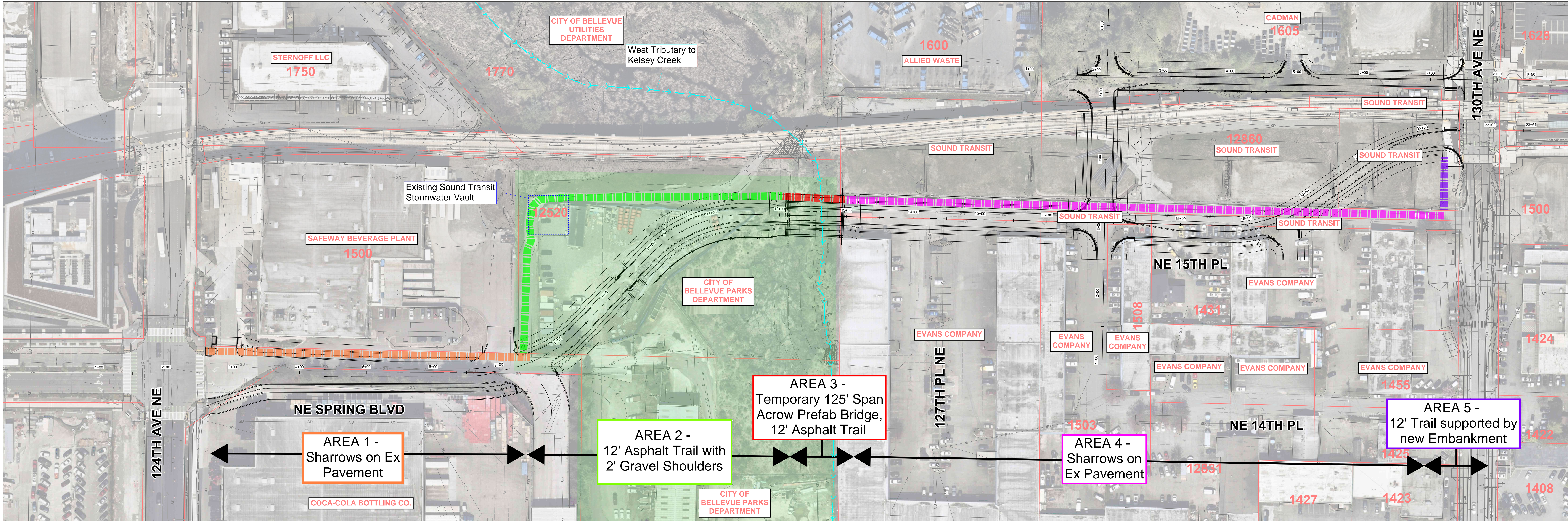
Schedule










The construction of the bicycle path could potentially start in Spring/Summer of 2026 pending availability of funding, completion of design, obtaining all required environmental permits and construction permits, and completion of ROW acquisition activities. The risks to schedule, documented in this memorandum, would impact this date.

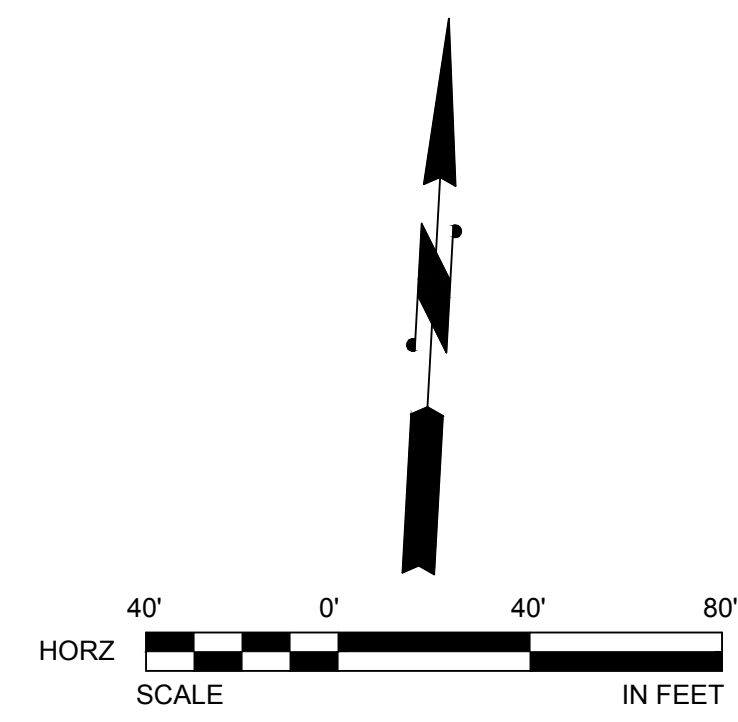
Cost

The planning level estimate for design and construction is based on conceptual design and is included in Appendix B. The ROW cost shown in the estimate is assuming there isn't a cost for transfer of rights on the City Parks Department parcel.

APPENDIX A



-  Existing Pavement, Existing City ROW
-  Pervious Area, Acquire Private Easement (Sound Transit)
-  Bridge Over West Trib, Existing City Parks Property
-  Existing Pavement, Acquire Private ROW/Easement (Sound Transit + Evans Industrial Park Rights)
-  Existing Gravel, Existing City Parks Property
-  Proposed Zone 3 Roadway Alignment
-  Stream Channel (West Tributary to Kelsey Creek)
-  Ordinary High Water Mark for Stream
-  Parcel Boundaries



APPENDIX B

OPINION OF PROBABLE COST AT PLANNING LEVEL

PROJECT: Spring Boulevard Zone 3 - 124th to 130th (Temporary Bicycle Path)

CIP NO.

DATE: 7/1/2024

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				\$2,250,000
II. CONSTRUCTION				
1. Grading/Drainage	\$212,715			
1.A) Clear, Grub, Demo, Removal	\$ 37,615	1.D) Drainage (WQ/Det/Conv)	\$ 100,000	
1.B) Roadway Excav./Unsuit.	\$ 31,800	1.E) NDP	\$ -	
1.C) CSTC, Gravel Borrow	\$ 43,300			
2. Structures	\$853,500			
2.A) Retaining Walls	\$ 16,000			
2.B) Railings and Fences	\$ 87,500			
2.C) Bridge	\$ 750,000			
3. Surfacing/Paving	\$39,120			
3.A) Pavement/Shldrs	\$ 39,120			
3.B) Curb Gutter & Sidewalk	\$ -			
4. Roadside Development	\$47,743			
4.A) Landscaping	\$ 11,560			
4.B) Temp Erosion Control	\$ 36,183			
4.C) Site Improvements	N/A			
4.D) Utilities	\$ -			
4.D) Utilities - Taxed (Sched B)	\$ -			
5. Traffic Services & Safety	\$ 138,386			
5.A) Traffic Control	\$ 53,386	5.E) Channelization	N/A	
5.B) Signals	\$ -	5.F) Traffic Control Labor	N/A	
5.C) Illumination (Roadway)	\$ 60,000			
5.D) Signing & Striping	\$ 25,000			
6. Miscellaneous Items Not Yet Estimated	\$258,293			
20.0% of (Lines 1 through 5)				\$1,549,758
7. Allowance for 5%-Level Accuracy	\$387,439			
25.0% of (Lines 1 through 6)				
8. Mobilization, Survey, Potholing	\$232,464			
15% of (Line 1 through 6)				\$2,169,661
9. Sales Tax	\$0			
10.1% of (Utilities - Line 4.D)				
10. Construction Work by Others at Owner's Expense	\$0			
Construction Work by Others				
11. Agreements	\$0			
Utility Agreements, etc.				\$2,169,661
12. Construction Engineering	\$216,966			
10.0% of (Lines 1 through 10)				
13. Construction Contingency	\$216,966			
10.0% of (Lines 1 through 10)				\$2,603,593
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering and Permitting (Consultant Contract)	\$325,449			
15.0% of (CONSTRUCTION cost not incl contingency)				
2. Agency Administration	\$216,966			
10.0% of (CONSTRUCTION cost not incl contingency)				
3. Alignment Survey	\$43,393			
2.0% of (CONSTRUCTION cost not incl contingency)				
				\$585,808
TOTAL ESTIMATED COST (UNADJUSTED 2024 DOLLARS)				\$5,439,401

Assumptions:

1. Estimate calculated in 2024 dollars.
2. Estimate is based on Conceptual <5% Design
3. ROW - assumed acquiring the bike access easement from ST and Evans