Site Clearing and Management Plan

Revision: 04

September 4, 2024

LOWER DUWAMISH WATERWAY

Upper Reach Remedial Action

Contract KC001065

Prepared By:

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Table of Contents

1.0 Introduction

This Site Clearing and Management Plan outlines the procedures and methods to be implemented for the effective clearing and grubbing of the project site, in accordance with Section 31 11 00 (Clearing and

Grubbing; Article 1.07). The plan includes detailed information on the areas to be cleared, the equipment and techniques to be used, the disposal of cleared materials, and the sequencing of activities to ensure minimal environmental impact. Additionally, it addresses the restoration of affected areas to their pre-construction conditions, ensuring compliance with all relevant regulations and project requirements. This comprehensive approach aims to facilitate a smooth and efficient site preparation process, setting the foundation for the subsequent phases of the project.

2.0 Locations and Extents of Proposed Areas to be Cleared and Grubbed

2.1 Reference Drawing

Refer to Figure 1 below from drawing G006 – SMA 5 Detailed Access Plan where clear and grub limits are shown. The full G006 drawing can be found in Attachment A.

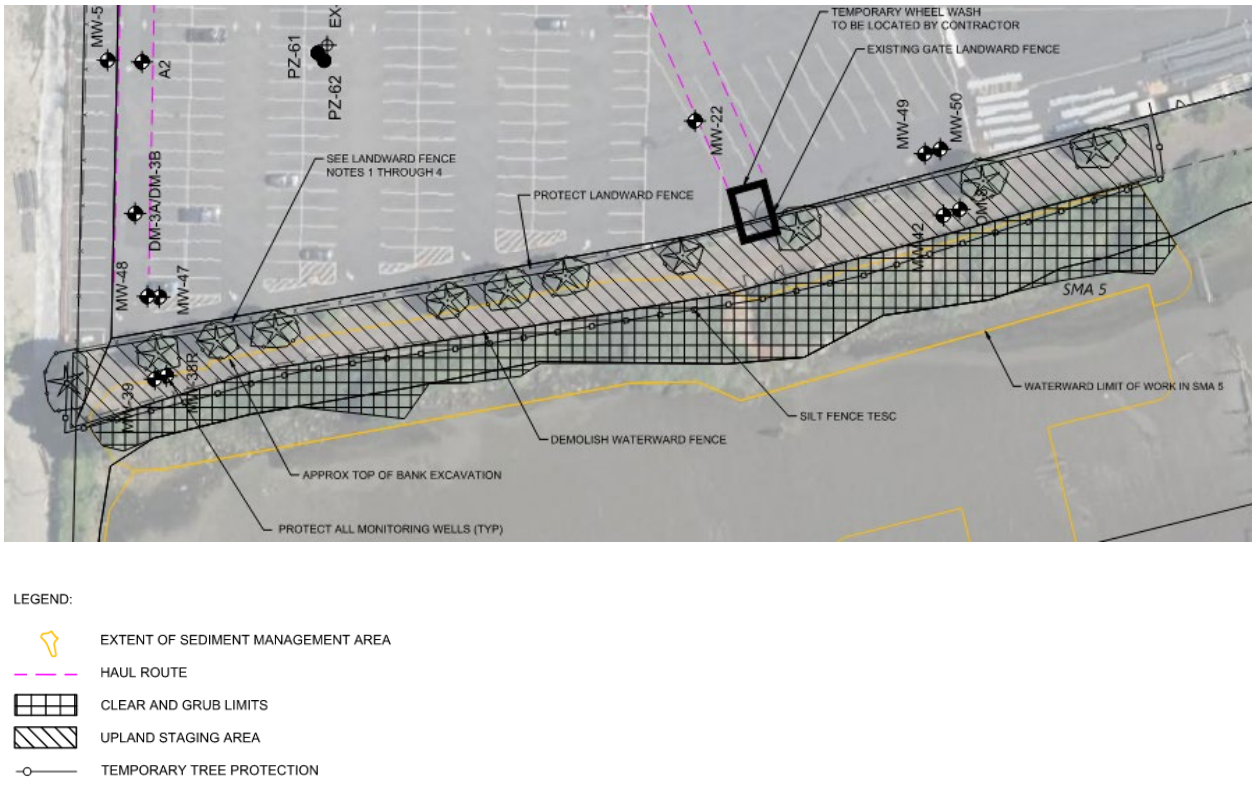

Figure 1. *Clip of SMA 5 Detailed Access Plan drawing.*

3.0 Methods, Procedures, and Equipment for Clearing and Grubbing

Section 31 11 00, Article 3.01, A.1 states "The Contractor shall notify the Project Representative prior to commencement of clearing and grubbing activities, including activities intended for survey or other Work Site investigation Work. Mark clearing limits for acceptance by the Project Representative prior to commencing clearing." PPM intends to perform this work first in the Construction Season 3 (October 1, 2026). Work will not commence until PPM has conducted the Pre-Construction Survey of SMA 5, it has been reviewed and approved by the Project Representative. Section 02 21 00, Article 3.05 D.3. States:

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"The Construction Season Pre-Construction Survey shall be submitted to the Project Representative for review and acceptance at least 21 calendar days prior to the start of any In-Water Work at the Work Site each Construction Season."

3.1 Erosion & Sediment Control Measures

Prior to clearing and grubbing, erosion control measures will be installed to prevent soil erosion and sediment runoff. Prior to excavating on land, geotextile fabric shall be placed on the ground within the swing radius of the excavator to contain any material spilt from the bucket while loading the dump truck, and shall be weighted down with sandbags as needed. The fabric shall be cleaned daily of all spillage to maintain throughout the duration of work.

If there is any possibility of wet material, it will be hauled out and dewatered at the Transload Facility. The material from the planting area of SMA 5 is anticipated to be dry material.

Engineered measures such as loading hoppers, tailgate seals, catchment platforms, and loading ramps will be utilized during materials placement into the dump trucks to ensure all materials are placed within the truck and are not spilt out. These measures will be developed in the coming year and submitted prior the 2026-2027 construction season in an appendix to this plan. The dump trucks shall not be overfilled per Section 01 35 43, Article 3.07 A.11.: "Trucks or railcars shall not be overloaded to prevent loss due to spilling (minimum freeboard height of 6 or 36 inches, respectively, shall be maintained)." to prevent spillage of material during transport to 1. the on-site stockpile, or 2. the disposal facility.

3.2 Tree Protection Structures

Before any clearing and grubbing activities begin, tree protection structures will be installed to safeguard existing trees and vegetation that are to remain. Per Section 32 93 10 of the Project Specifications, temporary tree protection fencing is required where SMA 5 Work is occurring near a tree dripline. At minimum the temporary tree protection will include the following:

1. Chain-link fence materials including (6' in height) rails, posts, braces, and mesh.
2. Mesh shall be 2 x 2 inches x 11-gauge minimum woven chain link fabric.
3. Posts and rails shall be a minimum of 1 – 1/2 inch outer diameter (OD) steel pipe.
4. Post bases shall be minimum 16-inch x 8-inch x 8-inch-high concrete piers with sleeves for posts, or Approved Equal accepted by the Project Representative.

Details regarding the tree protection fencing can be found in the fencing product data provided by the supplier. Details regarding the temporary tree protection fencing layout can be found in Figure 1.

3.3 Protective Barricades

Erect and maintain barricades and coverings to prevent damage to existing utilities, landscaping, and other site features during the clearing and grubbing operations.

3.4 Vegetation Removal

A 50 ton +/- 70' reach long reach excavator with digging and smooth lip buckets and/or a 50 ton +/- standard front excavator with digging and smooth lip buckets will be used to remove vegetation within the designated clearing area. The clearing process will include the removal of all vegetation, roots, stumps, and any trash or debris present.

3.5 Grubbing

Grubbing will involve the removal of roots, stumps, and other organic matter. Per Specification 31 11 00 3.01 A.5. vegetation is to be removed to a minimum of 12 inches below final excavation lines and grades, to remove organic matter.

3.6 Materials to be Cleared and Grubbed

Clearing and grubbing materials include topsoil, brush, trees, logs, heavy sod, vegetation, debris, objects, and structures that must be removed to prepare the Work Site for remedial activities. The materials are further described in Specification 31 11 00, Article 3.01, A.5.a.2. as "Selective invasive plant removal in SMA 5: 1) Any invasive non-native plants within the SMA 5 Planting Area shall be removed during performance of clearing and grubbing. 2) If invasive non-native plants are located outside the final Required Excavation Lines and grades but within the SMA 5 Planting Area, remove 12 inches of existing soil and dispose of material in an approved Disposal Facility(ies)."

4.0 Disposal of Cleared and Grubbed Material

4.1 Disposal Process

- Cleared and grubbed material that is free of contaminants will be collected and transported to a composting facility that will be determined prior to the 2026-2027 construction season
- Materials will be placed in sealed truck beds to prevent spillage during transportation.
- The trucks will then haul the materials to the compost facility

4.2 Disposal Facility

PPM will use a composting facility for disposal of the cleared and grubbed material. Detailed information for this facility will be determined and submitted to the PR for review and acceptance, prior to the 2026-2027 construction season. This plan will be updated with the site information when it is available.

5.0 Sequencing Approach for Clearing and Grubbing for Each Proposed Area

5.1 Work Sequence

- Notify the Project Representative and receive notice to proceed prior to commencement of work.
- Per Specification 31 11 00, Article 3.01, B., "Clearing and grubbing activities shall be performed in advance of removal of Dredge Debris, Identified Debris, Piling land-based excavation, and grading work."
- Clearing and grubbing activities will commence on one side of the site and progress systematically toward the opposite side (Fig. 1).
- This systematic approach ensures efficient use of resources and minimizes disruption to the surrounding environment.
- See Figure 2 below Draft Project Schedule snapshot for work sequence and timing, although the excavation will be moved up and done simultaneously with the Transportation and Disposal of Material to prevent lag between clearing and excavation. Refer to the Erosion and Sediment Control Plan for erosion mitigation efforts that will be implemented during the SMA 5 work to prevent any possible material leakage from the area.

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Budgeted Total Cost	Resources

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SMA 5		48	16-Dec-26	26-Feb-27	0	$2,019,736.34	
S3-4530	SMA 5 - Debris Removal	1	16-Dec-26	17-Dec-26	0	$47,136.34	Cost, 1200-6 Hitachi
S3-4540	SMA 5 - Transportation and Disposal of Material	2	17-Dec-26	21-Dec-26	0	$910,000.00	Cost, 1200-6 Hitachi
S3-4510	SMA 5 - Bank Excavation	16	21-Dec-26	14-Jan-27	0	$326,600.00	Cost, 1200-6 Hitachi
S3-4550	SMA 5 - Material Placement - Engineering Cap A	13	14-Jan-27	03-Feb-27	0	$621,000.00	Cost, 1200-6 Hitachi
S3-4560	SMA 5 - Planting Preparation	5	03-Feb-27	10-Feb-27	0	$89,000.00	Cost
S3-4570	SMA 5 - Inspection	1	10-Feb-27	11-Feb-27	0	$0.00	Cost
S3-4580	SMA 5 - Landscaping	10	11-Feb-27	26-Feb-27	0	$26,000.00	Cost

Figure 2. *Draft Project Schedule – SMA 5 Activities Snapshot.*

6.0 Planting Plan

6.1 Preparation of Subgrade

Per Specification 32 91 00, Article 3.02, subgrade soils outside of extent of Engineered Cap A will be ripped, disced, or scarified to a Minimum Depth of 12 inches. The soil within Driplines of existing trees is to remain untouched. A +/- 0.10-foot tolerance is allowed. Either a tiller, or the excavator bucket teeth can be used for scarifying the soil per the Contract Drawings. Soils shall not be worked in the presence of ponding or standing water (Article 1.07.)

6.2 Import, Inspect, Place, and Mix Topsoil

Prior to importing topsoil for placement in the planting area, a materials list of proposed materials demonstrating conformance with the requirements specified, including names, addresses, and certificates of all suppliers will be submitted per Contract Specification Section 32 91 00, Article 1.05. Also to be submitted prior to topsoil implementation: soil materials: 0.25-cubic-foot representative samples of imported topsoil, topsoil verification letter from soil supplier, and this Plan in accordance with above mentioned Contract Specifications.

After submitting required documentation and soil sample, the quality of the soil will be maintained during storage. Deliver products in manufacturer's standard containers bearing original labels containing the amounts, analysis, and name of manufacturer. Also, store the products in a way to protect them from weather or other damaging conditions that affect the effectiveness of the product (Section 32 91 00, Article 1.08.) The means and methods for storage of these products will be provided prior to the start of the work.

The topsoil shall be comprised of 60% sand, and 40% compost, as described below per Contract Specification Section 32 91 00, Article 2.01:

1. Testing requirements for gradation of Topsoil shall conform to ASTM (ASTM International) D6913.

2. Individual sand grains can be seen and felt readily. On squeezing in the hand when dry, it shall form a cast that will not only hold its shape when the pressure is released but shall withstand careful handling without breaking.

3. Topsoil shall have a pH range of 6.0 to 7.5. If pH range is between 5.5 and 6.0 or 7.5 and 8.0, dolomite lime, sulfur, or other amendments will be added prior to delivery as necessary to achieve design specified pH range.

4. Topsoil shall meet chemical quality criteria presented in Table 35 37 10-4 of Specification 35 37 10 (Material Placement).

5. Topsoil shall be free from debris, deleterious material, weeds, weed seeds, roots, rhizomes, woody material, and foreign matter that is detrimental to plant growth.

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6. The organic amendment component shall consist of composted organic material as described below.

a. Topsoil shall contain sufficient quantities of available nitrogen, phosphorus, potassium, calcium, magnesium, sulfate, copper, zinc, manganese, iron, and boron to support normal plant growth. In the event of nutrient inadequacies, provisions shall be made to add required materials prior to planting.

7. All Topsoil shall be tested by an agricultural laboratory for sufficient quantities of available nitrogen, phosphorus, potassium, calcium, magnesium, sulfate, copper, zinc, manganese, iron, and boron. If there are nutrient inadequacies, required materials will be added prior to planting. Topsoil agricultural laboratory tests shall require total sulfur testing and conform to recommendations for sulfur limits provided by the agricultural laboratory.

8. Re-use of existing on-site soils as Topsoil is permitted if materials designated for reuse meet the requirements of this Specification. This will be determined after samples are taken and tested, prior to the start of the 2026 Construction Season.

Further requirements for the composted organic material shall be as follows according to Contract Specification 32 91 00, Article 2.02:

A. The Contractor shall use only Compost that has been tested within 90 days of submittal and meets the requirements in this Article. Compost not conforming to these requirements or taken from a source other than those tested and accepted shall not be used and shall be removed from SMA 5 immediately.

1. Per King County Code 28.86.090 BP-2, biosolids-derived Compost is the preferred organic soil amendment for King County projects.

2. If biosolids-derived Compost does not conform to the test characteristics required by this Article, the organic amendment product shall consist of 100% recycled organic feedstocks defined in Washington Administrative Code (WAC) 173-350 as “wood waste,” “yard debris,” “post consumer food waste,” “preconsumer animal-based waste,” and/or “preconsumer vegetative waste” that have been sorted, ground up, aerated, and aged and shall be fully composted, stable, and mature (non-aerobic). The composting process shall be for at least 6 months’ time, and the organic amendment shall have a uniform dark, soil-like appearance.

B. Product requirements:

1. Compliance:

a. Compost shall be produced at a permitted solid waste-handling composting facility (Health Permit, Washington State Department of Ecology [Ecology] Stormwater Permit, Puget Sound Clean Air Agency Facility and Equipment Registration).

b. Compost production and quality will be in compliance with Ecology's specifications, which appear in WAC 173-350 Section 220, plus the following additional requirements.

c. Compost shall be certified by the Process to Further Reduce Pathogens guideline for hot composting as established by EPA.

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2. Test Characteristics:

a. Compost will be mature with regard to its suitability for serving as a soil amendment. Maturity shall be greater than 80% in accordance with United States Composting Council (USCC) Test Method for the Examination of Composting and Compost (TMECC) 05.05-A.

b. Compost shall have a moisture content that has no visible free water or dust produced when handling the material.

c. The material shall be certified free of all plant parasitic organisms, viable weed seeds, heavy metals, and parasitic residues. It shall contain no more than 0.5% foreign material (plastic, concrete, ceramics, and metal), including no more than 0.1% film plastic, on a dry weight basis as determined by USCC TMECC 03.08-A.

d. Carbon to Nitrogen (C:N) Ratio: Between 25:1 and 35:1

e. Minimum Organic Content: 40% of dry weight as determined using USCC TMECC 05.07-A

f. pH: Between 6.0 and 8.8, tested in accordance with USCC TMECC 04.11-A

g. Soluble Salt Content: Less than 4.0 micro mhos/cm, when tested in accordance with USCC TMECC 04.10

h. Stability: 4 milligrams CO2-C/g organic matter/day or below, in accordance with the USCC TMECC 05.08-B

i. Heavy Metals: Concentrations must be below the Washington State limits in accordance with WAC 173-350.

j. Topsoil shall meet chemical quality criteria presented in Table 35 37 10-4 of Section 35 37 10 (Material Placement).

k. Compost shall meet the following gradation:

U.S. STANDARD SIEVE SIZE	PERCENT BY DRY WEIGHT, PASSING
1 inch	100
5/8 inch	85 to 100
1/4 inch	75 to 85

l. Shall have heavy metal concentrations that conform with Table 220-B of WAC 173-350-220, as follows:

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ANALYTE	MAXIMUM CONCENTRATION (ppm)
Arsenic	20
Cadmium	10
Copper	750
Lead	150
Mercury	8
Molybdenum	9
Nickel	210
Selenium	18
Zinc	1400

Note:
ppm: part per million

Further requirements for the sand component of the topsoil shall be met as follows:

A. Sand shall meet the following specifications within reasonable variations:

U.S. STANDARD SIEVE SIZE	PERCENT BY DRY WEIGHT, PASSING
3/8 inch	100
1/4 inch	95 to 100
No. 10	85 to 95
No. 30	60 to 75
No. 60	50 to 60
No. 100	20 to 30
No. 200	0 to 5

Prior to installation, the soil preparation material shall be inspected by the Project Representative. The Project Representative shall approve or reject the material, dependent upon the material meeting all of the above requirements and the condition of the material. Rejected material shall be returned to sender and replaced with new material.

Equipment shall be decontaminated using pressure washer equipped with a detergent additive reservoir to remove all soils and sediments. The detergent of choice will be selected closer to the 2026 Construction Season, and more information on the products used will be provided.

Following completion of all clearing and grubbing work involving contaminated soils and sediment or prior to moving to a different task not related to the handling of contaminated soils and sediments, equipment directly in contact with contaminated materials shall be decontaminated.

Decontamination is only expected to be required for the excavator and crane buckets, as well as the dump truck to be utilized for spoils movement from the excavation area to the onsite stockpile. Spillage during transport of spoils from the excavation area to the on-site stockpile is not anticipated to occur.

Equipment decontamination shall occur over a large Eco Pan which shall contain all water generated by the decontamination procedures. Decontamination water will be pumped from the Eco Pan into an on- site baker tank used to store process and decant water. As needed, process and decant water shall be pumped from the baker tank into a tanker truck and transported offsite for disposal at a legal disposal site.

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As stated in the Transloading and Best Management Practices section of this plan, BMPs shall be utilized during the loading of disposal trucks to prevent spilt material and contamination of the tires or sides of the truck itself. As such, no regular decontamination of disposal trucks is anticipated.

6.3 Compaction/Decompaction

After the placement of the topsoil in the planting area, decompact or compact soils as necessary to maintain all applicable standards. Compaction shall not exceed a proctor maximum dry density of 85%. Testing requirements for soil compaction shall conform to ASTM D698 (Specification 32 91 00, Article 3.04.)

6.4 Fine Grading and Inspection

Following successful completion of placement and compaction of topsoil in the planting area, fine grading is to be performed. Per Specification 32 91 00 Article 3.05: Perform fine grading to attain finish grades as shown on the Contract Drawings. See Attachment B for grading elevation requirements. Rake out all rocks, roots, sticks and other debris larger than 2 inches in diameter or sticks longer than 4 inches long. Leave surface even and readily able to accommodate planting installation. Inspection must occur before planting can begin. The contractor shall notify the Project Representative at least 48 hours before the required time of inspection for completion of soil preparation.

6.5 Planting

Following Project Representative acceptance of completion of soil preparation, the Temporary Irrigation Plan, and acceptance of plant material, the planting will commence. See drawings C305 (Attachment B), L101, and L301 (Attachment C) for SMA 5 Engineered Cap A and planting details. Refer to Specification 32 93 00 for planting methods and requirements.

7.0 Methods and Procedures to Restore Similar Function to Affected Areas to Pre-Construction Conditions

7.1 Removal of Protective Structures

Once the clearing and grubbing operations and planting is complete, all protective structures installed earlier will be removed.

7.2 Erosion Control Removal

Erosion control measures put in place at the beginning of the project will be carefully dismantled and removed after final site stabilization (planting) is completed.

7.3 Temporary Facilities Removal

Any temporary facilities set up to aid in the clearing and grubbing process will be disassembled and removed from the site after final site stabilization is completed.

7.4 Utilities Interference, Relocation, and/or Removal

Per Specification 31 11 00, Article 3.01, D. & E.: PPM will protect existing utility lines from damage and will immediately notify the Project Representative of any damage to, or encounter with, an unknown

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existing utility line. PPM will be responsible for the repairs of damage to existing utility lines that are indicated or made known to them prior to the start of clearing and grubbing operations. PPM will notify the Project Representative in ample time, when encountering utility lines to be removed within the area of operations, to minimize interruption of the service. Where existing utilities interfere with the Work, PPM will notify the Project Representative and coordinate necessary relocation with the utility owner in accordance with Section 01 19 50 (Protection and Maintenance of Property and Work). PPM will call or put a ticket in to the Washington Utility Notification Center prior to the start of any excavation.

7.5 Site Restoration

The site will be restored to its pre-construction conditions as closely as possible, ensuring the restoration of similar function and appearance. According to Specification 31 11 00, Article 3.01, C.: “C. Restoration of Work Site: 1. The Contractor shall restore similar function of any affected areas during Work to pre-construction conditions, to the satisfaction of the property owner(s) and acceptance of the Project Representative. 2. The Contractor shall implement the Site Clearing and Management Plan. a. Mark clearing units prior to clearing. b. Preserve and provide protection for the following: 1) Adjacent facilities: Exercise extreme care to prevent damage to adjacent facilities that are to remain. 2) Monuments: Carefully maintain benchmarks, monuments, and other reference points. If disturbed or destroyed, replace as directed. Note the position of all monuments on the As-Built Drawings. c. Receive acceptance from the Project Representative to remove marked clearing units and trees. d. Maintain clear right-of-way for required construction and for access to the Work Site. Remove vegetation only as required. e. The Contractor shall not perform any general clearing and grubbing of the Work Site that leaves areas exposed that will not have immediate follow-up construction. f. All Erosion and Sediment Control Plan measures per Section 31 25 00 (Erosion and Sedimentation Control) shall be in place prior to clearing and grubbing. g. Adhere to City of Seattle and City of Tukwila seasonal restrictions for land clearing.

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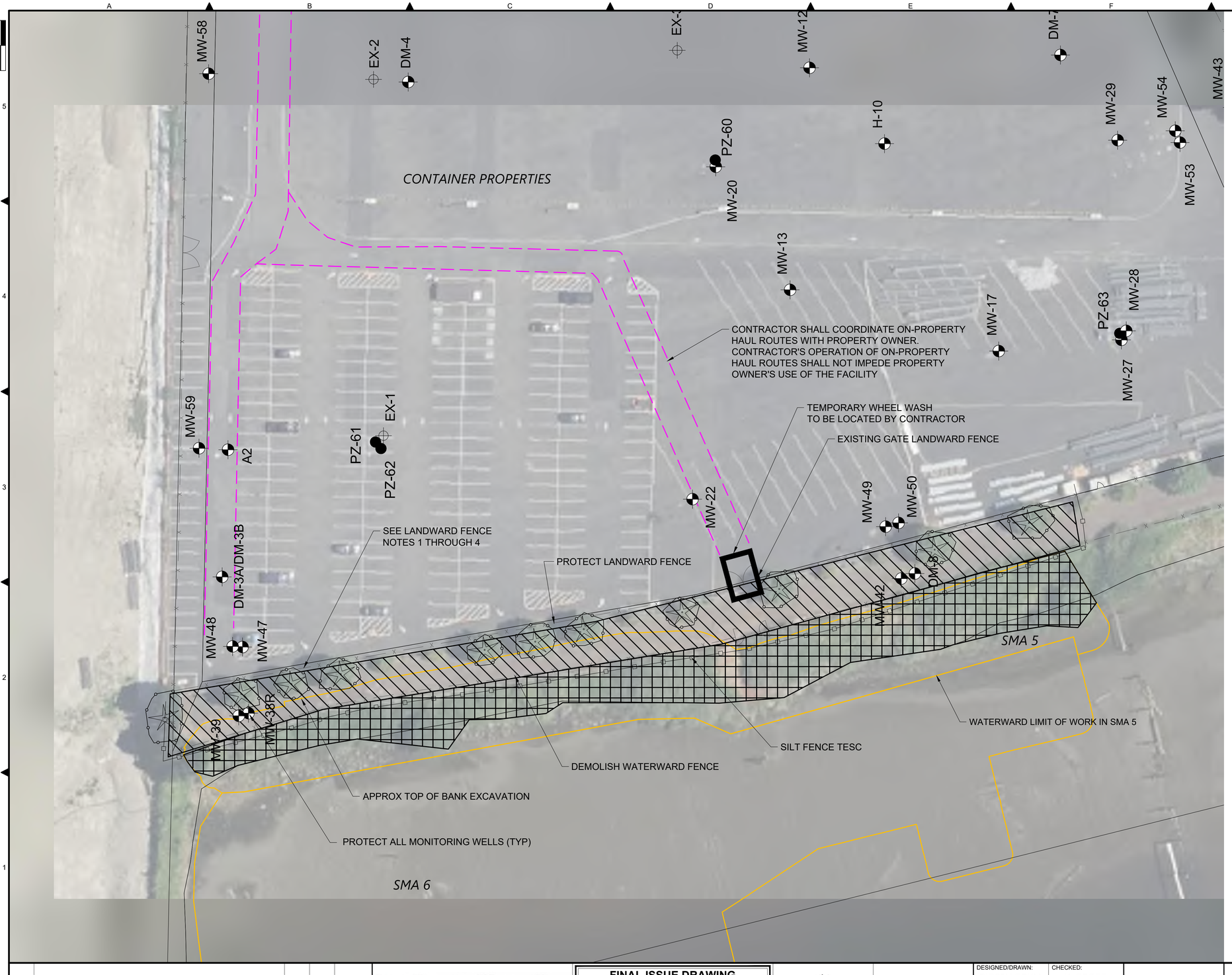
Attachment A

SMA 5 Detailed Access Plan



LEGEND:

- EXTENT OF SEDIMENT MANAGEMENT AREA
- HAUL ROUTE
- CLEAR AND GRUB LIMITS
- UPLAND STAGING AREA
- TEMPORARY TREE PROTECTION

GENERAL NOTES:

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD83 (2011), U.S. SURVEY FEET
2. AERIAL SOURCE: BING MAPS
3. CONTAINER PROPERTIES ACCESS FOR WORK IN SMA 5 ONLY.

LANDWARD FENCE NOTES:

CONTRACTOR MAY PROPOSE ADDITIONAL ACCESS GATE IN LANDWARD FENCE TO FACILITATE SHORELINE ACCESS.

1. ALL MODIFICATIONS REQUIRED FOR ACCESS SHALL BE COORDINATED WITH THE PROPERTY OWNER.
2. MODIFICATIONS, SUCH AS ADDITIONAL ACCESS GATES, SHALL BE CONSTRUCTED USING THE SAME FENCE GAUGE, FENCE MATERIAL, FENCE HEIGHT, AND FENCE APPURTENANCES (E.G. BARBED WIRE) AS EXISTING FENCE.
3. CONTRACTOR SHALL MAINTAIN SECURE SITE AT ALL TIMES AND PREVENT UNAUTHORIZED ACCESS TO CONTAINER PROPERTIES.
4. CONTRACTOR SHALL CONDUCT LANDWARD FENCE MODIFICATIONS USING METHODS THAT PROTECT ALL TREES AND UTILITIES ALONG FENCE LINE.

TEMPORARY TREE PROTECTION NOTES:

1. PROTECT EXISTING NATIVE TREES WITHIN AND DIRECTLY ADJACENT TO SMA 5 WORK.
2. INSTALL TEMPORARY TREE PROTECTION FENCING AT DRIPLINE OF TREES. NO WORK SHALL occur WITHIN DRIPLINE WITH THE EXCEPTION OF HAND REMOVAL OF INVASIVE VEGETATION .
3. TEMPORARY TREE PROTECTION FENCING AREAS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE CONFIRMED IN FIELD.

N

0 30 60
SCALE IN FEET

COLOR IMAGE
THIS DRAWING IS COMPOSED USING COLOR IMAGES OR PHOTOGRAPHS AND MUST BE PLOTTED, PRINTED, AND REPRODUCED IN COLOR TO BE VIEWED ACCURATELY.

NO	REVISION DESCRIPTION	BY	APVD	DATE

Lower Duwamish Waterway Group
City of Seattle / King County / The Boeing Company
ANCHOR QEA

FINAL ISSUE DRAWING
INFORMATION ONLY
BID DOCUMENTS
DECEMBER 2023

JOHN P. LAPLANTE STATE OF WASHINGTON 38792 REGISTERED PROFESSIONAL ENGINEER
12-14-23

DESIGNED/DRAWN: BIGSBY/GRIGA	CHECKED: K. GROSS
PROJECT ENGINEER: J. LAPLANTE	SCALE: AS NOTED
DESIGN APPROVAL: J. ABDALKHANI	PROJECT FILE NO: E00559E18
PROJECT ACCEPTANCE: G. STEINER	CONTRACT NO: KC001065

King County

DEPARTMENT OF NATURAL RESOURCES & PARKS
WASTEWATER TREATMENT DIVISION
LOWER DUWAMISH WATERWAY UPPER REACH
REMEDIAL ACTION

SMA 5 DETAILED ACCESS PLAN

DATE: DECEMBER 2023
DRAWING NO: **G006**
SHT NO 6 / TOTAL 91 | REV NO: **0**

BORDER FILE EDITION: xKCWTD-Dsize-TB-Border_AQByLayer
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PLOTTED: Jan 12, 2024-10:10:10am By jbigsby

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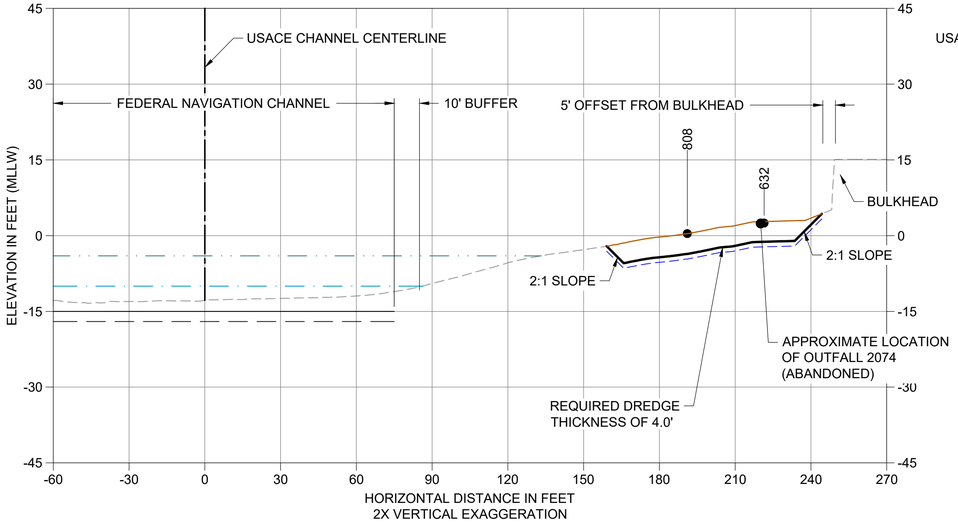
Attachment B

Grading Elevation Requirements



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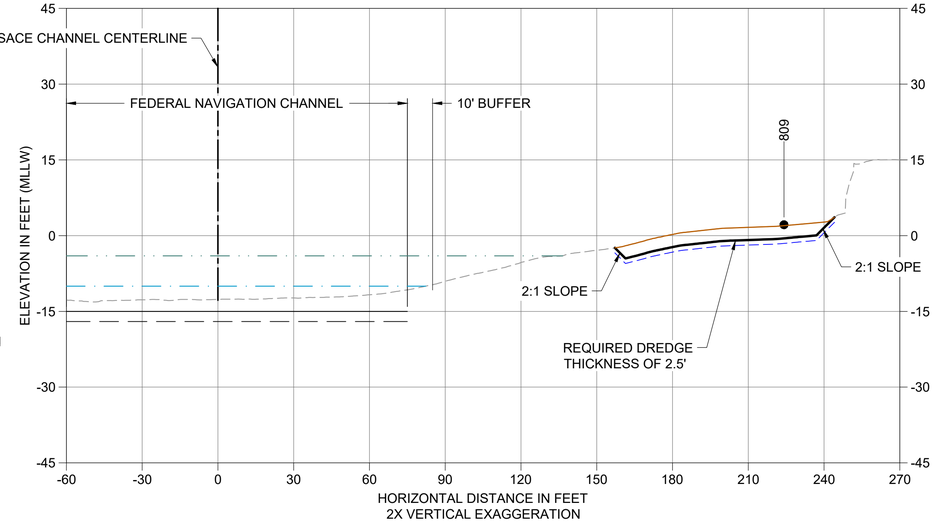
VERTICAL SCALE:1" = 15'



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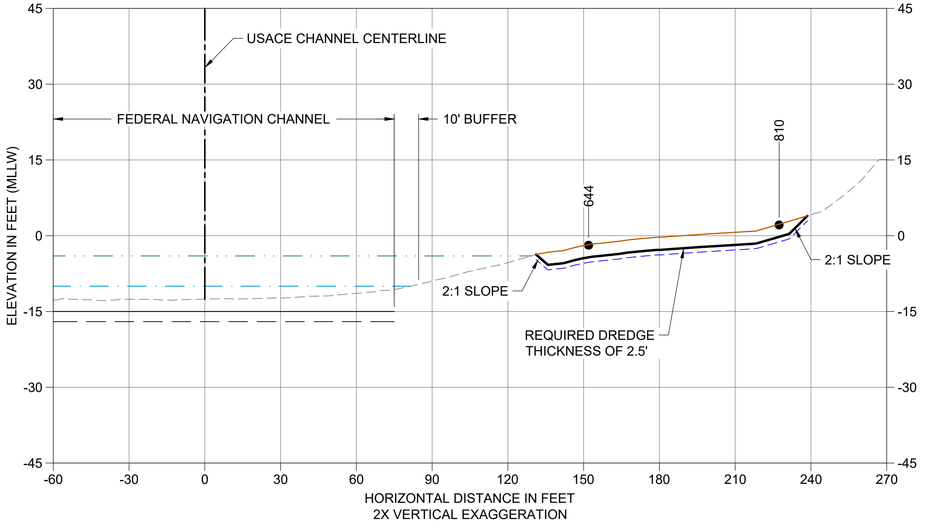

AM / C107 **CROSS SECTION STA 238+90**
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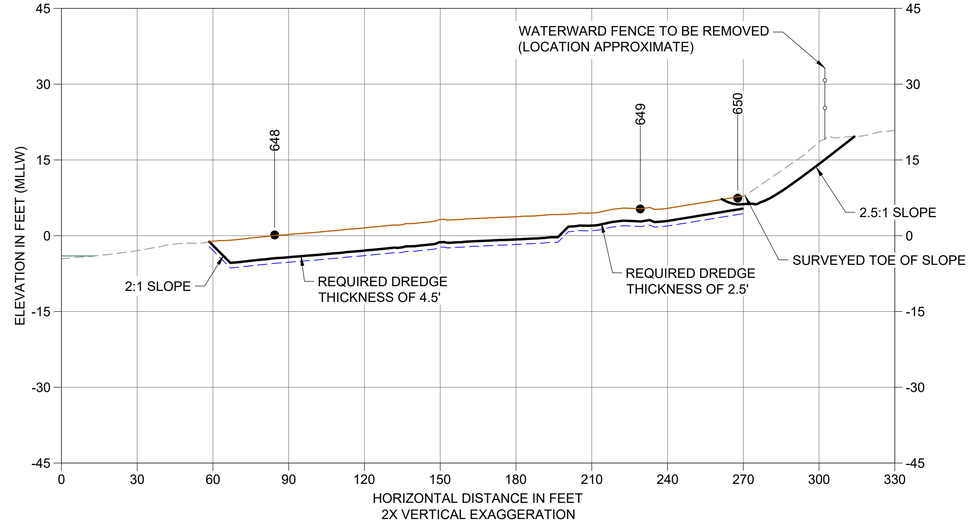
VERTICAL SCALE:1" = 15'



AN / C108 **CROSS SECTION STA 241+50**
HORIZONTAL SCALE:1" = 30'
VERTICAL SCALE:1" = 15'

LEGEND:

- EXISTING GRADE MERGED DATA
- USACE AUTHORIZED CHANNEL ELEVATION (-15' MLLW)
- USACE MAINTENANCE ELEVATION (-17' MLLW)
- INTERTIDAL/SUBTIDAL TRANSITION (-4' MLLW)
- LOWEST HABITAT AREA ELEVATION (-10' MLLW)
- VERTICAL SAMPLE LOCATION
- REQUIRED DREDGING SURFACE
- PAYABLE OVERDREDGE ALLOWANCE
- BACKFILL TARGETED PLACEMENT SURFACE
- ENGINEERED CAP A SURFACE (1 / C305)

NOTES:

1. VERTICAL DATUM: MLLW
2. ENR, RMC, AND AMENDED COVER PLACEMENT NOT SHOWN ON CROSS SECTIONS. SEE DETAILS 1 AND 3/C304.

COLOR IMAGE
THIS DRAWING IS COMPOSED USING COLOR IMAGES OR PHOTOGRAPHS AND MUST BE PLOTTED, PRINTED, AND REPRODUCED IN COLOR TO BE VIEWED ACCURATELY.

NO	REVISION DESCRIPTION	BY	APVD	DATE

Lower Duwamish Waterway Group
City of Seattle / King County / The Boeing Company
ANCHOR QEA

FINAL ISSUE DRAWING
INFORMATION ONLY
BID DOCUMENTS
DECEMBER 2023

JOHN P. LAPLANTE — STATE OF WASHINGTON — 38792 — REGISTERED PROFESSIONAL ENGINEER
12-04-23

DESIGNED/DRAWN: BIGSBY/GRIGA	CHECKED: K. GROSS
PROJECT ENGINEER: J. LAPLANTE	SCALE: AS NOTED
DESIGN APPROVAL: J. ABDALKHANI	PROJECT FILE NO: E00559E18
PROJECT ACCEPTANCE: G. STEINER	CONTRACT NO: KC001065

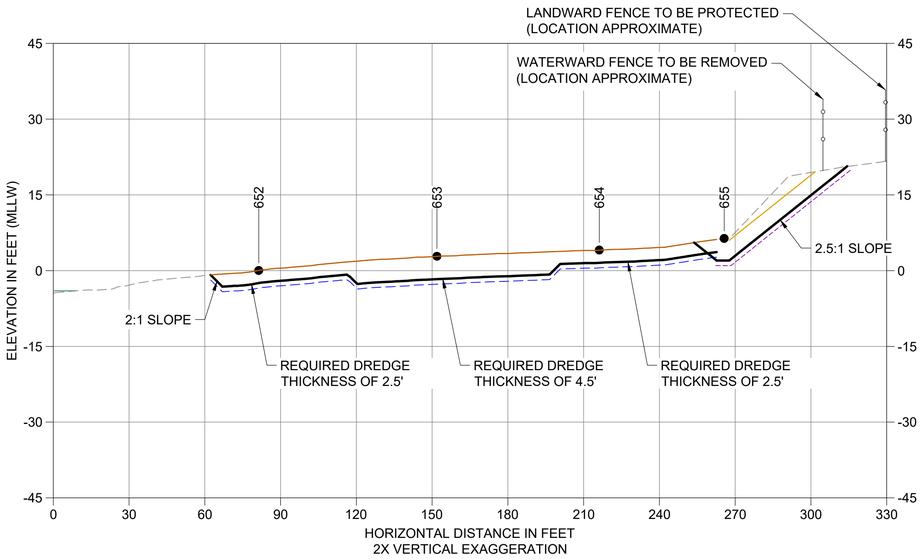
King County

DEPARTMENT OF NATURAL RESOURCES & PARKS
WASTEWATER TREATMENT DIVISION
LOWER DUWAMISH WATERWAY UPPER REACH REMEDIAL ACTION

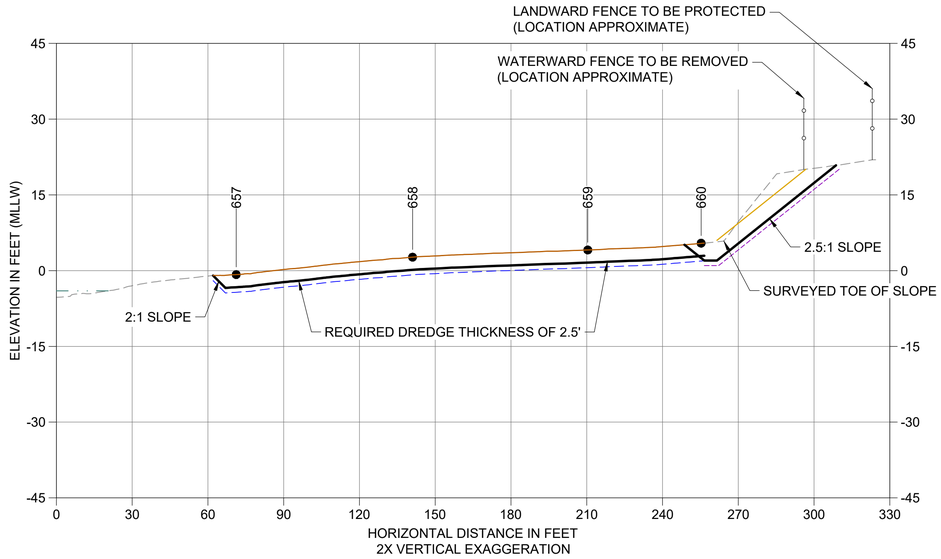
CROSS SECTIONS (10 OF 15)

DATE: DECEMBER 2023
DRAWING NO: **C210**
SHT NO 65 / TOTAL 91 | REV NO: **0**

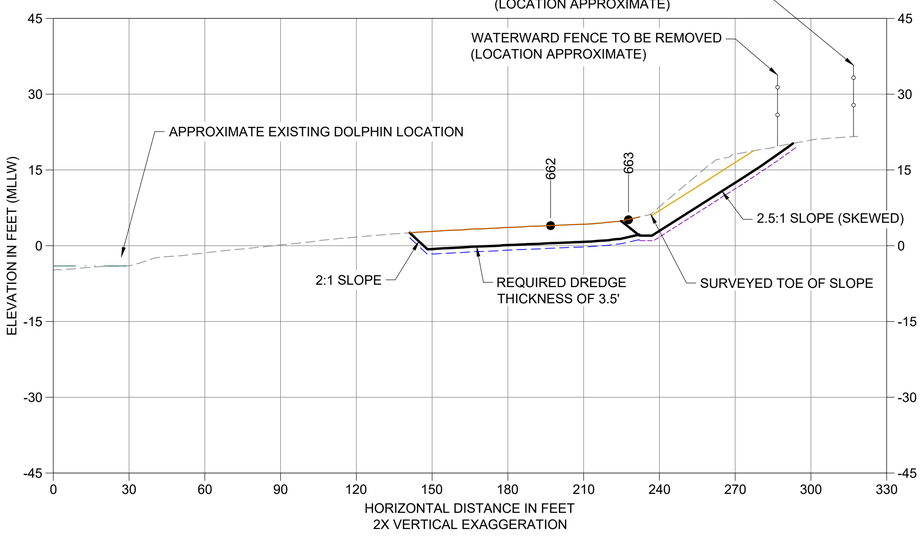
BORDER FILE EDITION: xKCWTD-Dsize-TB-Border_AGByLayer
\\galvlcad\Projects\0067-King County\LDW Upper Reach Engineering Services\Construction Plans\0067-LDWUR-PL-Dredge-Sections.dwg | Layout: C210
PLOTTED: Jan 12, 2024-11:01:17am By jbigsby



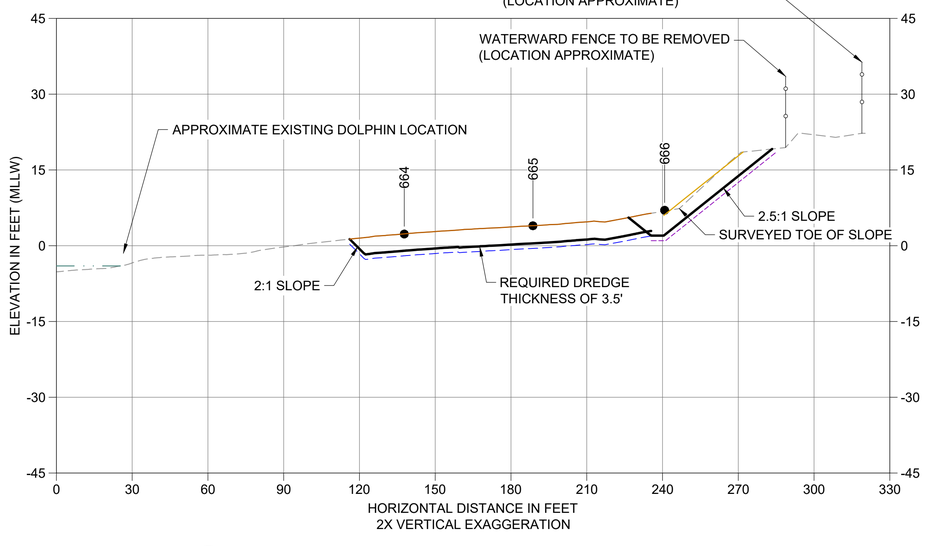
AO / C108 CROSS SECTION STA 242+50
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



AP / C108 CROSS SECTION STA 243+50
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



AQ / C108 CROSS SECTION STA 244+50
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'



AR / C108 CROSS SECTION STA 245+50
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 15'

LEGEND:

- EXISTING GRADE MERGED DATA
- USACE AUTHORIZED CHANNEL ELEVATION (-15' MLLW)
- USACE MAINTENANCE ELEVATION (-17' MLLW)
- INTERTIDAL/SUBTIDAL TRANSITION (-4' MLLW)
- LOWEST HABITAT AREA ELEVATION (-10' MLLW)
- VERTICAL SAMPLE LOCATION
- REQUIRED DREDGING SURFACE
- PAYABLE OVERDREDGE ALLOWANCE
- NON-PAYABLE OVEREXCAVATION ALLOWANCE
- BACKFILL TARGETED PLACEMENT SURFACE
- ENGINEERED CAP A SURFACE (1 / C305)

NOTES:

1. VERTICAL DATUM: MLLW
2. ENR, RMC, AND AMENDED COVER PLACEMENT NOT SHOWN ON CROSS SECTIONS. SEE DETAILS 1 AND 3/C304.

COLOR IMAGE
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Lower Duwamish Waterway Group
City of Seattle / King County / The Boeing Company

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FINAL ISSUE DRAWING
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DECEMBER 2023

JOHN J. LAPLANTE — STATE OF WASHINGTON — 38792 — REGISTERED PROFESSIONAL ENGINEER
12-04-23

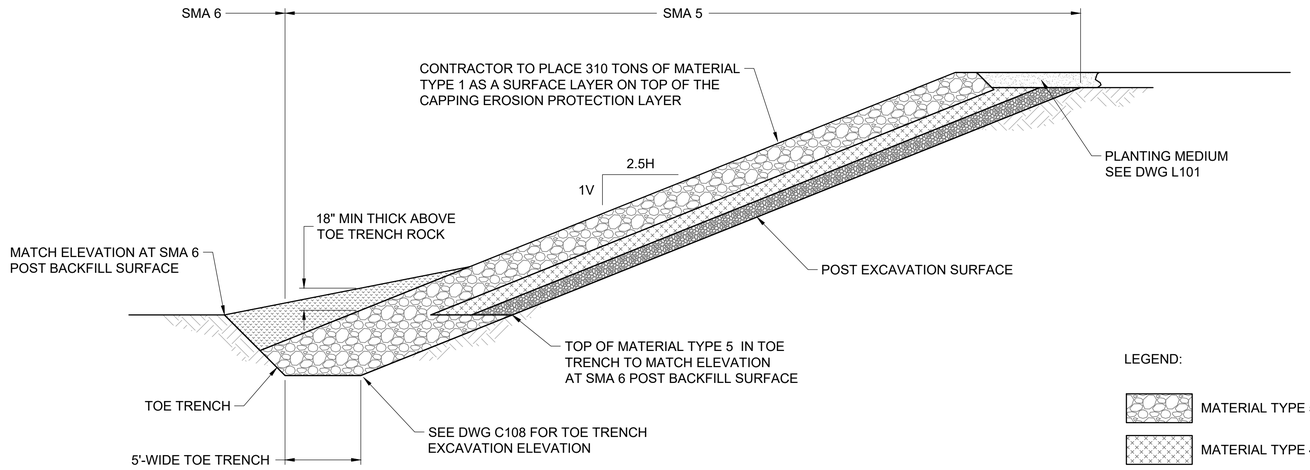
DESIGNED/DRAWN: BIGSBY/GRIGA	CHECKED: K. GROSS
PROJECT ENGINEER: J. LAPLANTE	SCALE: AS NOTED
DESIGN APPROVAL: J. ABDALKHANI	PROJECT FILE NO: E00559E18
PROJECT ACCEPTANCE: G. STEINER	CONTRACT NO: KC001065

King County

DEPARTMENT OF NATURAL RESOURCES & PARKS
WASTEWATER TREATMENT DIVISION
LOWER DUWAMISH WATERWAY UPPER REACH
REMEDIAL ACTION

CROSS SECTIONS (11 OF 15)

DATE: DECEMBER 2023
DRAWING NO: C211
SHT NO 66 / TOTAL 91 | REV NO: 0



LEGEND:

- MATERIAL TYPE 5 (12" MIN THICKNESS)
- MATERIAL TYPE 4 (6" MIN THICKNESS)
- MATERIAL TYPE 1A (12" MIN THICKNESS)
- MATERIAL TYPE 2 (18" MIN THICKNESS)

ENGINEERED CAP A (SMA 5 REVETMENT)

DETAIL 1 / -

SCALE: NOT TO SCALE

MATERIAL TYPE 1

U.S. STANDARD SIEVE SIZE	PERCENT BY DRY WEIGHT, PASSING
1-1/2 INCHES	100
3/4 INCH	73 TO 83
5/8 INCH	60 TO 70
1/2 INCH	56 TO 66
1/4 INCH	54 TO 64
U.S. NO. 4	48 TO 58
U.S. NO. 10	27 TO 37
U.S. NO. 40	8 TO 18
U.S. NO. 200	0 TO 5

MATERIAL TYPE 1A

U.S. STANDARD SIEVE SIZE	PERCENT BY DRY WEIGHT, PASSING
1-1/4 INCHES	99 TO 100
1 INCH	80 TO 100
5/8 INCH	50 TO 80
U.S. NO. 4	25 TO 45
U.S. NO. 40	3 TO 18
U.S. NO. 200	0 TO 5

MATERIAL TYPE 2

U.S. STANDARD SIEVE SIZE	PERCENT BY DRY WEIGHT, PASSING
3/8 INCH	100
U.S. NO. 4	99
U.S. NO. 8	75 TO 82
U.S. NO. 16	44 TO 59
U.S. NO. 30	19 TO 37
U.S. NO. 50	4 TO 16
U.S. NO. 100	1 TO 5
U.S. NO. 200	0 TO 2

MATERIAL TYPE 4

U.S. STANDARD SIEVE SIZE	PERCENT BY DRY WEIGHT, PASSING
2-1/2 INCHES	100
2 INCHES	65 TO 100
3/4 INCH	40 TO 80
U.S. NO. 4	0 TO 5
U.S. NO. 200	0 TO 1

MATERIAL TYPE 5

U.S. STANDARD SIEVE SIZE	PERCENT BY DRY WEIGHT, PASSING
8 INCHES	100
3 INCHES	40 MAX
3/4 INCH	10 MAX

MATERIAL TYPE 3:
MATERIAL TYPE 3 SHALL BE MATERIAL TYPE 1 BLENDED WITH GAC MATERIAL AT THE DOSAGE REQUIRED AND PROCEDURES DESCRIBED SECTION 35 37 10 - MATERIAL PLACEMENT

COLOR IMAGE
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Lower Duwamish Waterway Group
City of Seattle / King County / The Boeing Company

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JOHN P. LAPLANTE STATE OF WASHINGTON 38792 REGISTERED PROFESSIONAL ENGINEER
12-04-23

DESIGNED/DRAWN: BIGSBY/GRIGA	CHECKED: K. GROSS
PROJECT ENGINEER: J. LAPLANTE	SCALE: AS NOTED
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King County

DEPARTMENT OF NATURAL RESOURCES & PARKS
WASTEWATER TREATMENT DIVISION
LOWER DUWAMISH WATERWAY UPPER REACH
REMEDIAL ACTION

MATERIAL PLACEMENT DETAILS (3 OF 3)

DATE: DECEMBER 2023
DRAWING NO: C305
SHT NO 75 / TOTAL 91 | REV NO: 0

Pacific Pile & Marine, LP
700 South Riverside Drive
Seattle, WA 98108

T 206 331-3873
F 206 774-5958
License # PACIFPM922J3

Attachment C

Planting Details

MATCH LINE SEE DRAWING C152

MATCH LINE SEE DRAWING C109

CENTERPOINT PROPERTIES

CONTAINER PROPERTIES

TEMPORARY WIRE MESH HERBIVORE EXCLUSION FENCING (6/L301)

RESTORED LANDWARD FENCE

PREPARE PLANTING AREA WITH TOPSOIL AT ENGINEERED CAP INTERFACE (1/L301)

NORTHERN PLANTING AREA MAXIMUM 10-FT WIDTH STARTING 2.5' LANDWARD OFFSET FROM POST-CAP TOP OF BANK (1/L301)

EXTEND RIPARIAN SEED MIX PLANT COMMUNITY FROM EDGE OF MATERIAL TYPE 4 (1/L301)

SOUTHERN PLANTING AREA MAXIMUM 25-FT WIDTH STARTING 2.5' LANDWARD OFFSET FROM POST-CAP TOP OF BANK (1/L301)

PLANTING AREA

F.SLOPE

VAULT

TOP OF BANK

GRAVEL

FH (ABANDONED)

WATER VAULT (ABANDONED)

1.7'Ø METAL LID (LOCKED)

5

6

PLANT SCHEDULE

	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING	QUANTITY	NOTES	DETAIL
	RIPARIAN SEED MIX						
	SEE SPECIFICATION FOR SEED MIX SPECIES		N/A	N/A	3,289 SQUARE FEET	SEE SPECIFICATIONS FOR PERCENT BY WEIGHT AND APPLICATION RATES	1/L301
	RIPARIAN UNDERSTORY						
	ARCOSTAPHYLOS UVA-URSI	KINNICKINNICK	4-INCH POT	2' O.C.	390	CLUSTER SPECIES IN GROUPS OF 3-5	2/L301, 4/L301, 5/L301
	FRAGARIA CHILEONSIS	BEACH STRAWBERRY	4-INCH POT	2' O.C.	390		
	HOLODISCUS DISCOLOR	OCEANSPRAY	1 GAL. CONTAINER	5' O.C.	44		
	ROSA NUTKANA	NOOTKA ROSE	1 GAL. CONTAINER	5' O.C.	44		
	RUBUS URSINUS	TRAILING BLACKBERRY	1 GAL. CONTAINER	5' O.C.	44		
	SYMPHORICARPUS ALBA	SNOWBERRY	1 GAL. CONTAINER	5' O.C.	44		
	RIPARIAN TREES						
	ACER MACROPHYLLUM	BIG LEAF MAPLE	5 GAL. CONTAINER	AS SHOWN	8		3/L301, 5/L301
	ALNUS RUBRA	RED ALDER	5 GAL. CONTAINER	AS SHOWN	5		
	CRATAEGUS DOUGLASII	DOUGLAS HAWTHORNE	5 GAL. CONTAINER	AS SHOWN	6		
	MALUS FUSCA	PACIFIC CRABAPPLE	5 GAL. CONTAINER	AS SHOWN	6		
	PINUS CONTORTA VAR. CONTORTA	SHORE PINE	5 GAL. CONTAINER	AS SHOWN	6		
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	5 GAL. CONTAINER	AS SHOWN	8		

EXISTING SURVEY AND REMEDIAL ACTION LEGEND:

- 250+00 — USACE CHANNEL CENTERLINE AND STATIONING
- FEDERAL NAVIGATION CHANNEL
- RM 3.0 — RIVER MILE LABEL
- LDW UPPER REACH APPROXIMATE BOUNDARY
- EXISTING GRADE MERGED DATA SET CONTOURS (2' & 10' INTERVALS)
- SEDIMENT MANAGEMENT AREA BOUNDARY
- 14 — SEDIMENT MANAGEMENT AREA NUMBER
- EXISTING TREE

PLANTING LEGEND

- PLANTING AREA
- TEMPORARY WIRE MESH HERBIVORE EXCLUSION FENCING
- RESTORED LANDWARD FENCE

NOTES:

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD83 (2011), U.S. SURVEY FEET
2. VERTICAL DATUM: MLLW
3. PLANTING SHALL OCCUR AFTER CONSTRUCTION OF ENGINEERED CAP.
4. CONTRACTOR TO COORDINATE WITH PROPERTY OWNER ON LANDWARD FENCE RESTORATION REQUIREMENTS AND SHALL REINSTALL FENCE OF THE SAME TYPE AND DETAIL AS THE FENCE THAT WAS REMOVED.
5. LANDWARD FENCE RESTORATION SHALL ALLOW FOR CONTRACTOR MAINTENANCE ACCESS DURING THE MAINTENANCE PERIOD.

0 40 80
SCALE IN FEET

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Lower Duwamish Waterway Group
City of Seattle / King County / The Boeing Company

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DECEMBER 2023

STATE OF WASHINGTON · ANNA HOOK SPOONER · 22645 · REGISTERED LANDSCAPE ARCHITECT · 12-14-23

DESIGNED/DRAWN: R. FARNSWORTH	CHECKED: A. SPOONER
PROJECT ENGINEER: J. LAPLANTE	SCALE: AS NOTED
DESIGN APPROVAL: J. ABDALKHANI	PROJECT FILE NO: E00559E18
PROJECT ACCEPTANCE: G. STEINER	CONTRACT NO: KC001065

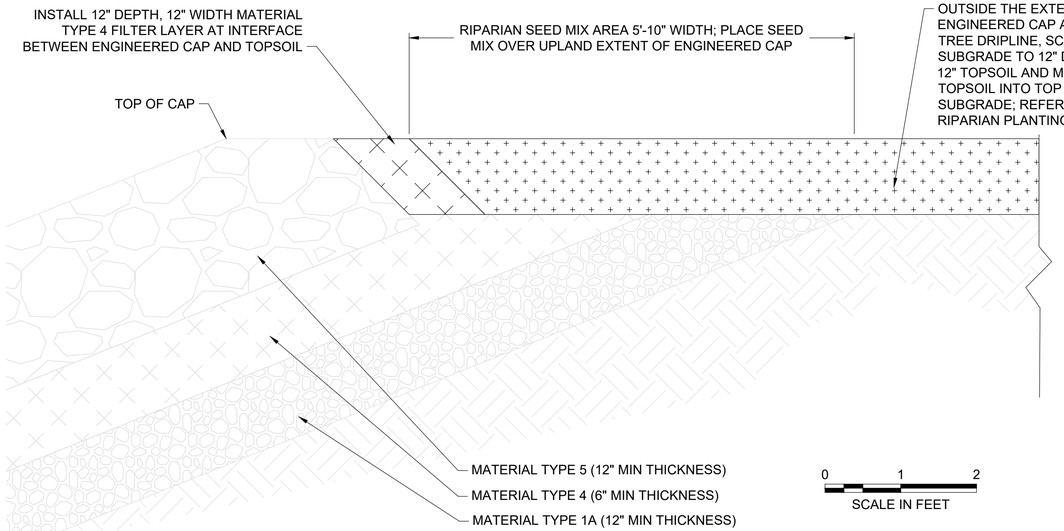
King County

DEPARTMENT OF NATURAL RESOURCES & PARKS
WASTEWATER TREATMENT DIVISION
LOWER DUWAMISH WATERWAY UPPER REACH
REMEDIAL ACTION

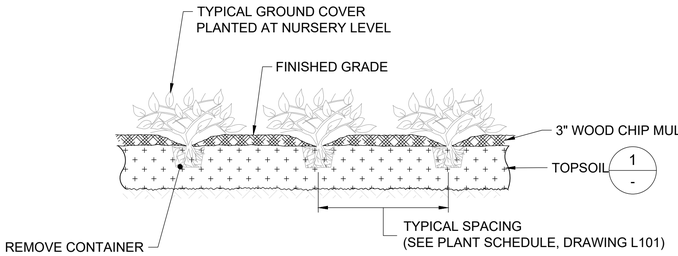
PLANTING AND RESTORATION PLAN (RM 3.98 TO 4.13)

DATE: DECEMBER 2023
DRAWING NO: L101
SHT NO 76 / TOTAL 91
REV NO: 0

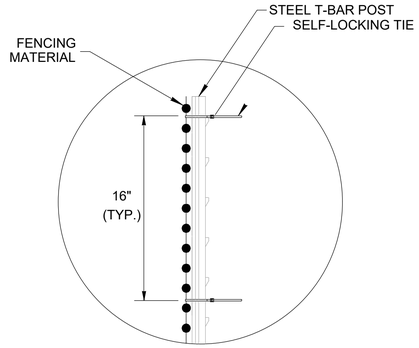
BORDER FILE EDITION: xKCWTD-Dsize-TB-Border_AQByLayer
\\galaCAD\Projects\0067-King County\LDW Upper Reach Engineering Services\Construction Plans\0067-LDWUR-PL-Planting.dwg | Layout: L101
PLOTTED: Jan 12, 2024-11:07:13am By jbigsby



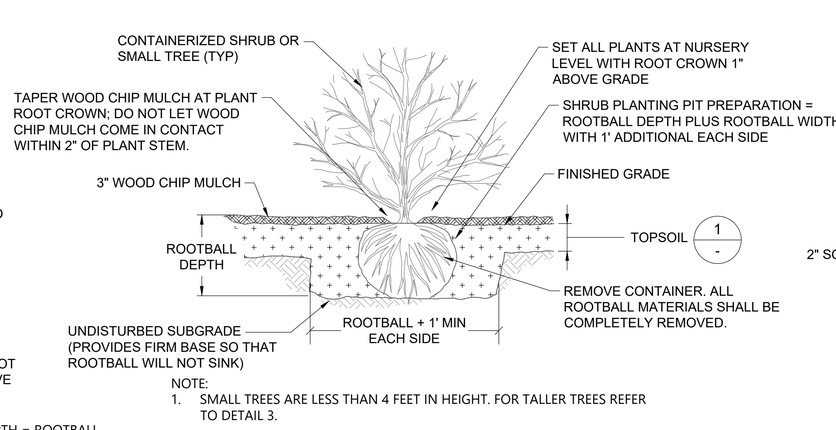
1 / L01 ENGINEERED CAP AND TOPSOIL INTERFACE
SCALE:1" = 1'



2 / L01 TYPICAL GROUNDCOVER PLANTING
SCALE:NOT TO SCALE

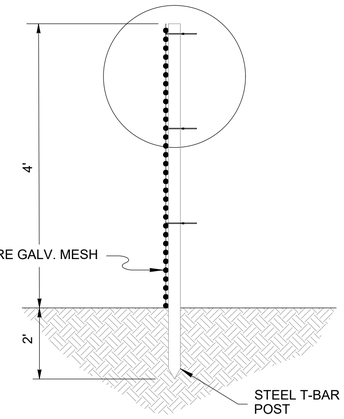


FENCE CONNECTION - STEEL T-BAR POST



NOTE:
1. SMALL TREES ARE LESS THAN 4 FEET IN HEIGHT. FOR TALLER TREES REFER TO DETAIL 3.

4 / L01 SMALL TREE OR SHRUB PLANTING - SECTION
SCALE:NOT TO SCALE



NOTE:
1. INSTALL STEEL T-BAR POST AT MINIMUM 6-FT SPACING. AVOID INSTALLING T-POST WITHIN DRIPLINE OF TREES. IF NECESSARY TO ACHIEVE MINIMUM SPACING, VERIFY LOCATION WILL NOT COME WITHIN 6-INCHES OF EXISTING TREE ROOTS.

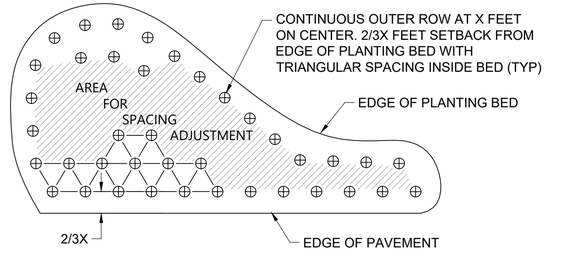
6 / L01 TEMPORARY WIRE MESH HERBIVORE EXCLUSION FENCING
SCALE:NOT TO SCALE

CONIFER TREE

DECIDUOUS TREE

TREE PLANTING NOTES:
1. REFER TO SPECIFICATION 32 93 00 FOR TREE STAKING REQUIREMENTS.
2. STAKE TREES WITH (2) 2"-DIAMETER (8'-0" LENGTH) LODGE POLE PINE OR DOUGLAS FIR STAKES.
3. CHAINLOCK (OR EQUAL) TREE TIE. LOOP EACH TIE AROUND TREE LOOSELY TO PROVIDE 1" SLACK FOR DIAMETER GROWTH.
4. ONE STAKE PER TREE ON WINDWARD SIDE; SECOND STAKE ON LEEWARD SIDE.
5. ALL ROOTBALL MATERIALS SHALL BE COMPLETELY REMOVED.
6. ROUGHEN SIDES OF PLANTING HOLE. MAXIMIZE EXCAVATED AREA WITHOUT UNDERMINING ADJACENT CONDITIONS.
7. SHAPE SOIL TO PROVIDE 3'-DIAMETER OR ROOTBALL DIAMETER, WHICHEVER IS GREATER, WATERING RING.
8. DO NOT LET MULCH COME INTO CONTACT WITHIN 2" OF THE PLANT STEM.
9. MULCH AREA TO BE CLEAR OF GRASS, WEEDS, ETC. TO REDUCE COMPETITION WITH TREE ROOTS.

3 / L01 TREE PLANTING AND STAKING
SCALE:NOT TO SCALE



⊕ PLANT LOCATION
X = PLANT SPACING (SEE PLANT SCHEDULE L101)

5 / L01 SHRUB AND GROUNDCOVER PLANTING LAYOUT - PLAN
SCALE:NOT TO SCALE

COLOR IMAGE
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DECEMBER 2023

STATE OF WASHINGTON ANNA HOOK SPOONER 240245 EXP. 06/ 09/2025 LICENSED LANDSCAPE ARCHITECT 12-11-23

DESIGNED/DRAWN: R. FARNSWORTH	CHECKED: A. SPOONER
PROJECT ENGINEER: J. LAPLANTE	SCALE: AS NOTED
DESIGN APPROVAL: J. ABDALKHANI	PROJECT FILE NO: E00559E18
PROJECT ACCEPTANCE: G. STEINER	CONTRACT NO: KC001065

King County

DEPARTMENT OF NATURAL RESOURCES & PARKS
WASTEWATER TREATMENT DIVISION
LOWER DUWAMISH WATERWAY UPPER REACH
REMEDIAL ACTION

PLANTING DETAILS

DATE: DECEMBER 2023
DRAWING NO: L301
SHT NO 77 / TOTAL 91
REV NO: 0

BORDER FILE EDITION: xKCWTD-Dsize-TB-Border_AQByLayer
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PLOTTED: Jan 12, 2024-11:08:56am By jbigsby