

Washington Park Arboretum



North Entry and Multi-Use Trail Project

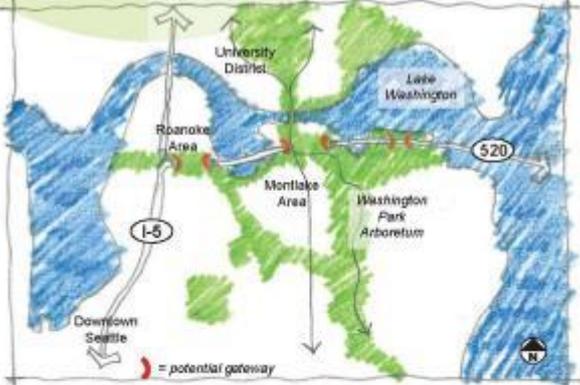
SR 520 Project Vision - Nature Meets City



A conceptual-level diagram of the potential natural (east-west) and urban (north-south) axes that define the Seattle corridor

OVERALL VISION

The SR 520 project corridor will be the premier gateway to the City of Seattle by reconnecting to the early Seattle vision of **“Nature meets City”**



Building on the Olmsted parks and boulevard plan legacy

DRAFT November 1, 2012



Enhancing Natural Habitat and Cultural Assets with West Approach Bridge



Design Improvements

- A** Minimize overall footprint of corridor and construct new roadway within the existing road footprint to the extent feasible, including narrowing roadway design to minimize right-of-way acquisitions and impacts on neighborhoods, parks and the environment
- B** Increase the West Approach bridge height to reduce intensity of shading over open water and wetlands and increase available light for fish habitat
- C** Minimize construction impacts such as fill to the aquatic and wetland environment by using long-span precast girders between piers and reducing in-water structure
- D** Provide gap between east and westbound structures for potential future light rail and to allow light and habitat enhancement for fish and other aquatic life
- E** Raise bridge structure at Foster Island for safer pedestrian connections under SR 520
- F** Reduce impacts on traditional tribal cultural lands at Foster Island by mending on-land structures/takams structure and consult with Arboretum and tribes on ethnobotanical planting plan and interpretive signage
- G** Increase recreational opportunities by enhancing trail connections, providing physical and visual shoreline access and preserving views, and access under the West Approach bridge

- H** Create new nonmotorized commuting alternatives and recreational connections with regional shared-use path that connects Eastside with local and regional trails in Seattle
- I** Provide new north-south nonmotorized link between Arboretum and East Montlake Park with multi-use trail at east Montlake link undercrossing
- J** Improve water quality and fish habitat by providing enhanced treatment of stormwater from West Approach bridge and floating bridge, which is currently not treated, through creation of integrated constructed wetland
- K** Increase the West Approach bridge height to allow gravity-fed stormwater conveyance to stormwater facility and avoid use of electric pumps
- L** Improve mobility and reduce greenhouse gas emissions, annual vehicle-miles traveled and energy consumption through tolling and traffic flow improvements, including dedicated transit/HOV lanes
- M** Recycle construction site materials and reduce amount of new construction materials

Project Commitments

- N** Meet Section 108 commitments to consult with stakeholders to develop an aesthetic design for the West Approach bridge and surrounding area, develop a landscape design for the WSDOT peninsula, and develop and implement a treatment plan for Foster Island
- O** Maximize noise mitigation by enhancing Union Bay Natural Area wetland
- P** Maximize noise mitigation by enhancing wetland habitat and open space at WSDOT peninsula, including removal Lake Washington Boulevard camps in Washington Park Arboretum
- Q** Maximize noise mitigation for affected off-site recreational properties at Washington Park Arboretum and East Montlake Park by supporting creation of public park at University of Washington Bryant Building site
- R** Support Washington Park Arboretum North Entry project
- S** Support Arboretum Waterford Trail boardwalk to Marsh Island as part of WSDOT shoreline permit conditions
- T** Mitigate for habitat impacts offsite at South Lake Washington, Seward Park, Bear Creek, Cedar River/Sleib Bridge and Taylor Creek with enhanced wetland and shoreline habitat











Today's Objectives

- Overview of the two projects
- Communicate the shared vision for the north entry
- Provide key points for further design review of the north entry
- Review design details for the multi-use trail
- Approval to proceed with implementation of the multi-use trail plan

Site Overview

North Entry

Multi-use trail

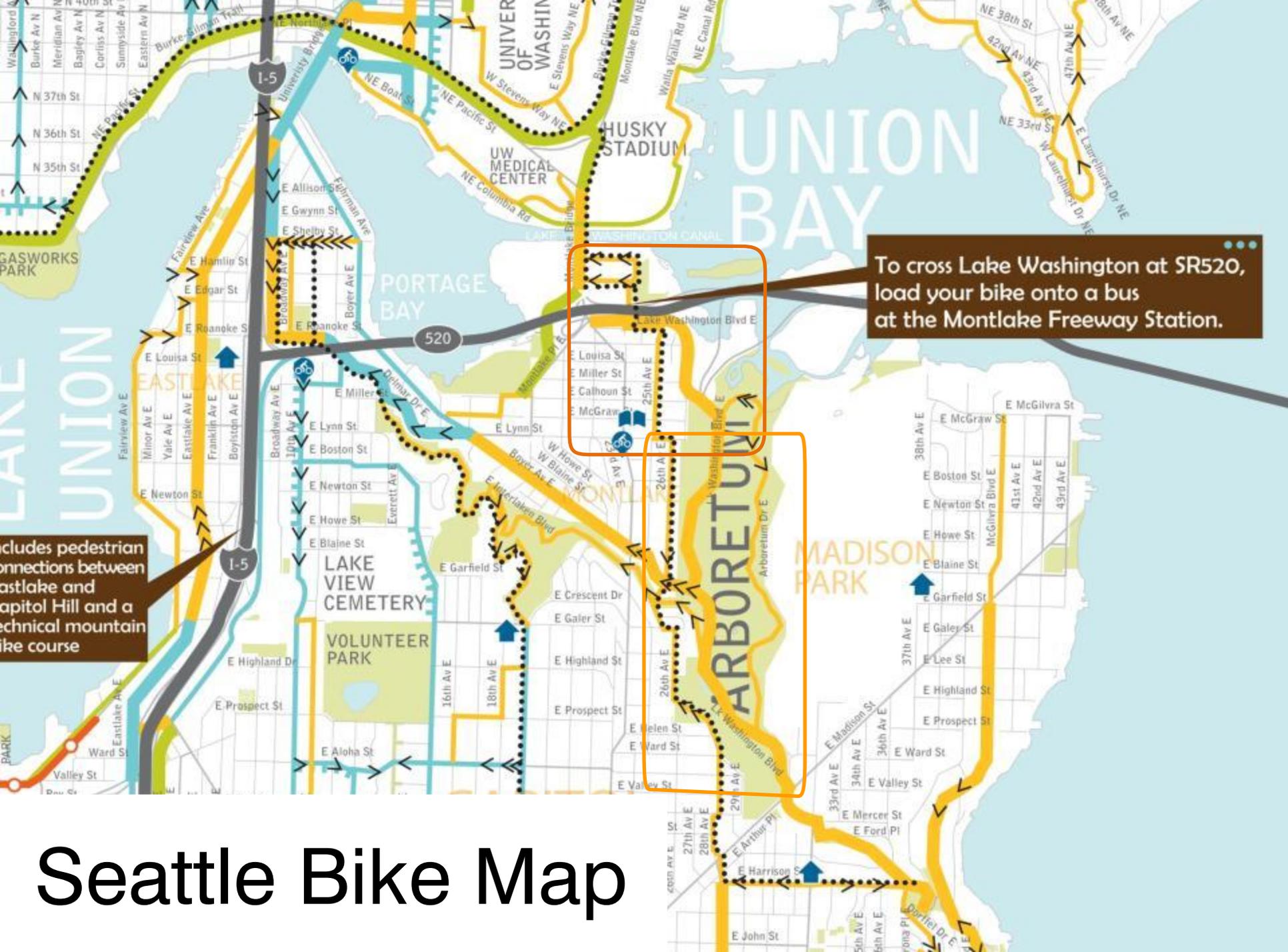




LEGEND

- WSDOT Connection Improvement
- City Bike Route
- Major trail route
- Seattle Shoreline Street Ends Program
- Community-identified gaps with potential responsible agency/stakeholder
- Community-proposed connections
- Potential activity nodes

SR 520 Bridge Design



To cross Lake Washington at SR520, load your bike onto a bus at the Montlake Freeway Station.

includes pedestrian connections between Eastlake and Capitol Hill and a technical mountain bike course

Seattle Bike Map

Greenways plan Montlake/Madison Park Neighborhoods

MAP LEGEND

Solid Green Line: Completed Greenway

Translucent Green: In progress/Greenway Funded

Red: Priority 1 Greenways to build next

Red Pin: Priority 1 intersections to build next

Narrow Purple Lines: Potential Greenway Routes (subject to change)

Purple Points: Potential Greenway intersection treatments

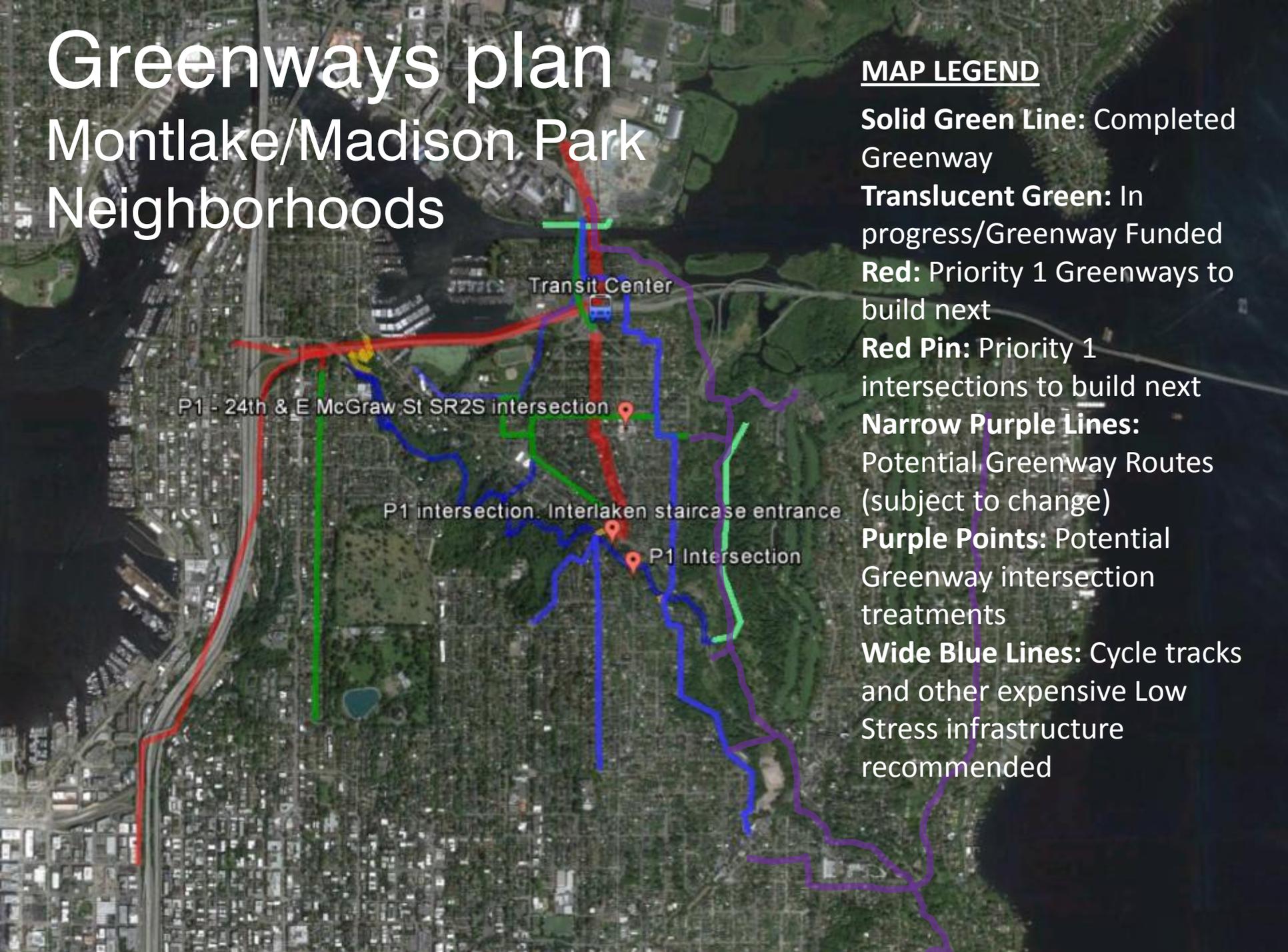
Wide Blue Lines: Cycle tracks and other expensive Low Stress infrastructure recommended

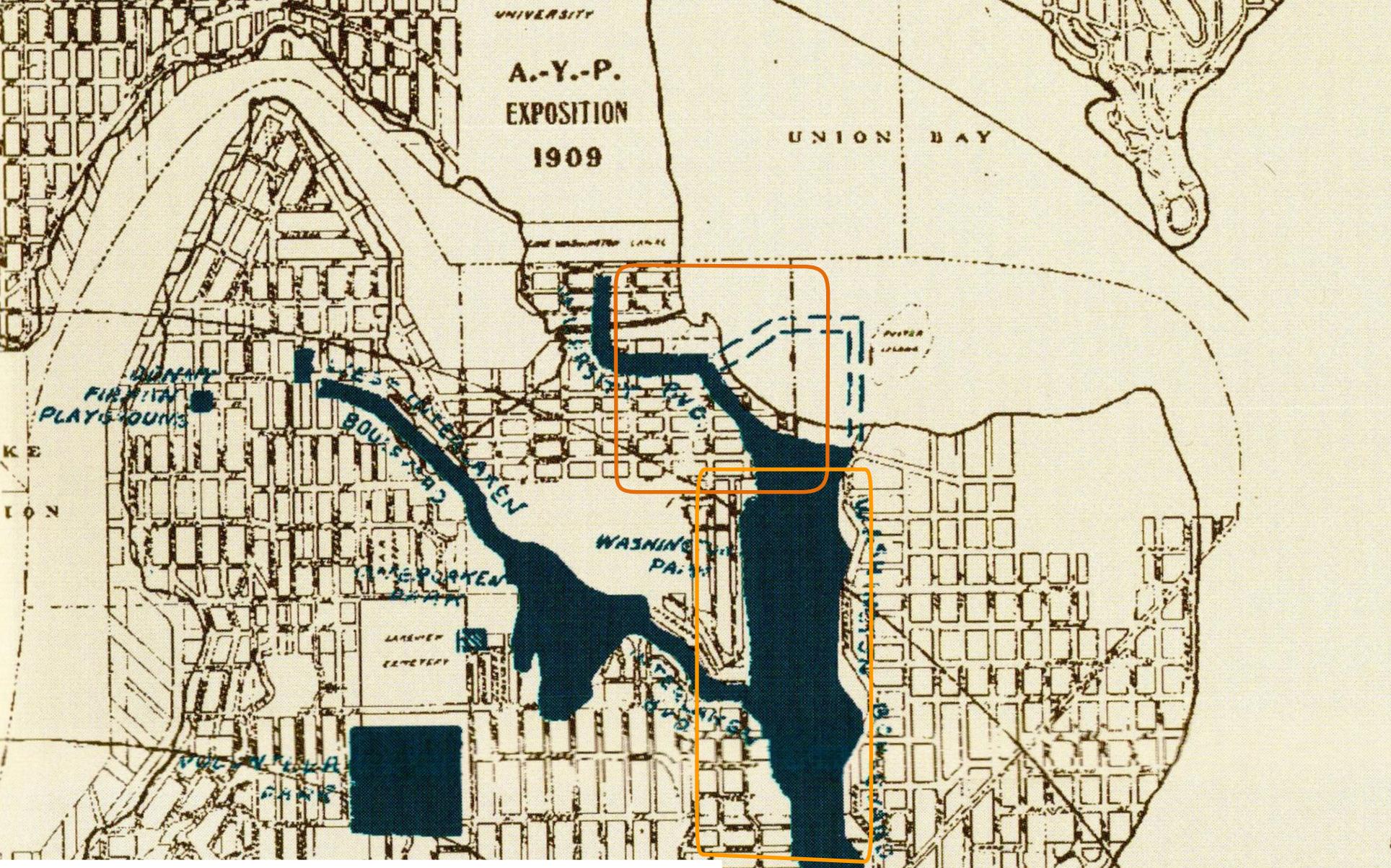
P1 - 24th & E McGraw St SR2S intersection

Transit Center

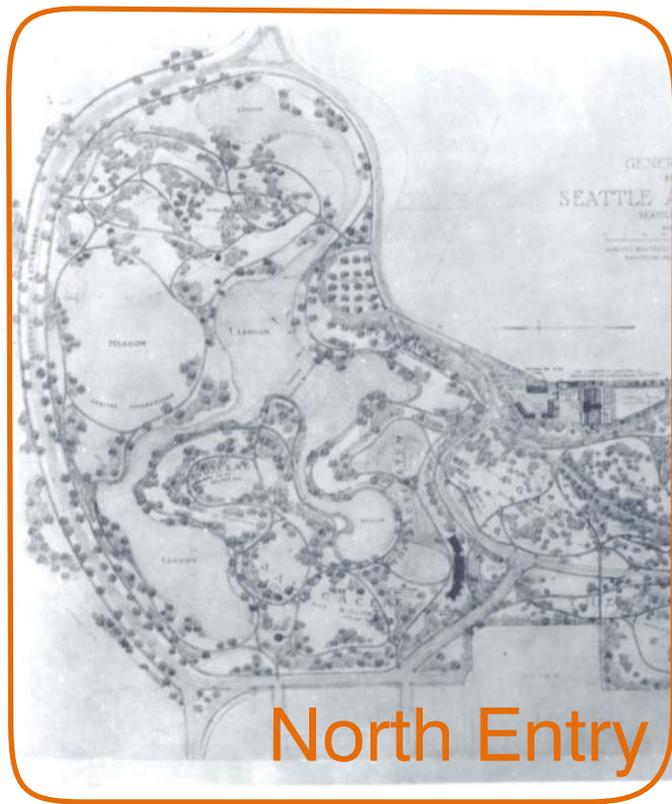
P1 intersection: Interlaken staircase entrance

P1 Intersection

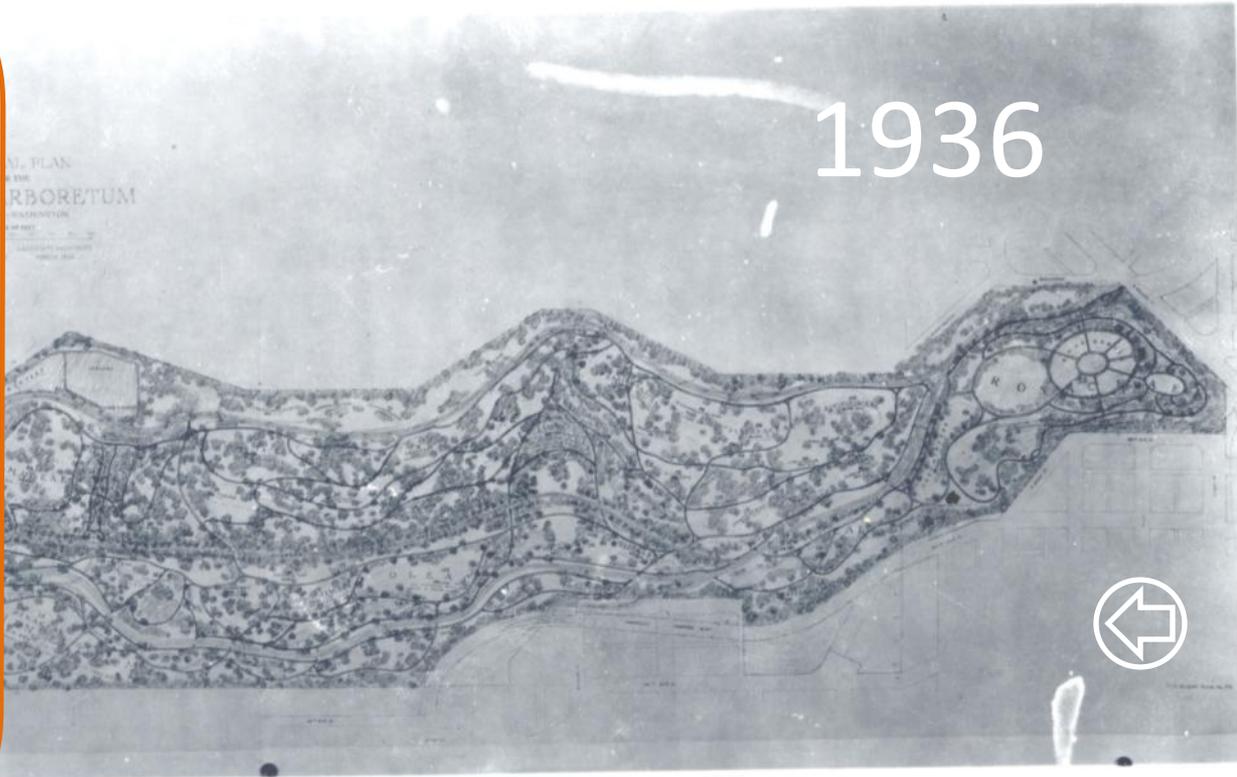




Olmsted Boulevard System



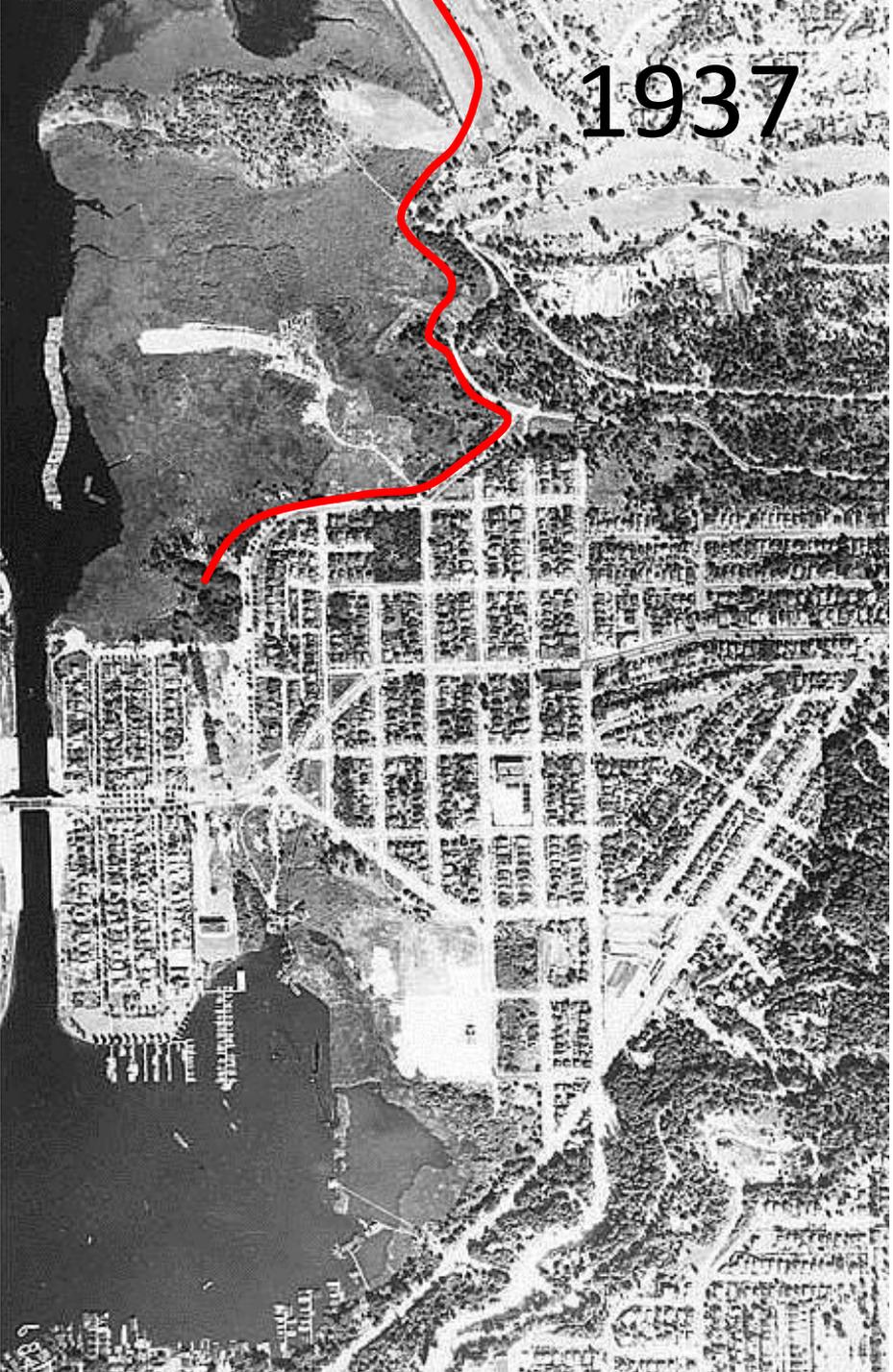
North Entry



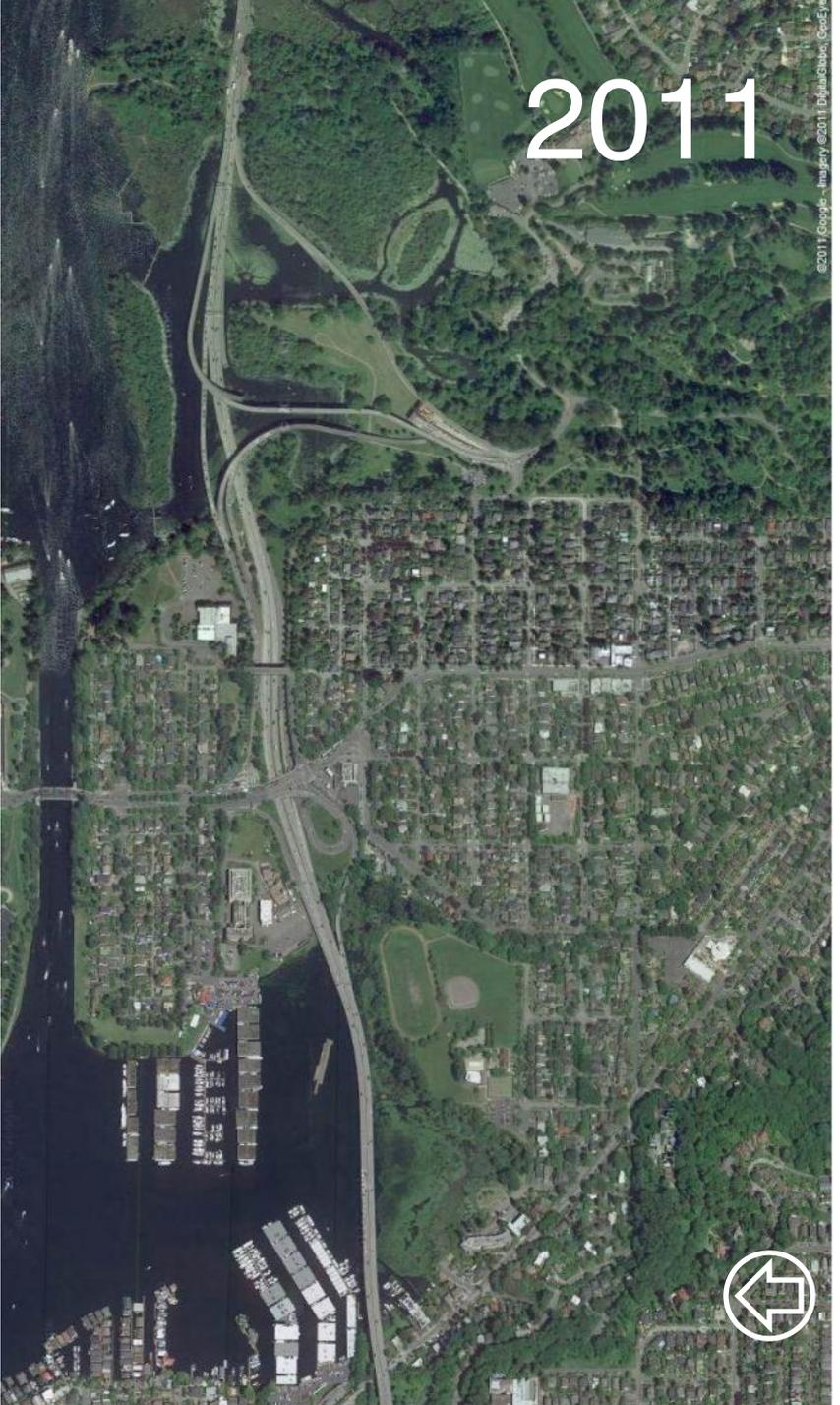
Photos courtesy of MSCUA, University of Washington Libraries



1937



2011



Context









Foster Island Bridge



Stone Cottage



Wilcox Footbridge



Stone path markers



SCALE: 1"=200'-0"

North Entry



Vision for the North Entry

- Gateway equally as powerful as the south entrance
- Return to the original Boulevard concept
- Multi modal connections to adjacent neighborhoods, UW, and 520
- Seamless transition to the 520 project
- Preserve open character of the WSDOT peninsula and create new vistas
- Enhance and Improve ecological function and integrate the WSDOT mitigation site
- Connection and expansion of the native forest (native matrix)
- Extend the parks perceived boundaries to encompass the Montlake lid
- Strengthen connections to the Union Bay Natural Area
- Draw from the historic character of the Arboretum, but provide a unique identity



Windermere Neighborhood

Arterial

Laurelhurst Neighborhood

University District

Burke Gilman

Bike Path

Montlake Lid

Montlake Neighborhood

Greenways

Olmsted Plan

Existing Parks

Capitol Hill Neighborhood

SR 520 Bridge Design

Madison Neighborhood

Multi-use Trail

Denny Blaine Neighborhood

Washington Park Arboretum

Madrona Neighborhood

Mann Neighborhood

Bike Lane

Key

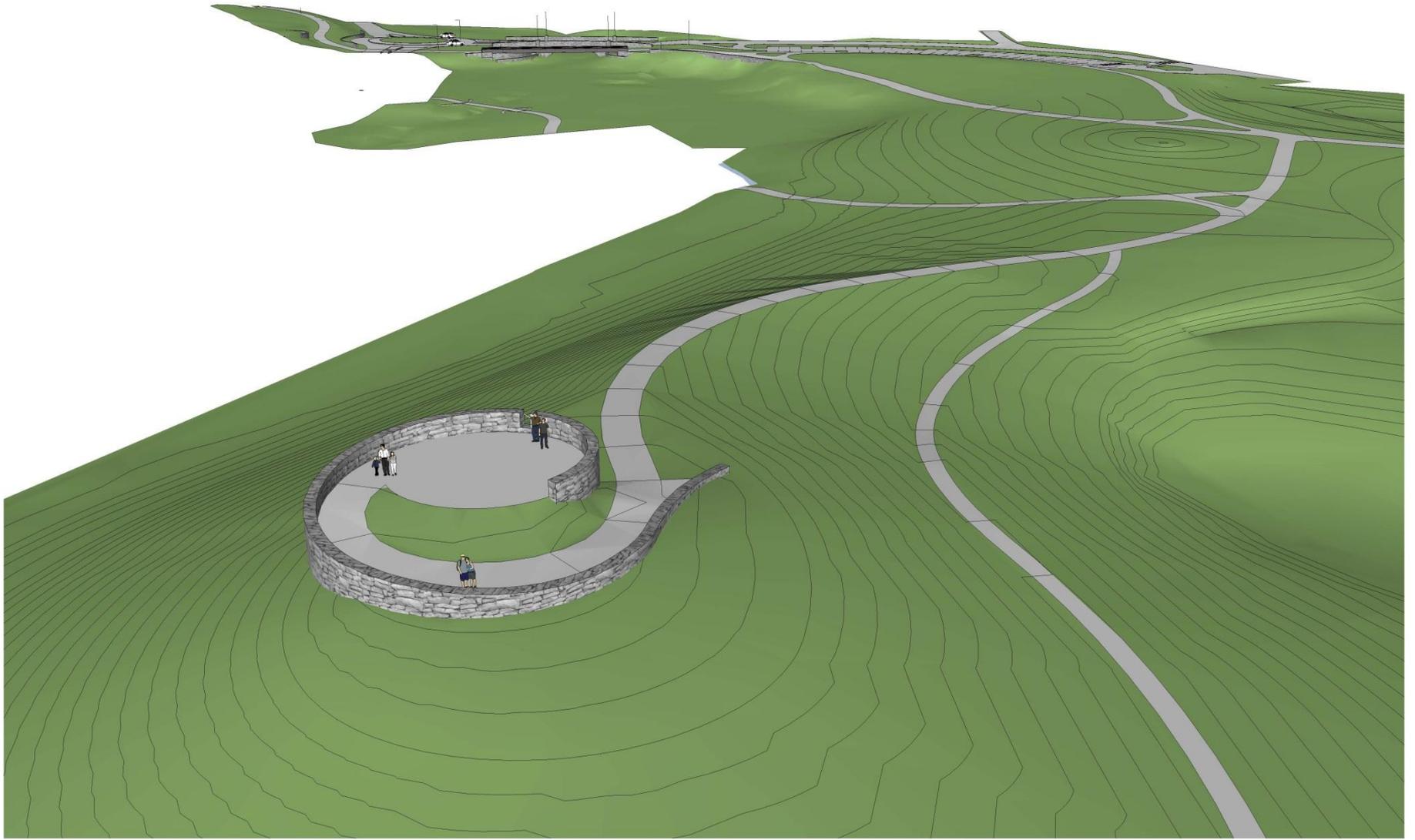
- a Daylight Arboretum Creek
- b Arboretum Creek Enhancements
- c Roundabout at intersection of E. Lake Washington Blvd. and Foster Island Drive.
- d Vehicular bridge
- e E. Lake Washington Blvd. restriped to include sharrows
- f Observation deck
- g Kayak landing
- h Overlook
- i Meadow mounds
- j Lawn
- k Existing trees to remain

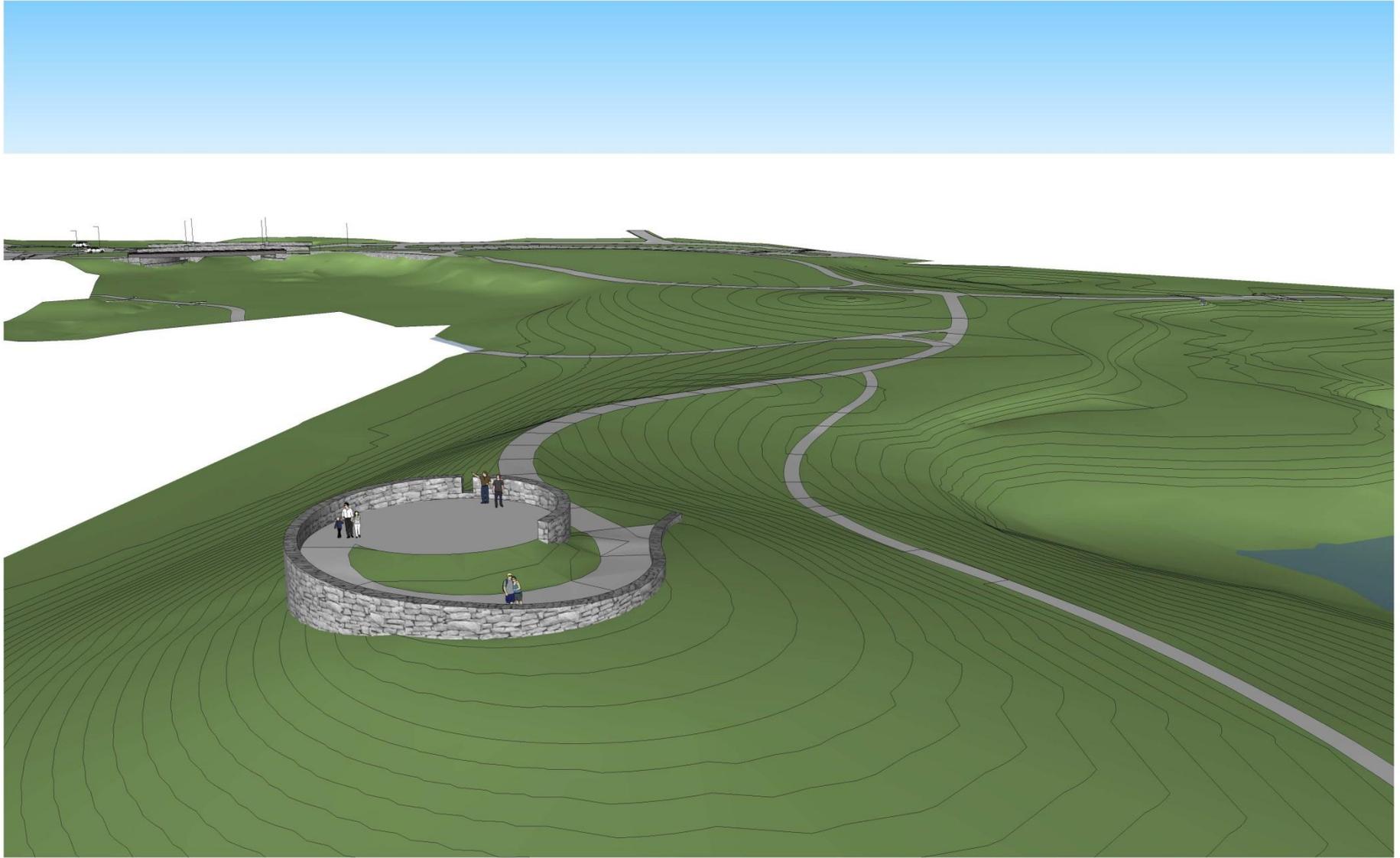


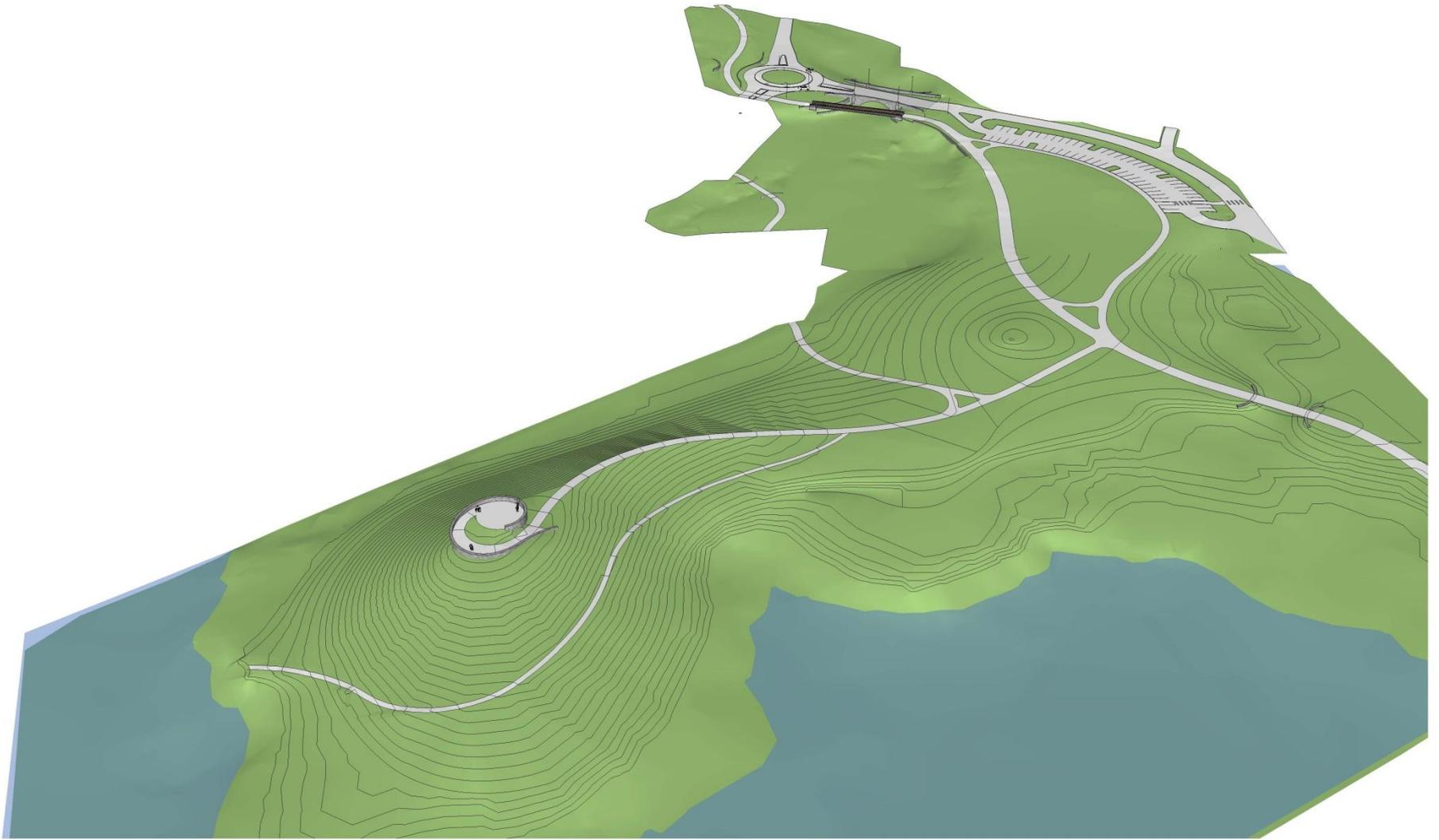
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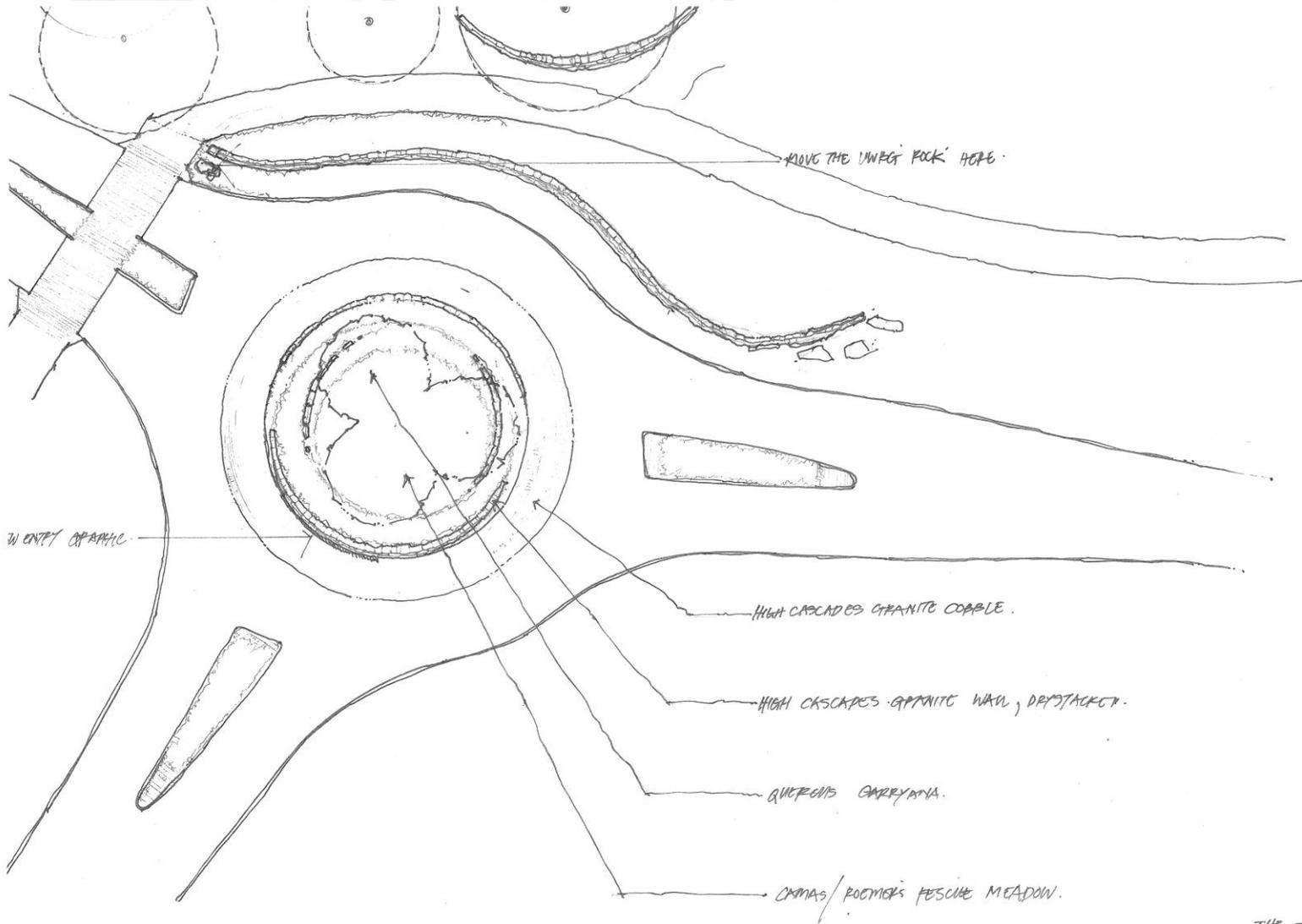
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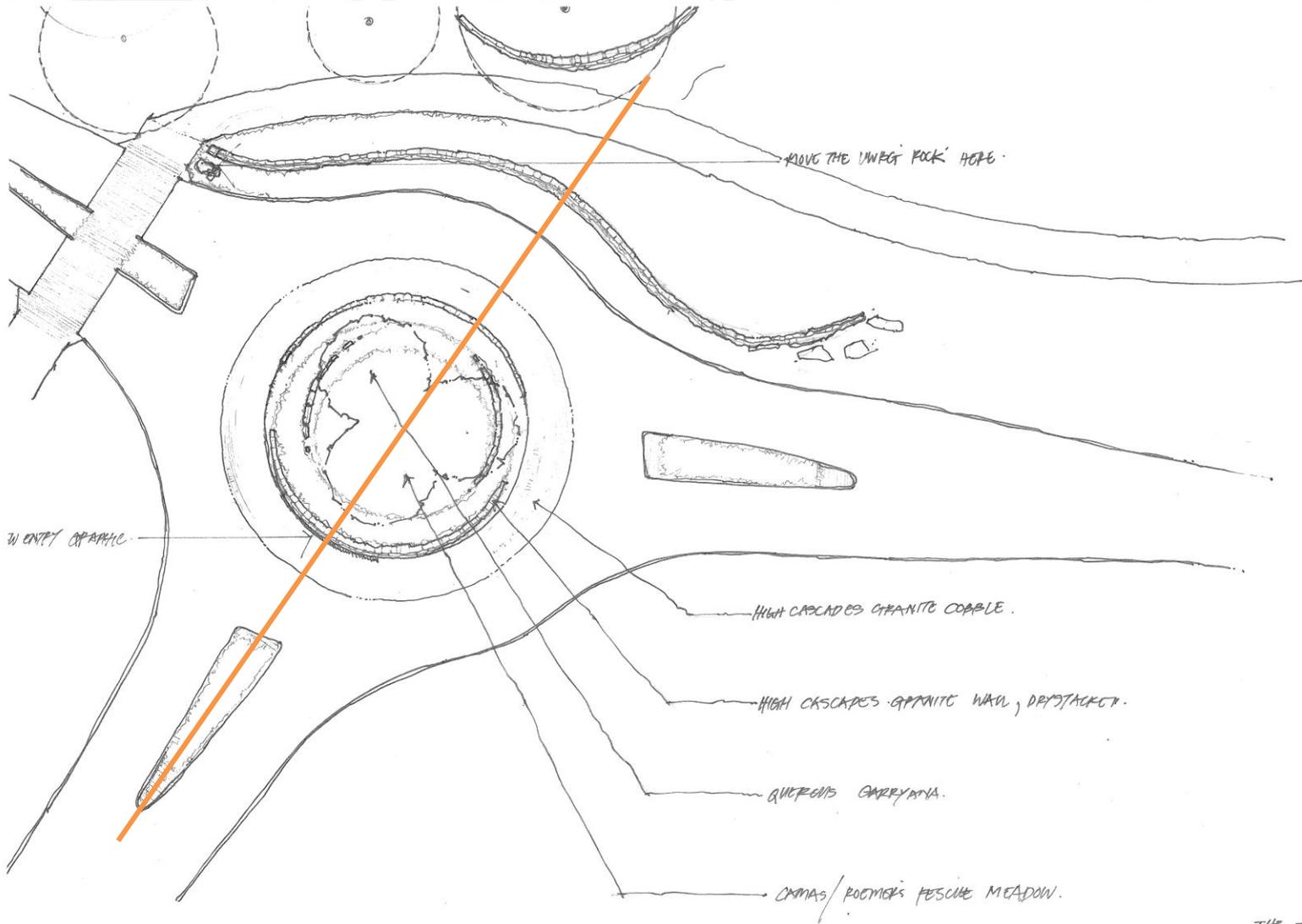








THE BRIC. 1" = 20'

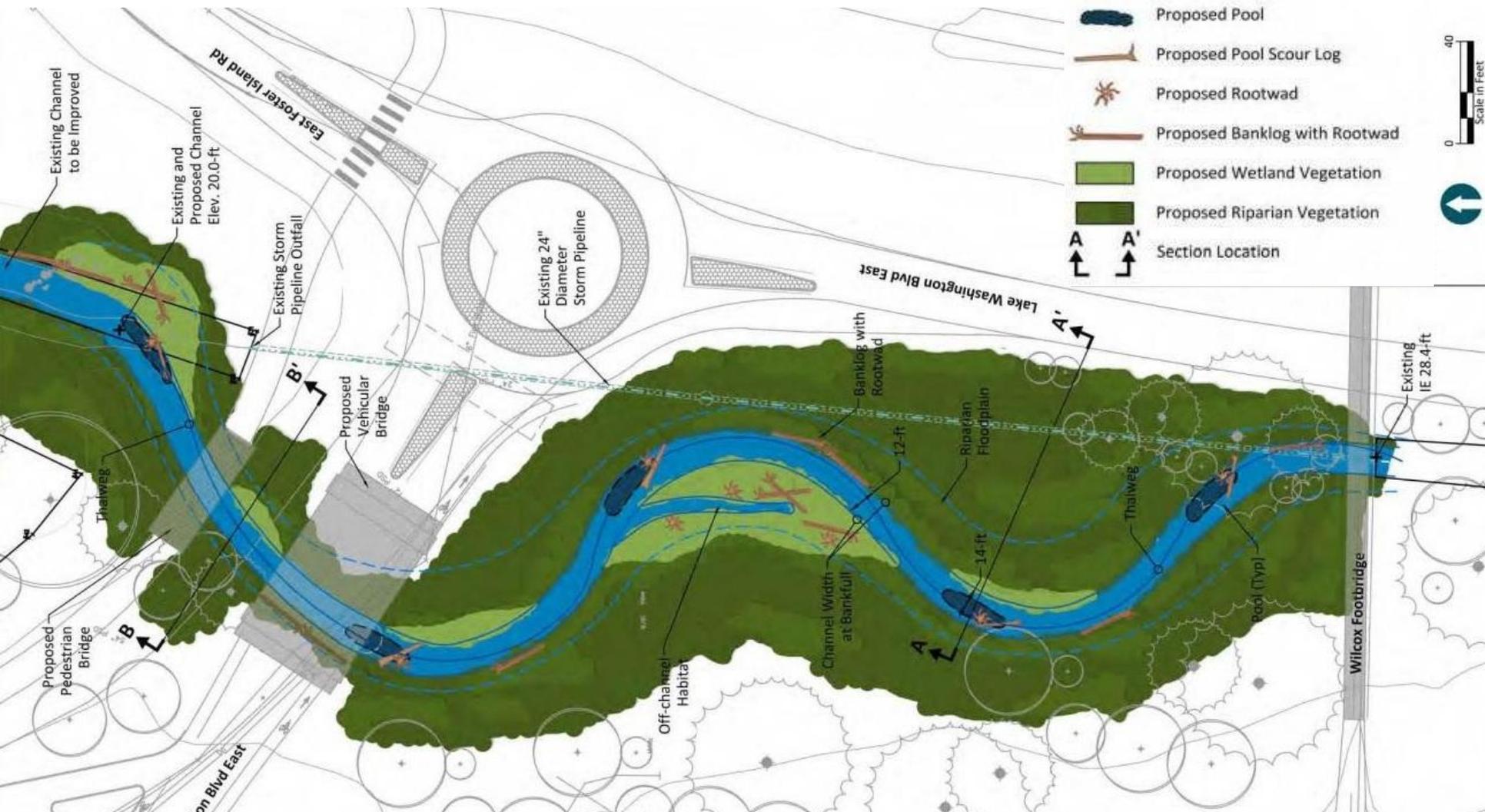


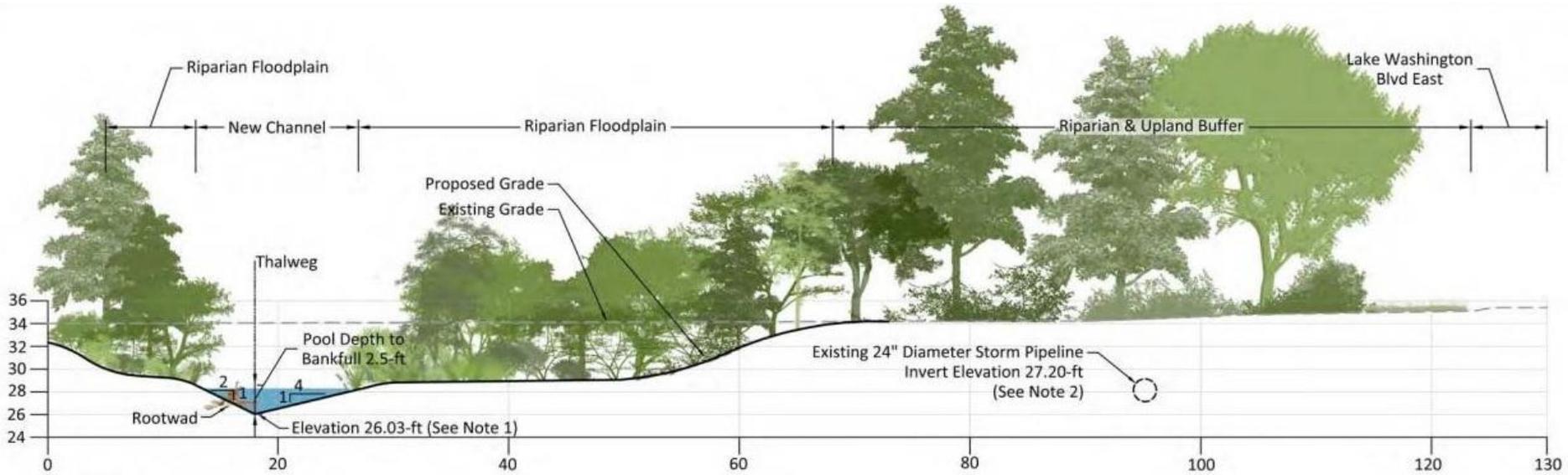
THE BRIC. 1" = 20'





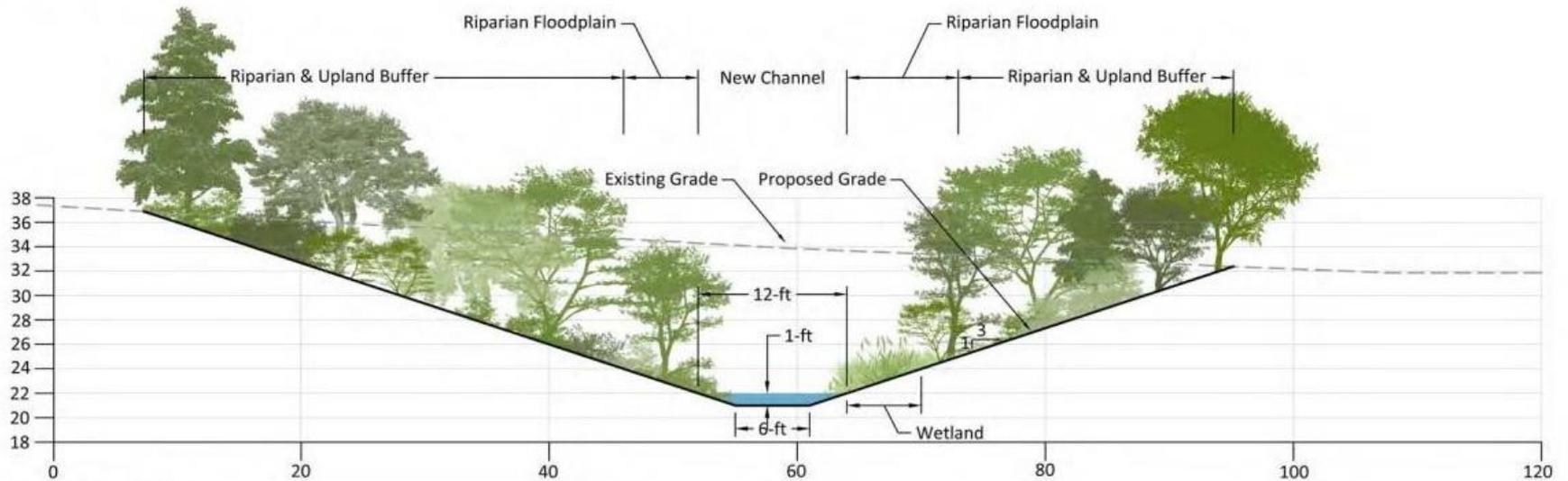
- LEGEND:**
- Existing Creek Alignment (Storm Pipeline and Outfall)
 - Proposed Thalweg
 - Proposed Riparian Floodplain Extent
 - Proposed Pool
 - Proposed Pool Scour Log
 - Proposed Rootwad
 - Proposed Banklog with Rootwad
 - Proposed Wetland Vegetation
 - Proposed Riparian Vegetation
 - Section Location





Section A-A'

Scale: 1" = 10.0'



Section B-B'

Scale: 1" = 10.0'

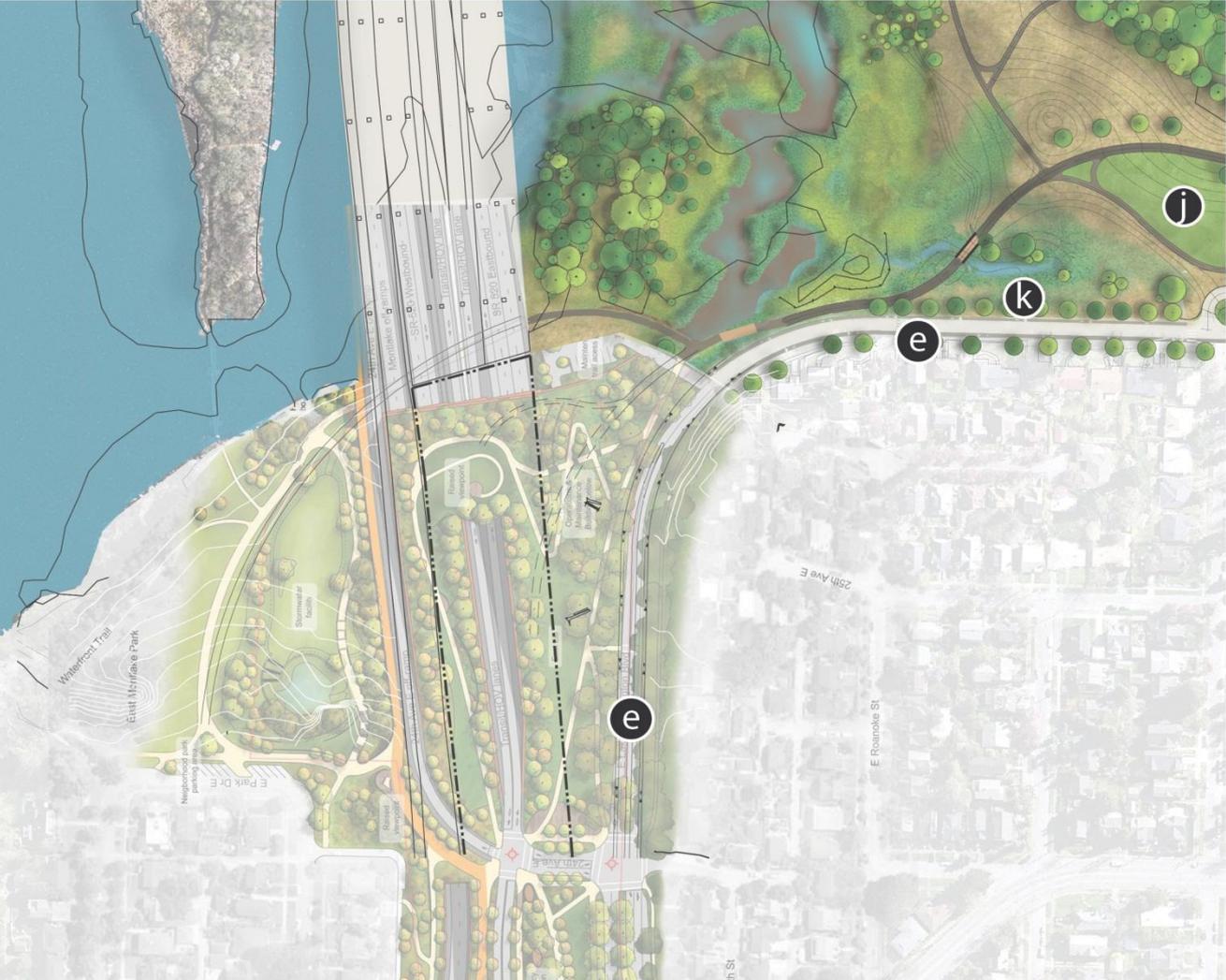
NOTES:

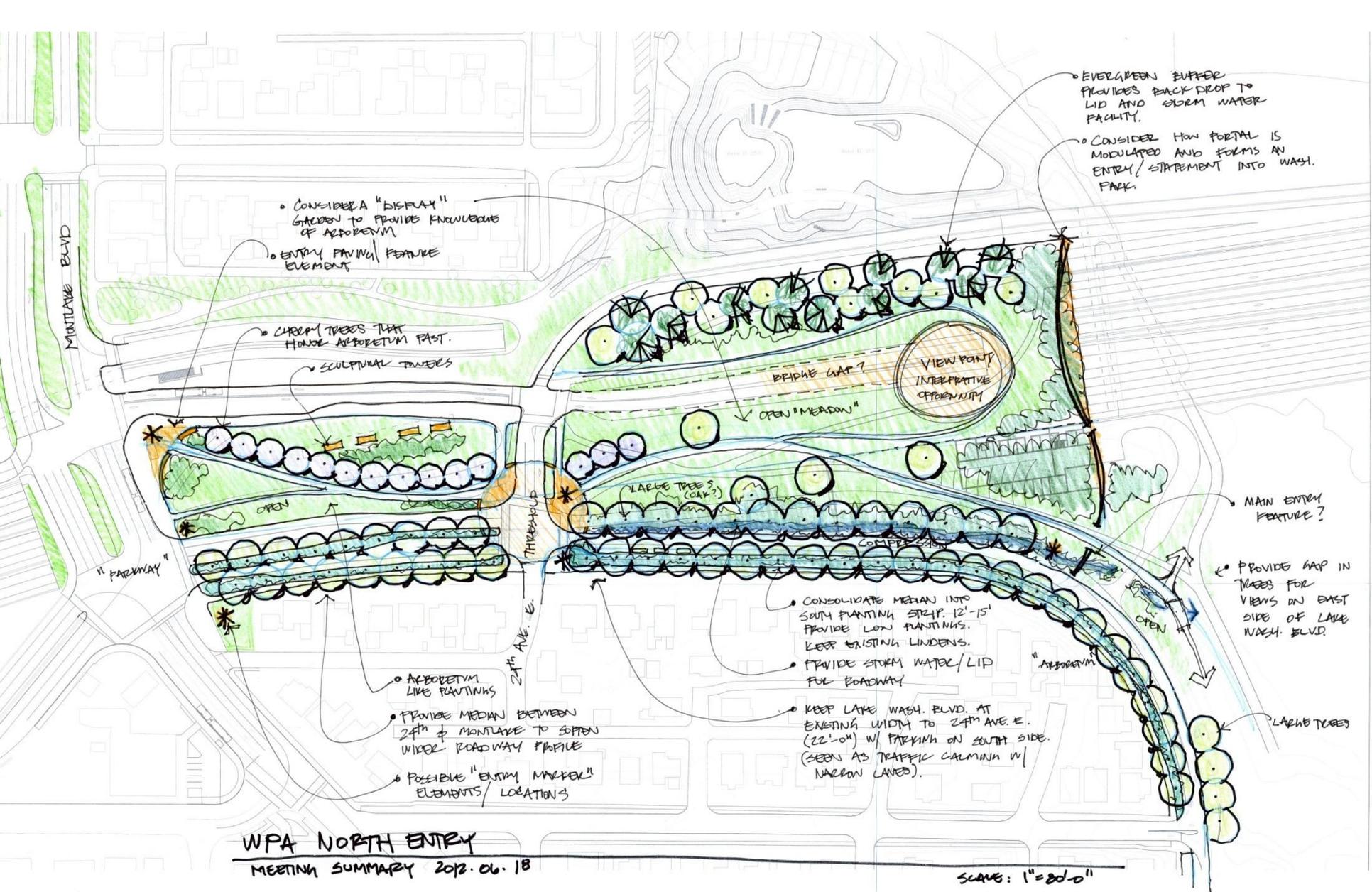
1. Invert Elevation of new channel ranges from approximately elevation 28.4-ft (upstream) to elevation 20.4-ft (downstream)
2. Invert Elevation of existing pipe ranges from approximately elevation 28.4-ft (upstream) to elevation 24.4-ft (at outfall)



Key

- e E. Lake Washington Blvd. restriped to include sharrows
- j Lawn
- k Existing trees to remain





- CONSIDER A "DISPLAY" GARDEN TO PROVIDE KNOWLEDGE OF ARBORETUM
- ENTRY PAVING / FEATURE ELEMENT

- CHROM TREES THAT HONOR ARBORETUM PAST.
- SCULPTURAL TREES

- EVERGREEN BUFFER PROVIDES BACK DROP TO LID AND SIDEM WATER FACILITY.
- CONSIDER HOW FORMAL IS MODULATED AND FORMS AN ENTRY / STATEMENT INTO WASH. PARK.

- OPEN
- "PARKWAY"

- BEIDGE GAP?
- VIEW POINT INTERPRETIVE OPPORTUNITY
- OPEN "MEADOW"
- LARGE TREES (OAK?)
- COMPLETION

- MAIN ENTRY FEATURE?
- PROVIDE GAP IN TREES FOR VIEWS ON EAST SIDE OF LAKE WASH. BLVD.

- ARBORETUM LIKE PLANTINGS
- PROVIDE MEDIAN BETWEEN 24th & MONTLAKE TO SOFTEN WIDER ROADWAY PROFILE
- POSSIBLE "ENTRY MARKER" ELEMENTS / LOCATIONS

- CONSOLIDATE MEDIAN INTO SOUTH PLANTING STRIP. 12'-15' PROVIDE LOW PLANTINGS. KEEP EXISTING LINDENS.
- PROVIDE STORM WATER / LID FOR ROADWAY
- KEEP LAKE WASH. BLVD. AT EXISTING WIDTH TO 24th AVE. E. (22'-0") W/ PARKING ON SOUTH SIDE. (SEEN AS TRAFFIC CALMING W/ NARROW LANES).

WPA NORTH ENTRY
MEETING SUMMARY 2012.06.18

SCALE: 1" = 20'-0"

Montlake Area - Option A

Montlake area site plan

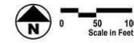


 SR 520 regional bicycle/pedestrian path

 Path/sidewalk

 Traffic signal

 WSDOT Right of Way



DRAFT
July 2012

CONCEPTUAL

DO NOT TAKE THESE OR ANY OTHER PLAN, SPECIFICATION OR CONTRACT DOCUMENTS TO BE USED FOR CONSTRUCTION.

 Washington State
Department of Transportation

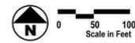
 SR 520

Montlake Area - Option B

Montlake area site plan



-  SR 520 regional bicycle/pedestrian path
-  Path/sidewalk
-  Traffic signal
-  WSDOT Right of Way



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July 2012

CONCEPTUAL
THIS IS A CONCEPTUAL PLAN AND DOES NOT REPRESENT THE FINAL DESIGN OR CONSTRUCTION.

 Washington State
Department of Transportation



East Montlake Lid Area, Option A - High Transit/HOV Ramps

Description

The SR 520 improvements east of 24th Avenue East include a landscaped lid covering the highway lanes below. Lid Option A retains the 'high' transit/HOV lanes, which separate from the through lanes and rise over the Arboretum wetlands area to run along the surface of the lid until they meet a signalized intersection at 24th Avenue East. The lid triggers substantial requirements for fire and life safety where it extends beyond 800 feet in length, including an operations and maintenance facility as well as emergency ventilation stacks and tunnel exits.

Function

A specific program or use for the lid has not yet been determined and multiple options are still being explored through ongoing and coordinated efforts between WSDOT, Seattle Parks Department, The University of Washington, Washington Park Arboretum, surrounding neighborhoods and other interested stakeholders. For planning purposes, however, the design concept for the lid is proposed as an extension of the natural environment and Washington Park Arboretum. The design concept retains the opportunity to provide large trees on many areas of the lid and includes a lookout hill that provides views over Union Bay.

Design Goals

- Complement and enhance the surrounding natural environment
- Provide inviting, accommodating and safe pathways and a variety of open spaces
- Create interesting viewpoints to surrounding features
- Maintain similar or better visual and noise buffers as the original Preferred Alternative configuration

Benefits

- Provides a large, consolidated space on the lid

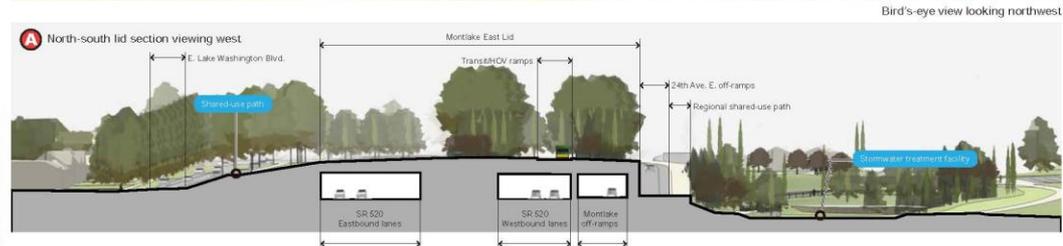
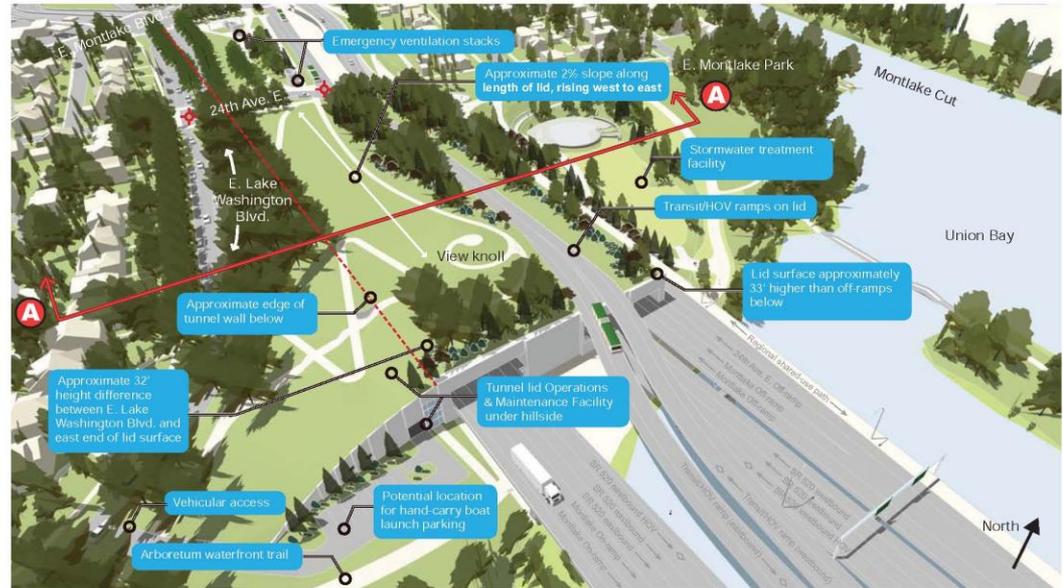
Considerations

- The 'high' transit/HOV ramps create greater visual impacts from surrounding vistas
- Because the open space on the lid slopes upward at a two percent grade from west to east, the consolidated area does not offer practical advantages for active uses
- The transit/HOV lanes create a visual barrier along the north edge of the lid

Connections



- LEGEND
- shared-use path
 - pedestrian-only path
 - climate plan
 - existing crosswalk
 - proposed crosswalk
 - existing bike lane or sharrows on street
 - view/rest area



Precedents



DRAFT **CONCEPTUAL**
July 2012

Washington State Department of Transportation



East Montlake Lid Area, Option B - Lowered Transit/HOV Ramps

Description

The SR 520 improvements east of 24th Avenue East include a landscaped lid covering the highway lanes below. Lid Option B lowers the transit/HOV lanes into a slot on the lid in which they rise to meet a signalized intersection at 24th Avenue East. The lid triggers substantial requirements for fire and life safety where it extends beyond 800 feet in length, including an operations and maintenance facility as well as emergency ventilation stacks and tunnel exits.

Function

A specific program or use for the lid has not yet been determined and multiple options are still being explored through ongoing and coordinated efforts between WSDOT, Seattle Parks Department, The University of Washington, Washington Park Arboretum, surrounding neighborhoods and other interested stakeholders. For planning purposes, however, the design concept for the lid is proposed as an extension of the natural environment and of Washington Park Arboretum. The design concept retains the opportunity to provide large trees on many areas of the lid and includes a lookout hill that provides views over Union Bay.

Design Goals

- Complement and enhance the surrounding natural environment
- Provide inviting, accommodating and safe pathways and a variety of open spaces
- Create interesting viewpoints to surrounding features
- Maintain similar or better visual and noise buffers as in the Preferred Alternative configuration

Benefits

- Reduces the visual impact of the transit/HOV ramps
- Reduces the visual impact of the surface transit/HOV lanes on views toward Union Bay
- Allows for overlook viewpoints along the northeast portion of the lid
- The lower transit/HOV lanes may result in less noise than on the lid (needs evaluation)

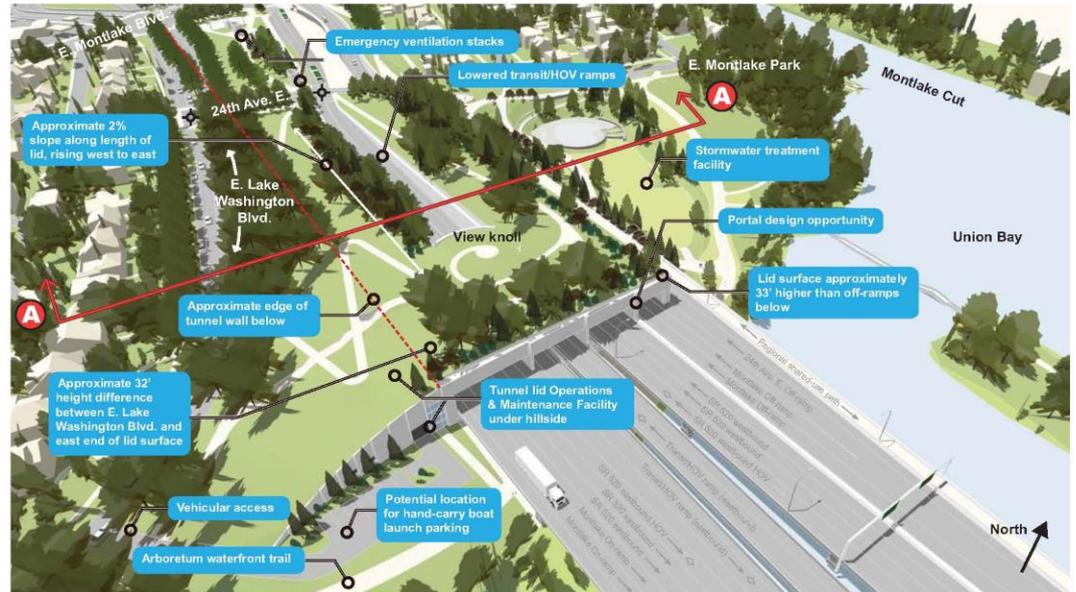
Considerations

- The 'slot' in the lid restricts opportunities for programmed uses or larger gatherings that would require a larger contiguous space

Connections



LEGEND			
	shared-use path		Olmsted plan
	pedestrian-only path		existing crosswalk
	existing bike lane or sharrow on street		view/rest area
	proposed crosswalk		



A North-south lid section viewing west Bird's-eye view looking northwest



Precedents



Olympic Sculpture Park
(Image courtesy Flickr user roweg)



Olympic Sculpture Park
(Image courtesy Flickr user Spokane)



Serpent Mound, Adams County, OH
(Image courtesy Flickr user fuzpqr007)

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July 2012

CONCEPTUAL
DESIGN

Washington State
Department of Transportation



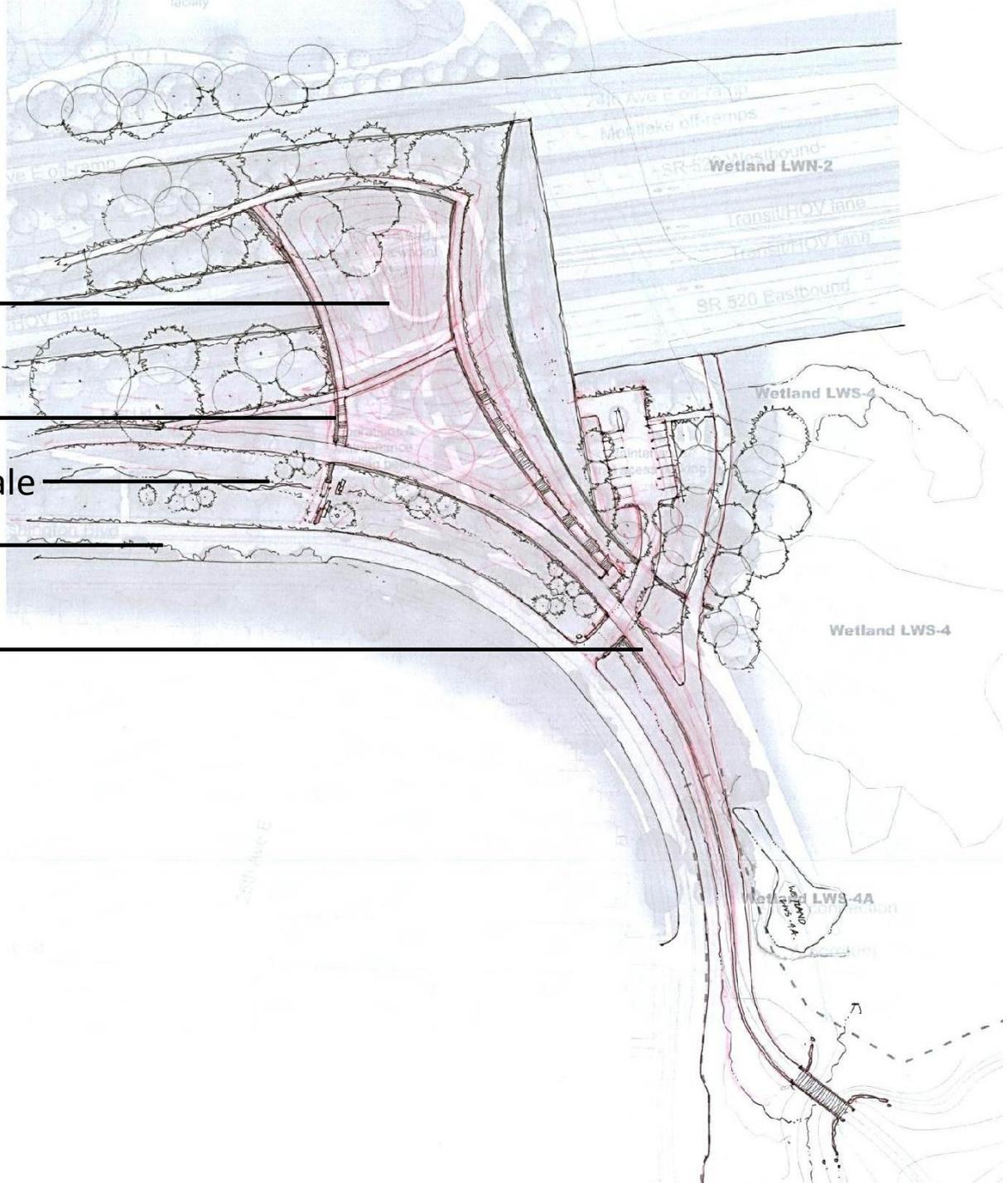
Viewpoint

Stone entry feature

Rain garden/stormwater swale

Boulevard

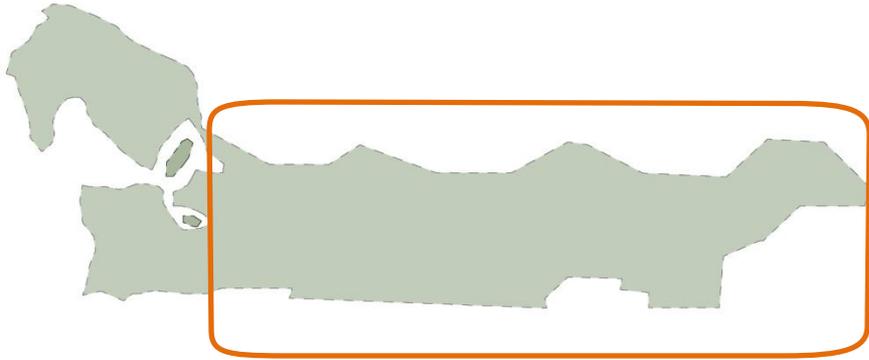
Multi-use trail





Multi-use Trail

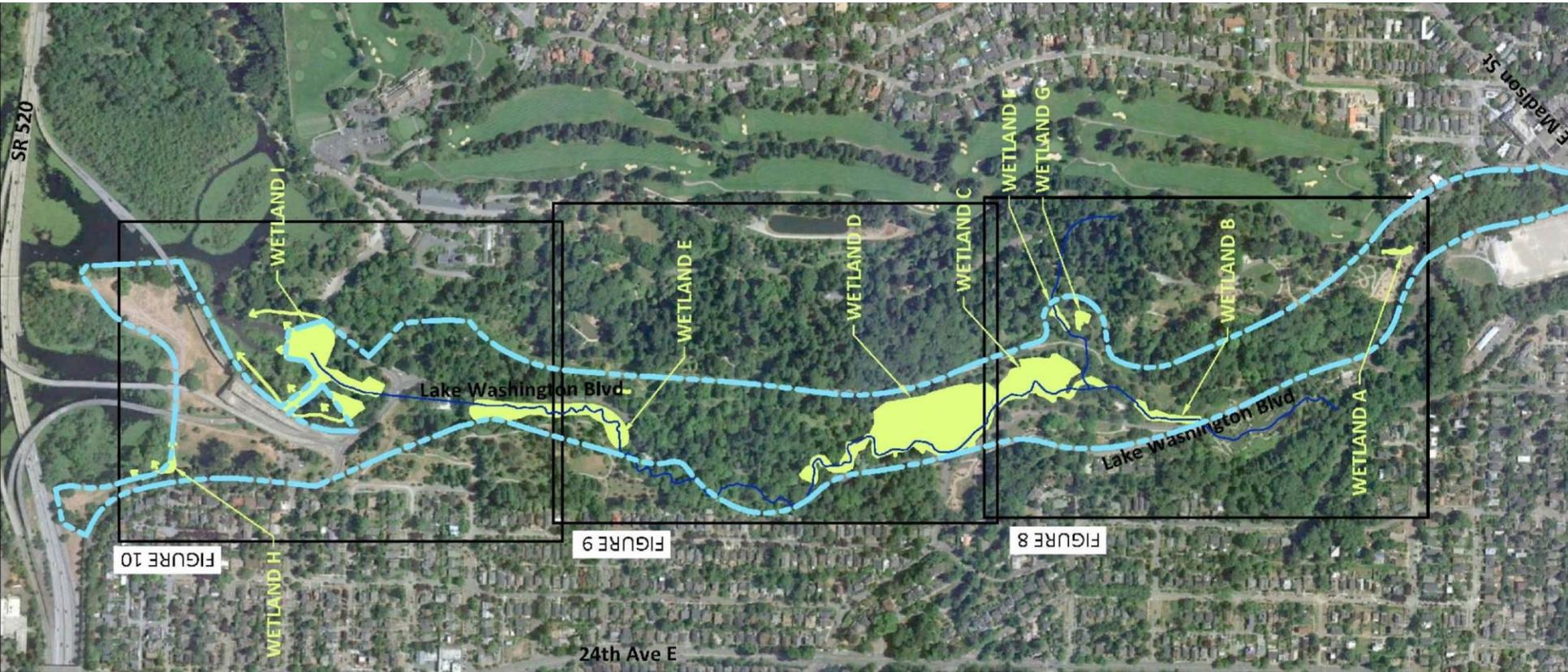




Key

- a** Multi-Use Trail Project
- b** Trail Bridge
- c** Restoration of pond and feature walls with runnel
- d** Daylighting of Arboretum Creek
- e** Azalea Way terminates at the Multi-Use Trail
- f** Wetland mitigation as needed for trail construction
- g** Reconfigured parking lot
- h** Trail bridge at drainage
- i** Retaining wall behind Stone Cottage. Possible narrow trail segment for a short distance
- j** Reconfiguration of 31st Ave. E. to include curb bulb and improved pedestrian connections



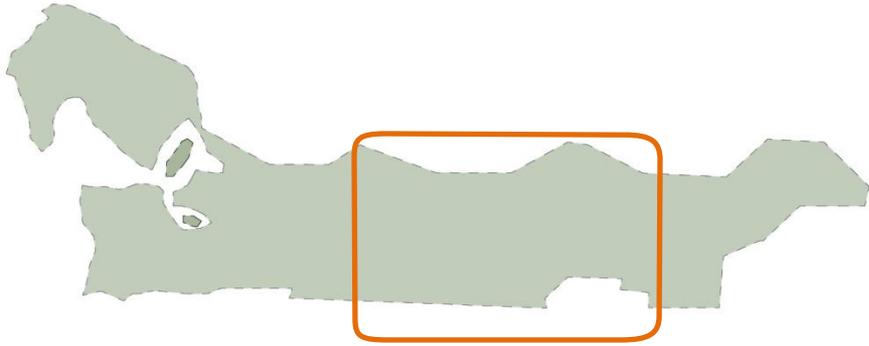




Planting Concept

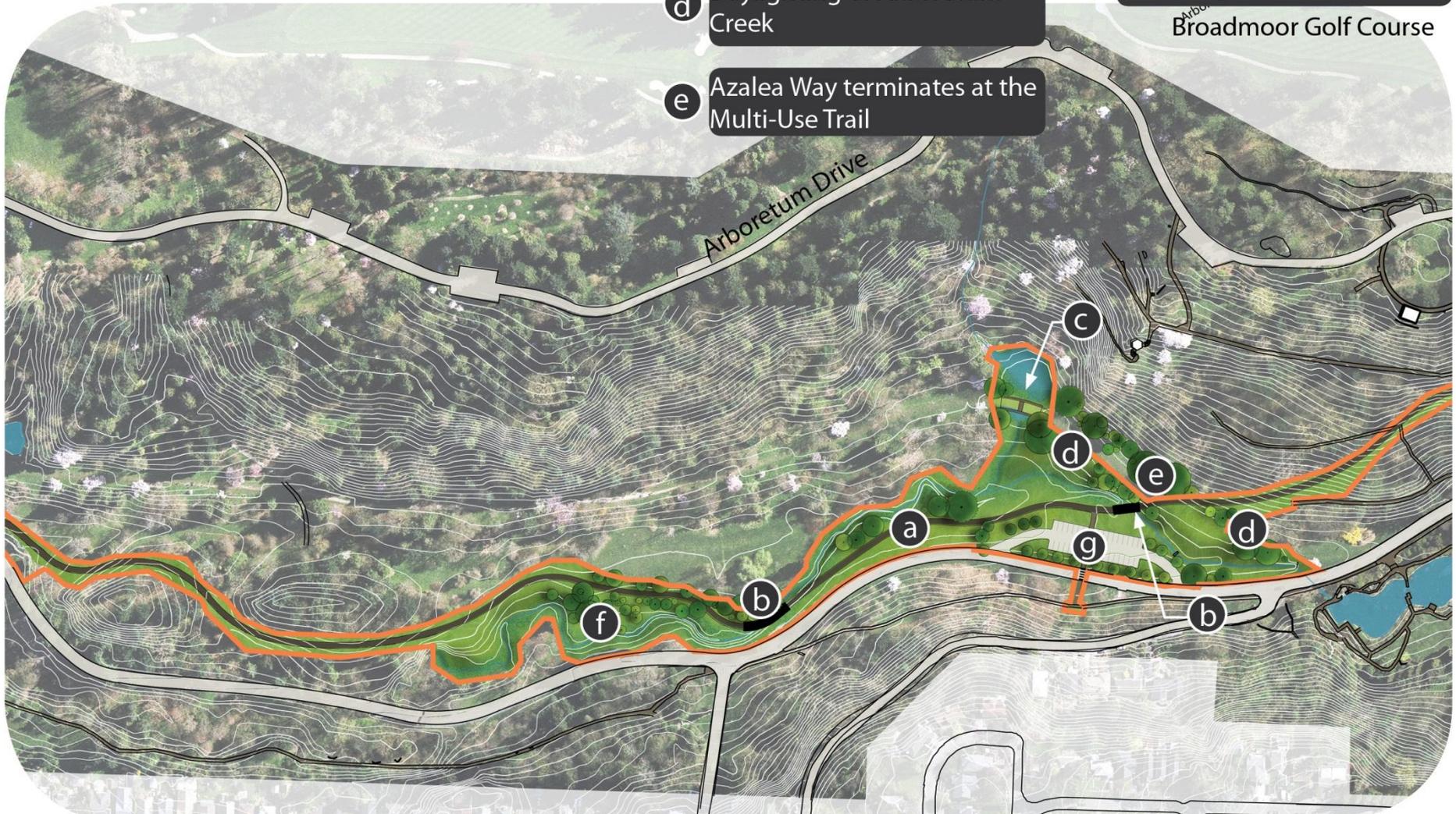


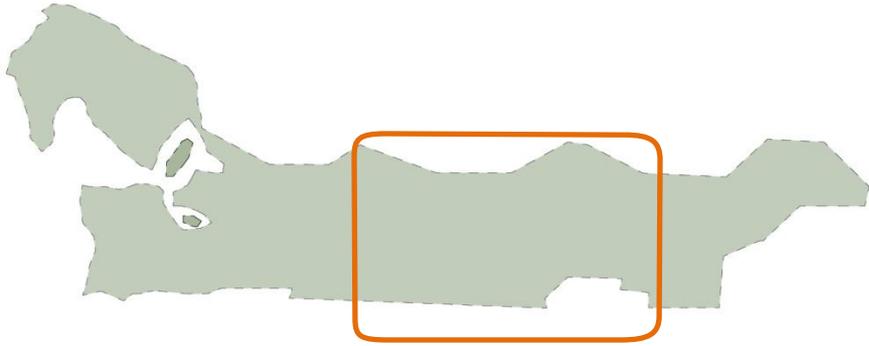
Planting Concept



Key

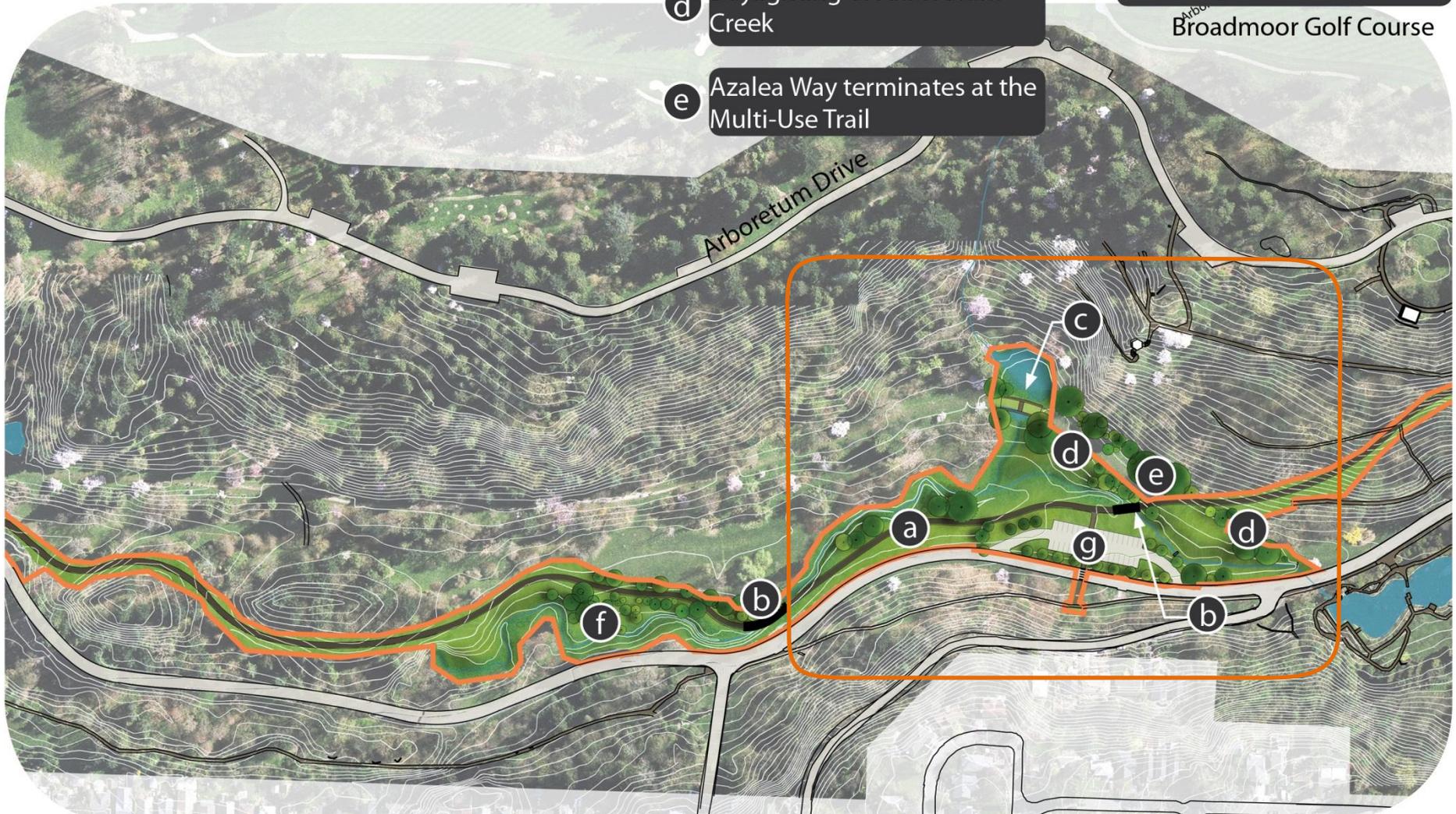
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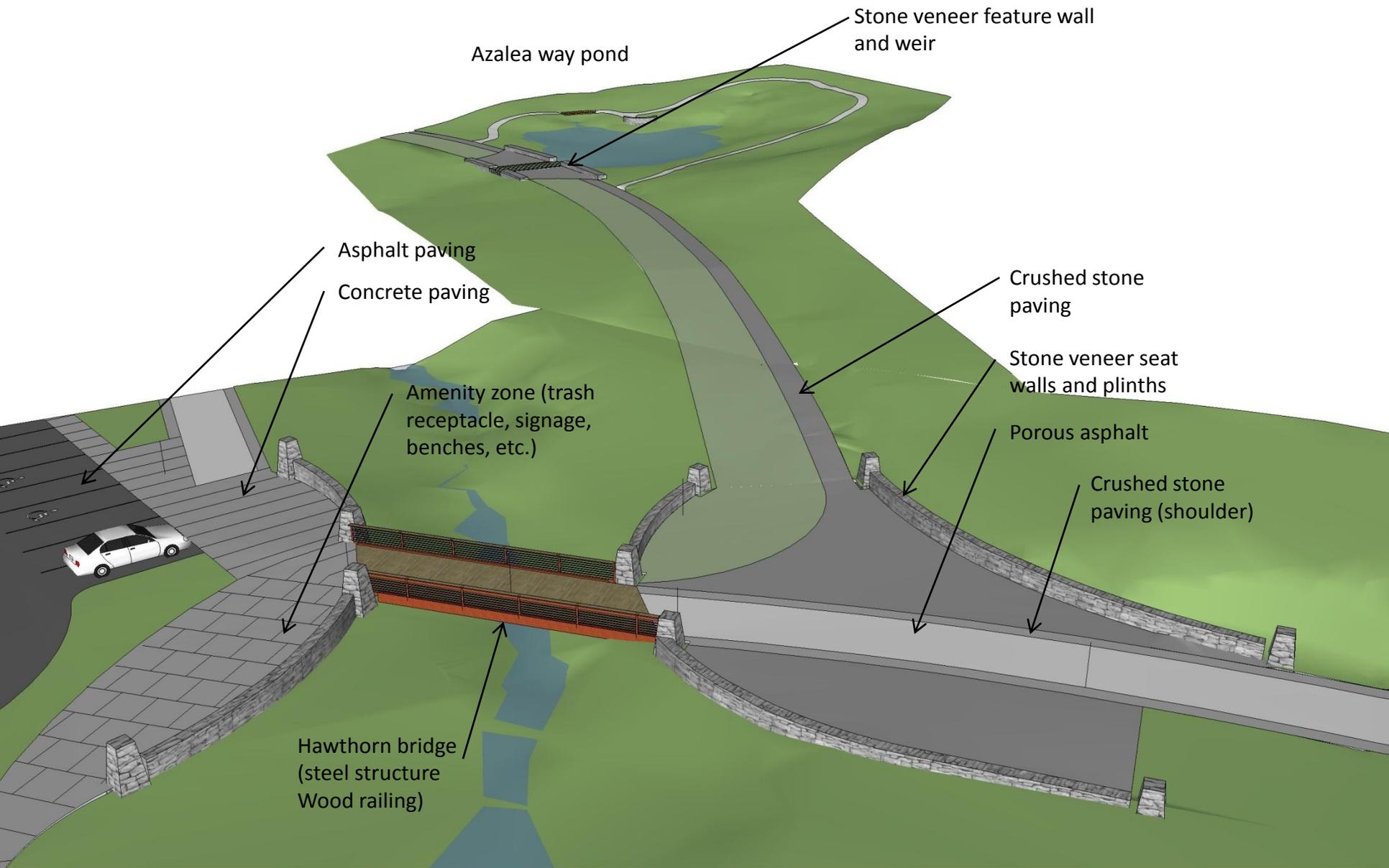


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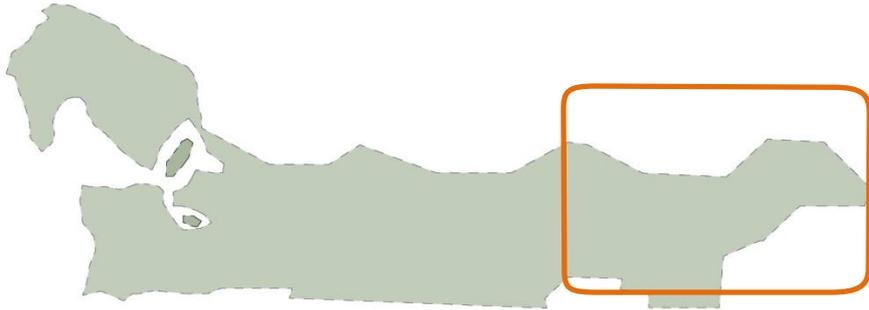
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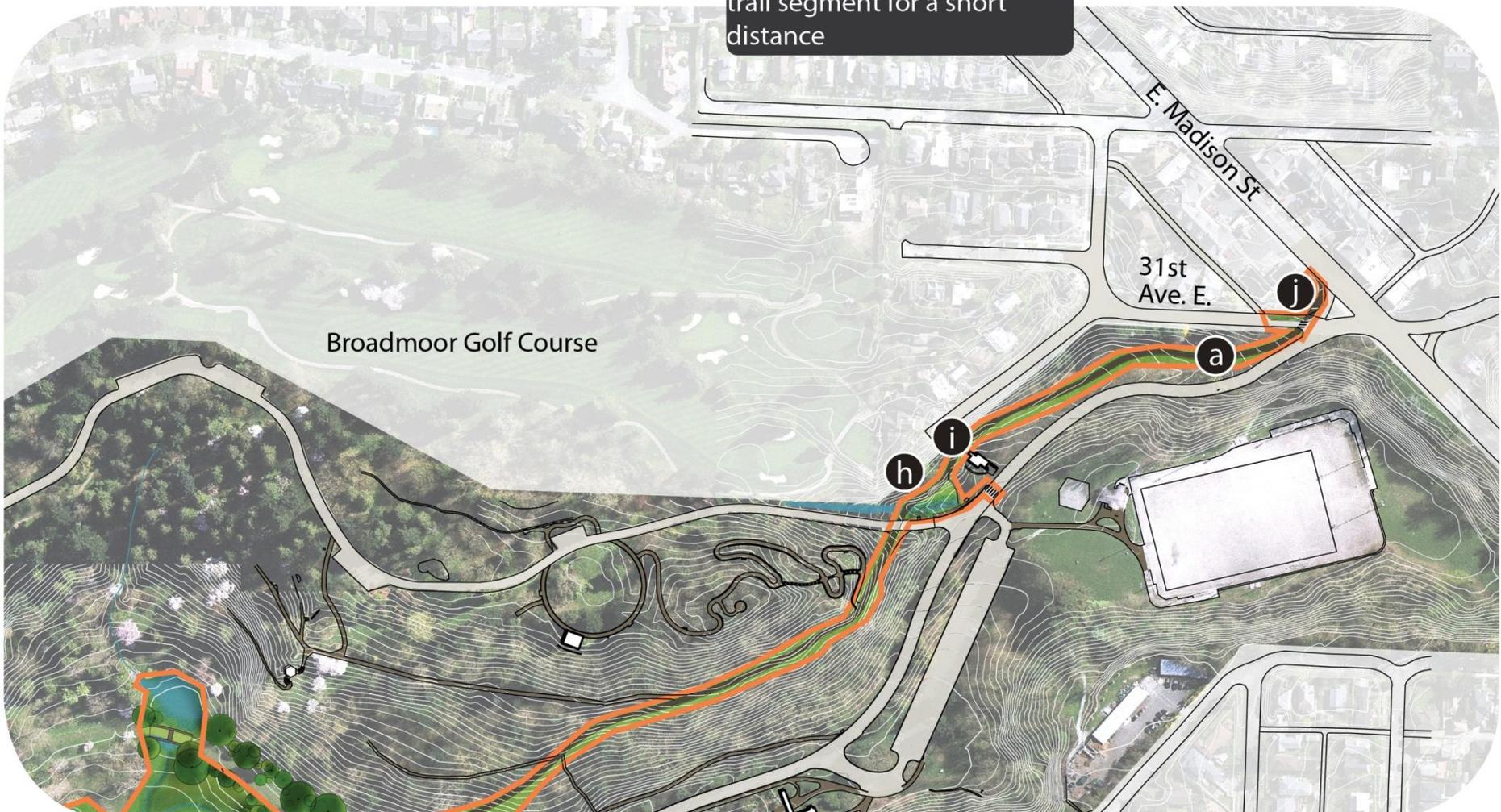






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Broadmoor Golf Course

E. Madison St

31st Ave. E.

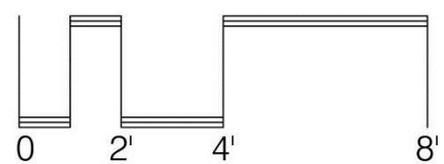
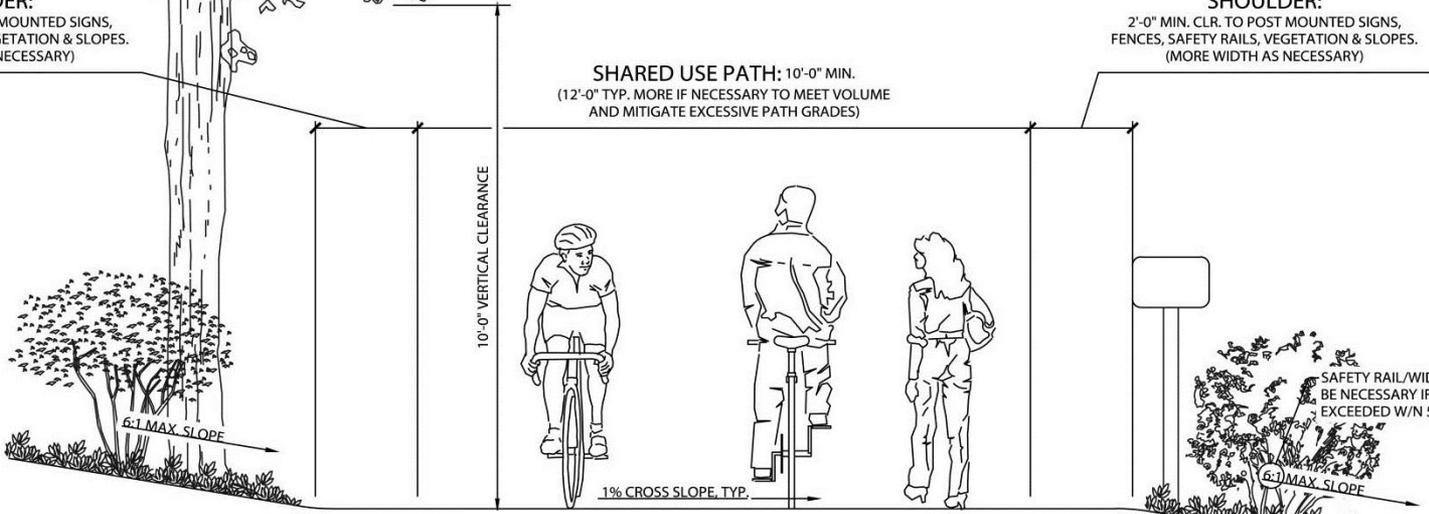
Multi-use Trail Section



SHOULDER:
2'-0" MIN. CLR. TO POST MOUNTED SIGNS,
FENCES, SAFETY RAILS, VEGETATION & SLOPES.
(MORE WIDTH AS NECESSARY)

SHOULDER:
2'-0" MIN. CLR. TO POST MOUNTED SIGNS,
FENCES, SAFETY RAILS, VEGETATION & SLOPES.
(MORE WIDTH AS NECESSARY)

SHARED USE PATH: 10'-0" MIN.
(12'-0" TYP. MORE IF NECESSARY TO MEET VOLUME
AND MITIGATE EXCESSIVE PATH GRADES)



Multi-use Trail Profile

SLOPE LEGEND

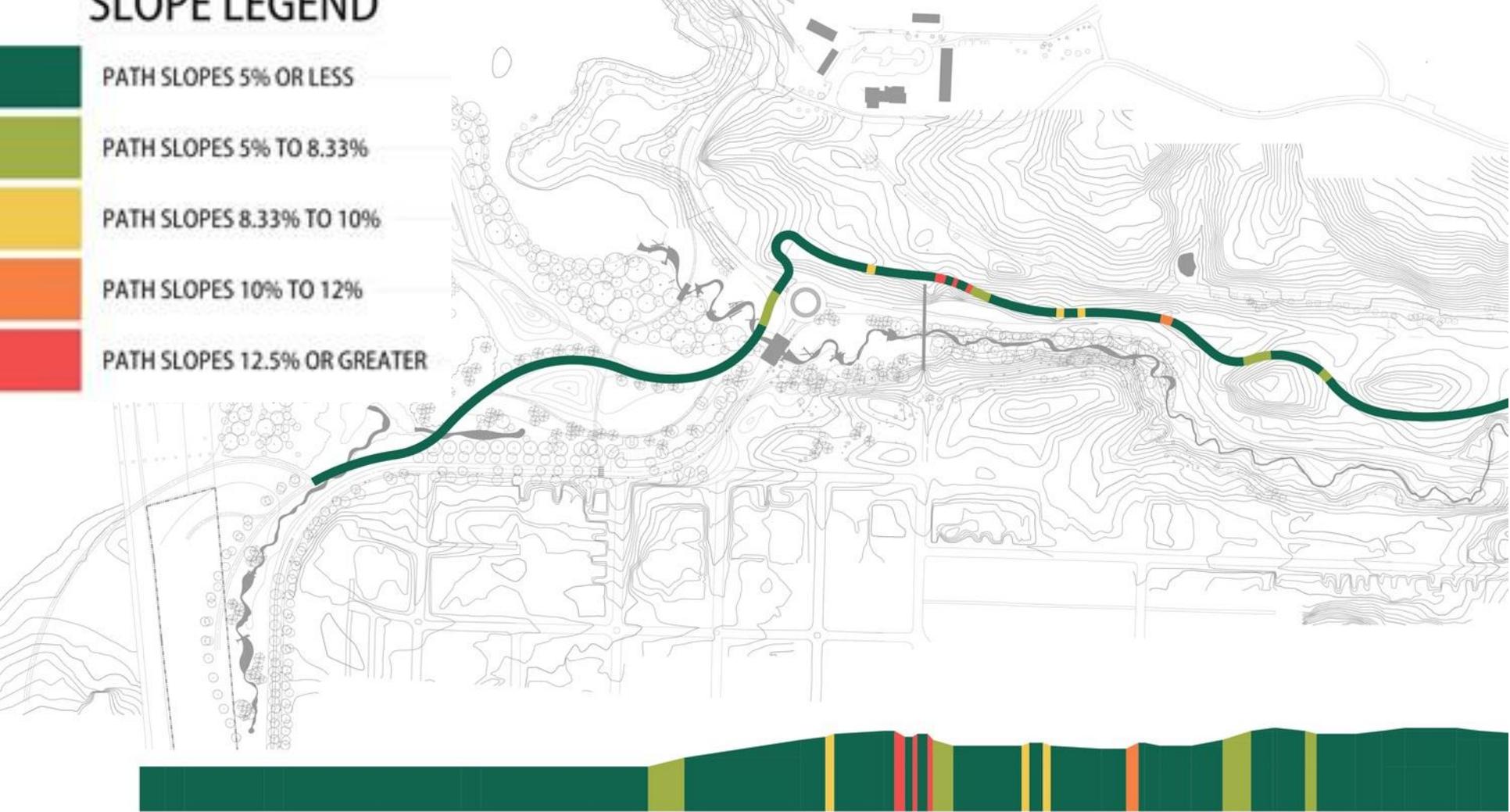
PATH SLOPES 5% OR LESS

PATH SLOPES 5% TO 8.33%

PATH SLOPES 8.33% TO 10%

PATH SLOPES 10% TO 12%

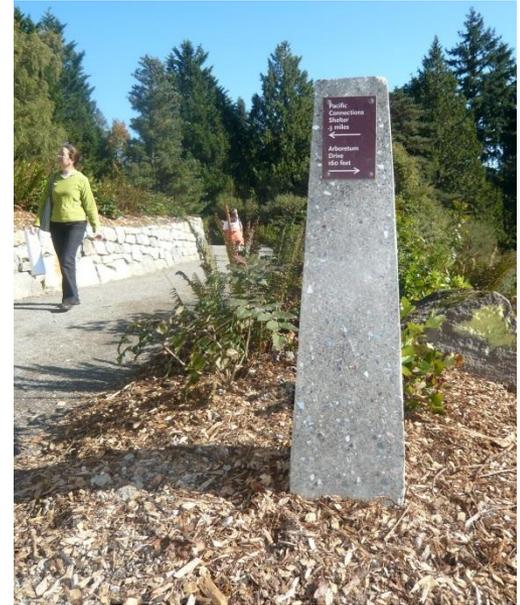
PATH SLOPES 12.5% OR GREATER

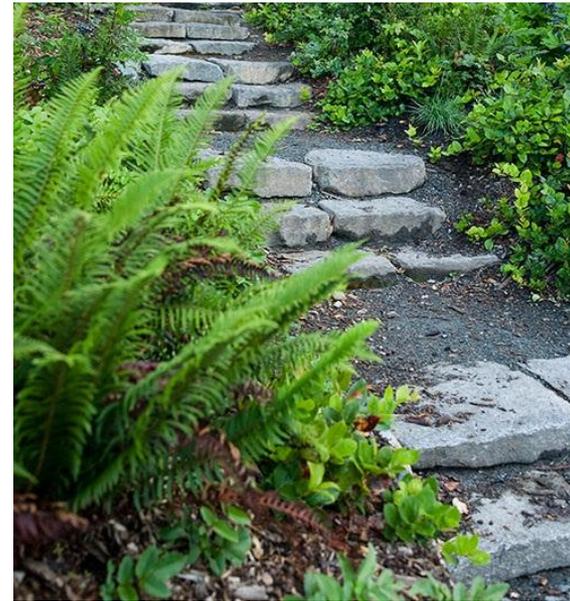
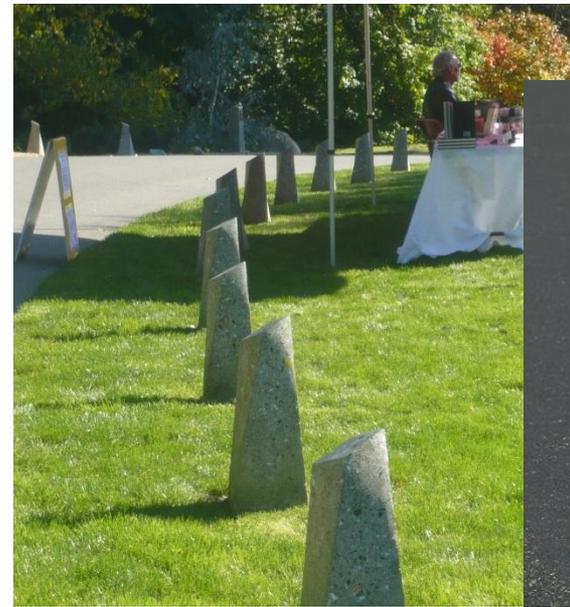


Multi-use Trail Profile



Materials





MATERIAL	ENVIRONMENTAL IMPACT	DESCRIPTION	TYPICAL SPAN /SIZE	MAINTENANCE	LIFE SPAN	
CONCRETE	Concrete is a very durable construction material. Very high levels of CO2 and other emissions as well as materials extraction associated with cement production. Some products use recycled aggregate and use cement substitutes.	Cast in place Concrete	Arch shotcreted over inflated form	Up to 17 feet wide and 8 1/2 feet high using a single form. Up to 48 feet wide and 8 feet high with multiple forms	Low	+100 years
		Prefabricated Concrete	Components fabricated off-site into standard sizes	Typical sizes include 30-foot span with 14-foot rise 40-foot span with 10-foot rise	Low	+100 years
STEEL	Although steel is very high in embodied energy, and has emissions associated with energy production including SO2 and NOx, the material is recyclable, and often has recycled content.	Steel Truss	The efficiency of the truss design maximizes material properties of the steel members.	Clear spans from 20'-250'	Low	+100 years
		Prefabricated Steel Truss	Steel components are shop manufactured with welded connections. Clear spans up to 100' can be fabricated and shipped	Clear spans from 20' to 200'. Steel trusses are best suited for clear widths from 6' to 12'	Low	+100 years
MASONRY	Durable, and readily available, locally sourced masonry has low embodied energy.	Masonry Clad Culvert	Precast arch-box. Strength and durability of masonry makes it ideal to resist fire, and decay from water	For spans 28'-36', rise ranges from 8'-13'. For spans 16'-24', rise is 5'-10'	Low	+100 years
WOOD	A 2004 Consortium for Research on Renewable Industrial Materials (CORRIM) study found that wood was better for the environment than steel or concrete in terms of embodied energy, global warming potential, air emissions, water emissions and solid waste production. Wood members may be pressure-treated after fabrication, and may contain harmful chemicals	Glulam Truss	Engineered, stress rated structural members built up of several layers of bonded wood	Clear spans 12'-40'	Medium	+100 years
		Wood Structure	Fastened wood structure	Clear spans 12'-20'	High	50 years



1 Juncus Bridge

2 Salix Bridge

3 Linden Bridge

4 Oak Bridge

5 Vehicular Bridge

6 Larch Bridge

7 Hawthorn Bridge

8 Stone Bridge



0 200
SCALE: 1"=200'-0"

- 1 Stone Bridge
- 2 Hawthorn Bridge
- 3 Larch Bridge
- 4 Vehicular Bridge
- 5 Oak Bridge
- 6 Linden Bridge
- 7 Salix Bridge
- 8 Juncus Bridge



PROPOSED BRIDGE LOCATIONS AND COLLECTIONS MAP



PROPOSED BRIDGE LOCATIONS AND COLLECTIONS MAP

1 Juncus Bridge

ADJACENT COLLECTIONS

Salix



SITE CONSIDERATIONS

The bridge structure spans 40' over the WSDOT future mitigated wetland area.

PREFERRED OPTION

Glulam truss with attached railing



WOOD

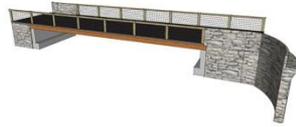
2 Salix Bridge

Salix



The bridge structure spans 40' over a future storm water collection area.

Glulam truss with attached railing



3 Linden Bridge

Lindens
Oak Family
Salix
Nothofagus



The structure spans 40' out the day lighted creek and connects east towards Foster Island.

Glulam truss with attached railing



4 Oak Bridge

Oak Family
Pinetum



Adjacent to the vehicular bridge, the 90' bridge structure defines a multiuse path over the day lit creek.

Prefabricated steel truss with integrated rail



STEEL

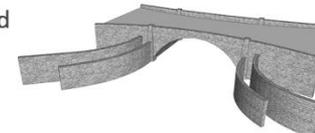
5 Vehicular Bridge

Oak Family
Pinetum



Located in place of the buried pipe, the proposed 30' wide vehicular bridge structure spans 60' and a new creek channel.

Masonry clad culvert



MASONRY

6 Larch Bridge

Larches
Hollies
True Ashes



The structure spans 30' over a day lit creek section.

Prefabricated steel truss with integrated rail



7 Hawthorn Bridge

China
Hawthorns
Hollies
Willow
Birch



The 40' spanning structure connects Azalea way to the multiuse path with a gathering space

Prefabricated steel truss with integrated rail



8 Stone Bridge

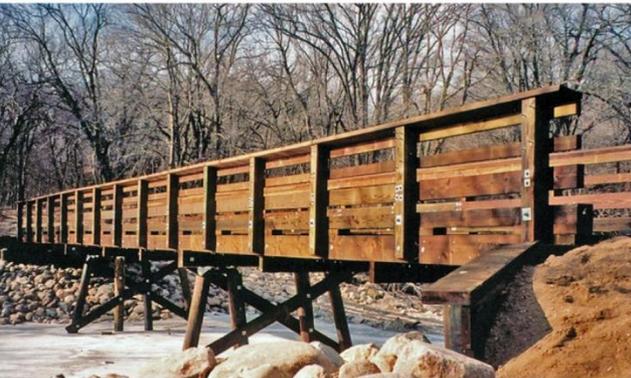
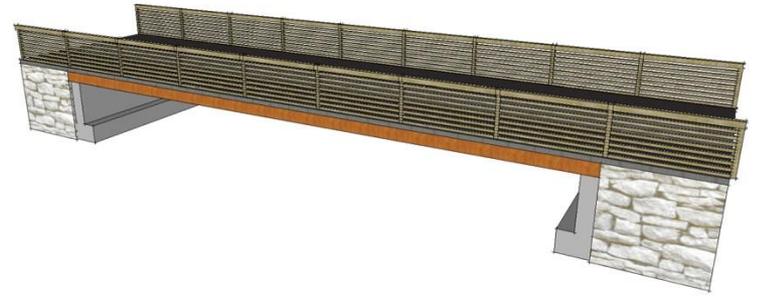
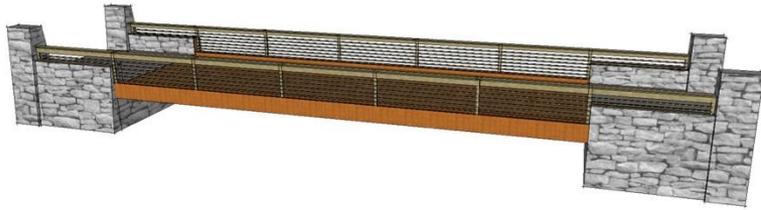
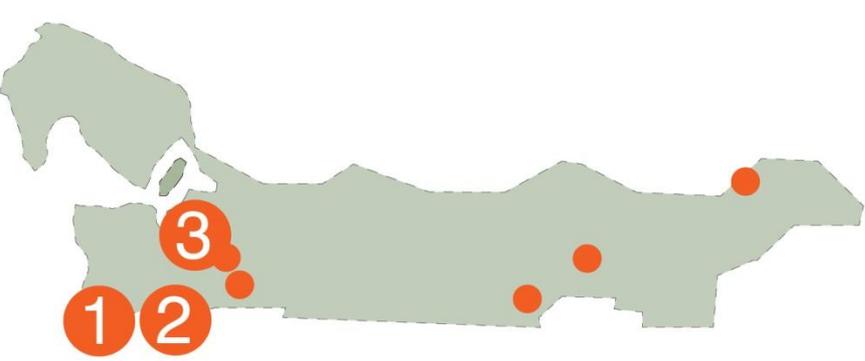
Cascadia
Chile

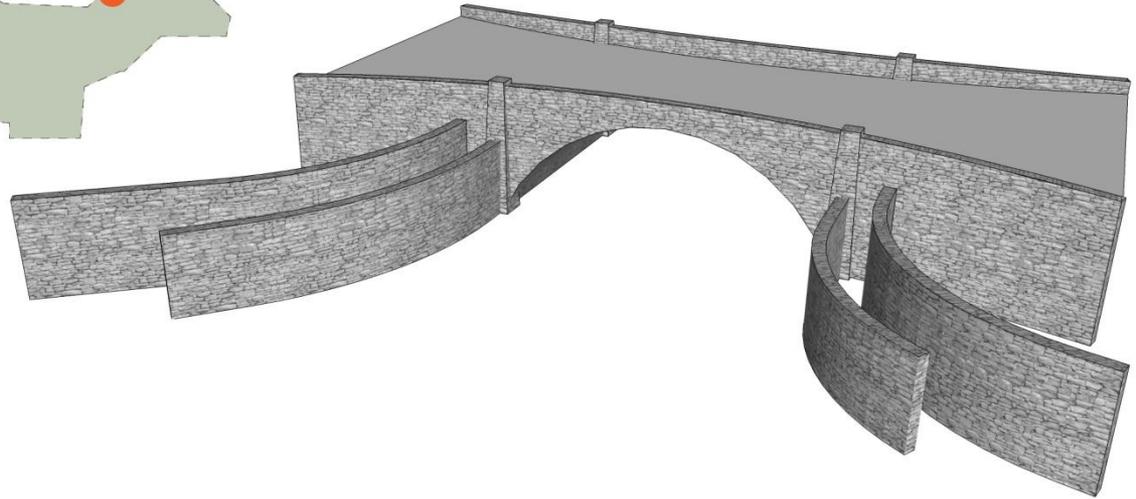
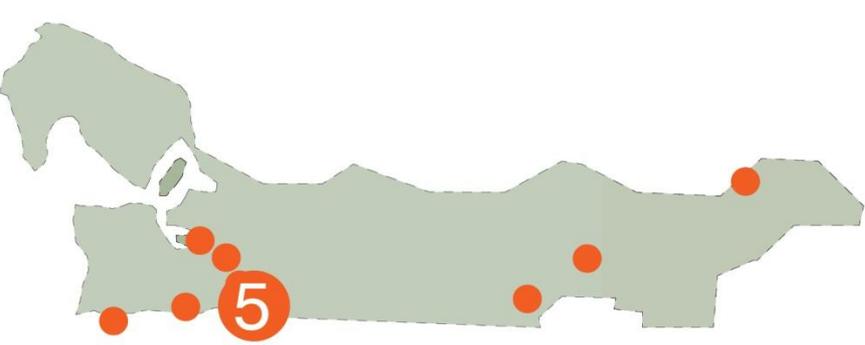


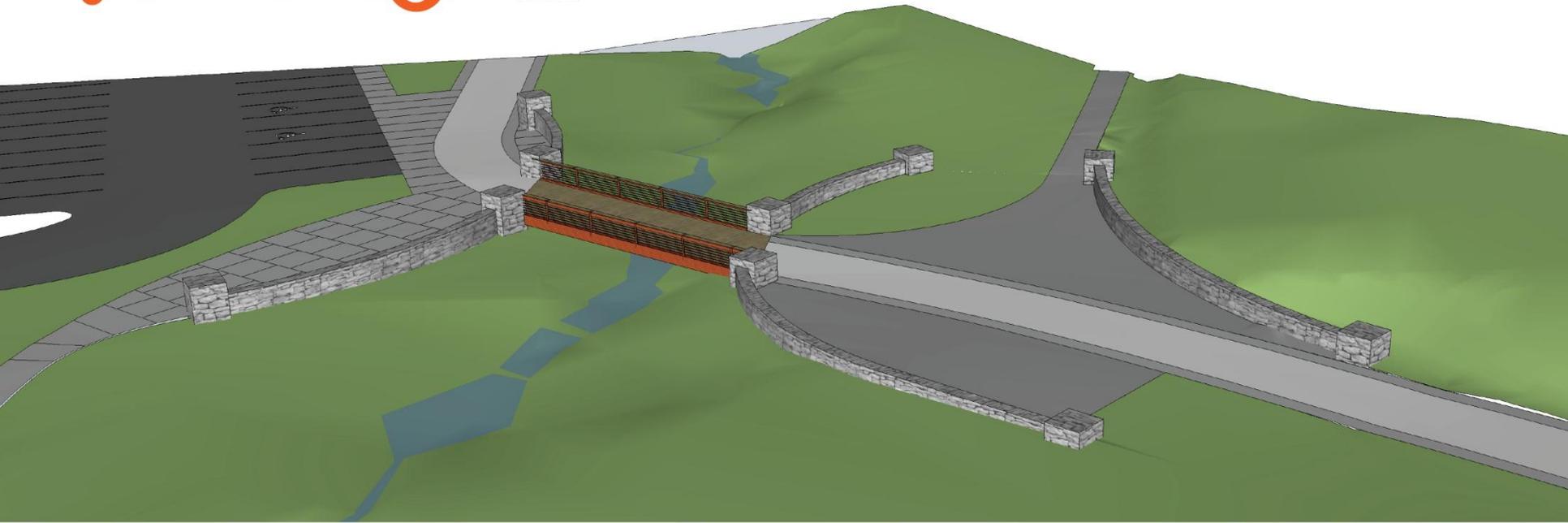
Adjacent to the Stone Cottage and the South Entry the bridge structure spans 50' crossing the

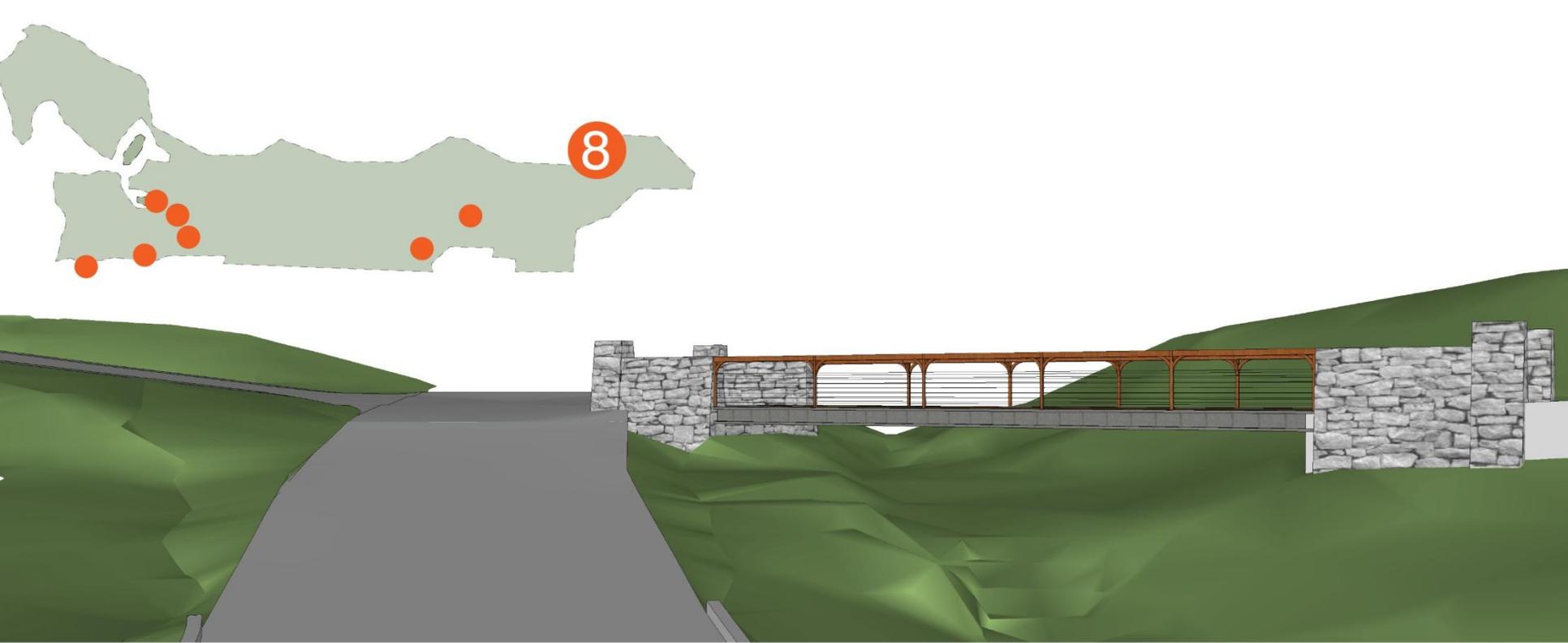
Steel truss with attached railing











Next Steps

- Proceed with implementation of the multi-use trail as first phase over the next two years (excludes the roundabout and Arboretum Creek day lighting)
- Continued collaboration on the north entry integration with the WSDOT design
- Return to the Design Commission a future date to discuss the north entry pending more certainty of the WSDOT schedule

