Discovery Park South Beach Trail

Schematic Design Report

Prepared for

Friends of Discovery Park - Est. 1974 -

July 2019

Prepared by

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Landscape Architects & Planners

With Shannon & Wilson Geotechnical & Environmental Consultants

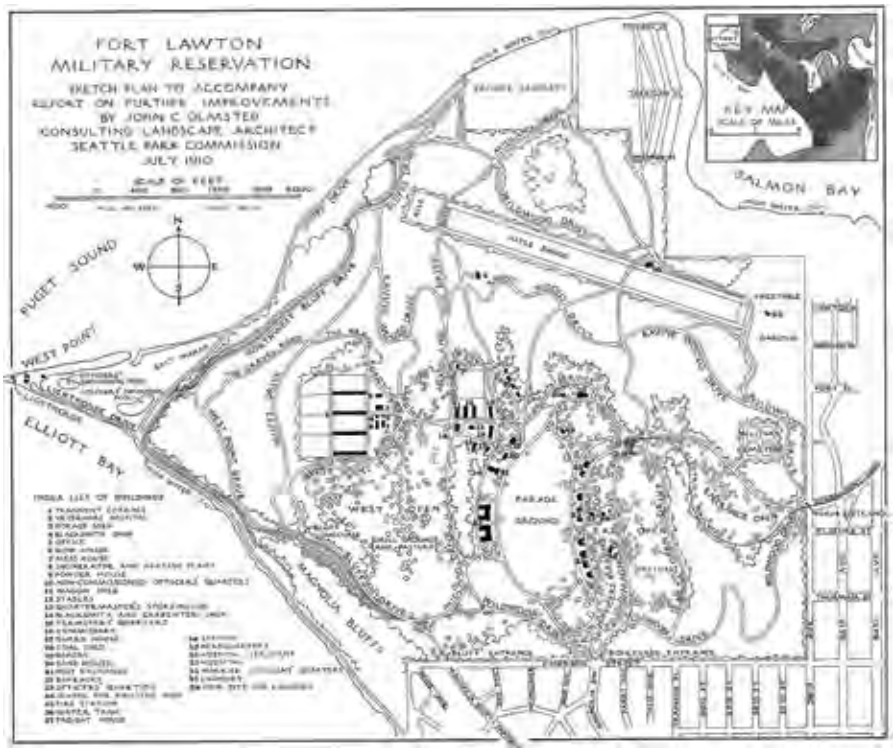
Contents

Trail and Viewpoint Schematic Design

Introduction

This project seeks to update, renovate and redesign the South Beach Trail at Seattle's Discovery Park. The trail connects the Loop Trail to South Beach and West Point, traveling through a mixed deciduous and coniferous forest with frequent views out to Puget Sound, the Olympics and Mount Rainier. The primary project goal is to renovate the trail to create an exceptional trail experience that highlights this spectacular Pacific Northwest shoreline bluff landscape.

The project is a schematic design of South Beach Trail from the Loop Trail to the point where the South Beach Trail connects with Discovery Park Boulevard. The Friends of Discovery Park hired JA Brennan Associates, PLLC and Shannon & Wilson to provide landscape architectural and geotechnical services respectively for design of the trail including public and stakeholder outreach support.



Olmsted Plan | 1910

Revised Master Plan | 1974 | Dan Kiley

The project need arose as the trail has aged and fallen into disrepair largely due to the effects of time, slope instability and erosion, as documented in a prior geotechnical report by Shannon & Wilson (March 2018). The project creates a low maintenance trail that offers a variety of views of Puget Sound to be enjoyed by all visitors. It also improves safety and universal accessibility of the trail.

Project Context

South Beach Trail is located at the northwest corner of Discovery Park. It offers visitors the experience of exploring an established coastal forest above an eroding feeder bluff with views through the trees to the lighthouse, the Sound, Mount Rainier and to the Olympics beyond. The trail drops approximately 220 vertical feet before connecting to the South Beach Access Road that leads to the extensive beach below.

The Capehart restoration area lies to the east of the project area and the West Point Sewage Treatment Facility is located just north of the South Beach Trail area.

Renovation of South Beach Trail must be considered within the context of the 1974 Discovery Park Master Plan, which guides all design and planning within the park.

Alternative Concepts

After several site visits to explore site opportunities and constraints, the design team, including the Friends of Discovery Park, developed two alternative trail design options for South Beach Trail: the "South Edge Explorer" and the "Forest Immersion Trail."

Alternative 1, the South Edge Explorer prioritizes views and stays as close to the water as possible, connecting with several viewpoints along the way.

Alternative 2, the Forest Immersion Trail, meanders through the interior of the forest and offers spur trails at various points leading to dramatic views along the bluff. (See Alternatives Memorandum and Appendix for Alternative Concept Plans)

Design Process

As documented in the DPSBT Inventory & Analysis Memorandum (2019-02-18) and the DPSBT Alternatives Memorandum, the client and design team completed inventory and analysis, identified key design considerations and subsequently developed the Final Concept Plan for the South Beach Trail. The renovation of the trail and viewpoints was guided by input received at two public meetings and two Seattle Parks ProView meetings, held between February and March 2019. Subsequently, a construction cost estimate and phasing plan were developed for implementation of the project. The process began in December 2018 and was completed July 2019. (See Appendix for Memorandums, Public Meeting Notes and graphics.)

Schematic Design

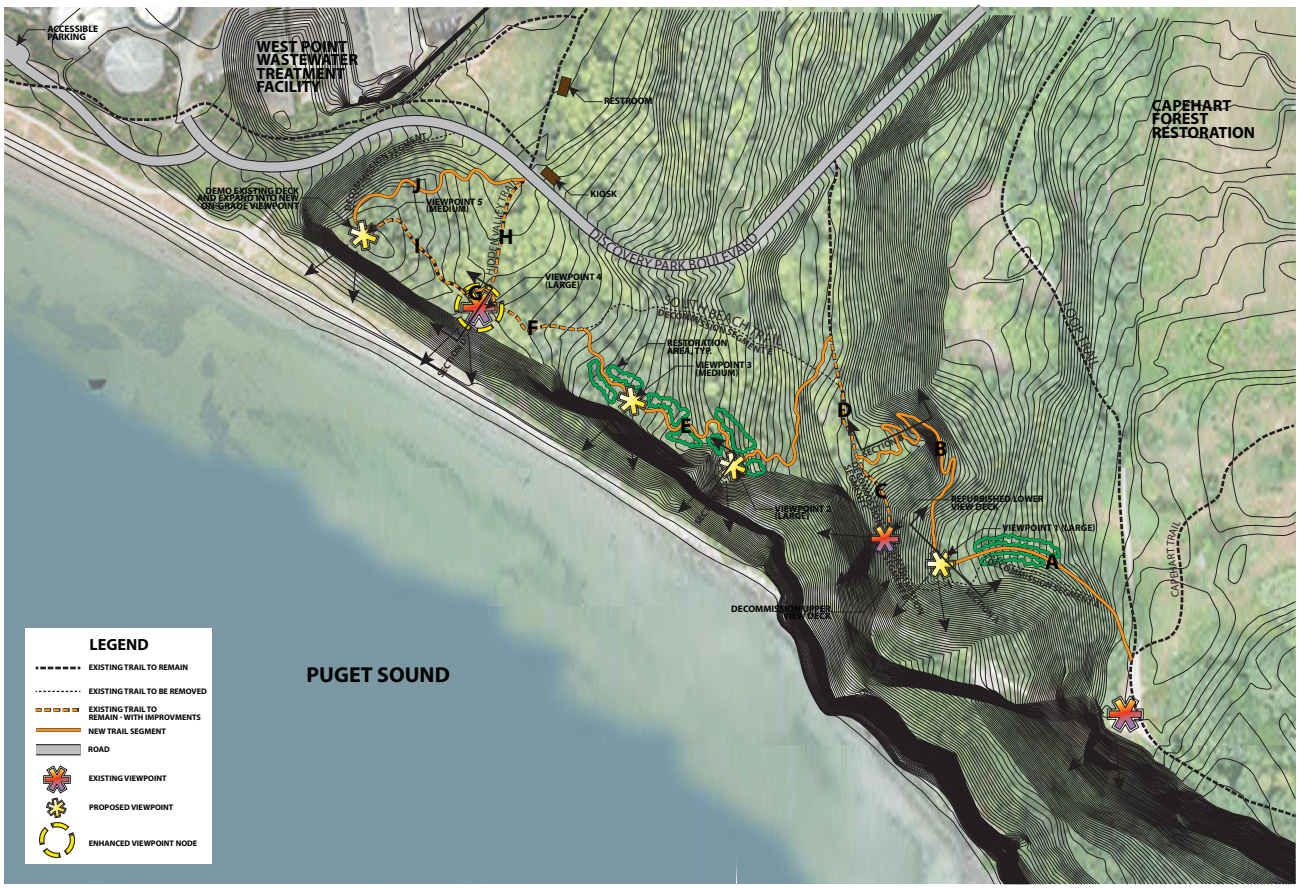
The schematic design combines aspects of both alternative concept plans. The Zone 1 trail segment is taken from the Forest Immersion Concept. In the upper zone, the majority of the existing trail is replaced with a new trail alignment, thereby eliminating most of the existing stairs and shifting the trail northward into the forest. A new viewpoint is proposed due west of the existing trail alignment and above slope from the first existing viewpoint on the trail. The viewpoint offers spectacular views to the Sound, Olympics and Mount Rainier. The trail then enters the forest, on more stable slopes, bringing the visitor into a quiet forested bowl landform, switch-backing gently through the trees before connecting back up with the existing trail at the southern edge of the bowl. At the intersection with the existing trail, the visitor can travel south along a segment of the existing trail to a replaced view deck at “platform #2” or travel north on the existing trail. The existing trail spur to the north is a route to the beach using a portion of Discovery Park Boulevard to bring visitors to the beach with improved accessibility.

Within the lower zone, the trail explores the south edge, meandering through the trees with two new (at grade) viewpoints at the top of the bluff along the way. In this concept, approximately two thirds of the existing lower zone trail is closed and replaced with a new trail alignment with gentler grades and improved views. The majority of stairs are eliminated by lengthening and meandering the trail. The initial switchback is separated from the existing trail by approximately 90 feet and up to 9 vertical feet of elevation, thereby discouraging trail shortcutting. It leads to the edge of the south bluff, but stays back from the edge to improve trail longevity, safety and variety of experience.

A portion of the existing trail north and south of the Hidden Valley viewpoint is retained, as it is a good quality trail with an interesting variety of views.

The existing Hidden Valley viewpoint, currently an open gravel area at the edge of a recently revegetated bluff area, is enhanced to create a view node with a protective railing, log edge treatment, seating opportunities and restoration plantings. The existing northern-most view-deck is proposed to be demolished and replaced with a slightly larger deck with seating opportunities.

The existing trail connection to Discovery Park Boulevard is replaced with a gently meandering trail that connects up with the road at its intersection with the Hidden Valley Trail. This allows removal of a number of stairs, reducing maintenance and significantly improving universal accessibility. (See Appendix for graphics)



DISCOVERY PARK - SOUTH BEACH TRAIL
SCHEMATIC DESIGN | PLAN

Scale: 1" = 60'
0' 60' 120'

7/31/2019

j.a. brennan associates PLLC

View from
New Viewpoint #1

Key Design Considerations

- Prioritize the experiential quality of the trawithin the context of the overall park
- Improve handicapped accessibility, including providing signs to guide visitors to the most accessible route to the beach
- Create a diverse trail experience
- Combine the gentle forest experience with dramatic views below
- Create strong connections to surrounding area
- Accommodate increased visitation while keeping it simple and natural
- Highlight views of:
  - Puget Sound
  - Lighthouse
  - Beach
  - Olympic Mountains
  - Perkins Lane
  - Mount Rainier
  - Alki
- Create a trail that minimizes maintenance and is durable
- Improve wayfinding in keeping with Seattle Parks' standards

Phasing and Next Steps

This phasing plan is provided as a guide for the implementation of the South Beach Trail and is meant to be revised and adjusted over time. The actual phases will be refined during each budget planning process to reflect grant funding availability and the priorities of Seattle Parks and the Friends of Discovery Park.

Considerations | Considerations for determining general phasing priorities include the following:

- ***Stewardship*** | Discovery Park has a long history of stewardship as a vital part of the Seattle Parks system. The park provides valuable fish and wildlife habitat through protection of sensitive resources such as the forest, meadows and shoreline. Recreational, educational, and aesthetic resources should also be maintained and enhanced.

- ***Construction sequencing*** | Trail implementation can be phased over time to achieve the desired final concept plan. Phased construction can allow for parts of the trail to remain open to the public during construction while maintaining construction boundaries for safety and efficiency. In general, it is most efficient to work segment by segment through the trail and make sure newly constructed trails are not impacted in subsequent phases. It may be possible to partially develop a trail segment in one phase, such as clearing and grading for the trail subgrade, and then add low impact items such as surfacing and railings in subsequent phases, as funding becomes available. Careful consideration must be given to access routes for future work sites.

- ***Maintenance*** | Capital improvements to the trail can reduce the amount of future funds spent on maintenance. Examples of this include improving paving surfaces and installing native plants that inhibit weed growth, thereby reducing maintenance requirements.

- ***Honoring funding restrictions*** | Other implementation factors to consider are potential restrictions tied to funding sources. This phasing strategy aims to adhere as closely as possible to the $25,000 grant increments that the Friends of Discovery Park have access to, but can also be modified for application for larger size grants.

Phases | For implementation of the South Beach Trail project, the project has been broken into three phases and ten segments: A through J (see Appendix for Phasing Plan graphic and cost estimate). The three phases consider the logistics of construction and a desire not to close down the trail for a significant period of time. The accompanying cost estimate is broken down in several tabs including an overall summary for the whole project: phases 1-3 and trail sections A-J. Each phase includes a variety of trail segments. The Concept Plan identifies trail segments A through J.

The trail segments are broken down into pieces that are as small as possible, to correspond with the limited construction budget which is likely to be available at one time. For construction feasibility, the trail segments are designed to avoid construction of a trail segment that leads to a dead end or requires closure of the whole trail for a significant amount of time.The cost estimate for implementation of the Final Trail and Viewpoint Concept Plan is predicated on the assumption that the project will be implemented by Seattle Parks Department's in-house staff and construction crew.

Total Project Cost: $998,545.24
Phase 1: $496,068.23
Phase 2: $305,538.47
Phase 3 $196,938.54

New Viewpoint #2 location from below

Next steps for implementation of the project include:

- Wetland Reconnaissance for all wetlands within 200 feet of the project
- Wetland delineations of wetlands that may be located in close proximity to the trail alignment
- Geologic critical areas report identifying steep slope critical areas
- Critical Areas Report documenting wetlands and steep slope critical areas as required for submittal for a critical areas permit from Seattle Department of Construction and Inspections (SDCI).
- Detailed design of trail and viewpoints as required for Seattle Parks Trails Construction (no bid)
- Breakdown of trail implementation into phases based on funding availability

Project Technical Memorandums

Site Inventory and Analysis

Introduction

This project seeks to update, renovate and redesign the South Beach Trail at Discovery Park. The trail connects from the Loop Trail to South Beach and West Point, and the primary goal is to create a premier trail experience. The project consists of the schematic design of South Beach Trail from the Loop Trail to the point where the South Beach Trail connects with Discovery Park Boulevard. JA Brennan Associates, PLLC provided landscape architectural design services for design of the trail including public and stakeholder outreach support. Shannon & Wilson provided geotechnical services.

South Beach Trail has fallen into disrepair due to the age of the trail and due to the effects of slope instability and erosion, as documented in a prior geotechnical report by Shannon & Wilson (March 2018). The project aims to create a low maintenance trail—that offers a variety of Puget Sound's views—with improved safety and accessibility.

Schedule

- Inventory and analysis: December 2018
- Alternative Concept Development: mid-December 2018 through February 2019
- Proview Meeting #1: February 19, 2019
- Public Meeting #1: end February 2019
- Draft Preferred Concept: end March 2019
- ProView Meeting #2: March 12, 2019
- Public Meeting #2: March 27, 2019
- Final Trail and Viewpoint Concept: mid-March–July 2019

Project Context

South Beach Trail is located in the northwest corner of Discovery Park. It offers visitors the experience of exploring an established coastal forest above an eroding feeder bluff with views through the trees to the lighthouse, the Sound and to the Olympics beyond. The trail drops approximately 220 vertical feet before connecting to the South Beach Access Road that leads to the extensive beach below.

The Capehart restoration area lies to the east of the project area and the West Point Sewage Treatment Facility is located just north of the South Beach Trail area.

Renovation of South Beach Trail must be considered within the context of the Discovery Park Master Plan, which guides all design and planning within the park.

Inventory and Analysis

For ease of analysis, the site has been divided into two parts: an upper zone and a lower zone. The upper zone has higher quality vegetation that includes mature big leaf maples and pines. It is also steeper than the lower zone and elevated above the bluff, providing many dramatic views over the tree tops and out to the Sound. The lower zone has poorer vegetation and more clay soil but it also has great potential for improvement. Its gentler grades slope out towards the top of the bluff with spectacular views through the trees.

The South Beach Trail was first designed by EDAW in 1982. The trail is a much loved and well used trail in Discovery Park. As detailed in the Shannon & Wilson geotechnical report, there are many areas of erosion and soil creep along the trail which is leading to failure of the wooden stairways constructed in the steeper parts of the trail. Three wooden view decks with railings were built along the trail. Two of the view decks are in moderate condition. Platform #2's views of the beach and lighthouse beyond could be opened up with minor vegetation pruning and clearing. No large trees obstruct the view. Views from Platform #1 however, are more difficult to open up after significant vegetation growth in the view corridor. The decks are small with room for only one group of up to 3 or 4 people.

Our site analysis of the South Beach Trail has been informed by Shannon & Wilson's geotechnical report combined with field reconnaissance. The primary issues effecting the trail are surface water erosion and soil creep, which has led to muddy conditions, undercut steps, gullying and some potentially dangerous conditions. We have worked closely with Bill Laprade (Shannon and Wilson) to gain an understanding of geotechnical issues along the trail and also in the vicinity of the trail where alternative routes were explored. All new trail options have been designed in close coordination with Laprade who has advised on the best design solutions.

Soil Creep Analysis

Opportunities

The need to address the trail and viewpoint condition offers an opportunity to re-evaluate and improve the trail as a whole and enhance the overall experience and enjoyment of all trail users.

Trails

- Close high maintenance trails
- Retain trail segments that are relatively stable and provide water views
- Remove failing stair structures
- Reduce number of stairs required
- Enhance trail longevity
- Construct trails with gentler gradients for improved accessibility and reduced maintenance needs

Failing Stairs on South Beach Trail

Viewpoints

- Assess existing view decks (platforms) and remove or replace
- Create new at-grade viewpoints with rustic edge treatments and seating
- Create new viewpoints to further enhance the visitor experience
- Identify a viewpoint or viewpoints that can accommodate more visitors (6-8)

View from Hidden Valley Viewpoint

Alternatives

Introduction

The two alternative trail design options for South Beach Trail are the "South Edge Explorer" and the "Forest Immersion Trail." Alternative 1, the South Edge Explorer, prioritizes views and stays as close to the water as possible, connecting with several viewpoints along the way. Alternative 2, the Forest Immersion Trail, meanders through the interior of the forest and offers spur trails at various points leading to dramatic views along the bluff.

Alternative 1 (South Edge Explorer)

The South Edge Explorer Trail stays as close to the water as possible, while winding through the forest, giving the visitor the experience of coming in and out of Puget Sound views. These viewpoints are located along the trail, so all visitors experience them along the way.

Upper Zone | The upper zone of the trail retains the majority of the existing trail, diverging for only 250'–300' to bypass the existing trail segment with the majority of the stairways that have fallen into disrepair due to the surface water erosion and soil creep. A new viewpoint is proposed adjacent to a signature maple tree where the existing trail takes a sudden turn to the south offering expansive views to the Olympics and Mount Rainier. The proposed trail enters into the forest just north of this viewpoint, makes a couple switchbacks on more stable slopes, dropping to meet the existing trail near the second of the two existing view decks. After sitting at the new enlarged view deck, the visitor continues down the existing trail another 120' before entering the forest of the lower zone.

Lower Zone | Within the lower zone, the trail explores the south edge, meandering through the trees with a number of (at grade) viewpoints at the top of the bluff along the way. In this alternative, the majority of the existing lower zone trail is closed and replaced with a new trail alignment with gentler grades and improved views. The majority of stairs are eliminated by lengthening and meandering the trail.

One existing viewpoint—currently an open gravel area at the edge of a recently revegetated bluff area—is enhanced to create a view node with edge treatments and seating opportunities.

Pros

- Frequent views along the trail that all visitors can experience
- Improved visitor safety at viewpoints, as these would not be isolated from the main trail
- Visitors consistently further from the traffic on Discovery Park Boulevard than in Alt 2
- Gentler gradient trail (than existing), improving accessibility
- Lower maintenance than existing trail; fewer stairs (slightly more stairs than Alt 2)

Cons

- Slightly greater initial construction cost due to length of new trail proposed
- Visitors at viewpoints would be potentially disturbed by passersby

Alternative 2 (Forest Immersion)

The Forest Immersion Trail option explores the forest further away from the bluff but has several spurs that T off of the trail and make their way out to viewpoints along the bluff.

Upper Zone | In the upper zone, the majority of the existing trail is replaced with a new trail alignment, thereby eliminating most of the existing stairs and shifting the trail northward into the forest. As with Trail Alternative 1, a new viewpoint is proposed adjacent to a signature maple tree, where the existing trail takes a sudden turn to the south with spectacular views to the Olympics and Mount Rainier. The trail then enters the forest, on more stable slopes, bringing the visitor into a quiet forested bowl landform, switch backing gently through the trees before connecting back up with the existing trail at the southern edge of the bowl. At the intersection with the existing trail, the visitor can travel south along a segment of the existing trail to a replaced view deck at "platform #2" or travel north on the existing trail.

Lower Zone | In the lower zone, just before the existing trail intersection, the new trail alignment meanders into the forest with a series of spur trails to new viewpoints along the top of the bluff. In this option, approximately 2/3 of the lower trail remains as existing with maintenance improvements as needed. The portion of the existing trail which is steep—with a number of stairways and a frequently muddy and monotonous straight-away—is closed and replaced with a longer, gentler gradient trail.

One existing viewpoint—currently an open gravel area at the edge of a recently revegetated bluff area—is enhanced to create a view node with edge treatments and seating opportunities.

Pros

- Majority of viewpoints are off the primary trail, creating quiet zones for relaxation and enjoying views
- Visitors experience more of the forest, further from the traffic on Discovery Park Boulevard
- Gentler gradient trail (than existing), improving accessibility
- Lower maintenance than existing trail; fewer stairs (and fewer stairs than in Alt 1)

Cons

- Runners and visitors staying on the primary trail alignment would see fewer views
- Greater overall impact on the existing forest habitat
- Potential safety risks due to isolation of viewpoints from the main trail

Sub Alternatives

- Deck versus. on grade viewpoints
- Place-making gathering area viewpoints
- Restoration planting included
- No restoration plantings
- Interpretive elements
- No interpretation

Design Considerations

- Experiential quality in the context of the overall park
- Fit with master plan
- Specific view opportunities
  - Puget Sound
  - Lighthouse
  - Beach
  - Olympic Mountains
  - Perkins Lane
  - Mount Rainier
  - Alki
- Connections to surrounding areas
- What is unique about this part of the park?
- Life span of previous trail and anticipated life span of this trail
- Maintenance and durability
- Accessibility
- Safety
- Recommendations for trail closure
- Integration of interpretive elements

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Appendix A | Graphics

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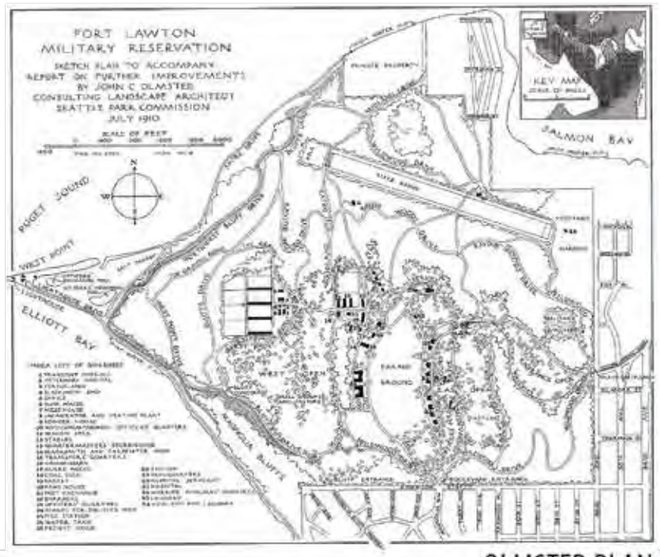

OLMSTED PLAN

AERIAL OF PROJECT AREA

DISCOVERY PARK MAP

DAN KILEY REVISED MASTER PLAN

DISCOVERY PARK - SOUTH BEACH TRAIL

HISTORY AND CONTEXT

7/31/2019

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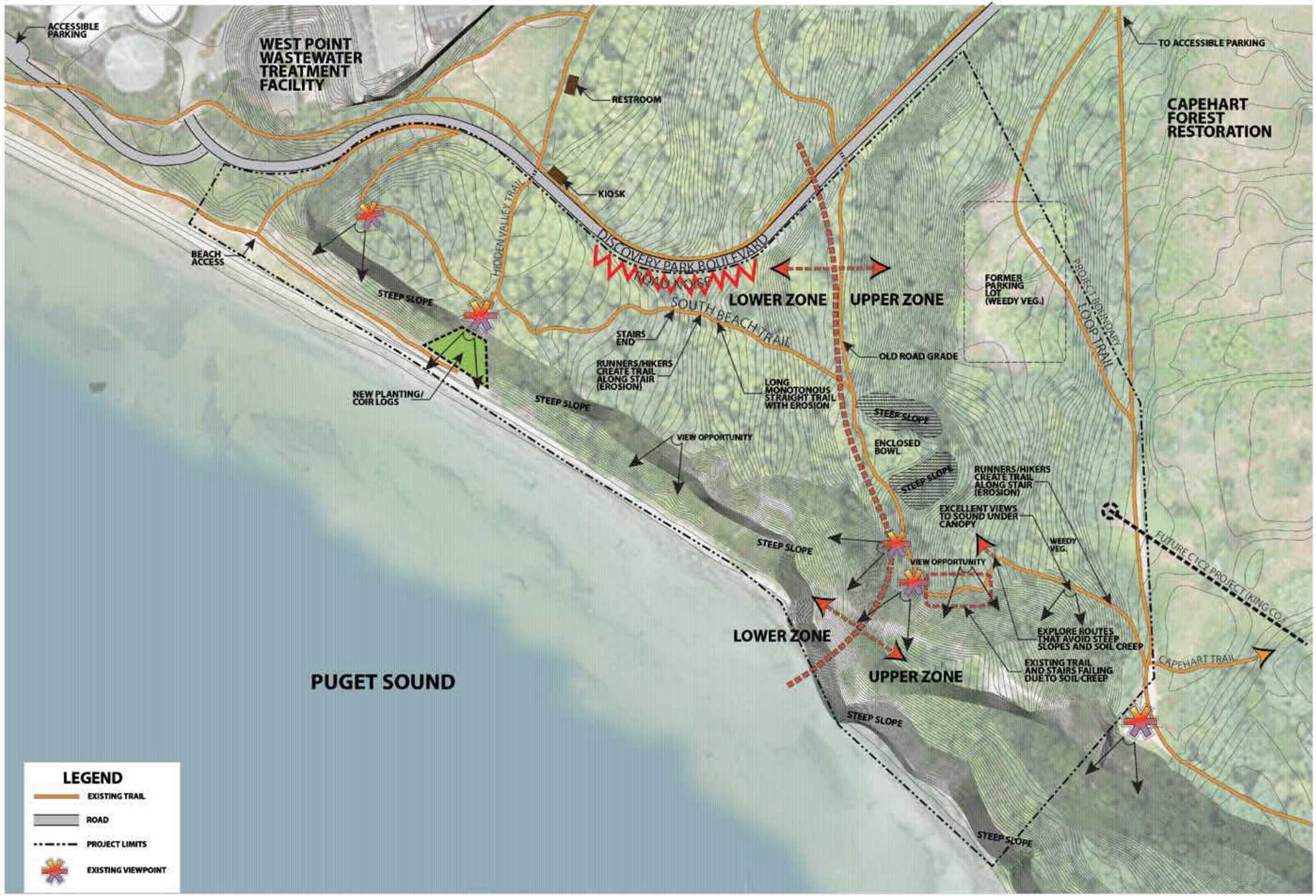

DISCOVERY PARK - SOUTH BEACH TRAIL

ISSUES AND OPPORTUNITIES PLAN

N

Scale: 1" = 60'

0' 60' 120'

2/18/2019

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SOIL CREEP ANALYSIS

LOWER VIEW DECK TO REFURBISH

VIEW FROM NEW UPPER VIEWPOINT

FAILING STAIRS ON SOUTH BEACH TRAIL

NEW VIEWPOINT LOCATION

VIEW FROM HIDDEN VALLEY VIEWPOINT

NORTH PORTION OF TRAIL

LOWER ZONE EDGE CHARACTER

PORTIONS OF TRAIL TO RETAIN

DISCOVERY PARK - SOUTH BEACH TRAIL

IMAGE BOARD

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SOIL CREEP ON SOUTH BEACH TRAIL

VIEW DECK ON SOUTH BEACH TRAIL

VIEW DECK AT DAYBREAK STAR

FAILING STAIRS ON SOUTH BEACH TRAIL

FAILING STAIRS ON SOUTH BEACH TRAIL

WALL AT THE CHAPEL

VIEWPOINT AREA ON TRAIL

NORTH PORTION OF TRAIL

SOUTH BEACH

DISCOVERY PARK - SOUTH BEACH TRAIL

Image Board

3/5/2019

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DISCOVERY PARK - SOUTH BEACH TRAIL

ALTERNATIVE 1 (SOUTH EDGE EXPLORER)

N

Scale: 1" = 60'

0' 60' 120'

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DISCOVERY PARK - SOUTH BEACH TRAIL

ALTERNATIVE 2 (FOREST IMMERSION TRAIL)

N

Scale: 1" = 60'

0' 60' 120'

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ACCESSIBLE PARKING

WEST POINT WASTEWATER TREATMENT FACILITY

RESTROOM

CAPEHART FOREST RESTORATION

DECOMMISSION SEGMENT

DEMO EXISTING DECK AND EXPAND INTO NEW ON-GRADE VIEWPOINT

J

VIEWPOINT 5 (MEDIUM)

KIOSK

DISCOVERY PARK BOULEVARD

I

H

HIDDEN VALLEY TRAIL

VIEWPOINT 4 (LARGE)

G

SECTION G

SOUTH BEACH TRAIL

DECOMMISSION SEGMENT E

F

RESTORATION AREA, TYP.

VIEWPOINT 3 (MEDIUM)

LOOP TRAIL

D

SECTION D

E

B

C

SECTION C

DECOMMISSION SEGMENT C

VIEWPOINT 2 (LARGE)

REFURBISHED LOWER VIEW DECK

VIEWPOINT 1 (LARGE)

A

DECOMMISSION SEGMENT A

CAPEHART TRAIL

SECTION A

DECOMMISSION SEGMENT B

DECOMMISSION UPPER VIEW DECK

PUGET SOUND

LEGEND

- EXISTING TRAIL TO REMAIN
- EXISTING TRAIL TO BE REMOVED
- EXISTING TRAIL TO REMAIN - WITH IMPROVMENTS
- NEW TRAIL SEGMENT
- ROAD
- EXISTING VIEWPOINT
- PROPOSED VIEWPOINT
- ENHANCED VIEWPOINT NODE

DISCOVERY PARK - SOUTH BEACH TRAIL

SCHEMATIC DESIGN | PLAN

N

Scale: 1" = 60'

0' 60' 120'

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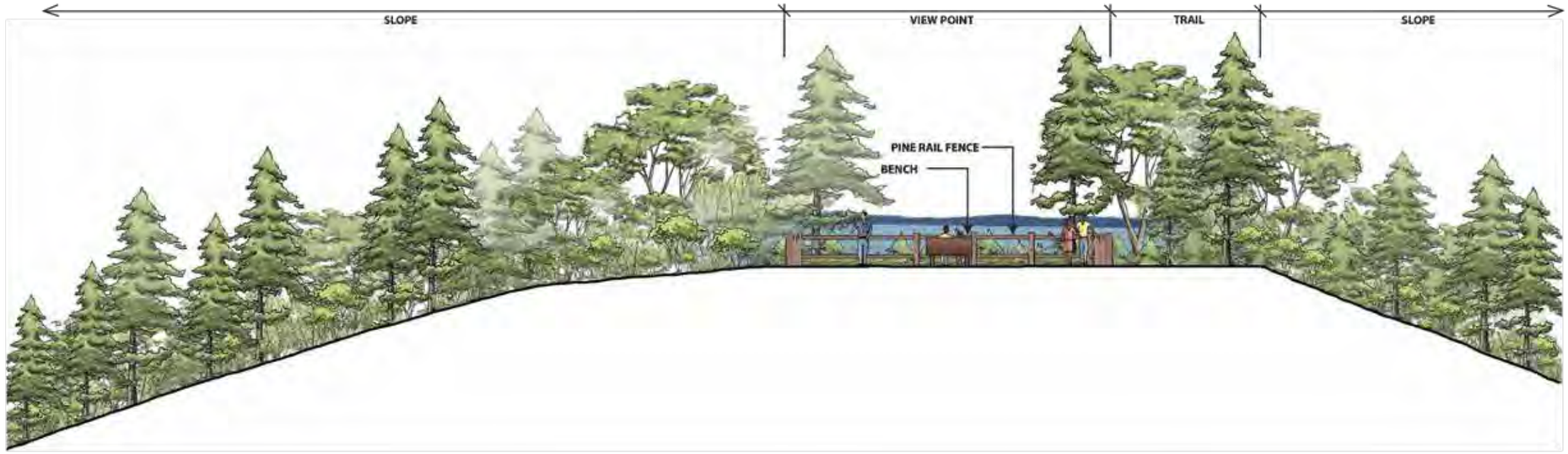

A **VIEWPOINT 1 SECTION**
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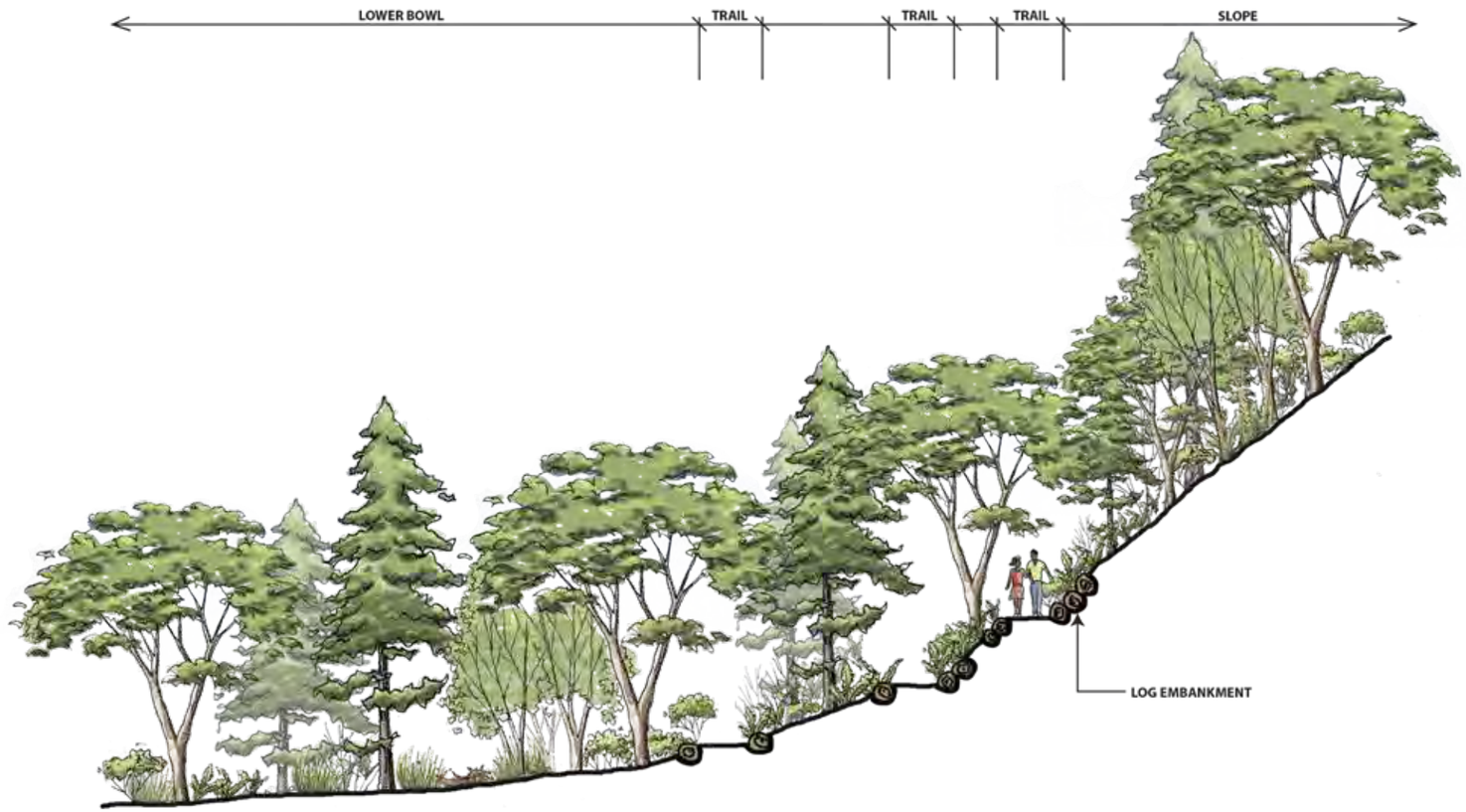

B **BOWL SECTION**
Scale: 1/4" = 1' - 0"

DISCOVERY PARK - SOUTH BEACH TRAIL

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SCHEMATIC DESIGN | SECTIONS A & B

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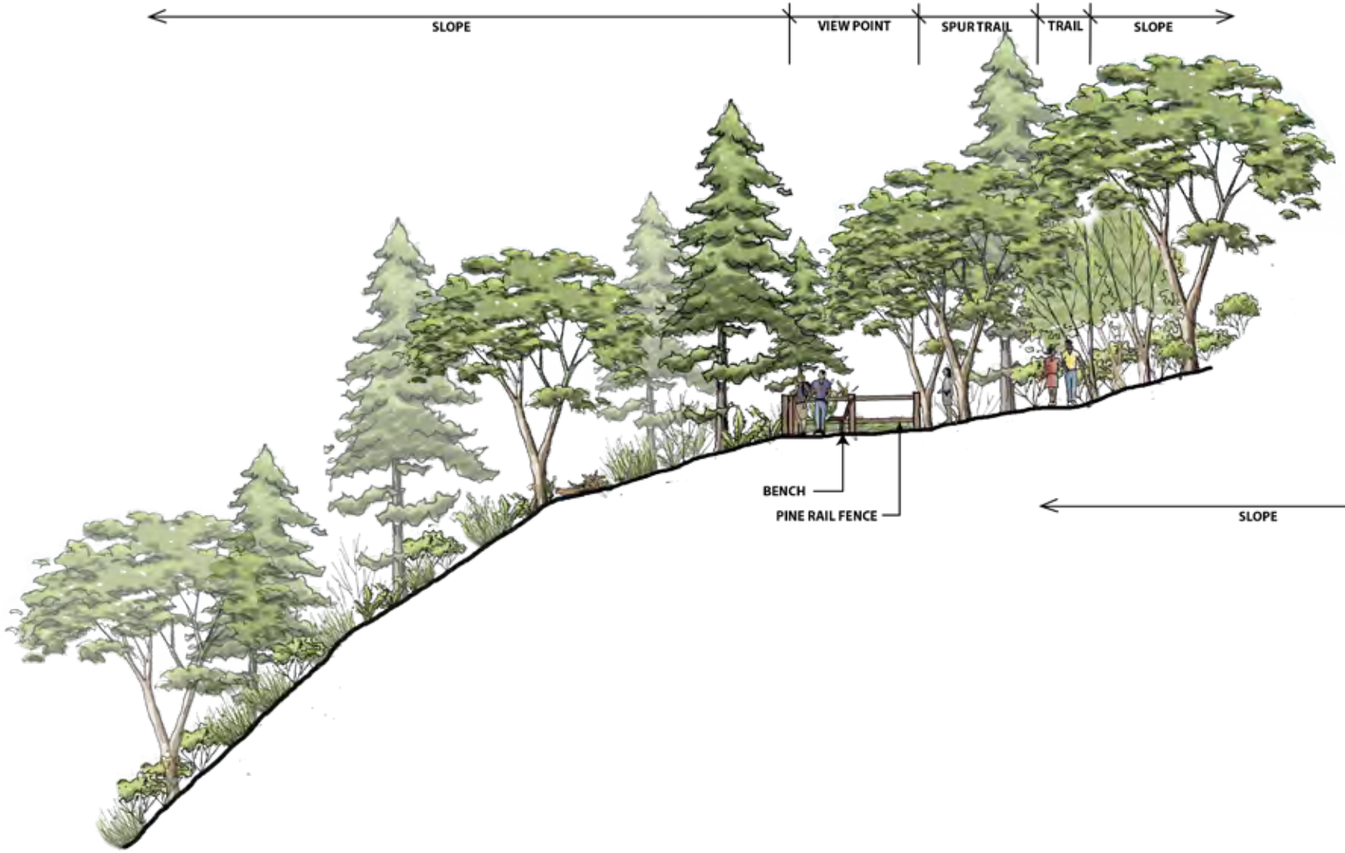

C **VIEWPOINT 2 SECTION**
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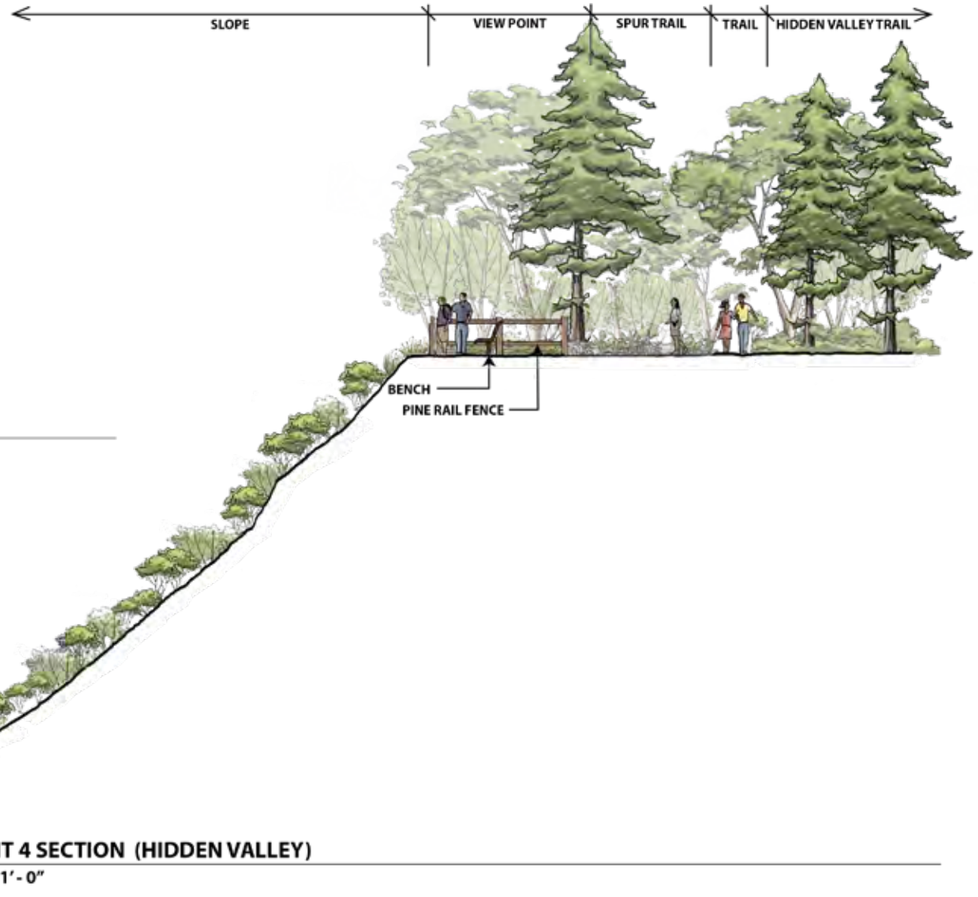

D **VIEWPOINT 4 SECTION (HIDDEN VALLEY)**
Scale: 1/4" = 1' - 0"

DISCOVERY PARK - SOUTH BEACH TRAIL

SCHEMATIC DESIGN | SECTIONS C & D

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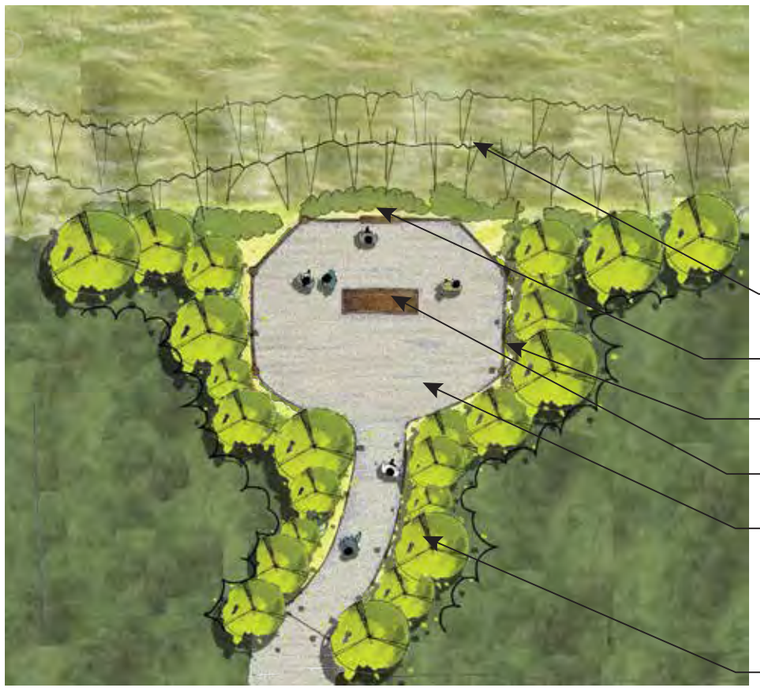

SLOPE

POTENTIAL INTEPRETIVE PANEL

PINE RAIL FENCE

BENCH

CRUSHED ROCK

RESTORATION PLANTING

RESTORATION PLANTING WITH HABITAT LOGS

MEDIUM VIEWPOINT

LARGE VIEWPOINT

DISCOVERY PARK - SOUTH BEACH TRAIL

VIEWPOINT DETAIL AREA PLANS

Scale: 1″ = 4′

0′ 4′ 8′

7/22/2019

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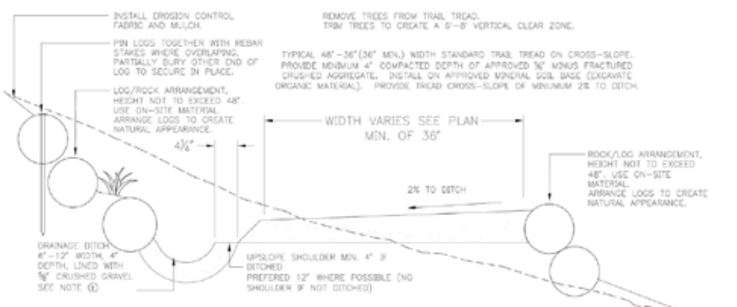
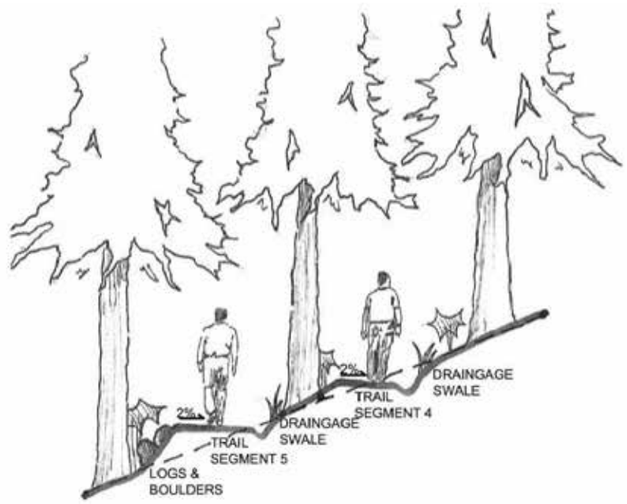
PERSPECTIVE OF NEW VIEWPOINT

TRAIL SWITCHBACK WITH LOG ARMORING

RESTORATION PLANTING WITH LOG EDGE



TRAIL DETAIL WITH LOG ARMORING



TRAIL CROSS SECTION

STANDARD PIPE FRAME BENCH

DISCOVERY PARK - SOUTH BEACH TRAIL

DETAILS BOARD

7/31/2019

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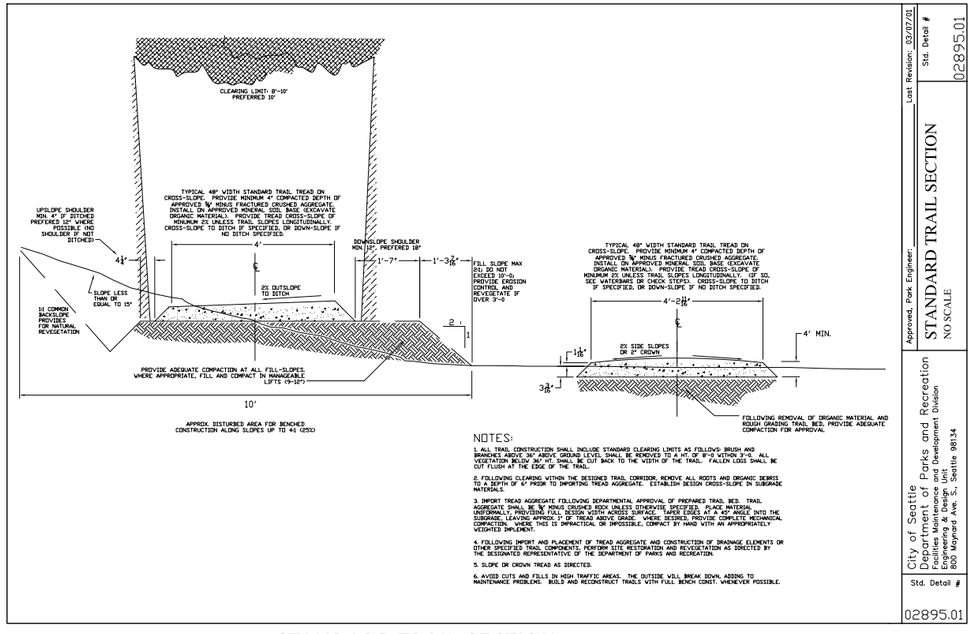


NOTES:

1. ALL TRAIL CONSTRUCTION SHALL INCLUDE STANDARD CLEARING LIMITS AS FOLLOWS: BRUSH AND BRANCHES ABOVE 36" ABOVE GROUND LEVEL SHALL BE REMOVED TO A HT. OF 8'-0 WITHIN 3'-0. ALL VEGETATION BELOW 36" HT. SHALL BE CUT BACK TO THE WIDTH OF THE TRAIL. FALLEN LOGS SHALL BE CUT FLUSH AT THE EDGE OF THE TRAIL.

2. FOLLOWING CLEARING WITHIN THE DESIGNED TRAIL CORRIDOR, REMOVE ALL ROOTS AND ORGANIC DEBRIS TO A DEPTH OF 4" PRIOR TO IMPORTING TREAD AGGREGATE. ESTABLISH DESIGN CROSS-SLOPE IN SUBGRADE MATERIALS.

3. IMPORT TREAD AGGREGATE FOLLOWING DEPARTMENTAL APPROVAL OF PREPARED TRAIL BED. TRAIL AGGREGATE SHALL BE ¾" MINUS CRUSHED ROCK WITH SUFFICIENT FINES TO COMPACT INTO THE SUBGRADE, LEAVING APPROX 1" OF TREAD ABOVE GRADE. WHERE DESIRED, PROVIDE COMPLETE MECHANICAL COMPACTION. WHERE THIS IS IMPRACTICAL OR IMPOSSIBLE, COMPACT BY HAND WITH AN APPROPRIATELY WEIGHTED IMPLEMENT.

4. FOLLOWING GRADING AND PLACEMENT OF TREAD AGGREGATE AND CONSTRUCTION OF DRAINAGE ELEMENTS OR ANY OTHER TRAIL COMPONENTS, PERFORM SITE RESTORATION AND REVEGETATION AS DIRECTED BY THE DESIGNATED REPRESENTATIVE OF THE DEPARTMENT OF PARKS AND RECREATION.

5. SLOPE OR CROWN TREAD AS DIRECTED.

6. AVOID CUTS AND FILLS IN HIGH TRAFFIC AREAS. THE OUTSIDE WILL BREAK DOWN, ADDING TO MAINTENANCE PROBLEMS. BUILD AND RECONSTRUCT TRAILS WITH FULL BENCH CONST. WHENEVER POSSIBLE.

Last Revision: 03/07/01 | Std. Detail # 02895.01

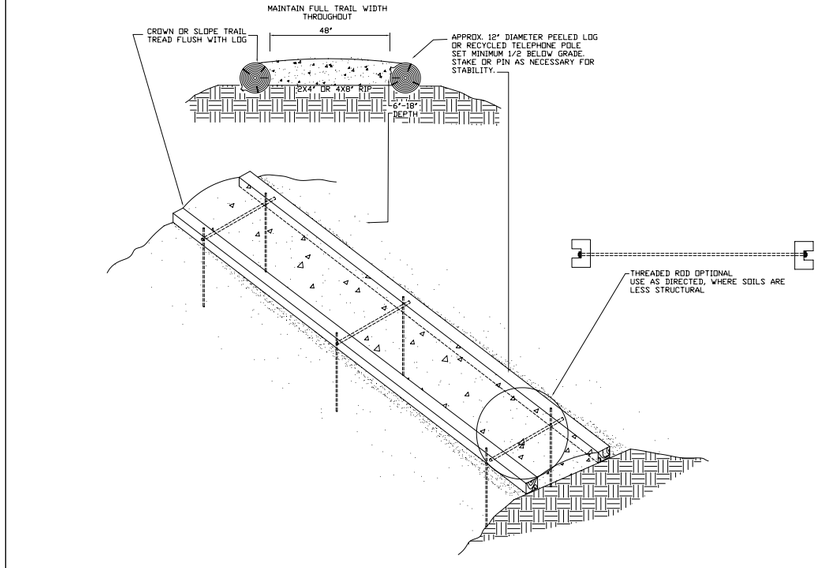
Approved, Park Engineer: _____

STANDARD TRAIL SECTION
NO SCALE

City of Seattle
Department of Parks and Recreation
Facilities Maintenance and Development Division
Engineering & Design Unit
800 Maynard Ave. S., Seattle 98134

Std. Detail # 02895.01

STANDARD TRAIL SECTION



Last Revision: 03/07/01 | Std. Detail # 02895.02B

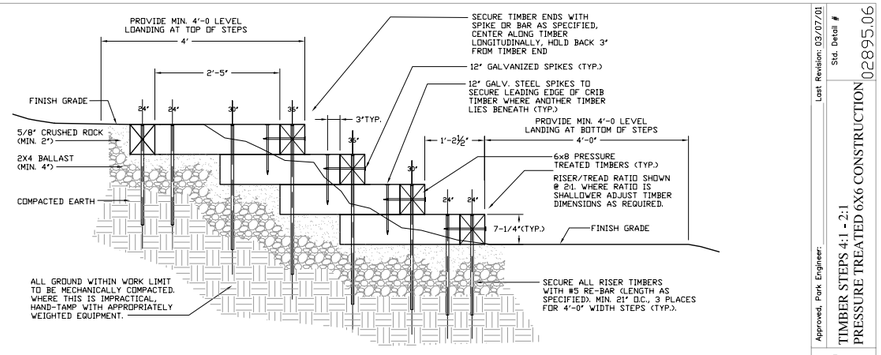
Approved, Park Engineer: _____

TURNPIKE DETAIL
NO SCALE

City of Seattle
Department of Parks and Recreation
Facilities Maintenance and Development Division
Engineering & Design Unit
800 Maynard Ave. S., Seattle 98134

Std. Detail # 02895.02B

TURNPIKE DETAIL



NOTES:

1. USE THIS DETAIL WHERE AVERAGE GROUND SLOPE IS 25-50%, BUT DOES NOT EXCEED 65% FOR MORE THAN 10 LF.

2. PREPARE ALL SUBGRADE SURFACES PRIOR TO DRILLING TIMBERS FOR STEEL PINS. ADJUST DRILL-POINTS TO ALLOW FOR SUBGRADE OBSTRUCTIONS SUCH AS ROCKS. COMPACT ALL SUBGRADE SURFACES TO RECIEVE TIMBERS.

3. ALL HORIZONTAL DIMENSIONS GIVEN ABOVE ASSUME 2:1 (50%) GRADE. ADJUST AS NECESSARY TO ACCOMODATE SHALLOWER GRADES TO 4:1 (25%).

4. BACKFILL ALL TIMBER CRIBS W/MIN. 6" COMPACTED DEPTH ⅜" MINUS CRUSHED AGGREGATE, COMPACT FINISHED GRADE FLUSH TO TOP OF TIMBER CRIB.

5. REFER TO APPROPRIATE DETAILS FOR SLOPES LESS THAN 4:1 (10-20%, SEE WATER BARS, 20-25% SEE 6X6 STEPS) OR GREATER THAN 2:1 (>50%, SEE OPEN TREAD LADDER STEPS).

6. TREATED WOOD SHALL BE PRESSURE TREATED, ACCORDING TO AWPA QUALITY STANDARD 3B (MINIMUM RETENTION OF 0.20 LBS. PER CUBIC FOOT) FOR ABOVE GROUND USE, AWPA QUALITY STANDARD 4A (MINIMUM RETENTION OF 0.41 LBS. PER CUBIC FOOT) FOR GROUND CONTACT OR FRESH WATER USE, OR AWPA QUALITY STANDARD 4B (MINIMUM RETENTION OF 0.61 LBS. PER CUBIC FOOT) FOR GROUND CONTACT, OR FRESH WATER OR IMPORTANT STRUCTURAL COMPONENTS WITH AN EPA APPROVED (COPPER AZOLE) WOOD PRESERVATIVE. THE ONLY TREATMENTS CURRENTLY ACCEPTABLE FOR WOOD USE IN PARKS ARE EITHER ACQ OR CBA-A & CBA-B (USE CATEGORIES UC1, UC2, UC3, UC3B, UC4A, AND UC4B) TREATMENTS. WOOD FOR GROUND CONTACT USE SHALL BE INCISED, AND FOR ABOVE GROUND USE (HANDRAILS) SHALL BE NON-INCISED.

Last Revision: 03/07/01 | Std. Detail # 02895.06

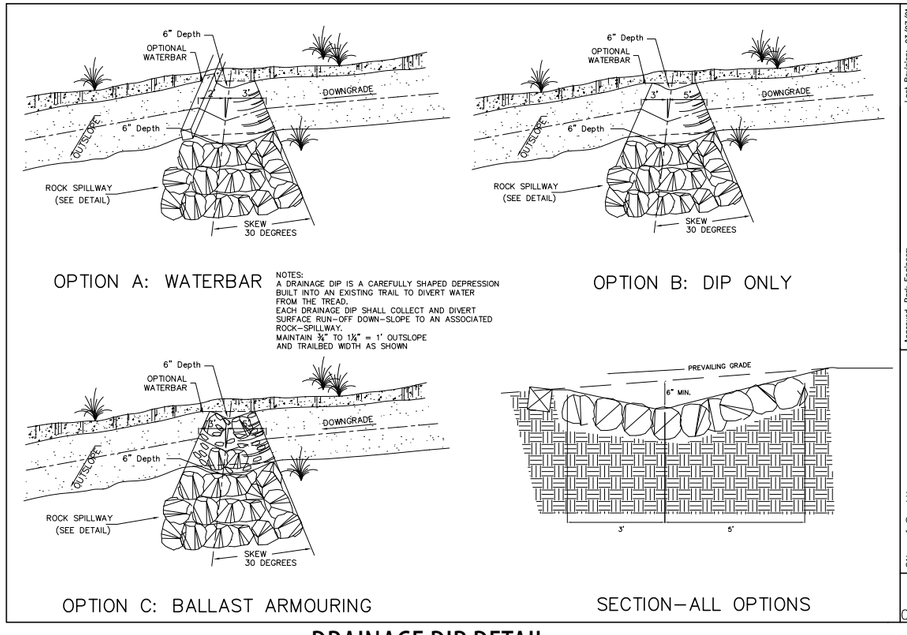
Approved, Park Engineer: _____

TIMBER STEPS 4:1 - 2:1
PRESSURE TREATED 6X6 CONSTRUCTION

City of Seattle
Department of Parks and Recreation
Facilities Maintenance and Development Division
Engineering & Design Unit
800 Maynard Ave. S., Seattle 98134

Std. Detail # 02895.06

TIMBER STEPS DETAIL



Last Revision: 03/07/01 | Std. Detail # 02895.11

Approved, Park Engineer: _____

DRAINAGE DIP DETAIL
NO SCALE

City of Seattle
Department of Parks and Recreation
Facilities Maintenance and Development Division
Engineering & Design Unit
800 Maynard Ave. S., Seattle 98134

Std. Detail # 02895.11

DRAINAGE DIP DETAIL

DISCOVERY PARK - SOUTH BEACH TRAIL

Details Board

7/31/2019

j.a. brennan associates PLLC

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
t | 206.583.0620 | w | jabrennan.com

Date: 31-Jul-19

SUMMARY ALL TRAIL SECTIONS

Item	Description	Quantity	Unit	Unit Costs		Subtotal
1	Trail Section A	1	LS	$178,721.06	$	178,721.06
2	Trail Section B	1	LS	$214,628.75	$	214,628.75
3	Trail Section C	1	LS	$92,405.77	$	92,405.77
4	Trail Section D	1	LS	$10,312.65	$	10,312.65
5	Trail Section E	1	LS	$290,312.76	$	290,312.76
6	Trail Section F	1	LS	$15,225.71	$	15,225.71
7	Trail Section G	1	LS	$55,097.81	$	55,097.81
8	Trail Section H	1	LS	$1,459.61	$	1,459.61
9	Trail Section I	1	LS	$34,612.08	$	34,612.08
10	Trail Section J	1	LS	$105,769.04	$	105,769.04
	Total South Beach Trail Construction Cost				**$**	**998,545.24**

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
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Date: 31-Jul-19

SUMMARY PHASE 1 TRAIL SECTIONS

Item	Description	Quantity	Unit	Unit Costs		Subtotal
1	Trail Section A	1	LS	$178,721.06		$178,721.06
2	Trail Section B	1	LS	$214,628.75	$	214,628.75
3	Trail Section C	1	LS	$92,405.77	$	92,405.77
4	Trail Section D	1	LS	$10,312.65	$	10,312.65
	Total Phase 1 Construction Cost					**$ 496,068.23**

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
t | 206.583.0620 | w | jabrennan.com

Date: 31-Jul-19

SUMMARY PHASE 2 TRAIL SECTIONS

Item	Description	Quantity	Unit	Unit Costs		Subtotal	
5	Trail Section E	1	LS	$290,312.76	$	290,312.76	
6	Trail Section F	1	LS	$15,225.71	$	15,225.71	
	Total Phase 2 Construction Cost						**$ 305,538.47**

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
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Date: 31-Jul-19

SUMMARY ALL TRAIL SECTION

Item	Description	Quantity	Unit	Unit Costs		Subtotal	
7	Trail Section G	1	LS	$55,097.81	$	55,097.81	
8	Trail Section H	1	LS	$1,459.61	$	1,459.61	
9	Trail Section I	1	LS	$34,612.08	$	34,612.08	
10	Trail Section J	1	LS	$105,769.04	$	105,769.04	
	Total South Beach Trail Construction Cost						**$ 196,938.54**

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION A

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
t | 206.583.0620 | w | jabrennan.com

MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	93,670.10	9,367.01	
						$9,367.01

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	240	LF	87.50	21,000.00	
	Non-Standard Trail (technical / crushed rock)	190	LF	131.29	24,945.10	
	Refurbished Existing Trail	50	LF	20.00	1,000.00	
						$46,945.10

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign Bollard	1	EA	765.00	765.00	
	Trail Entry Sign (preserve rules, small map & trail name)	1	EA	4,000.00	4,000.00	
						$4,765.00

VIEWPOINT (1 LARGE)

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Crushed rock pad	620	SF	4.00	2,480.00	
	Bench	1	EA	1,700.00	1,700.00	
	Pine Rail Fence	56	LF	30.00	1,680.00	
	Planting - General Landscaping	1	LS	4,000.00	4,000.00	
	Site Prep	1	LS	3,500.00	3,500.00	
						$13,360.00

DECOMMISSIONING TRAIL

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed (Decommissioning Trail Section A)	1000	SF	3.50	3,500.00	
	Site Prep	1	LS	2,000.00	2,000.00	
	Log and Brush Placement (Decommissioning Trail Section A)	1	LS	2,000.00	2,000.00	
						$7,500.00

GENERAL LANDSCAPING / RESTORATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed	4600	SF	3.50	16,100.00	
	Site Prep	1	LS	5,000.00	5,000.00	
						$21,100.00

SUBTOTAL	$103,037.11
CONSTRUCTION CONTINGENCY: 10%	$10,303.71
DESIGN CONTINGENCY: 25%	$25,759.28
CONTRACTOR OVERHEAD & PROFIT: 12%	$15,455.57
SALES TAX: 10.1% (Seattle, WA)	$14,049.11
INFLATION (3% PER YEAR FOR 2 YEARS)	$10,116.29
TOTAL MACC	**$178,721.06**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION B

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
t | 206.583.0620 | w | jabrennan.com

MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	112,489.80	11,248.98	
						$11,248.98

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	150	LF	87.50	13,125.00	
	Non-Standard Trail (technical / crushed rock)	620	LF	131.29	81,399.80	
	Refurbished Existing Trail	0	LF	20.00	0.00	
						$94,524.80

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign	1	EA	765.00	765.00	
	Trail Entry Sign (preserve rules, small map & trail name)	0	EA	4,000.00	0.00	
						$765.00

DECOMMISSIONING TRAIL

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed (Decommissioning Trail Section B)	1200	SF	3.50	4,200.00	
	Site Prep	1	LS	2,000.00	2,000.00	
	Demo and Remove Existing Timber Steps (Decommissioning Trail Section B)	1	LS	3,000.00	3,000.00	
	Demo and Remove Existing Viewdeck (Decommissioning Trail Section B)	1	LS	5,000.00	5,000.00	
	Log and Brush Placement (Decommissioning Trail Section B)	1	LS	3,000.00	3,000.00	
						$17,200.00

SUBTOTAL	$123,738.78
CONSTRUCTION CONTINGENCY: 10%	$12,373.88
DESIGN CONTINGENCY: 25%	$30,934.70
CONTRACTOR OVERHEAD & PROFIT: 12%	$18,560.82
SALES TAX: 10.1% (Seattle, WA)	$16,871.78
INFLATION (3% PER YEAR FOR 2 YEARS)	$12,148.80
TOTAL MACC	**$214,628.75**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION C

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
t | 206.583.0620 | w | jabrennan.com

MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	48,431.10	4,843.11	
						$4,843.11

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	0	LF	87.50	0.00	
	Non-Standard Trail (technical / crushed rock)	90	LF	131.29	11,816.10	
	Refurbished Existing Trail	85	LF	20.00	1,700.00	
						$13,516.10

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign Bollard	1	EA	765.00	765.00	
	Trail Entry Sign (preserve rules, small map & trail name)	0	EA	4,000.00	0.00	
						$765.00

TRAIL STRUCTURES

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Replaced Viewdeck (200 SF)	1	LS	22,000.00	22,000.00	
						22,000.00

DECOMMISSIONING TRAIL

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed (Decommissioning Trail Section C)	400	SF	3.50	1,400.00	
	Site Prep	1	LS	1,000.00	1,000.00	
	Log and Brush Placement (Decommissioning Trail Section C)	1	LS	1,000.00	1,000.00	
						$3,400.00

GENERAL LANDSCAPING / RESTORATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed	1500	SF	3.50	5,250.00	
	Site Prep	1	LS	3,500.00	3,500.00	
						$8,750.00

SUBTOTAL	$53,274.21
CONSTRUCTION CONTINGENCY: 10%	$5,327.42
DESIGN CONTINGENCY: 25%	$13,318.55
CONTRACTOR OVERHEAD & PROFIT: 12%	$7,991.13
SALES TAX: 10.1% (Seattle, WA)	$7,263.94
INFLATION (3% PER YEAR FOR 2 YEARS)	$5,230.52
TOTAL MACC	**$92,405.77**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION D

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
t | 206.583.0620 | w | jabrennan.com

MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	5,405.00	540.50	
						$540.50

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	0	LF	87.50	0.00	
	Non-Standard Trail (technical / crushed rock)	0	LF	131.29	0.00	
	Refurbished Existing Trail	232	LF	20.00	4,640.00	
						$4,640.00

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign	1	EA	765.00	765.00	
	Trail Entry Sign (preserve rules, small map & trail name)	0	EA	4,000.00	0.00	
						$765.00

SUBTOTAL	$5,945.50
CONSTRUCTION CONTINGENCY: 10%	$594.55
DESIGN CONTINGENCY: 25%	$1,486.38
CONTRACTOR OVERHEAD & PROFIT: 12%	$891.83
SALES TAX: 10.1% (Seattle, WA)	$810.67
INFLATION (3% PER YEAR FOR 2 YEARS)	$583.74
TOTAL MACC	**$10,312.65**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION E

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
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MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	152,156.80	15,215.68	
						$15,215.68

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	725	LF	87.50	63,437.50	
	Non-Standard Trail (technical / crushed rock)	170	LF	131.29	22,319.30	
						$85,756.80

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign Bollard	2	EA	765.00	1,530.00	
	Trail Entry Sign (preserve rules, small map & trail name)	0	EA	4,000.00	0.00	
						$1,530.00

VIEWPOINTS (1 LARGE AND 1 MEDIUM)

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Crushed rock pad	940	SF	4.00	3,760.00	
	Bench	2	EA	1,700.00	3,400.00	
	Pine Rail Fence	96	LF	30.00	2,880.00	
	Planting - native trees, shrubs and seed	2	LS	4,000.00	8,000.00	
	Site Prep	2	LS	3,000.00	6,000.00	
						$24,040.00

GENERAL LANDSCAPING / RESTORATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed	6000	SF	3.50	21,000.00	
	Clear, Grub, Haul & Dump	0.5	AC	6,750.00	3,375.00	
						$24,375.00

DECOMMISSIONING TRAIL

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed (Decommissioning Trail Section E)	2130	SF	3.50	7,455.00	
	Site Prep	1	LS	4,000.00	4,000.00	
	Demo and Remove Existing Timber Steps (Decommissioning Trail Section E)	1	LS	3,000.00	3,000.00	
	Log and Brush Placement (Decommissioning Trail Section E)	1	LS	2,000.00	2,000.00	
						$16,455.00

SUBTOTAL	$167,372.48
CONSTRUCTION CONTINGENCY: 10%	$16,737.25
DESIGN CONTINGENCY: 25%	$41,843.12
CONTRACTOR OVERHEAD & PROFIT: 12%	$25,105.87
SALES TAX: 10.1% (Seattle, WA)	$22,821.24
INFLATION (3% PER YEAR FOR 2 YEARS)	$16,432.80
TOTAL MACC	**$290,312.76**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION F

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
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MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	7,980.00	798.00	
						$798.00

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	0	LF	87.50	0.00	
	Non-Standard Trail (technical / crushed rock)	0	LF	131.29	0.00	
	Refurbished Trail (crushed rock)	180	LF	20.00	3,600.00	
						$3,600.00

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign	0	EA	765.00	0.00	
	Trail Entry Sign (preserve rules, small map & trail name)	0	EA	4,000.00	0.00	
						$0.00

GENERAL LANDSCAPING / RESTORATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed	1080	SF	3.50	3,780.00	
	Clear, Grub, Haul & Dump	1	LS	600.00	600.00	
						$4,380.00

SUBTOTAL	$8,778.00
CONSTRUCTION CONTINGENCY: 10%	$877.80
DESIGN CONTINGENCY: 25%	$2,194.50
CONTRACTOR OVERHEAD & PROFIT: 12%	$1,316.70
SALES TAX: 10.1% (Seattle, WA)	$1,196.88
INFLATION (3% PER YEAR FOR 2 YEARS)	$861.83
TOTAL MACC	**$15,225.71**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION G

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
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MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	28,877.50	2,887.75	
						$2,887.75

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	95	LF	87.50	8,312.50	
	Non-Standard Trail (crushed rock)	0	LF	131.29	0.00	
	Refurbished Trail (crushed rock)	0	LF	20.00	0.00	
						$8,312.50

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign Bollard	1	EA	765.00	765.00	
	Interpretive Sign	0	EA	4,500.00	0.00	
	Trail Entry Sign (preserve rules, small map & trail name)	0	EA	4,000.00	0.00	
						$765.00

VIEWPOINTS (1 LARGE)

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Crushed rock pad	800	SF	4.00	3,200.00	
	Bench	1	EA	1,700.00	1,700.00	
	Pine Rail Fence	130	LF	30.00	3,900.00	
	Planting - native trees, shrubs and seed	1	LS	7,000.00	7,000.00	
	Site Prep (remove crushed rock)	1	LS	4,000.00	4,000.00	
						$19,800.00

SUBTOTAL	$31,765.25
CONSTRUCTION CONTINGENCY: 10%	$3,176.53
DESIGN CONTINGENCY: 25%	$7,941.31
CONTRACTOR OVERHEAD & PROFIT: 12%	$4,764.79
SALES TAX: 10.1% (Seattle, WA)	$4,331.19
INFLATION (3% PER YEAR FOR 2 YEARS)	$3,118.74
TOTAL MACC	**$55,097.81**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.
All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION H

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
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MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	765.00	76.50	
						$76.50

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	0	LF	87.50	0.00	
	Non-Standard Trail (crushed rock)	0	LF	131.29	0.00	
	Refurbished Trail (crushed rock)	230	LF	25.00	5,750.00	

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign Bollard	1	EA	765.00	765.00	
	Trail Entry Sign (preserve rules, small map & trail name)	0	EA	4,000.00	0.00	
						$765.00

GENERAL LANDSCAPING / RESTORATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - General Landscaping	0	LS	4,000.00	0.00	
	Site Prep	0	LS	3,500.00	0.00	
						$0.00

SUBTOTAL	$841.50
CONSTRUCTION CONTINGENCY: 10%	$84.15
DESIGN CONTINGENCY: 25%	$210.38
CONTRACTOR OVERHEAD & PROFIT: 12%	$126.23
SALES TAX: 10.1% (Seattle, WA)	$114.74
INFLATION (3% PER YEAR FOR 2 YEARS)	$82.62
TOTAL MACC	**$1,459.61**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION I

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
t | 206.583.0620 | w | jabrennan.com

MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	18,445.00	1,844.50	
						$1,844.50

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	New Trail (crushed rock)	0	LF	87.50	0.00	
	Non-Standard Trail (technical / crushed rock)	0	LF	131.29	0.00	
	Refurbished Trail (crushed rock)	300	LF	20.00	6,000.00	
						$6,000.00

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign Bollard	1	EA	765.00	765.00	
	Trail Entry Sign (preserve rules, small map & trail name)	0	EA	4,000.00	0.00	
						$765.00

VIEWPOINTS (1 MEDIUM)

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Crushed rock pad	320	SF	4.00	1,280.00	
	Bench	1	EA	1,700.00	1,700.00	
	Pine Rail Fence	40	LF	30.00	1,200.00	
	Planting - native trees, shrubs and seed	1	LS	4,000.00	4,000.00	
	Site Prep	1	LS	3,500.00	3,500.00	
						$11,680.00

GENERAL LANDSCAPING / RESTORATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed	0	SF	3.50	0.00	
	Clear, Grub, Haul & Dump	0	AC	6,750.00	0.00	
						$0.00

SUBTOTAL	$20,289.50
CONSTRUCTION CONTINGENCY: 10%	$2,028.95
DESIGN CONTINGENCY: 25%	$5,072.38
CONTRACTOR OVERHEAD & PROFIT: 12%	$3,043.43
SALES TAX: 10.1% (Seattle, WA)	$2,218.66
INFLATION (3% PER YEAR FOR 2 YEARS)	$1,959.17
TOTAL MACC	**$34,612.08**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).

DISCOVERY PARK SOUTH BEACH TRAIL

PLANNING LEVEL

PRELIMINARY BUDGET ESTIMATE

TRAIL SECTION J

Date: 31-Jul-19

j.a. brennan ASSOCIATES PLLC
landscape architects & planners
2701 First Avenue | Suite 510 | Seattle, WA 98121
t | 206.583.0620 | w | jabrennan.com

MOBILIZATION

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Mobilization (10%)	0.1	%	56,365.00	5,636.50	
						$5,636.50

TRAIL SYSTEM

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Standard Trail (crushed rock)	420	LF	87.50	36,750.00	
	Non-Standard Trail (technical / crushed rock)	0	LF	131.29	0.00	
	Refurbished Trail (crushed rock)	0	LF	20.00	0.00	
						36,750.00

SIGNAGE

Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Directional Sign Bollard	1	EA	765.00	765.00	
	Trail Entry Sign (rules, small map & trail name)	1	EA	4,000.00	4,000.00	
						$4,765.00

DECOMMISSIONING TRAIL

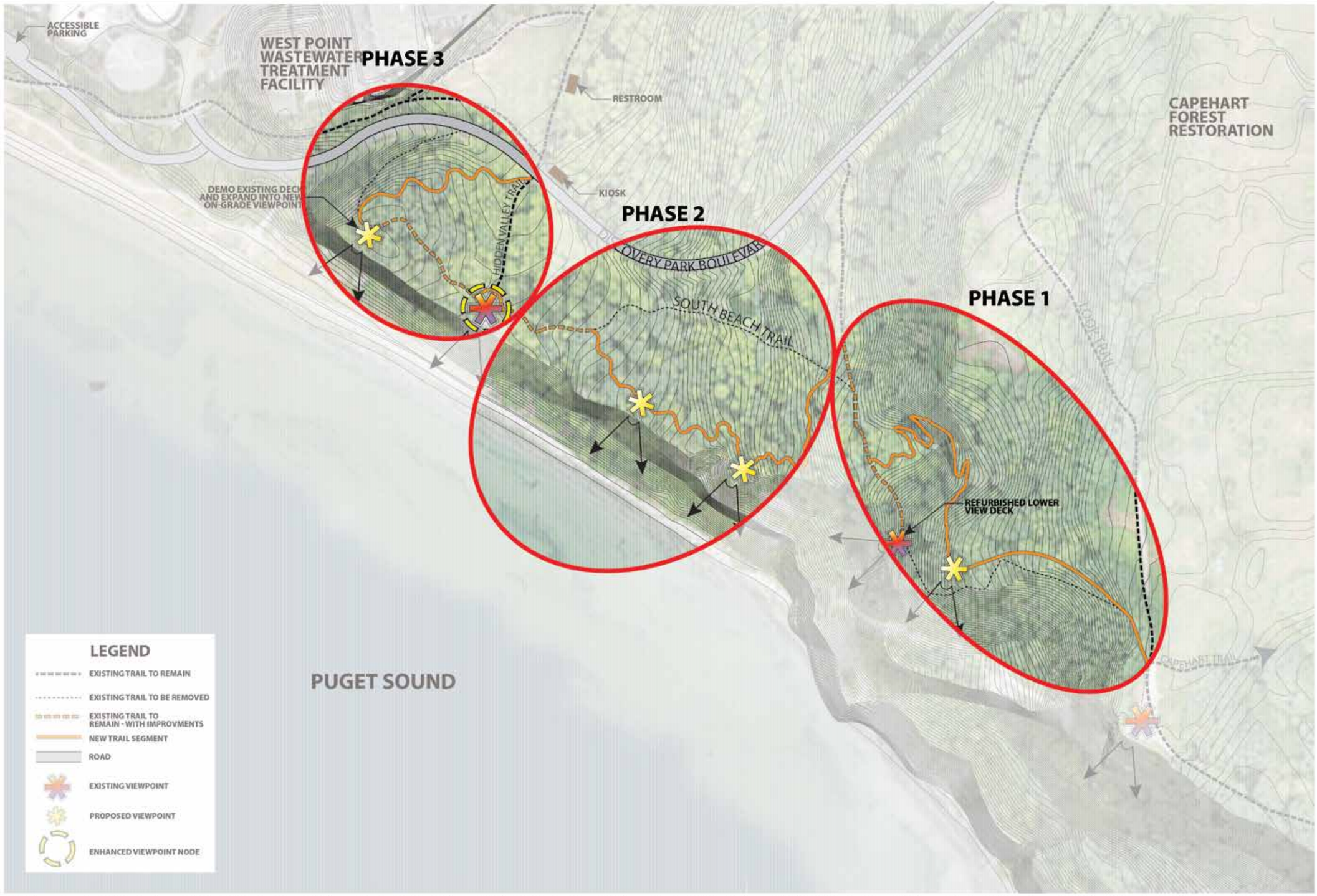
Item	Description	Quantity	Unit	Unit Costs	Subtotal	Total
	Planting - native trees, shrubs and seed (Decommissioning Trail Section J)	1100	SF	3.50	3,850.00	
	Site Prep	1	LS	3,000.00	3,000.00	
	Demo and Remove Ex. Timber Steps & Railing (Decommissioning Trail - J)	1	LS	6,000.00	6,000.00	
	Log and Brush Placement (Decommissioning Trail Section J)	1	LS	2,000.00	2,000.00	
						$14,850.00

SUBTOTAL	$62,001.50
CONSTRUCTION CONTINGENCY: 10%	$6,200.15
DESIGN CONTINGENCY: 25%	$15,500.38
CONTRACTOR OVERHEAD & PROFIT: 12%	$9,300.23
SALES TAX: 10.1% (Seattle, WA)	$6,779.86
INFLATION (3% PER YEAR FOR 2 YEARS)	$5,986.93
TOTAL MACC	**$105,769.04**

Notes:

All standard trail costs include layout flagging, clearing, grading, base preparation, and trail side restoration.

All non-standard trail costs include all standard trail items and all required trail structures (crib walls, rock work, steps, railing, and drainage structures).



DISCOVERY PARK - SOUTH BEACH TRAIL

PHASING PLAN

N

Scale: 1" = 60'

0' 60' 120'

7/22/2019

j.a. brennan associates PLLC

Appendix B | Geotechnical Report

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SHANNON & WILSON
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

May 9, 2019

Mr. James Brennan
J.A. Brennan Associates, PLLC
2701 first Avenue, Suite 510
Seattle, WA 98121

RE: TECHNICAL MEMORANDUM, GEOTECHNICAL EVALUATION OF SOUTH BEACH TRAIL FOR SCHEMATIC DESIGN, DISCOVERY PARK, SEATTLE, WASHINGTON

Dear Mr. Brennan:

This technical memorandum presents our observations, conclusions, and preliminary recommendations concerning proposed improvements to South Beach Trail at Discovery Park in Seattle, Washington. Parts of this trail have fallen into disrepair, and other parts may be threatened by slope instability or erosion. Friends of Discovery Park has undertaken a design study of potential improvements to both the existing trial and new trail areas. The purpose of our services is to provide geologic/geotechnical input to J.A. Brennan's schematic redesign of the South Beach Trail.

The scope of our services included (1) attendance at the kickoff meeting, as many as three site visits, one client field meeting, and one ProView meeting; (2) geotechnical input during schematic design; and (3) preparation of this geotechnical memorandum.

Our work was authorized by Mr. James Brennan on December 4, 2018, by signing a contract for geotechnical services.

SITE DESCRIPTION

South Beach Trail is a 4- to 5-foot-wide, 2,200-foot-long walking trail along the western edge of Discovery Park, as shown in the Vicinity Map, Figure 1. It connects the upland Loop Trail to South Beach. The present trail was designed in 1982; date of construction unknown.

The trail originates at elevation 283 feet and winds its way northwestward down a steep, southwest-facing hillside, eventually connecting to Discovery Park Boulevard at about elevation 58 feet. Along the trail, the neighboring topography varies substantially from flat to vertical bluffs, as evident from a light detecting and ranging (LiDAR) hillshade image, Figure 2. Wooden stairways were constructed in the steeper parts of the trail. Observation platforms were built at three locations, as shown in Figure 3.

In general, many of the stairways are in disrepair, either from surface water erosion, soil movement or creep, settlement on the outboard side of the stairway, or undermining of support. Seepage was observed only at one location near elevation 130 feet, as noted in Figure 3; however, this water flowed for more than 100 feet downhill, including along a stairway, continuously wetting the trail surface. At the existing trail overlook near the "Bowl", the headscarp of an active landslide is located only about 8 feet from the trail at its nearest to the viewing area. It appears from recent sloughing that this lower bowl is expanding in small increments, most recently on the northern and southern sides. In the "Bowl" uphill from the same trail overlook, steep slopes on the north and south sides of the "Bowl" appear to be in an unstable configuration, probably due to previous construction activities at the site.

GEOLOGIC CONDITIONS

Geologic conditions at Discovery Park are a legacy of the last glacial incursion into the Puget Lowland and the interglacial period prior to it. Nonglacial, very dense silt and fine sand (Olympia Beds) are found at the base of park bluffs. The Olympia Beds are overlain by the Lawton Clay, a glaciolacustrine deposit that extends up to about elevation 130 feet. For geologists, the sea bluff at Discovery Park is the "type locality" of these two geologic formations. The upper part of the bluff exposes Esperance Sand, a very dense glacial outwash sand. As typical for much of the Puget Lowland, seepage emerges at the contact between the Lawton Clay and the Esperance Sand. Such is likely the case along this hillside at about elevation 130 feet. Slope instability is also common at this same geologic contact, as is the case along the breadth of the Discovery Park shoreline. This accounts for instability along the bluff that parallels the South Beach Trail.

CONDITIONS ALONG PROPOSED TRAIL

During the schematic design process, J.A. Brennan has established several design guidelines that are discussed below.

For the proposed design, stairs are not desired. The existing trail has about eight sets of wooden stairs. They have fallen into disrepair for several reasons, noted above, so the new trail has been laid out to avoid the need for stairways. This is accomplished by flatter trail gradients than now exist throughout the trail.

Because stairs will not be utilized, it will be necessary to cut and/or fill on side slopes. These methods can be employed where necessary. On the steeper slopes, such as the eastern side of the "Bowl", cut and fill may be the better solution. Maintenance will be required with

cuts and fills, particularly in the spring; after the rainy season, because the cuts may slough and the fills may settle over the winter months. Alternatively, short walls could be constructed on the upper or lower edge of the trail.

Four new overlooks will be created for the western vistas, and it is desirable to have them as close as possible to the edge of the bluff. Based on our observations of the bluff from the beach, we recommend that the newly proposed overlooks be no closer than 20 feet from the edge of the bluff.

We understand the northernmost 300 feet of the existing trail will be removed, as indicated in Figure 3. The current split rail fence shows signs of hillside creep and contains two stairways. This section of trail would require increasingly more maintenance in the future, if retained as part of the trail system.

The "Bowl" slopes will be used to accomplish elevation changes along the trail. The northern and southern sides of the "Bowl" are very steep and are actively sloughing, appearing to be the result of past grading. They are not suitable for the establishment of a trail without significant and expensive engineering solutions. The eastern side of the bowl has flatter slope gradients and does not show a history of slope instability. It appears to have been graded for a utility in the past. This slope would likely be suitable for the trail, in our opinion. Due to the height of the slope, it will be necessary to use switchbacks to negotiate the slope.

Where the proposed trail crosses the 130-foot contour, seepage can be expected. It is recommended to install subdrainage where this seepage is encountered to prevent deterioration of the trail. A preliminary design can be provided during final trail design, but the actual location and types of materials will need to be finalized when the conditions are viewed during construction.

At the southwestern corner of the "Bowl", the existing trail is as close as 8 feet from the edge of the active slope below. We recommend that the trail be moved back about 10 feet, and the trail to its south be realigned to connect to the existing trail about 30 feet to the south.

PERMITTING

The trail will require permitting through the City of Seattle. The proposed alignment of the trail is in or near critical areas including steep slopes and potentially near wetlands or drainages. The City will require a critical areas report to accompany the State Environmental Policy Act checklist. The critical areas will need to be identified in the field

and described in the report. Any impacts to the critical areas will need to be discussed, and where possible avoidance or minimization of those impacts will need to be documented. In addition, because some areas of the trail will be within the Shoreline zone a Shoreline permit will be required for the trail. A full permit compliance review should be done after all critical areas have been identified on the alignment.

CLOSURE

The analyses, conclusions, and preliminary recommendations contained in this technical memorandum are based on site conditions as they presently exist, and further assume that the soil exposures and surface conditions are representative of the subsurface conditions throughout the site; that is, the subsurface conditions everywhere are not significantly different from those disclosed by surface exposures. If conditions are different from those observed during our site visits, we should be advised at once so that we can review these conditions and reconsider our preliminary recommendations, where necessary. If there is a substantial lapse of time between the submission of this technical memorandum and subsequent phases of this project, or if conditions have changed because of natural forces, we recommend that we review our technical memorandum to determine the applicability of the items in this memorandum.

Within the limitations of scope, schedule, and budget, the analyses, conclusions, and preliminary recommendations presented in this technical memorandum were prepared in accordance with generally accepted professional engineering geologic principles and practice in this area at the time this memorandum was prepared. We make no other warranty, either express or implied. The comments herein were based on our understanding of the site as described in this memorandum and the site conditions as observed at the time of our site visits. The descriptions and memorandum should not be construed as a warranty of subsurface conditions included in this technical memorandum.

The scope of our present work did not include environmental assessments or evaluations regarding the presence or absence of wetlands, or hazardous or toxic substances in the soil, surface water, groundwater, or air on, below, or around this site, or for the evaluation or disposal of contaminated soils or groundwater should any be encountered.

SHANNON & WILSON

Shannon & Wilson has prepared and included an enclosure, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our report.

Sincerely,

SHANNON & WILSON

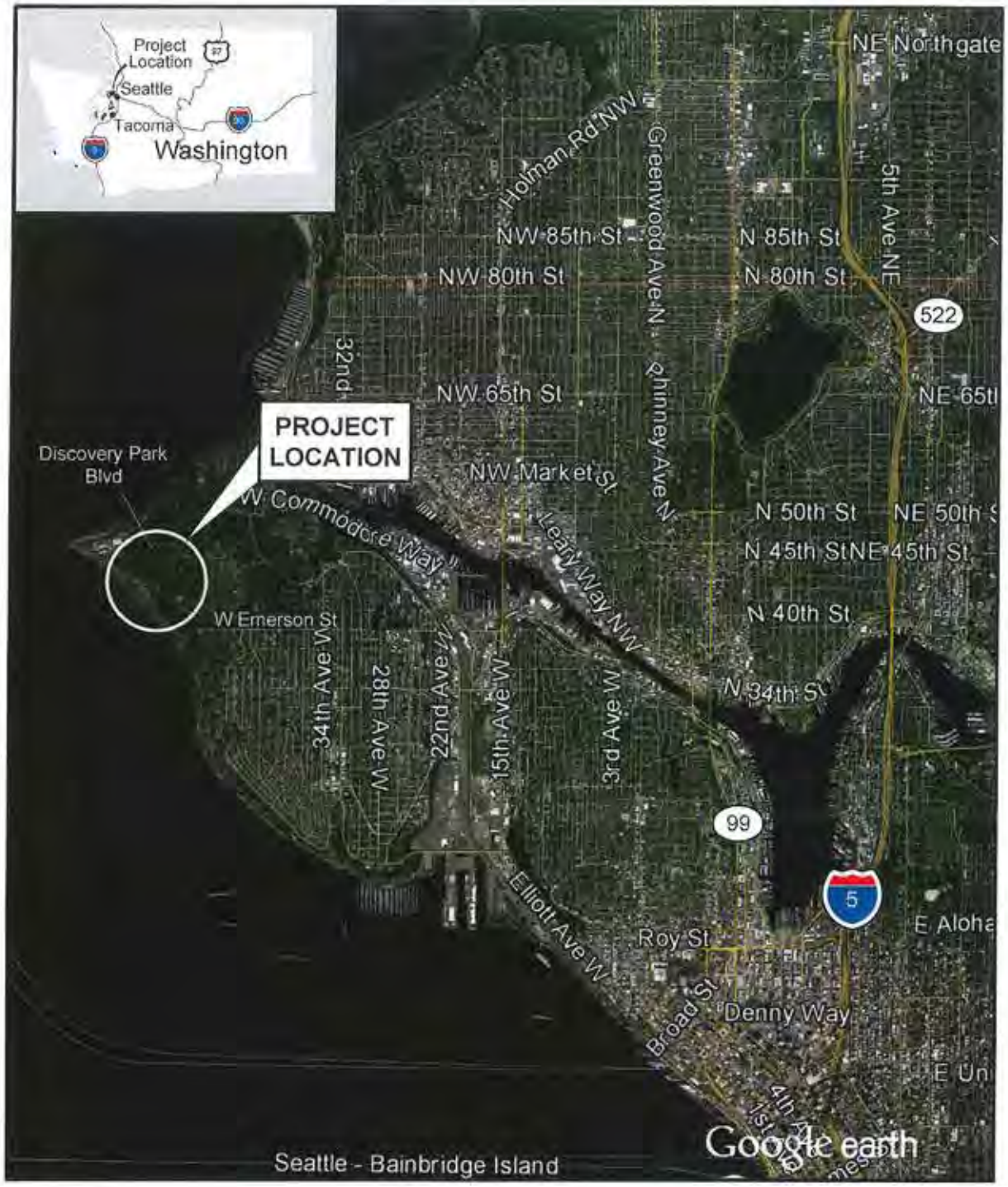
State of Washington
Engineering Geologist
111
Licensed Geologist
William Thomas Laprade

5/9/19

William T. Laprade, LEG
Senior Vice President

WTL:GJB/wtl

Enc. Figure 1 – Vicinity Map
Figure 2 – LiDAR Hillshade Image
Figure 3 – Proposed Alternative
Important Information About Your Geotechnical/Environmental Report



0 1 2

Approximate Scale in Miles

NOTE

Map adapted from aerial imagery provided by Google Earth Pro, reproduced by permission granted by Google Earth ™ Mapping Service.

Friends of Discovery Park

VICINITY MAP

May 2019 21-1-30086-002

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

Filename: J:\21\130086\002\21-1-30086-002 Fig 1 - Vicinity Map.dwg Date: 05-01-2019 Login: sac

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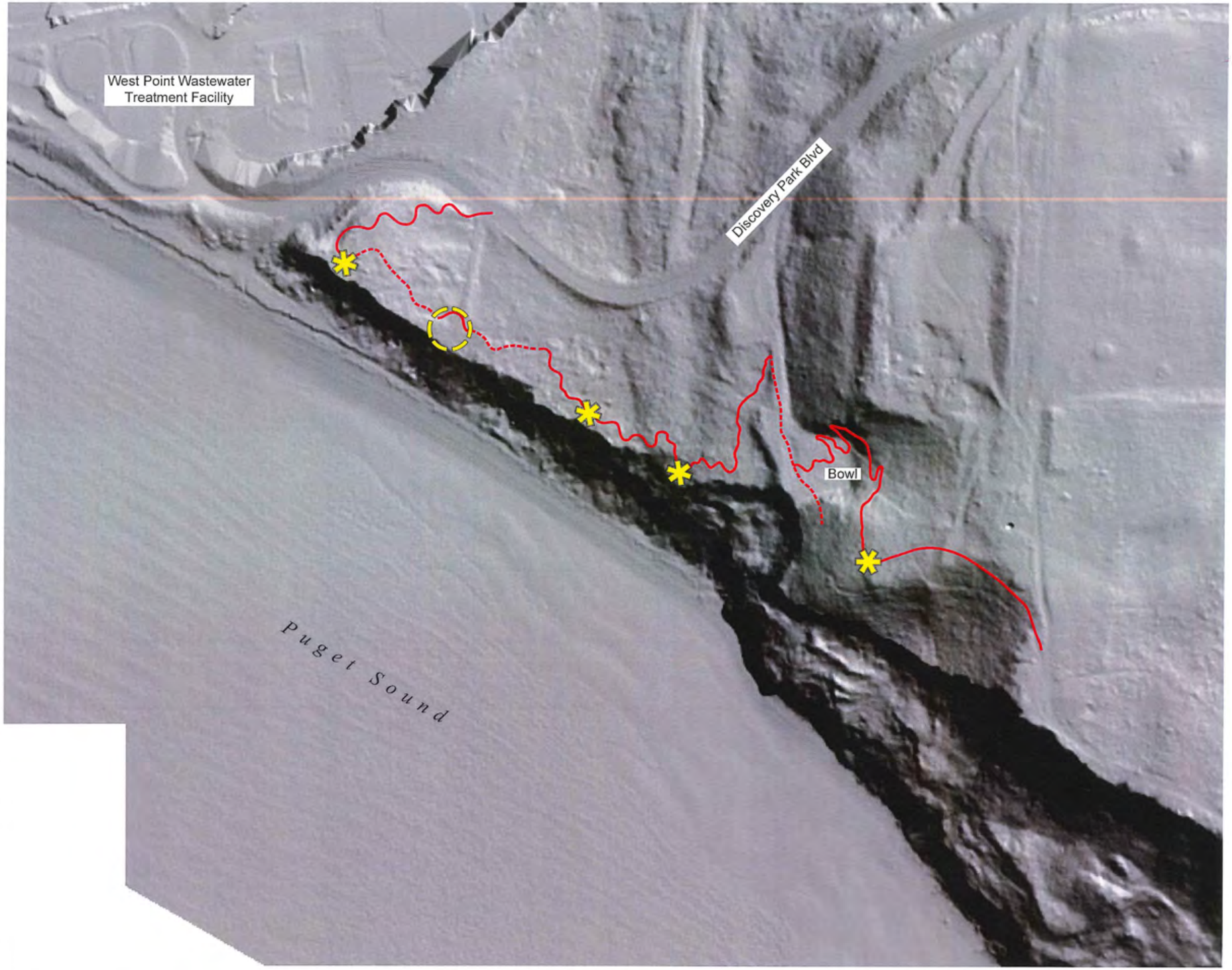

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0 200 400

Approximate Scale in Feet

LEGEND

- New Trail Segment
- Existing Trail to Remain with Improvements
- Proposed Viewpoint
- Enhanced Viewpoint Node

NOTE

Base map derived from data provided by Puget Sound LiDAR Consortium.

Friends of Discovery Park

LIDAR HILLSHADE IMAGE

May 2019 21-1-30086-002

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 2

Filename: J:\21\1\30086\002\21-1-30086-002 Fig 2 - LiDAR Hillshade Map.dwg Date: 05-01-2019 Login: sac

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0 200 400

Approximate Scale in Feet

LEGEND

Seepage

NOTE

Proposed trail map provided by j.a. Brennan Associates.

Friends of Discovery Park

POTENTIAL ALTERNATIVE

May 2019 21-1-30086-002

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 3

Filename: J:\21\30086\002\21-1-30086-002 Fig 3 - Potential Alternative.dwg Date: 05-01-2019 Login: sac

SHANNON & WILSON
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Attachment to and part of Report: 21-1-30086-002
Date: May 9, 2019
To: Mr. James Brennan
J.A. Brennan Associates, PLLC

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

Appendix C | Meeting Notes

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j.a. brennan
associates PLLC

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March 13, 2019

DISCOVERY PARK SOUTH BEACH TRAIL

Public Meeting #1

Discovery Park Environmental Learning Center @ 6:00 PM on 03/6/19

MEETING NOTES

Prepared by:
J.A. Brennan Associates

Introduction/Presenters

- Ken Bryan – Introductory comments
- Jim Brennan
- Tom Walker

Meeting Notes

General Notes and Comments:

1. Both options are good but be careful about people cutting switchbacks – don't make trails too close to each other and make sure there is vegetation for visual barrier
2. Consider restoration opportunities
3. Concern of overbuilding – make sure trail is in keeping with the master plan
4. There are too many viewpoints proposed
5. Simplify and reduce number of switchbacks and viewpoints
6. Like forest immersion option and views at end of spurs but not all need structures
7. The current Hidden Valley Viewpoint needs a railing – people have tried to come up the hillside. It is a safety concern from both sides. Any barrier needs to look natural
8. Any barriers need to look natural
9. Timber benches at beach are good
10. Boulders are not as good for barriers and don't fit into the character of the park
11. Forest Immersion alternative may invite folks to cut down bank to beach
12. Look at existing trails and how they are designed and how they are used
13. Improve wayfinding in park – good signage is important for access
14. Suggestion for signage – incorporate maps that say "you are here"
15. Suggestion for interpretive kiosk
16. Perhaps learn from some things that have been done at Mt Rainier and Grand Canyon with signage – good wayfinding and signage to keep people off of trails
17. Combine elements of both options – Entry of Alt 2 is good because it is gentler and prefer going into forest but lower part of Alt 1 is good with its dramatic views along edge
18. Old road grade has a lot of wood peckers
19. Consider better surfacing
20.
21. Priest Point Park is a good precedent for wayfinding
22. Need signs to keep people on trail
23. Design for the future and accommodate more use as region continues to grow
24. Incorporate GPS number system for emergency response – put number at wayfinding post
25. Seattle Parks and Recreation would like to use a standard way finding system

26. Wayfinding must work for all including those without a cell phone
27. Discovery Park is a destination park
28. QR code is now on many signs – include this for information
29. A realignment at the top of trail is good
30. Entering into bowl area and then switchback would be a good experience
31. An alternative that contrasts forest and view experiences
32. What about help signs?
33. What about wayfinding?
34. Some signage that educate about erosion, history, geography and stewardship would be good
35. Signage about flora and fauna and wildlife is good but need themes to keep it simple
36. History of fort is very limited
37. Comment by Chukundi: Use parks standard sign, see standard detail, department doesn't have…
38. The use of wood is good, possibly retaining structure
39. Use is wood stairs is good as these have lasted a long time
40. Use of pin piles have been used
41. Would be good to remove some stairs
42. Plastic timbers could be an option but they are more expensive and warp
43. Granite is out of character with the park
44. Only use trail edging where necessary
45. Recycle as much existing wood as possible
46. Consider use of logs for trail edging
47. Consider appropriate width of trail – Parks standard is 4' wide but need to consider increased capacity
48. Need balance – acknowledge reality of increase in population while keeping it natural
49. Need sign for alternative route to beach – road via Loop Trail
50. Trail at Capehart cuts corner – consider realigning this

j.a. brennan
associates PLLC

landscape architects & planners
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DISCOVERY PARK SOUTH BEACH TRAIL

Public Meeting #2 – April 10, 2019

Discovery Park Environmental Learning Center @ 6:00 PM on 04/10/19

MEETING NOTES

Prepared by: J.A. Brennan Associates

Introduction/Presenters

- Ken Bryan – Introductory comments
- Tanja Wilcox, RLA
- Tom Walker, designer
- Bill Laprade, Geotech (in audience; provided input)

Meeting Notes

General Notes and Comments:

1. Prefer on-grade viewpoints
2. Wire mesh included in pine-rail fence is a good idea to deter people from short-cutting down the bluff, etc.
3. Concrete walls have a 100-year lifespan; consider concrete over timber retaining walls
4. Cedar logs have longevity of approx. 30-50 years; potential for use at switchbacks & retaining walls
5. Concern about cutting at switchbacks
6. The scale of the plan (1"=60') makes the distance between switchbacks appear less than it is; pine rails may be used at switchbacks to deter people from short-cutting and also logs, brush and plantings at former trail segments.
7. Keep in mind the accessibility and gentle grades needed for older age user groups; whose percent of the population is increasing
8. Make sure that the height of the railing at viewpoints doesn't obscure the view when sitting at a bench
9. Cost of the full SBT construction? Approximately $200,000 including volunteer implementation (as per Garrett Esperum); (A cost estimate will be developed by J.A. Brennan.)
10. Will there be vegetation disturbance, particularly of big trees, when constructing this trail? – No the trail will be routed around all large and medium-sized trees.
11. For geologic stability at two viewpoints, keep them 20-feet back from the top of the bluff
12. Rock walls at the South Parking Lot are dry stack and irregular in character; they are preferred over mortared in place more formal rock wall. Also use vegetation to obscure the walls.
13. Keep walls short, below 30-inch height, if possible, in order to avoid need for railings
14. Capehart trail cost was approximately $100K, not including the cost of the many logs used for edging, which were expensive.
15. Phasing will likely be necessary; consider prioritizing the upper trail construction in order to replace the worst failing stairs along the SBT

16. One method of jump-starting development of the new trail alignment would be to brush out the proposed alignment first.

Summary Notes:

The preferred trail alignment and proposed detailing and character were well received by the public.

Attendees are eager to see the South Beach Trail built as proposed.

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