DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, SEATTLE DISTRICT
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

Regulatory Branch May 5, 2021

Mr. Mark Rettman
Port of Tacoma
Post Office Box 1837
Tacoma, Washington 98401

Reference: NWS-2020-457-WRD
Tacoma, Port of

Dear Mr. Rettman:

Enclosed is a Department of the Army permit which authorizes performance of the work described in your referenced application. You are cautioned that any change in the location or plans of the work will require submittal of revised plans to this office for approval prior to accomplishment. Deviation from the approved plans may result in imposition of criminal or civil penalties.

While you have proposed the actions described above as advance mitigation for future impacts to aquatic resources at the project site, approval of the work does not constitute the Corps acceptance of this area as mitigation for future impacts on the site. Use of the advance mitigation area for future impacts will be evaluated at the time an application is received for the proposed work.

Your attention is drawn to General Condition 1 of the permit which specifies the expiration date for completion of the work. Upon completing the authorized work, please fill out and return the enclosed *Certificate of Compliance with Department of the Army Permit* form. We are interested in your experience with our Regulatory Program and encourage you to complete a customer service survey form.

This form and information about our program is available on our website at: www.nws.usace.army.mil select “Regulatory Branch, Permit Information” and then “Contact Us.” If you have any questions please contact Mr. Jason Sweeney at Jason.t.sweeney@usace.army.mil.

Sincerely,

Kristina G. Tong

for Michelle Walker, Chief
Regulatory Branch

Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee: Tacoma, Port of

Post Office Box 1837
Tacoma, Washington 98401

Permit No: NWS-2020-457-WRD

Issuing Office: Seattle District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: The proposed work includes re-establishment of wetlands, re-establishment of tidal mudflats, and stream restoration for the construction of an advance mitigation site. (in accordance with the plans and drawings dated January 7, 2021 attached hereto which are incorporated in and made a part of this permit). The purpose of the project is to improve aquatic resources and provide potential advance mitigation for future impacts contingent on Corps approval.

Project Location: In wetlands, Wapato Creek and tidal areas at Fife and Tacoma, Pierce County, Washington.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on May 5, 2024. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least 1 month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in accordance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification to this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

7. After a detailed and careful review of all the conditions contained in this permit, the permittee acknowledges that, although said conditions were required by the Corps, nonetheless the permittee agreed to

those conditions voluntarily to facilitate issuance of the permit; the permittee will comply fully with all the terms of all the permit conditions.

Special Conditions:

a. You shall provide a copy of the permit transmittal letter, permit form, and permit drawings to all contractors involved in the authorized work.

b. If future operations by the United States require the removal, relocation, or other alteration of the work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, you will be required, upon due notice from the U. S Army Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

c. You must implement and abide by the Endangered Species Act (ESA) requirements and/or agreements set forth in the No Effect Memo, dated May 5, 2020, in its entirety. The U.S. Army Corps of Engineers (Corps) made a determination of No Effect for all species and critical habitat based on this document. Failure to comply with the commitments made in this document, as revised below, constitutes non-compliance with the ESA and your Corps permit. The No Effect Memo is hereby modified as follows: In 2021, in water work can occur starting on July 8, 2021.

d. You shall adhere to the Puyallup Tribe of Indians Inadvertent Discovery Plan dated February 11, 2021, in its entirety.

e. By accepting this permit, you agree to accept such potential liability for response costs, response activity and natural resource damages as you would have under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. 9601 et seq. (CERCLA) or the Model Toxics Control Act, R.C.W. 70.105 (MTCA) absent the issuance of this permit. Further, you agree that this permit does not provide you with any defense from liability under the CERCLA or the MTCA. Additionally, you shall be financially responsible for any incremental response costs attributable under CERCLA or MTCA to your activities under this permit.

f. Permittee shall comply with the conditions specified in the Washington State Department of Ecology coastal zone management consistency determination dated March 29, 2021.

g. You shall implement and abide by the advance mitigation plan, *Final Advance Mitigation Plan – Lower Wapato Creek Habitat Project* dated March 2021. Release of mitigation credits is dependent on approval from the U.S. Army Corps of Engineers, Regulatory Branch. Advance mitigation construction must be completed before the release of mitigation credits.

h. An as-built construction report and as-built drawings of the restoration areas shall be submitted upon completion of advance mitigation construction. This report must be submitted to the U.S. Army Corps of Engineers, Seattle District, Regulatory Branch for review and approval and must prominently display the reference number NWS-2020-457-WRD.

i. You must implement and adbide by the Water Quality Monitoring Plan dated March 4, 2021.

Further Information:

1. Congressional Authorities. You have been authorized to undertake the activity described above pursuant to:

☒ Section 10 of the Rivers and Harbor Act of 1899 (33 United States Code (U.S.C.) 403).

☒ Section 404 of the Clean Water Act (33 U.S.C. 1344).

☐ Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorization required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of the permit.

b. The information provided by you in support of your application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 Code of Federal Regulations (CFR), Part 325.7 or enforcement procedures such as those contained in 33 CFR, Parts 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for

the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR, Part 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

May 5, 2021

Port of Tacoma (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

May 5, 2021

Alexander L. Bullock (DATE)
Colonel, Corps of Engineers
District Engineer

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (DATE)

US Army Corps of Engineers ®
Seattle District

CERTIFICATE OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

Permit Number: NWS-2020-457-WRD

Name of Permittee: Port of Tacoma

Date of Issuance: May 5, 2021

Upon completion of the activity authorized by this permit, please check the applicable boxes below, date and sign this certification, and return it to the following email or mailing address:

NWS.Compliance@usace.army.mil OR

Department of the Army
U.S. Army Corps of Engineers
Seattle District, Regulatory Branch
Post Office Box 3755
Seattle, Washington 98124-3755

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of your authorization, your permit may be subject to suspension, modification, or revocation.

☐	The work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of this permit. Date work complete: _____ ☐ Photographs and as-built drawings of the authorized work (OPTIONAL, unless required as a Special Condition of the permit).

☐	If applicable, the mitigation required (e.g., construction and plantings) in the above-referenced permit has been completed in accordance with the terms and conditions of this permit (not including future monitoring). Date work complete: _____ ☐ N/A ☐ Photographs and as-built drawings of the mitigation (OPTIONAL, unless required as a Special Condition of the permit).

☐	Provide phone number/email for scheduling site visits (must have legal authority to grant property access). Printed Name: _____ Phone Number: _____ Email: _____

Printed Name: _____

Signature: _____

Date: _____

MEMORANDUM

DATE: May 5, 2020

TO: Jason Sweeney, Project Manager, Biologist U.S. Army Corps of Engineers

FROM: Mark Rettmann, Environmental Project Manager II, Port of Tacoma

SUBJECT: **Lower Wapato Creek Habitat Project, No Effect Determination on Multiple ESA-Listed Species**

INTRODUCTION

This memorandum addresses the potential effects of the proposed Parcel 14 Lower Wapato Creek Habitat Project (Project) located in Fife and Tacoma, Washington on fish and wildlife species listed as threatened or endangered under the Federal and State Endangered Species Acts (ESA). Section 7 of the Federal ESA assures that, through consultation (or conferencing for proposed species) with U.S. Fish and Wildlife Services (USFWS) and National Marine Fisheries Service (NMFS), actions do not jeopardize the continued existence of any threatened, endangered or proposed species, or result in the destruction or adverse modification of critical habitat. The Project also requires federal permits from the U.S. Army Corps of Engineers (USACE), state permits from Washington Department of Fish and Wildlife (WDFW) and Washington Department of Ecology (Ecology) (if applicable), and local approval from the Cities of Fife and Tacoma (CoF and CoT, respectively).

The Port of Tacoma (Port) proposes to conduct estuarine habitat restoration actions at the 18.52-acre Project site as advance permittee-responsible compensatory mitigation for future unavoidable wetland impacts on Port property and for future unavoidable non-ESA fish habitat impacts on Wapato Creek downstream of the Project site. Advance mitigation credit generated by the Project will be documented and approved through an Advance Mitigation Plan (AMP) prepared for this Project in accordance with the *2012 Interagency Regulatory Guide for Advance Permittee-Responsible Mitigation* (Ecology 2012). The Project includes relocating approximately 1,040 linear feet (LF) of the existing degraded Wapato Creek channel into a new meandering creek channel (approximately 1,875 LF) through restored floodplain habitat, including re-establishment of high-quality estuarine channel, mudflat, emergent wetland, forested wetland and forested riparian buffer habitat. The Project also includes replacement of an existing partial fish passage barrier (culverts) with a bridge at the 12th Street East crossing. The excess materials excavated for the Project will be transported and placed/stockpiled at the Disposal site located on an adjacent Port property.

The Port of Tacoma has recently, (October 28, 2019), completed a similar "No Effect" determination for the Port's Parcel 15 project (Portac Property, Corps project # NWS-2019-946-WRD). The Parcel 15 project included replacement of an undersized culvert with a single span

bridge approximately 1,300 feet downstream of the proposed Project site. This Project will use similar construction equipment and activities identified in the Parcel 15 No Effect memo and conclusions that no ESA listed species utilize Wapato Creek. The USACE recently concurred with this "No Effect" determination and issued Nationwide Permits 3 and 15 (NWS-2019-946-WRD) based on this analysis. Our analysis of effects on listed species for this Project is based on the previous "No Effect" determination, since the status of listed species in the vicinity of Wapato Creek have not changed.

LOCATION

The Project consists of five parcels (Project/habitat site: No. 0320017003, 03200130055, 0320013157, 0320013158, and Disposal site: 0320011117) and 12th Street East right-of-way (ROW) in Fife and Tacoma, Washington in Township 20 North, Range 3 East, Section 1, Willamette Meridian. The site is bordered to the north by State Route (SR) 509 and Port industrial property, to the east by the Prologis Park Tacoma industrial warehouse facility, to the west by East Alexander Avenue and Progress Rail Services and to the south by 12th Street East, the Omega Morgan industrial facility, and Tribal Trust properties including private residences. The Project study area includes the Project site, the downstream portion of Wapato Creek and an approximate 1,000-foot-radius past the outlet of Wapato Creek into the Blair Waterway.

METHODS

The findings presented in this memorandum are based on searches of USFWS, NMFS and WDFW databases, as well as other applicable information sources to identify ESA-listed species and critical habitat that may be impacted by the proposed Project (USFWS 2020a, USFWS 2020b, NMFS 2020, WDFW 2020a, WDFW 2020b).

PROJECT DESCRIPTION

The Port proposes the Lower Wapato Creek Habitat Project as an advance permittee-responsible mitigation site which will increase ecological functions, values, and areal extent of Cowardin Classes of Wetland and Deepwater Habitats including; Riverine tidal streambed cobble-gravel/mud (Wapato Creek), estuarine intertidal unconsolidated mud (intertidal mudflats), estuarine intertidal emergent persistent wetlands (estuarine emergent wetlands) and Palustrine forested evergreen/deciduous wetlands (forested wetlands) in the lower Wapato Creek watershed. The re-establishment of these habitat types will be completed in advance of other potential wetland impacts as defined in the Project's Advance Mitigation Plan (AMP). The Project design includes two primary habitat elements: (1) fish passage improvement through replacement of two Wapato Creek culverts at the 12th Street East crossing; and (2) re-establishment of wetland and fish habitat through relocation of Wapato Creek and constructing a diverse complex of associated floodplain and wetland habitats historically present in the Commencement Bay intertidal mudflats.

The fish passage improvement element includes the replacement of twin undersized 60-inch-diameter culverts with an approximately 50-foot-wide single span bridge at the 12th Street East crossing to provide unimpeded fish passage to the upper reaches of Wapato Creek. The proposed bridge will also improve flood conveyance and reduce the impacts of habitat fragmentation caused

by the constriction perpetuated by the existing culverts. This will create an aquatic and riparian fish and wildlife corridor that extends from upstream of the Project, through the habitat site and into the downstream Wapato Creek corridor. Correcting fish passage barriers is an important step in the recovery of anadromous fish species.

The re-establishment of wetland and fish habitat will be achieved through a variety of design elements that will provide habitat diversity, complexity and interspersion. The Project proposes to increase the length of Wapato Creek from 1,040 lineal feet (LF) to approximately 1,875 LF (with an additional 350 LF of retained off-channel habitat in the existing Wapato Creek channel) by meandering the creek channel within a re-established broad floodplain corridor that includes an interconnected mosaic of forested wetlands, intertidal mudflats and estuarine emergent wetlands. These zones are protected by a forested upland buffer that surrounds the Project site. The design includes creation of sinuous edge habitat, as well as intermixed hummock and wetland habitat that is essential to re-establishing habitat interspersion and complexity in lower Wapato Creek. These habitat features have been designed to function as an interconnected ecosystem unit that provides key habitat functions for all life stages of avian, wildlife and fish species especially anadromous salmonids. Intertidal stream channels, mudflats, estuarine emergent wetlands, as well as freshwater forested wetlands and forested riparian habitats provide essential fish and wildlife functions such as forage opportunities, refuge, osmoregulation, flood protection and food web interconnections. These habitats also work together to provide key ecosystem services such as flood attenuation, water quality functions, sediment sorting and biodiversity. The design has focused on re-establishment of critical habitat functions and features as close to historic, pre-disturbance locations and conditions as possible within this highly developed urban/industrial location.

In order to re-establish this functioning ecosystem complex, approximately 713 LF of the existing straightened and simplified Wapato Creek channel will be filled along 12th Street East and the remaining portions of Wapato Creek, that connects to the proposed channel confluence will be retained as aquatic habitat. From the tie-in point of the proposed re-established channel, the remaining existing channel segment will be a backwater slough that transitions into intertidal mudflat and estuarine emergent wetland habitat to the south. The existing 12th Street Ditch will also be reconfigured into a vegetated filter strip swale.

The proposal includes a total of 10.02 acres of wetland/aquatic resource re-establishment including 5.51 acres of palustrine forested wetland (PFO) to provide shade and organic input, 2.35 acres of estuarine emergent wetland (EEM) to improve water quality and increase forage habitat, 2.10 acres of tidal stream channel/ mudflats re-establishment to increase epibenthic and prey production for higher level species as well as 7.34 total acres of forested upland (UPL) riparian buffer enhancement to filter pollutants and provide screening from adjacent developed areas. The proposed sinuous Wapato Creek channel will also include streambed substrate and large woody material (LWM) in high energy areas to provide opportunity for juvenile salmonid refuge from predators and high flows and provide initial stability as the site becomes established. Additional LWM, (including standing snags) will be installed in the re-established floodplain and wetland areas to provide surface roughening features, flood flow dispersion, amphibian habitat as well as increased insect production and instant allochthonous organic input.

The Project site is currently dominated by invasive species that inhibit the growth and diversity of vegetation species. These invasive species will be removed and wetland and upland areas will be densely planted with a diverse palate of native grass, emergent soft-stemmed vegetation, shrub and tree species. Forested wetlands and riparian buffer will be planted with a diverse assemblage of native woody coniferous and deciduous tree and shrub species to create a diverse multi-canopy dense riparian habitat and a source of long-term LWM recruitment. The configuration of the proposed forested wetland, hummock and riparian buffer areas will maximize habitat interspersion and complexity, preserve existing trees as much as possible, and provide significant forested cover over much of the site. This interspersion of habitat types will also provide shade to reduce water temperatures in Wapato Creek, filter pollutants, increase sources of allochthonous inputs and provide screening from surrounding developed areas.

The re-established habitats listed above are designed to function as synergistic components of a single, naturally functioning, re-established ecosystem providing substantial habitat functional lift. The different habitat types, including the tidal stream channel and mudflats, are designed as individual components of a larger mosaic of locally important aquatic resource habitats. The mosaic is designed to allow natural dynamic physical processes to adjust the habitat types over time based on changing climate and creek conditions. The Project site is not intended to be static and guarantee specific amounts of specific types of habitat. Rather, the site will be dynamic and designed to adapt and mature into a natural, self-sustaining wetland and stream complex with 10.02 acres of wetland/aquatic resource re-establishment and 7.34 total acres of riparian buffer. This re-establishment will be achieved through design and implementing the proposed construction, site protection, monitoring, maintenance and stewardship that will provide increased potential for successful development of a larger sustainable ecosystem in an area that otherwise is devoid of wetlands and has limited opportunities for functioning fish and wildlife habitat. The Project will generate advance mitigation credits for wetlands and non-Endangered Species Act (non-ESA) fish habitat as detailed in the AMP. The Project is anticipated to generate 10.02 Acre-Credits of wetland mitigation credit and non-ESA fish habitat credit for future unavoidable impacts to Wapato Creek from one or more crossings totaling 60 feet in width, parallel to flow, downstream of the Project. The final mitigation credit generated by the Project will be as detailed in the final AMP approved by the permitting agencies.

The Project also includes relocation of TPU poles, relocating utilities for the bridge replacement, the placement of excess excavated soils on adjacent Port property (i.e., within the corridor of the future SR 509 to SR 167 connection) and other ancillary project activities.

The proposed Project is designed to avoid and minimize adverse impacts to the aquatic environment to the greatest extent practicable. Best Management Practices (BMPs) include, but may not be limited to:

- Work below high tide line (HTL)/ordinary high water (OHW) will occur during the USACE and WDFW-approved in-water marine waters work window when juvenile salmonids are unlikely to be present.
- Work will occur in-the-dry during periods of low-flow/low-tide to the greatest extent practicable.

- Washington State Department of Transportation (WSDOT) Fish exclusion protocols will be implemented prior to in-water work.
- In-water work will occur in isolation of natural stream flow (e.g., cofferdams, etc.) to avoid and minimize turbidity and sedimentation within Wapato Creek.
- The contractor will be required to prepare and implement an erosion and sediment control (ESC) plan and a spill prevention, control and countermeasures (SPCC) plan prior to start of work activities.
- All stockpile and excavation areas will be protected from the release of sediment.
- Washed streambed material will be used, and uncured concrete will not be allowed to come into contact with Wapato Creek.
- Garbage and other deleterious debris will be removed from the shoreline where slope repairs are made.

EXISTING CONDITIONS

The Project site is located approximately 0.46 miles upstream of the outlet into the Blair Waterway in Commencement Bay. Wapato Creek enters the site through twin, 60-inch-diameter culverts flowing north under 12th Street East. The creek immediately turns 90 degrees to the west and flows along 12th Street East as a channelized roadside drainage. As the creek approaches East Alexander Avenue, it makes another 90-degree turn to the north and again flows straight to the north offsite under SR 509. The creek is tidally influenced throughout the Project site.

Historically, the proposed restoration area was a tidally influenced wetland or mudflats. The wetland was converted to agricultural use in the first half of the 20th Century (GeoEngineers 2010). In the mid 1960's, the site was legally filled with dredge material from the expansion of the Blair and Hylebos waterways, and the Wapato Creek channel was rerouted to its present location and configuration (GeoEngineers 2010).

Existing vegetation at the site includes several existing forested areas, primarily composed of black cottonwood (*Populus balsamifera*) with several Pacific madrone (Arbutus menziesii) and quaking aspen (Populus tremuloides) and grasses and Himalayan blackberry (Rubus armeniacus) in the understory. The remaining portions of the site are dominated by invasive species including reed canarygrass (*Phalaris arundinacea*), Himalayan blackberry (*Rubus armeniacus*), scotch broom (*Cytisus scoparius*), English Ivy (Hedera helix), and poison hemlock (*Conium maculatum*).

Several small, low functioning, isolated wetlands are located in the northern and eastern portions of the site, which were determined to be non-jurisdictional by the USACE in 2008, 2013, and 2020, and Ecology in 2011, and 2020. The City of Tacoma (City) also indicated that the onsite wetlands are by definition, artificial wetlands in 2009/2013 and will make a final jurisdictional determination during 2020 permitting actions. Vegetation observed in these features includes reed canarygrass, soft rush (*Juncus effusus*), red top (*Agrostis gigantea*), Baltic rush (*Juncus balticus*) and hardhack (*Spirea douglasii*).

Hydrogeology of the Project site was evaluated in 2010 to monitor surface and groundwater levels and aid in the development of the proposed restoration plan. Surface water elevations of Wapato Creek range from approximately +9 to +15 feet MLLW (Port of Tacoma Tidal Datum), with

maximum daily fluctuations of approximately 6 feet. The highest water levels occur during winter high tides. Groundwater levels are highest on the eastern side of the site (ranging from approximately +12 to +18 feet MLLW) and lower in the center of the site, just east of Wapato Creek (ranging from approximately +10 to +12.5 feet MLLW). Groundwater exhibits significant seasonal fluctuations, but very little fluctuation with tidal variation in Wapato Creek (no more than 0.15 feet in any location). Salinity testing, conducted by GeoEngineers in 2020, identified tidal influence up to the existing 12th Street East culverts. The salinities were high, (>20 parts-per-thousand [ppt]) >24 inches below the water surface elevation, approximately 40 feet downstream of the 12th Street East crossing outfall during a +13 feet MLLW high tide at approximately 7:00 am on March 11, 2020 (GeoEngineers 2020). The following table (Table 1) identifies salinities measured at that location.

Table 1. Salinity Readings Below Existing 12th Street East Culverts

Water Depth (feet)	Salinity (ppt)
0.5	0.3
1	0.42
1.5	0.8
1.8	2.2
2	25.09
3	28.28

Wapato Creek is on Ecology's 303(d) list under Category 5 for dissolved oxygen and bacteria, Category 2 for benzene, and Category 4C for instream flow (Ecology 2020). Wapato Creek is listed on the WDFW and Department of Natural Resources (DNR) Stream Classification mapping system as Type F, fish-bearing stream (WDFW 2020b, DNR 2020).

SPECIES AND HABITAT PRESENT

Several federal and state ESA-listed fish, wildlife and plants have the potential to occur within Pierce County and/or the Project study area (USFWS 2020a; USFWS 2020b; WDFW 2020a). Table2 presents several species listed within Pierce County that either have no documented occurrences within the Project study area, or no suitable habitat exists. Based on the lack of documented occurrences and suitable habitat for these species, the Project will have **No Effect** on them and they are not addressed further in this memorandum.

Table 2. ESA-Listed Species with Potential to Occur in Pierce County

Common Name	Scientific Name	ESU or DPS[1]	ESA Federal Status	ESA State Status	Critical Habitat
Canada Lynx	*Lynx canadensis*	N/A	Threatened	Threatened	Designated
Golden Paintbrush	*Castilleja levisecta*	N/A	Threatened	Endangered	Not designated or proposed

Common Name	Scientific Name	ESU or DPS[1]	ESA Federal Status	ESA State Status	Critical Habitat
Gray Wolf	*Canis lupis*	N/A	Endangered	Endangered	Not designated or proposed
Grizzly Bear	*Ursus arctos horribilis*	N/A	Threatened	Endangered	Proposed
Northern Spotted Owl	*Strix occidentalis caurina*	N/A	Threatened	Threatened	Designated
Oregon Spotted Frog	*Rana pretiosa*	N/A	Threatened	Endangered	Proposed
Pacific Eulachon	*Thaleichthys pacificus*	Southern DPS	Threatened	Candidate	Designated
Roy Prairie, Olympia, Tenino, and Yelm Pocket Gophers	*Thomomys mazama* ssp.	N/A	Threatened	Threatened	Designated
Streaked Horned Lark	*Eremophila alpestris strigata*	N/A	Threatened	Endangered	Designated
Taylor's Checkerspot	*Euphydryas editha taylori*	N/A	Endangered	Endangered	Designated
Water Howellia	*Howellia aquatilis*	N/A	Threatened	Threatened	Not designated or proposed
Yellow-Billed Cuckoo	*Coccyzus americanus*	Western U.S. DPS	Threatened	Candidate	Proposed

[1]ESU: Evolutionarily Significant Unit; DPS: Distinct Population Segment

Table3 presents the listing status of ESA-listed species that have a potential to occur in the proximity of the Project study area, followed by a brief discussion of each species.

Table 3. ESA-Listed Species with a Potential to Occur in the PCT Culvert Repairs Project Study Area

Common Name	Scientific Name	ESU or DPS[1]	ESA Federal Status	ESA State Status	Critical Habitat
Bocaccio	*Sebastes paucispinis*	Puget Sound/ Georgia Basin DPS	Endangered	Candidate	Designated
Bull trout	*Salvelinus confluentus*	Puget Sound DPS	Threatened	Candidate	Designated
Canary Rockfish	*Sebastes pinniger*	Puget Sound/ Georgia Basin DPS	Threatened	Candidate	Designated
Chinook Salmon	*Oncorhynchus tshawytscha*	Puget Sound ESU	Threatened	Candidate	Designated
Humpback Whale	*Megaptera novaeangliae*	N/A	Endangered	Endangered	Proposed
Marbled Murrelet	*Brachyramphus marmoratus*	N/A	Threatened	Threatened	Designated
Southern Resident Killer Whale (Orca)	*Orcinus orca*	Southern Resident DPS	Endangered	Endangered	Designated
Steelhead	*Oncorhynchus mykiss*	Puget Sound DPS	Threatened	Candidate	Designated
Yelloweye Rockfish	*Sebastes ruberrimus*	Puget Sound/ Georgia Basin DPS	Threatened	Candidate	Designated

[1]ESU: Evolutionarily Significant Unit; DPS: Distinct Population Segment

Fish

The USFWS and NMFS Threatened and Endangered Lists indicate there are five federally-listed Endangered or Threatened fish that could occur in the proximity of the Project study area: Chinook salmon, bull trout, steelhead, bocaccio and yelloweye rockfish.

Chinook Salmon

The Puget Sound ESU of Chinook salmon includes all naturally spawning populations of Chinook salmon from rivers and streams flowing into Puget Sound (70 FR 52630). Puget Sound ESU Chinook salmon are listed as threatened by NMFS under the ESA and has designated critical habitat (70 FR 52685). The Project study area is located in marine nearshore areas of the Blair Waterway and tidally-influenced Wapato Creek which has little suitable habitat for adults and out-migrating juveniles in this ESU. Puget Sound ESU Chinook salmon have been documented in the Hylebos Waterway and Commencement Bay, but not the Blair Waterway within the Project study area or Wapato Creek (WDFW 2017b). Neither the Blair Waterway nor Wapato Creek provide suitable spawning habitat for Chinook salmon within the Project study area, as the waterways are in a tidally-influenced marine/estuarine environment.

Adult Chinook salmon may temporarily hold within the waters of Commencement Bay but are not likely to be present within the Blair Waterway with the exception of incidental use. Similarly, juvenile Chinook salmon could potentially rear within the waters of Commencement Bay but are not likely to be present within the Blair Waterway with the exception of incidental use. There have

been no documented occurrences of adult or juvenile Chinook salmon in Wapato Creek and they are not expected to be present within the Project study area.

Steelhead

The Puget Sound DPS steelhead is an anadromous trout with a complex life history, involving repeated spawning and reversals of freshwater to ocean phases (71 FR 15667). Puget Sound DPS steelhead are listed as threatened by NMFS and final rule on Puget Sound DPS steelhead critical habitat was issued in February 2016 (81 FR 9251). Similar to Chinook salmon, the Project study area has little suitable habitat for migrating adults and out-migrating juveniles in this DPS. Puget Sound DPS steelhead have been documented in the Blair Waterway and Wapato Creek (WDFW 2020b); however, NMFS is not aware of documented use of Puget Sound DPS steelhead within Wapato Creek within at least the past 20 years and does not consider Wapato Creek to provide suitable habitat for steelhead (Fisher personal communication April 16, 2013).

Bull Trout

The Puget Sound DPS of bull trout includes all naturally spawning populations in the Puget Sound Basin, including streams that flow into Puget Sound. Puget Sound DPS bull trout are listed as threatened by USFWS and critical habitat has been designated, including nearshore marine habitat within Puget Sound (70 FR 56212-56311). Sparse suitable habitat and water quality issues within the Project study area may deter the presence of bull trout in the vicinity of the proposed work, and there are no documented occurrences of Puget Sound DPS bull trout in Blair Waterway or Wapato Creek (WDFW 2017b).

Bocaccio and Yelloweye Rockfish

NMFS published a final determination in 2010 to list the Puget Sound/Georgia Basin DPSs of bocaccio as endangered, and yelloweye rockfish as threatened (75 FR 22276), and critical habitat for both species was finalized in 2014 (79 FR 68041).

Adult bocaccio and yelloweye rockfish are not expected to occur within the Project study area, as water depths are too shallow, and substrates consist of silty sand and sandy silt. Nearshore habitat is largely lacking any eelgrass, kelp, or other aquatic vegetation that would be preferred by juvenile or larval bocaccio, and high shipping activity and water quality conditions limit the habitat suitability within the Project study area. Juvenile or larval yelloweye rockfish are not likely to be present within the waterways as they do not frequently use nearshore habitat. Typically, they settle quickly to shallow, high relief areas and then move to deep-water habitat, and are most frequently found in association with floating kelp beds, which are not present within the Project study area (Love et al. 1991).

Marine Mammals

Two marine mammals that could potentially occur within the Project study area are listed as endangered by National Oceanic and Atmospheric Association (NOAA) under the ESA: humpback whale and Southern Resident killer whale.

Humpback Whale

Humpback whales inhabit waters over continental shelves, along their edges, and around some oceanic islands (City of Seattle 2007). While humpback whales are occasionally sighted in south

Puget Sound, they are rarely present within Commencement Bay, and have never been documented in the Blair Waterway. Humpback whales were listed as endangered in 1970 (35 FR 18319), and critical habitat was proposed in October 2019; however, proposed critical habitat is located off the Washington Coast, and not within the Puget Sound area (50 CFR 226).

Southern Resident Killer Whale (Orca)
The Southern Resident killer whale population is the only known resident to occur in the United States and is comprised of three pods: J, K and L pods. They are highly social, living within matriarchal societies and Southern Resident killer whales are currently comprised of approximately 73 whales between the three pods (CWR 2019; NMFS 2019). Southern Resident killer whales were listed as endangered by NMFS in 2005, with their own DPS (therefore, "species") under the ESA (70 FR 69903). Critical habitat was designated in 2006 (71 FR 69054). Southern Resident killer whales are most commonly observed in Commencement Bay between October and January; however, they typically do not occur in inner Commencement Bay. The Blair Waterway does not provide suitable habitat, and they are not expected to occur within the Project study area.

Wildlife

One bird species listed as threatened under the ESA could potentially be present within the Project study area: marbled murrelet.

Marbled Murrelet
The marbled murrelet is a small sea bird that feeds primarily on fish and invertebrates in nearshore marine waters (City of Seattle 2007). The marbled murrelet was listed as threatened in California, Oregon and Washington under the ESA in 1992 (57 FR 45328), and critical habitat was designated in 1996 (61 FR 26256). There is no mature forested habitat which is a nesting requirement for the marbled murrelet, and WDFW PHS data have no documented habitat or nesting sites within the Project study area. Due to the lack of nesting habitat nearby, marbled murrelets to do not frequently forage in Commencement Bay, and the Blair Waterway does not provide suitable foraging habitat due to shipping activity.

POTENTIAL IMPACTS TO LISTED SPECIES AND FINDINGS OF EFFECT

Analysis of effects of the proposed Project on federal and state ESA-listed Chinook salmon, steelhead, bull trout, bocaccio, yelloweye rockfish, humpback whale, Southern Resident killer whale and marbled murrelet is based on a review of existing sensitive species database information, Project plans and proposed activities, and survey of the Project study area. The analysis is presented in this memorandum may not be valid if the Project scope changes and/or if the listing status of species changes during the course of the Project.

Fish

The proposed Project is outside the documented range of – or the Project study area lacks suitable habitat for – two of the five fish species with the potential to occur within the Project study area (bocaccio and yelloweye rockfish). Limited suitable migrating habitat for Chinook salmon, bull trout and steelhead is present within the Project study area; however, work will occur during the

approved in-water work window which greatly diminishes the likelihood that these species will be present within Commencement Bay and not within the Blair Waterway. There is no current record of any of the listed salmonids utilizing Wapato Creek. Additionally, the Project study area is an area where these fish species generally do not utilize. Actions associated with the Project will be temporary, and during the time of year when migrating ESA-listed fish are not anticipated to be in Commencement Bay, the Blair Waterway or Wapato Creek. Therefore, **No Effect** is expected on ESA-listed fish species.

Marine Mammals

The proposed Project is outside any documented occurrences of humpback whale or Southern Resident killer whale. The Blair Waterway does not have suitable habitat for either species, and the Southern Resident killer whale's primary food source (Chinook salmon) will not be impacted by the proposed Project. Actions associated with the Project will be temporary and BMPs will be implemented to avoid and minimize any impacts to water resources. Humpback whales and Southern Resident killer whales are not expected to be present within the Blair Waterway at any time. Therefore, **No Effect** is expected on ESA-listed marine mammals.

Wildlife

The proposed Project is outside the area where marbled murrelets may be expected during foraging activities, and no suitable nesting habitat is located near the Project study area. Actions associated with the Project will be temporary and BMPs will be implemented to avoid and minimize any impacts to water resources. Marbled murrelets are not expected to be present within the Blair Waterway at any time. Therefore, **No Effect** is expected on ESA-listed wildlife.

REFERENCES

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

March 29, 2021

Port of Tacoma
ATTN: Mark Rettmann
PO Box 1837
Tacoma, WA 98401-1837

RE: Coastal Zone Consistency for Corps Reference No. NWS-2020-457-WRD,
Lower Wapato Habitat Project, Tacoma, Pierce County, Washington

Dear Mark Rettmann:

On September 16, 2020, The Department of Ecology (Ecology) received a Certification of Consistency with the Washington State Coastal Zone Management Program (CZMP) for the above project. On March 2, 2021, Ecology and the Port of Tacoma sent a letter to the Corps of Engineers agreeing to stay the CZM review period until April 30, 2021.

This determination is for the Lower Wapato Habitat Project which is an advance permittee-responsible mitigation site to compensate for future impacts downstream and within Wapato Creek, and future wetland impacts on Port of Tacoma property. The proposed work includes re-establishment of wetlands, re-establishment of tidal mudflats, and stream restoration.

This project is located at 1131 East Alexander Avenue, Tacoma, Pierce County, Washington; SW Section 01, Township 20 North, Range 03 East; WRIA 10, Puyallup-White Watershed.

Pursuant to Section 307(c)(3) of the Coastal Zone Management Act of 1972 as amended, Ecology concurs with the Port of Tacoma's determination that the proposed work is consistent with Washington's CZMP.

If you have any questions regarding Ecology's consistency decision please contact Lori Kingsbury at Lori.kingsbury@ecy.wa.gov.

YOUR RIGHT TO APPEAL

You have a right to appeal this decision to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this decision. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this decision:

- File your appeal and a copy of this decision with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this decision on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW, Suite 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Sincerely,

Perry J Lund, Section Manager
Shorelands and Environmental Assistance Program
Southwest Regional Office

e-cc: Jason Sweeney, U.S. Army Corps of Engineers
Linda Storm, EPA
Char Naylor, Puyallup Tribe
Loree Randall, Ecology
Patricia Johnson, Ecology
Zach Meyer, Ecology
Lori Kingsbury, Ecology
ecyrefedpermits@ecy.wa.gov

PUYALLUP TRIBE OF INDIANS

In the Matter Granting a
Water Quality Certification
To: Port of Tacoma
In Accordance with the Water Quality Standards
for Surface Waters of the Puyallup Tribe

Reference No. NWS-2020-457
Wapato Advanced Mitigation Project
Tacoma, Pierce County, WA

ATTN: Mr. Mark Rettmann
Port of Tacoma
P.O. Box 1837
Tacoma, WA 98401-1837

On July 1, 2020, the Puyallup Tribe received a Port of Tacoma's Clean Water Act (CWA) Section 401, 33 U.S.C. § 1341, water quality certification request for NWS-2020-457, the Lower Wapato Creek Advance Mitigation Project, individual CWA Section 404 permit. This request was made to the Puyallup Tribe of Indians for the above-referenced project pursuant to the provisions of the Water Quality Standards for Surface Waters of the Puyallup Tribe. The request for certification was made available for public review and comment by inclusion in Corps Public Notice pertaining to NWS-2020-457.

The Tribe received the request for 401 certification along with a Joint Aquatic Resources Permit Application (JARPA) on July 1, 2020. This application package included project engineering design drawings and a Draft Advance Mitigation Plan both dated June 1, 2020. On July 20, 2020, the U.S. Army Corps of Engineers (Corps), Puyallup Tribe, the EPA and the Port of Tacoma met to review the project proposal. On August 11, 2020 the Corps and EPA issued a joint public notice for a 30-day comment period which closed on September 10, 2020. On January 27, 2021 updated 90% engineering designs, updated JARPA dated January 7, 2021, and the Final Revised Advance Mitigation Project Site plan dated January 25, 2021, were provided by the Port. This certification is for the final project design, including the Final Advance Mitigation Project Plan, as updated and revised in March 2021. The Port has also developed a Water Quality Monitoring and Protection Plan for the Lower Wapato Creek Habitat Project, as revised in March 2021. This certification is based on and relies upon information contained in the aforementioned documents.

This Certification applies to point source discharges from the Lower Wapato Advance Mitigation Project into waters of the Puyallup Tribe that occur within tribal trust and tribal owned lands, including Parcels 0320013158 and Parcel 03210017003, located within the Puyallup Tribe of Indians reservation boundary, in Washington State. For clarification purposes with regard to lands under the Tribe's 401 authority for this project, refer to the property map attached herein. The Lower Wapato Advance Mitigation Project is located at 1131 East Alexander Avenue, Tacoma, Washington, (SW ¼ Section 01, Township 20 N, Range 03 E; Latitude 47.246431 N, Longitude -122.371509 W)

Upon review of the documents described above, the Puyallup Tribe of Indians is granting certification under section 401 of the Clean Water Act that there is reasonable assurance that the proposed activity and resulting discharges are in compliance with applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act and our tribal water quality requirements, including Puyallup Tribal Code Chapter 10.08 (Water Quality Standards for Surface Waters of the Puyallup Tribe).

Project Description

The proposed project is to develop a permittee-responsible advanced mitigation site on 18.52 acres, to provide advanced mitigation credits to compensate for future wetland and stream impacts within Wapato Creek on Port of Tacoma properties.

The proposed work includes re-establishment of wetlands, re-establishment of tidal mudflats, and stream restoration. Two undersized 60-inch diameter culverts will be replaced with a 50-foot wide single span bridge at 12th street east. This will result in the discharge of 70 cubic yards of fill material for the structural fill, and 270 cubic yards of streambed material. Up to 9,200 cubic yards of fill material would be discharged into 713 linear feet (0.55 acre) of the existing straightened Wapato Creek channel. A new meandering 1,875 linear foot channel (2.29 acres) would be constructed, with 350 linear feet of the existing channel retained as off-channel rearing habitat for juvenile salmonids and other functions it will provide. Up to 126 cubic yards of fill material would be placed in the remaining 350 linear feet of straightened Wapato Creek to raise the stream bed and create mudflat and shallower stream habitat. The proposed sinuous Wapato Creek channel will also include placement of 7,100 cubic yards of streambed substrate (gravel), and large woody material (LWM) will be placed in high energy areas to provide juvenile salmonid refuge as well as stream stability. Additional LWM will be installed in the re-established floodplain and wetland areas. A total of 201 pieces of LWM will be installed.

The proposal includes a total of 10.02 acres of wetland/aquatic resource re-establishment, including 5.51 acres of palustrine forested wetland (PFO), 2.35 acres of estuarine emergent wetland (EEM), and 2.10 acres of tidal stream channel/mudflats. An additional 7.34 acres of forested upland buffer would be established or enhanced. The existing 12th street ditch would also be reconfigured into a vegetated filter strip swale which will involve the discharge of 2,533 cubic yards of fill material over 11,400 square feet (0.26 acres).

The Port has requested authorization to initiate in-water work on July 8, 2021, one-week prior to the July 15th start of the marine in-water work window [July 15 through February 14 (Corps) and July 15 through February 15 (WDFW)] requested in the June 2020 JARPA. This change, if approved, will provide additional time for construction to occur during the dry season and avoid more time during the wet season. The Tribe has concurred with this request via email from Char Naylor to Mark Rettmann on January 7th, 2021.

The requisite information necessary to ensure water quality requirements are met are detailed in the above referenced documents, including the Advanced Mitigation Plan and JARPA update memo dated January 7, 2021. A stormwater pollution prevention plan will also be required under the Construction General Stormwater Permit which will further detail best management practices

to control site runoff and prevent unpermitted discharges. Best management measures are further detailed in the 90% engineering plans to prevent turbidity-laden water generated during dewatering activities to be released to Wapato Creek. Importantly, monitoring to prevent downstream turbidity in Wapato Creek will also occur as part of the bypass/diversion planning efforts.

The proposed work is expected to be constructed over a two year period per the January 25, 2021 Lower Wapato Creek Advance Mitigation Project plan. During the first year the site would be re-graded, the new creek channel established, LWM installed, the culverts replaced with a bridge, and the site stabilized with native upland and wetland seed mixes and erosion control blankets. The excavated material would be stock-piled offsite at uplands located on an adjacent Port of Tacoma property (parcel 0320011117) for re-use by the Washington Department of Transportation. In the second year the majority of the plantings would be installed.

General Information

The general information provided in this section does not constitute a certification condition(s).

The Port of Tacoma is responsible for obtaining all other permits, licenses, and certifications that may be required by federal, state, or tribal authorities, including fulfilling any requirements for an EPA general CWA Section 402 stormwater permit notice of intent for authorization under EPA's Construction Stormwater General Permit. The Port of Tacoma is also responsible for implementing all the requirements of the Water Quality Monitoring and Protection Plan for the Lower Wapato Creek Habitat Project, as revised in March 2021. Lastly, the Port of Tacoma is also responsible for providing all final project plans, including the revised Advanced Mitigation Plan, March 2021, pertaining to this project to the Tribe.

This certification should be retained in your files with the applicable Corps permit as documentation of the Puyallup Tribe's certification for the above-referenced project. This certification is specifically associated with your Corps CWA Section 404 permit NWS-2020-457 authorization and expires when that permit expires.

The Port of Tacoma shall notify the Tribe if spills or unauthorized discharges occur during the project construction. Copies of this certification should be kept on the job site and made readily available for reference.

If you have any questions regarding this certification, please contact Char Naylor, Water Quality Manager, by calling 253-405-7815, or by email char.naylor@puyalluptribe-nsn.gov.

Sincerely,

C. Naylor

Char Naylor, Manager
Water Quality

Cc:

Mr. Jason Sweeney, Project Manager, Seattle District, U.S. Army Corps of Engineers,
Jason.T.Sweeney@usace.army.mil
Ms. Linda Storm, Senior Aquatic Ecologist
Storm.Linda@epa.gov
Mr. Russ Ladley, Fisheries Program Manager, Puyallup Tribe of Indians,
Russ.Ladley@PuyallupTribe-nsn.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3123

WATER
DIVISION

March 19, 2021

Mr. Mark Rettmann
Port of Tacoma
P.O. Box 1837
Tacoma, WA 98401-1837

Dear Mr. Rettmann:

The U.S. Environmental Protection Agency (EPA) has reviewed the Port of Tacoma's Clean Water Act (CWA) Section 401, 33 U.S.C. § 1341, water quality certification request for NWS-2020-457-WRD, Lower Wapato Creek Advance Mitigation Project, for an individual CWA Section 404 permit. EPA received the request for CWA Section 401 certification along with a Joint Aquatic Resource Permit Application (JARPA) on July 1, 2020. That application package included project engineering design drawings and a Draft Advance Mitigation Plan both dated June 1, 2020. On July 20, 2020, the U.S. Army Corps of Engineers (Corps), EPA, the Puyallup Tribe of Indians (PTOI), and the Port of Tacoma (POT) met to go over the project proposal. On August 11, 2020, the Corps and EPA issued a joint public notice for a 30-day comment period which closed on September 10, 2020. On January 27, 2021, the POT provided EPA with updated 90% engineering designs, an updated JARPA dated January 7, 2021, and a Revised Advance Mitigation Project Plan dated January 25, 2021. Subsequently, POT provided a Final Revised Advance Mitigation Project Plan dated March 2021. This certification is for the final project design, including the Final Revised Advance Mitigation Project Plan, as updated and revised. This certification is based on and relies upon information contained in the aforementioned documents.

The Corps did not inform EPA of a specific deadline by which to provide the CWA Section 401 certification decision.

This Certification applies to any potential point source discharges from the Lower Wapato Advance Mitigation Project into waters of the United States that occur on parcel numbers: 0320013157, 0320013158, 0320017003, and upland disposal site 0320011117, located within the PTOI's reservation boundary, in the City of Fife and the City of Tacoma, Washington within Township 20 North, Range 03 East, Section 01, Willamette Meridian; Latitude 47.246431º N, Longitude -122.371509º W.

CWA Section 401(a)(1) requires applicants for Federal permits and licenses that may result in discharges into waters of the United States to obtain certification that potential discharges will comply with applicable provisions of the CWA, including Sections 301, 302, 303, 306 and 307. Where no state agency or tribe has authority to give such certification, EPA is the certifying authority. In this case, the PTOI treatment in a manner as a state authority does not apply to POT lands within the reservation boundary and EPA is making the certification decision for discharges that may result from this proposed project.

EPA has determined that any discharge from the proposed project will comply with the requirements of CWA Section 401(a)(1) and CWA Section 401(d). Therefore, EPA grants CWA Section 401 certification with no conditions. This Certification applies to any potential point source discharges from NWS-2020-457-WRD that would occur in waters of the United States within the Puyallup Tribe of Indians Reservation provided the project is implemented as specified in the referenced application, plans and specifications.

Project Description

The proposed project is to develop a permittee-responsible advance mitigation site on 18.52 acres to provide advance mitigation credits to compensate for future wetland and stream impacts within Wapato Creek on POT properties.

The proposed work includes re-establishment of wetlands, re-establishment of tidal mudflats, and stream restoration. Two undersized 60-inch diameter culverts would be replaced with a 50-foot wide single span bridge at 12th Street East. This would result in the discharge of 70 cubic yards of fill material for the structural fill and 270 cubic yards of streambed material. Up to 9,200 cubic yards of fill material would be discharged into 713 linear feet (0.55 acre) of the existing straightened Wapato Creek channel. A new meandering 1,875 linear foot channel (2.29 acres) would be constructed, with 350 linear feet of the existing channel retained as off-channel rearing habitat for juvenile salmonids and other functions. Up to 126 cubic yards of fill material would be placed in the remaining 350 linear feet of straightened Wapato Creek to raise the stream bed and create mudflat and shallower stream habitat. The proposed sinuous Wapato Creek channel would also include placement of 7,100 cubic yards of streambed substrate (gravel), and large woody material (LWM) would be placed in high energy areas to provide juvenile salmonid refuge as well as stream stability. Additional LWM would be installed in the re-established floodplain and wetland areas. A total of 201 pieces of LWM would be installed.

The proposal includes a total of 10.02 acres of wetland/aquatic resource re-establishment, including 5.51 acres of palustrine forested wetland (PFO), 2.35 acres of estuarine emergent wetland (EEM), and 2.10 acres of tidal stream channel/mudflats. An additional 7.34 acres of forested upland buffer would be established or enhanced. The existing 12th Street ditch would also be reconfigured into a vegetated filter strip swale which will involve the discharge of 2,533 cubic yards of fill material over 11,400 square feet (0.26 acres).

The POT has requested authorization to initiate in-water work on July 8, 2021, one-week prior to the July 15th start of the marine in-water work window. This change, if approved, would provide additional time for construction to occur during the dry season and would avoid more construction during the wet season. EPA understands that the PTOI concurred with the proposed earlier start work date on January 7, 2021. EPA has no objection to this earlier start work date.

The requisite information necessary to ensure water quality requirements are met are detailed in the above referenced documents, including the Final Revised Advance Mitigation Plan dated March 2021 and JARPA update memo dated January 7, 2021. A stormwater pollution prevention plan will also be provided under the Construction General Stormwater Permit which will further detail best management practices to control site runoff and prevent unpermitted discharges. Best management practices are further detailed in the 90% engineering design plans to prevent turbidity-laden water from being released to Wapato Creek during dewatering activities. Importantly, monitoring to prevent downstream turbidity in Wapato Creek will also occur as part of the bypass/diversion aspects of the project as specified in the POT's March 2021 Water Quality Monitoring and Protection Plan for the Lower Wapato Creek Habitat Project.

The proposed work is expected to be constructed over a two year period per the March 2021 Final Revised Advance Mitigation Plan. During the first year the site would be re-graded, the new creek channel established, LWM installed, the culverts replaced with a bridge, and the site stabilized with native upland and wetland seed mixes and erosion control blankets. The excavated material would be stock-piled offsite at uplands located on an adjacent POT property (parcel 0320011117) for re-use by the Washington Department of Transportation. In the second year the majority of the plantings would be installed.

General Information
The general information provided in this section does not constitute a certification condition(s).

The POT is responsible for obtaining all other permits, licenses, and certifications that may be required by federal, state, or tribal authorities, including fulfilling any requirements for an EPA general CWA Section 402 stormwater permit notice of intent for authorization under EPA's Construction Stormwater General Permit.[1] The POT is also responsible for implementing all the requirements of the Water Quality Monitoring and Protection Plan for the Lower Wapato Creek Habitat Project, as revised in March 2021. Lastly, the POT is also responsible for providing all final project plans pertaining to this project to EPA.

This certification should be retained in your files with the applicable Corps permit as documentation of EPA certification for the above-referenced project. This certification is specifically associated with your Corps CWA Section 404 permit NWS-2020-457-WRD authorization and expires when that permit expires.

The POT shall notify EPA Region 10 if spills or unauthorized discharges occur during the project construction. Copies of this certification should be kept on the job site and made readily available for reference.

If you have any questions regarding this certification, please contact Ms. Linda Storm, Aquatic Ecologist, by calling 206-437-2293, or by email storm.linda@epa.gov.

Sincerely,

David Croxton, Manager
Wetlands and Oceans Section

cc: Mr. Jason Sweeney, Project Manager, Seattle District, U.S. Army Corps of Engineers, Jason.T.Sweeney@usace.army.mil

Ms. Char Naylor, Water Quality Program, Puyallup Tribe of Indians, Char.Naylor@PuyallupTribe-nsn.gov

Mr. Russ Ladley, Fisheries Program Manager, Puyallup Tribe of Indians, Russ.Ladley@PuyallupTribe-nsn.gov

[1] https://www.epa.gov/npdes/stormwater-discharges-construction-activities

BINDING EDGE

PORT OF TACOMA

LOWER WAPATO CREEK HABITAT PROJECT
MASTER ID #101449.01
CONTRACT #071447

PORT COMMISSIONERS:

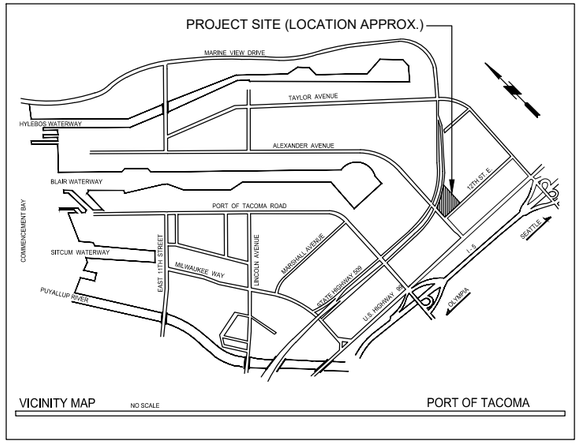
JOHN MCCARTHY
DON MEYER
DICK MARZANO
DEANNA KELLER
KRISTIN ANG

PORT STAFF:

ERIC JOHNSON
Executive Director

THAIS HOWARD, PE
Director of Engineering

DAVID R. MYERS, NCARB, CSI
Engineering Project Manager



VICINITY MAP NO SCALE PORT OF TACOMA

CONSULTANT:

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1601 5TH AVENUE
SEATTLE, WA 98101
(425) 778-6243

PROJECT MANAGER: JOHN DAWSON, P.E.

DRAWING LIST

SHEET DESIGNATION	SHEET #	SHEET TITLE
GENERAL		
G1.0	1	COVER SHEET
G2.0	2	GENERAL NOTES
G3.O	3	EXISTING SITE PLAN
G4.0	4	PHOTOS 1
G4.1	5	PHOTOS 2
G5.0	6	PROPOSED OVERALL SITE PLAN
G5.1	7	DISPOSAL SITE CROSS SECTIONS
G6.0	8	TESC AND DEMOLITION PLAN 1
G6.1	9	TESC AND DEMOLITION PLAN 2
G6.2	10	TESC AND DEMOLITION NOTES AND DETAILS
G7.0	11	SITE ACCESS AND FLOW DIVERSION PLAN
CIVIL		
C1.0	12	OVERALL GRADING PLAN
C1.1	13	GRADING PLAN 1
C1.2	14	GRADING PLAN 2
C1.3	15	GRADING PLAN 3
C2.0	16	GRADING SECTIONS 1
C2.1	17	GRADING SECTIONS 2
C3.0	18	STREAM CROSS SECTIONS 1
C3.1	19	STREAM CROSS SECTIONS 2 - BRIDGE CROSSING
C4.0	20	STREAM PROFILE 1
C4.1	21	STREAM PROFILE 2
C4.2	22	STREAM PROFILE 3
C4.3	23	STREAM PROFILE 4 - BRIDGE CROSSING
C5.0	24	LARGE WOODY MATERIAL DETAILS 1
C5.1	25	LARGE WOODY MATERIAL DETAILS 2
C6.0	26	CIVIL / ROADWAY PLAN 1
C6.1	27	CIVIL / ROADWAY PLAN 2
C6.2	28	CIVIL / ROADWAY PLAN 3
C7.0	29	ROADWAY GRADING 1
C7.1	30	ACCESS GRADING

DRAWING LIST

SHEET DESIGNATION	SHEET #	SHEET TITLE
STRUCTURAL		
S1.1	31	BRIDGE GENERAL NOTES
S1.2	32	BRIDGE LAYOUT
S2.1	33	FOUNDATION PLAN
S2.2	34	TYPICAL PILE DETAILS
S2.3	35	ABUTMENT DETAILS
S2.4	36	WINGWALL DETAILS
S3.1	37	TYPICAL SECTION
S3.2	38	FRAMING PLAN AND CAMBER DIAPHRAGM
S3.3	39	GIRDER DETAILS 1 OF 2
S3.4	40	GIRDER DETAILS 2 OF 2
S4.1	41	APPROACH SLAB DETAILS 1 OF 3
S4.2	42	APPROACH SLAB DETAILS 2 OF 3
S4.3	43	APPROACH SLAB DETAILS 3 OF 3
S4.4	44	TRAFFIC BARRIER DETAILS 1 OF 3
S4.5	45	TRAFFIC BARRIER DETAILS 2 OF 3
S4.6	46	TRAFFIC BARRIER DETAILS 3 OF 3
S4.7	47	FENCE DETAILS
S5.1	48	BAR BENDING DIAGRAM
LANDSCAPING		
L1.0	49	SOILS PLAN
L2.0	50	LANDSCAPING PLAN
FOR INFORMATION ONLY		
115 KV TRANSMISSION LINE TEMPORARY PLAN AND PROFILE		
115 KV TRANSMISSION LINE FUTURE PLAN AND PROFILE		

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DIRECTOR ENG. DATE CHECKED BY DATE
PRINTED BY: MOR69830 Dec 10, 2020 PROJ. ENGR DATE
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TACOMA, WA 98421

LOWER WAPATO CREEK HABITAT PROJECT
COVER SHEET

6656
G1.0
1 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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BINDING EDGE

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THESE PLANS AND SPECIFICATIONS, ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE PROJECT PERMITS AND ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS PERTAINING TO DEMOLITION AND DISPOSAL.
2. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A DETAILED WORK PLAN, INCLUDING, DEMOLITION PRIOR TO COMMENCING WORK, SEE SPECIFICATIONS.
3. THE CONTRACT DOCUMENTS AND SPECIFICATIONS REPRESENT THE SCOPE OF WORK, UNLESS OTHERWISE SHOWN THEY DO NOT INDICATE THE METHOD OF WORK. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND HE SHALL BE SOLELY RESPONSIBLE FOR ALL MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES.
4. THE CONTRACTOR SHALL KEEP ALL STREETS, AND VEHICULAR TRAFFIC AREAS CLEAN.
5. CONTRACTOR IS RESPONSIBLE FOR ANY TRAFFIC CONTROLS REQUIRED DURING THE DURATION OF THE PROJECT, SEE SPECIFICATIONS.
6. THE CONTRACTOR SHALL INSTALL AND MAINTAIN PERIMETER FENCING AS REQUIRED TO MAINTAIN SECURITY OF SITES.
7. CONTRACTOR SHALL PROTECT-IN-PLACE ALL STRUCTURES, UTILITIES AND OBJECTS NOT CALLED OUT AS BEING DEMOLISHED ON THE PLANS. ANY DAMAGE TO ITEMS NOT BEING DEMOLISHED SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.
8. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO STRICTLY CONTAIN THE WORK WITHIN THE LIMITS SHOWN ON THE PLANS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ANY DAMAGE TO UTILITIES, OTHER FACILITIES, OR EQUIPMENT DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE PROMPTLY REPAIRED AT HIS EXPENSE. THIS INCLUDES ITEMS OUTSIDE THE WORK AREA THAT ARE DAMAGED BY CONSTRUCTION ACTIVITIES DURING EXECUTION OF THIS CONTRACT.
9. ALL LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN HEREIN HAVE BEEN ESTABLISHED BY FIELD OBSERVATIONS OR OBTAINED FROM REVIEW OF AVAILABLE RECORDS AND SHOULD, THEREFORE, BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS SHOWN AND TO FURTHER DISCOVER AND AVOID OTHER UTILITIES NOT SHOWN HEREIN WHICH MAY BE AFFECTED BY THE IMPLEMENTATIONS OF THIS PLAN. THE CONTRACTOR SHALL BRING ANY CONFLICTS BETWEEN EXISTING UTILITIES AND NEW WORK TO THE ENGINEERS ATTENTION. UTILITY LOCATE PHONE NUMBER 1-800-424-5555.
10. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO COMMENCING WORK IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.
11. PRIOR TO COMMENCING DEMOLITION ACTIVITIES CONTRACTOR SHALL IMPLEMENT TEMPORARY EROSION AND SEDIMENTATION CONTROLS. NO DEMOLITION MATERIALS OR DEBRIS SHALL BE ALLOWED TO ENTER THE WATERWAY, SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

PROJECT DATUM AND SURVEY INFORMATION

1. DATUM REFERENCE DATA TAKEN FROM SURVEY DATA COLLECTED BY SITTS AND HILL. SURVEY DATA CAN ONLY BE CONSIDERED REPRESENTATIVE OF THE CONDITIONS AT THE TIME OF THE SURVEY.
2. HORIZONTAL DATUM: NAD83 WASHINGTON STATE PLANE COORDINATE SYSTEM, NORTH ZONE, US SURVEY FEET.
3. VERTICAL DATUM: PORT OF TACOMA BENCHMARK: 2-1/2 INCH BRASS DISK ON THE SOUTHEAST CORNER OF MILWAUKEE WAY AND N FRONTAGE RD. BENCHMARK NO. 846 ELEVATION=15.26'.
4. ALL ELEVATIONS ARE REFERENCED TO MLLW (PORT OF TACOMA TIDAL DATUM).
5. WATER LEVELS SHOWN ARE ONLY FOR REFERENCE AND MAY NOT REPRESENT CONDITIONS DURING CONSTRUCTION.

EXISTING MONUMENTS

ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
TBM A	705778.99	1178025.67	13.82	REBAR & CONTROL CAP
TBM B	705754.87	1178587.59	13.72	MAGNETIC NAIL
TBM C	705759.46	1177773.43	24.48	REBAR & CONTROL CAP
TBM D	703585.29	1176681.35	20.97	REBAR & CONTROL CAP

SEE DRAWING G-5 FOR BENCHMARK LOCATIONS

SHEET SYMBOLS

WATER LEVEL SUMMARY

1. WATER LEVELS WITHIN THE PROJECT AREA LIMITS VARY BASED ON THE DISCHARGE FROM THE CREEK AND TIDAL WATER LEVELS. WATER LEVELS CAN BE HIGHLY VARIABLE DURING TIME PERIODS OF HIGHER CREEK DISCHARGE. APPROXIMATE TIDE ELEVATIONS ARE PROVIDED IN THE FOLLOWING TABLE.

APPROXIMATE TIDE ELEVATIONS (FT)

MAX HW	15.00
MHHW	11.83
MHW	10.95
MSL	6.87
MLW	2.86
MLLW	0.00

WAPATO CREEK DISCHARGE

1. WAPATO CREEK DISCHARGE VARIES DEPENDING ON THE TIME OF YEAR, PRECIPITATION, AND OTHER FACTORS. THE ESTIMATED 2-YR, 100-YR, AND 500-YR DISCHARGE FOR WAPATO CREEK ARE AS FOLLOWS:

RECURRENCE INTERVAL (YEAR)	DISCHARGE (CFS)
500	540
100	390
2	147

SUGGESTED CONSTRUCTION SEQUENCING

NOTE: THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE SEQUENCING PLAN IN WRITING.

1. SITE PREPARATION AND TESC
   A. ENSURE COPIES OF ALL PERMITS AND CONDITIONS FROM LOCAL, STATE, AND FEDERAL AGENCIES ARE PRESENT ON-SITE FOR THE DURATION OF THE WORK.
   B. HOLD A PRE-CONSTRUCTION MEETING WITH THE PORT OF TACOMA, CITY OF TACOMA, CITY OF FIFE, AND OTHER AGENCIES IN ACCORDANCE WITH PERMIT REQUIREMENTS.
   C. ESTABLISH CLEARING LIMITS, AND INSTALL SILT FENCE, SEDIMENT AND EROSION CONTROL SYSTEMS AND HIGH VISIBILITY FENCING ON PROJECT PERIMETER.
   D. INSTALL CONSTRUCTION ENTRANCE AND STAGING AREA.
   E. LOCATE, RELOCATE, OR PROTECT EXISTING UTILITIES WITHIN THE PROJECT AREA.
   F. CLEAR AND GRUB AREA DESIGNATED FOR EXCAVATION AND CONSTRUCTION.

2. NEW CHANNEL CONSTRUCTION (IN PARALLEL WITH NEW STEEL MONOPOLE CONSTRUCTION AND BRIDGE CONSTRUCTION)
   A. CONSTRUCT NEW WAPATO CREEK ALIGNMENT THROUGH THE HABITAT AREA, LEAVING BERM OF MATERIAL TO ISOLATE GRADING ACTIVITIES FROM THE EXISTING STREAM CHANNEL.
   B. LEAVE BERMS AT UPSTREAM AND DOWNSTREAM ENDS OF THE NEW CHANNEL TO PREVENT WATER FROM FLOWING INTO THE GRADED SITE UNTIL READY TO REROUTE WAPATO CREEK INTO THE NEW CHANNEL.
   C. DISPOSE OF EXCESS EXCAVATED SPOILS ON THE DISPOSAL SITE.
   D. PUMP ANY TURBID WATER COLLECTING IN THE DEPRESSION DURING CONSTRUCTION TO A TEMPORARY INFILTRATION AREA AS SHOWN. THIS WATER WILL NOT BE DISCHARGED INTO WAPATO CREEK.

3. NEW STEEL MONOPOLE CONSTRUCTION (IN PARALLEL WITH NEW CHANNEL CONSTRUCTION AND BRIDGE CONSTRUCTION)
   A. ISOLATE POLE REPLACEMENT WORK AREA IN EXISTING WAPATO CREEK ADJACENT TO NEW STEEL MONOPOLE ("STRUCTURE 2" PER POLE PLANS) WITH SUPERSACK COFFER DAMS UPSTREAM AND DOWNSTREAM AND INSTALL TEMPORARY FLOW DIVERSION SYSTEM SUFFICIENT TO CARRY FLOW AND ANY FISH AROUND THE WORK AREA TO A POINT DOWNSTREAM.
   B. FILL IN LOCALIZED AREA OF WAPATO CREEK AS SHOWN IN PLANS AND AS REQUIRED IN SPECIFICATIONS.
   C. DRILL AND INSTALL DRILLED SHAFT FOUNDATIONS PER PLANS AND GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
   D. INSTALL STEEL MONOPOLES AND THEIR APPURTENANCES PER PLANS.
   E. TRANSFER POWER LINES AND OTHER UTILITY LINES PER PLANS.
   F. REMOVE EXISTING POWER POLES PER PLANS.

SUGGESTED CONSTRUCTION SEQUENCING (CONTINUED)

4. BRIDGE CONSTRUCTION (IN PARALLEL WITH NEW MONOPOLE CONSTRUCTION AND NEW CHANNEL CONSTRUCTION)
   A. ISOLATE CULVERT REPLACEMENT WORK AREA WITH SUPERSACK COFFER DAMS UPSTREAM AND DOWNSTREAM OF THE CULVERTS AND INSTALL TEMPORARY FLOW DIVERSION SYSTEM SUFFICIENT TO CARRY FLOW AND ANY FISH AROUND THE WORK AREA TO A POINT DOWNSTREAM.
   B. PRIOR TO OR DURING DEWATERING OF THE WORK AREA, REMOVE FISH PER WDFW HYDRAULIC PROJECT APPROVAL INSTRUCTIONS USING QUALIFIED PROFESSIONALS.
   C. EXCAVATE ROADWAY AND ROADWAY EMBANKMENT.
   D. TEMPORARILY RELOCATE AND SUPPORT UTILITIES TO BE SUPPORTED ON BRIDGE.
   E. REMOVE AND DISPOSE OF EXISTING CULVERTS.
   F. INSTALL STEEL PILE FOUNDATIONS PER PLANS AND GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
   G. FORM, INSTALL REINFORCING STEEL, AND POUR CONCRETE FOR ABUTMENT PILE CAPS, AND WINGWALLS.
   H. INSTALL STREAMBED MATERIALS UNDER BRIDGE TO THE EXTENT POSSIBLE GIVEN THE FLOW DIVERSION SYSTEM.
   I. BACKFILL ROADWAY SUBGRADE, ABUTMENTS, AND WINGWALLS.
   J. SET PRECAST CONCRETE SLAB ELEMENTS FOR BRIDGE.
   K. FORM, INSTALL REINFORCING STEEL, AND POUR CONCRETE FOR BRIDGE DECK AND END DIAPHRAGMS.
   L. FORM, INSTALL REINFORCING STEEL, AND POUR CONCRETE FOR APPROACH SLABS.
   M. CONSTRUCT ROADWAY SUBGRADE AND FINISHED ROADWAY.
   N. FORM, INSTALL REINFORCING STEEL, AND POUR CONCRETE FOR BRIDGE PARAPETS.
   O. INSTALL CEDAR FENCE ON CONCRETE PARAPET.
   P. REROUTE, INSTALL, AND CONNECT UTILITIES SUPPORTED ON BRIDGE.
   Q. COMPLETE FINAL GRADING AND INSTALLATION OF STREAMBED MATERIAL.
   R. REMOVE TEMPORARY FLOW BYPASS SYSTEM PER WDFW HPA INSTRUCTIONS.
   S. REMOVE TESC SYSTEM.

5. LANDSCAPING

6. TRIMMING AND CLEANUP

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ABUT	ABUTMENT
ALUM	ALUMINUM
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
B/	BOTTOM
BM	BENCHMARK
BMP	BEST MANAGEMENT PRACTICE
B.O.	BOTTOM OF
BRG	BEARING
BTM	BOTTOM
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CP	CONTROL POINT
CPEP	CORRUGATED POLYETHYLENE PIPE
CTR	CENTER
CU	CUBIC
Ø/DIA	DIAMETER
DWG	DRAWING
E	EAST/EASTING
EA	EACH
EF	EACH FACE
EL / ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EX	EXISTING
EXP	EXPANSION
FT	FEET
GA	GAUGE
GALV	GALVANIZED
GIR	GIRDER
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT-MIX ASPHALT
HORIZ	HORIZONTAL
HW	HIGH WATER
ID	INNER DIAMETER
IE	INVERT ELEVATION
IN	INCH
KSI	KIPS PER SQUARE INCH
LB/LBS	POUNDS
LOC	LIMIT OF CONSTRUCTION
LT	LEFT
MAX	MAXIMUM
MHW	MEAN HIGH WATER
MHHW	MEAN HIGHER HIGH WATER
MIN	MINIMUM
MSL	MEAN SEA LEVEL
MLW	MEAN LOW WATER
MLLW	MEAN LOWER LOW WATER
N	NORTH/NORTHING
NAD83	NORTH AMERICAN DATUM OF 1983
NE	NORTHEAST
NGAS	NATURAL GAS
NO	NUMBER
NTS	NOT TO SCALE
NW	NORTHWEST
OC	ON CENTER
OD	OUTER DIAMETER
OHW	ORDINARY HIGH WATER
OHWM	ORDINARY HIGH WATER MARK
OPP	OPPOSITE
PAV'T	PAVEMENT
PC	PRECAST
PG	PERFORMANCE GRADING
PSI	POUNDS PER SQUARE INCH
PSF	POUNDS PER SQUARE FOOT
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
RECT	RECTANGLE
REF	FOR REFERENCE ONLY
REINF	REINFORCEMENT
REQ/REQ'D	REQUIRED
REV	REVISION
ROW	RIGHT OF WAY
RT	RIGHT
SD	STORMDRAIN
SDWK	SIDEWALK
SE	SOUTHWEST
SHLDR	SHOULDER
SQ	SQUARE
SIM	SIMILAR
SS	STAINLESS STEEL OR SEWER SYSTEM OR SANITARY SEWER
STA	STATION
STD	STANDARD
SW	SOUTHWEST
SWDM	SURFACE WATER DESIGN MANUAL
SWPPS	STORMWATER POLLUTION PREVENTION PLANS
T	THICK
T/	TOP
TEMP	TEMPORARY
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
TO	TOP OF
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VC	VERTICAL CURVE
VERT	VERTICAL
W	WATER LINE
WP	WORKING POINT
W/	WITH
WS	WATER SURFACE
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
YR	YEAR
@	AT
'	MIN OR FEET
"	SECONDS OR INCHES
°	DEGREES
%	PERCENT

90% DESIGN
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PRINTED BY: MOR69830 Dec 10, 2020

PORT ADDRESS: 1 SITCOM PLAZA TACOMA, WA 98421

LOWER WAPATO CREEK HABITAT PROJECT

GENERAL NOTES

6656
G2.0
2 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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BINDING EDGE

LEGEND

- EXISTING TREES
- TREES TO BE REMOVED
- PHOTO LOCATION
- EXISTING PAVING
- FLOW DIRECTION
- 100-YR FLOOD ZONE AND REGULATORY FLOODWAY LIMIT
- EXISTING CONTOUR
- EXISTING RIGHT-OF-WAY
- ORDINARY HIGH WATER (OHW)
- OVERHEAD POWER LINE
- BURIED POWER LINE
- BURIED TELEPHONE LINE
- APPROX. BURIED CABLE LINE
- BURIED NATURAL GAS LINE
- STORM LINE
- SANITARY SEWER LINE
- ORDINARY HIGH WATER (OHW)
- WATER LINE
- FENCE LINE
- LIMIT OF CONSTRUCTION (LOC)

NOTES

1. HAWK'S NEST TO BE LOCATED PRIOR TO COMMENCING CONSTRUCTION. LOCATION OF HAWK'S NEST TO BE PROTECTED DURING CONSTRUCTION WITH TREE PROTECTION FENCING.
2. EXISTING TREES TO BE REMOVED SHALL BE DISPOSED OF BY THE CONTRACTOR.

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LOWER WAPATO CREEK HABITAT PROJECT

EXISTING SITE PLAN

6656
G3.0
3 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
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BINDING EDGE

PHOTO 1
PANORAMIC VIEW FROM THE SOUTHEAST CORNER OF THE PROJECT SITE - LOOKING WEST (270° PHOTO)

PHOTO 2
PANORAMIC VIEW - LOOKING NORTH

PHOTO 3
PANORAMIC VIEW - LOOKING EAST

90% DESIGN
FOR AGENCY REVIEW

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LOWER WAPATO CREEK HABITAT PROJECT

PHOTOS 1

6656
G4.0
4 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M.ID: 1014449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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PORT OF TACOMA FILE: C:\pwworking\mm\ports_harbors\mor69830\dms48094\Wapato Creek Habitat - Cover

PHOTO 4

WAPATO CREEK UPSTREAM OF 12TH STREET - LOOKING SOUTH

PHOTO 5

NORTH OF 12TH STREET - LOOKING EAST

PHOTO 6

NORTH OF 12TH STREET - LOOKING WEST

PHOTO 7

WAPATO CREEK - LOOKING SOUTHWEST

PHOTO 8

WAPATO CREEK - LOOKING NORTHWEST

PHOTO 9

PROPOSED ACCESS ROUTE TO DISPOSAL SITE - LOOKING EAST

90% DESIGN
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LOWER WAPATO CREEK HABITAT PROJECT
PHOTOS 2

TOWNSHIP: 20N | RANGE: 3E | SECTION: 1
DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)
PARCEL: 14 | DRAWING SCALE: AS NOTED

6656
G4.1
5 OF 50

CONT/CONS: 071447
M. ID: 101449.01
PHASE: 90% Design

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BINDING EDGE

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BINDING EDGE

LEGEND

- TEMPORARY BENCHMARK (TBM)
- STAGING AREA
- CONSTRUCTION ENTRANCE
- VEHICLE DIRECTION
- EXISTING DRAINAGE
- OVERHEAD POWER ENVELOPE
- OVERHEAD POWER LINE
- ACCESS ROUTE
- SILT FENCE
- PROPERTY LINE
- LIMIT OF CONSTRUCTION (LOC)

NOTES

1. THE CONTRACTOR MAY PUMP WATER FROM THE DEWATERING OPERATIONS TO THE VEGETATED DRAINAGE SWALE FOR INFILTRATION.
2. THE CONTRACTOR MAY ALSO PUMP TO BAKER TANKS FOR SETTLEMENT.
3. STOCKPILE MOUND WILL BE SEEDED WITH STANDARD WSDOT EROSION CONTROL SEED MIX.
4. OVERHEAD POWER LINES INCLUDE 13.8 KV DISTRIBUTION LINE, 115 KB TRANSMISSION LINE, TPWR HFC FIBER LOOP.
5. ACCESS TO BE COORDINATED WITH PROLOGIS.

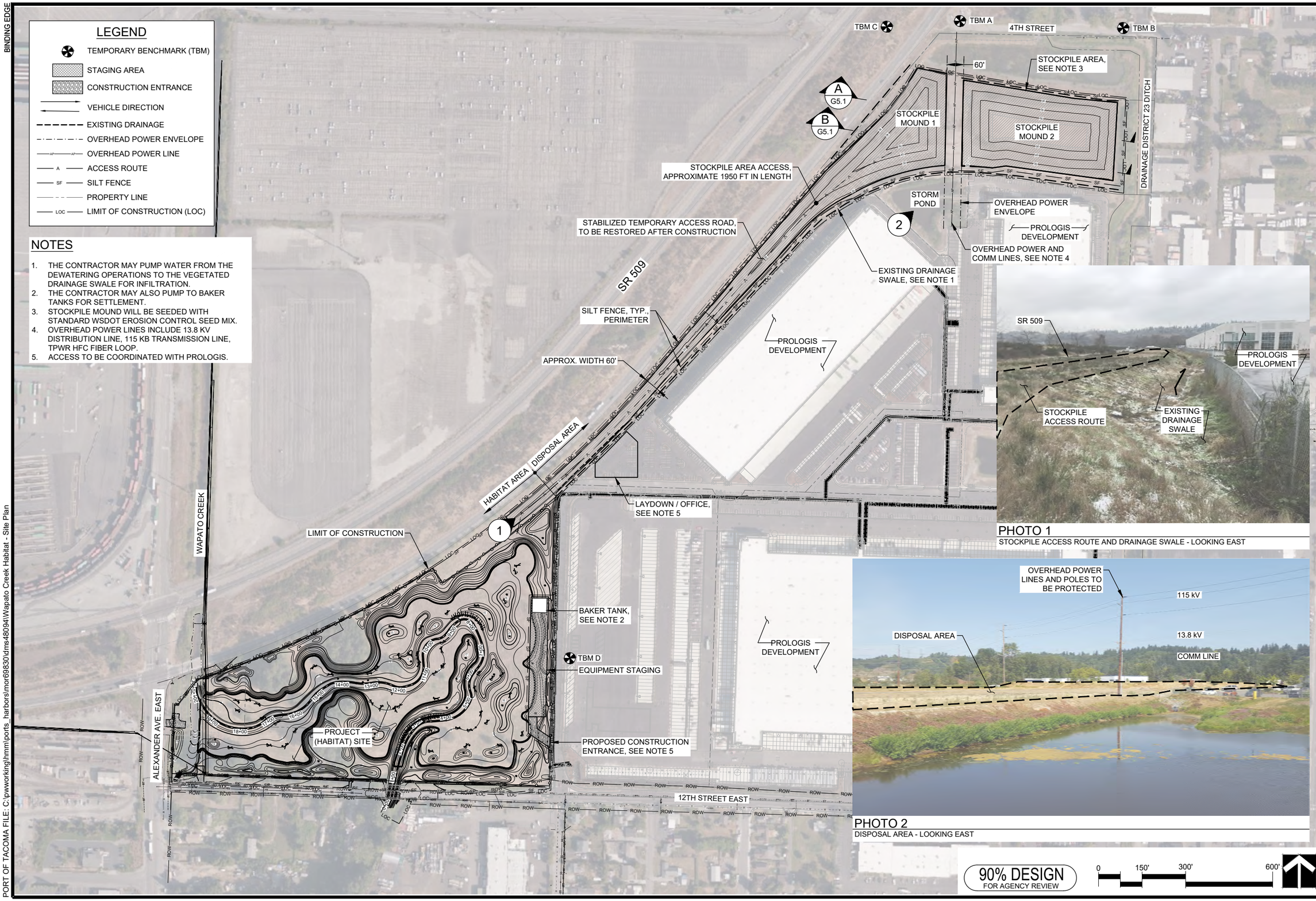

PHOTO 1
STOCKPILE ACCESS ROUTE AND DRAINAGE SWALE - LOOKING EAST

PHOTO 2
DISPOSAL AREA - LOOKING EAST

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LOWER WAPATO CREEK HABITAT PROJECT

PROPOSED OVERALL SITE PLAN

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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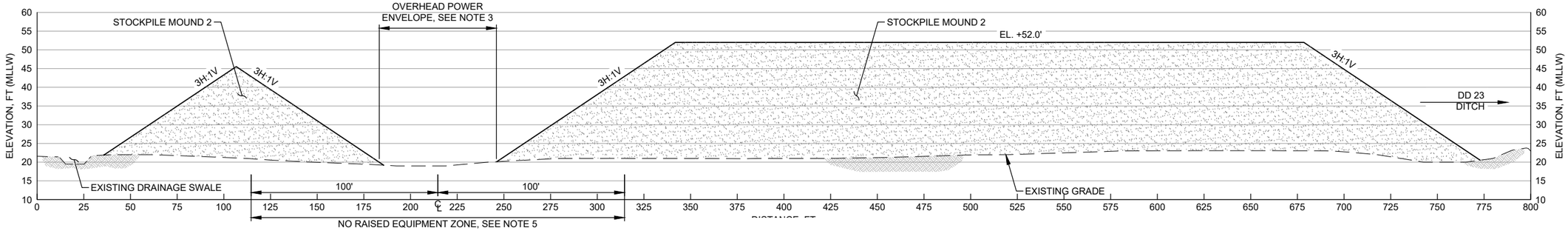
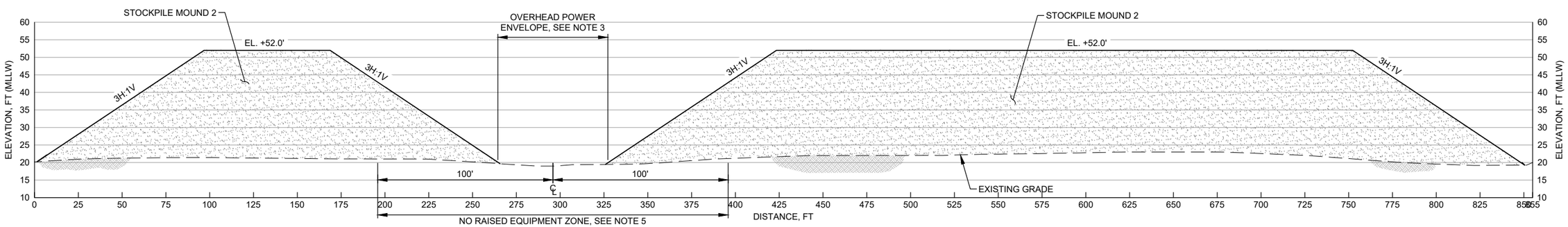


A STOCKPILE AREA
HORIZONTAL SCALE: 1" = 30', VERTICAL SCALE: 1" = 15'



B STOCKPILE AREA
HORIZONTAL SCALE: 1" = 30', VERTICAL SCALE: 1" = 15'

NOTES

1. EARTH EMBANKMENT SHALL BE CONSTRUCTED TO MEET THE REQUIREMENTS PROVIDED IN THE SPECIFICATIONS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES DURING CONSTRUCTION.
3. OVERHEAD POWER LINES INCLUDE 13.8 KV DISTRIBUTION LINE, 115 KB TRANSMISSION LINE, TPWR HRC FIBER LOOP.
4. IF HRC FIBER LOOP IS DAMAGED, CONTACT LUMEN. ROB BAIR (253) 393-6384. IF POWER OR TRANSMISSION LINES ARE DAMAGED, CONTACT TPU.
5. LOWER TRUCK BEDS BEFORE ENTERING, LOWER EXCAVATOR BOOMS AND LOADER BUCKETS.

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LOWER WAPATO CREEK HABITAT PROJECT

DISPOSAL SITE CROSS SECTIONS

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7 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
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BINDING EDGE
PORT OF TACOMA FILE: C:\pwworking\mm\ports_harbors\mor69830\dms48094\Wapato Creek Habitat - Sections and Profiles

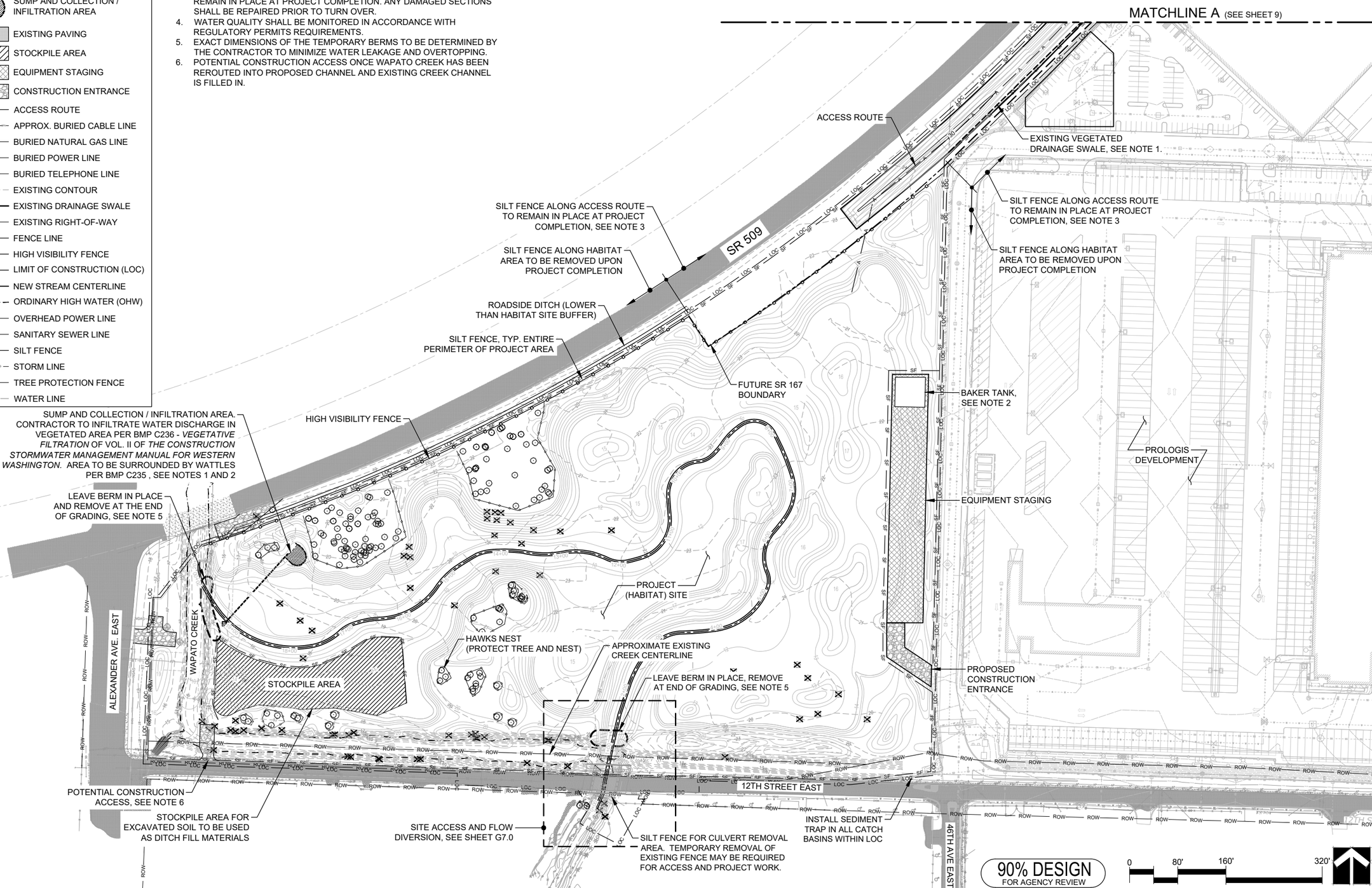
BINDING EDGE

LEGEND

- EXISTING TREES
- TREES TO BE REMOVED
- SUMP AND COLLECTION / INFILTRATION AREA
- EXISTING PAVING
- STOCKPILE AREA
- EQUIPMENT STAGING
- CONSTRUCTION ENTRANCE
- ACCESS ROUTE
- APPROX. BURIED CABLE LINE
- BURIED NATURAL GAS LINE
- BURIED POWER LINE
- BURIED TELEPHONE LINE
- EXISTING CONTOUR
- EXISTING DRAINAGE SWALE
- EXISTING RIGHT-OF-WAY
- FENCE LINE
- HIGH VISIBILITY FENCE
- LIMIT OF CONSTRUCTION (LOC)
- NEW STREAM CENTERLINE
- ORDINARY HIGH WATER (OHW)
- OVERHEAD POWER LINE
- SANITARY SEWER LINE
- SILT FENCE
- STORM LINE
- TREE PROTECTION FENCE
- WATER LINE

NOTES

1. ADDITIONAL INFILTRATION MAY BE CONDUCTED IN VEGETATED SWALE ALONG HAUL ROUTE.
2. THE CONTRACTOR MAY ALSO PUMP TO BAKER TANKS FOR SETTLEMENT.
3. SILT FENCE ALONG ACCESS ROUTE AND AROUND DISPOSAL AREA TO REMAIN IN PLACE AT PROJECT COMPLETION. ANY DAMAGED SECTIONS SHALL BE REPAIRED PRIOR TO TURN OVER.
4. WATER QUALITY SHALL BE MONITORED IN ACCORDANCE WITH REGULATORY PERMITS REQUIREMENTS.
5. EXACT DIMENSIONS OF THE TEMPORARY BERMS TO BE DETERMINED BY THE CONTRACTOR TO MINIMIZE WATER LEAKAGE AND OVERTOPPING.
6. POTENTIAL CONSTRUCTION ACCESS ONCE WAPATO CREEK HAS BEEN REROUTED INTO PROPOSED CHANNEL AND EXISTING CREEK CHANNEL IS FILLED IN.



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LOWER WAPATO CREEK HABITAT PROJECT

TESC AND DEMOLITION PLAN 1

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8 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
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BINDING EDGE

LEGEND

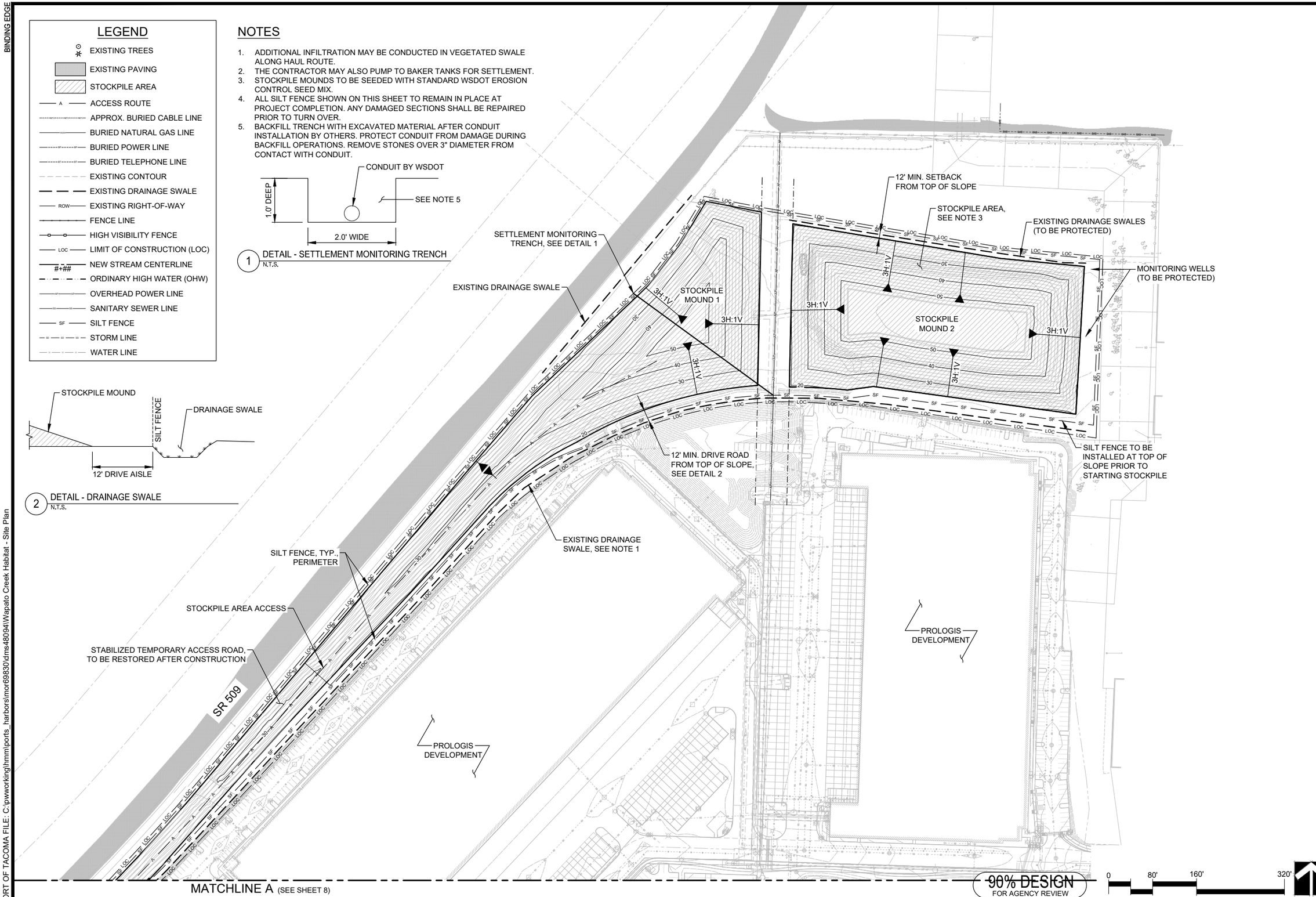
- EXISTING TREES
- EXISTING PAVING
- STOCKPILE AREA
- A — ACCESS ROUTE
- APPROX. BURIED CABLE LINE
- BURIED NATURAL GAS LINE
- BURIED POWER LINE
- BURIED TELEPHONE LINE
- EXISTING CONTOUR
- EXISTING DRAINAGE SWALE
- ROW — EXISTING RIGHT-OF-WAY
- FENCE LINE
- HIGH VISIBILITY FENCE
- LOC — LIMIT OF CONSTRUCTION (LOC)
- #+## — NEW STREAM CENTERLINE
- ORDINARY HIGH WATER (OHW)
- OVERHEAD POWER LINE
- SANITARY SEWER LINE
- SF — SILT FENCE
- STORM LINE
- WATER LINE

NOTES

1. ADDITIONAL INFILTRATION MAY BE CONDUCTED IN VEGETATED SWALE ALONG HAUL ROUTE.
2. THE CONTRACTOR MAY ALSO PUMP TO BAKER TANKS FOR SETTLEMENT.
3. STOCKPILE MOUNDS TO BE SEEDED WITH STANDARD WSDOT EROSION CONTROL SEED MIX.
4. ALL SILT FENCE SHOWN ON THIS SHEET TO REMAIN IN PLACE AT PROJECT COMPLETION. ANY DAMAGED SECTIONS SHALL BE REPAIRED PRIOR TO TURN OVER.
5. BACKFILL TRENCH WITH EXCAVATED MATERIAL AFTER CONDUIT INSTALLATION BY OTHERS. PROTECT CONDUIT FROM DAMAGE DURING BACKFILL OPERATIONS. REMOVE STONES OVER 3" DIAMETER FROM CONTACT WITH CONDUIT.

1 DETAIL - SETTLEMENT MONITORING TRENCH
N.T.S.

2 DETAIL - DRAINAGE SWALE
N.T.S.



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LOWER WAPATO CREEK HABITAT PROJECT

TESC AND DEMOLITION PLAN 2

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PARCEL: 14	DRAWING SCALE: AS NOTED	

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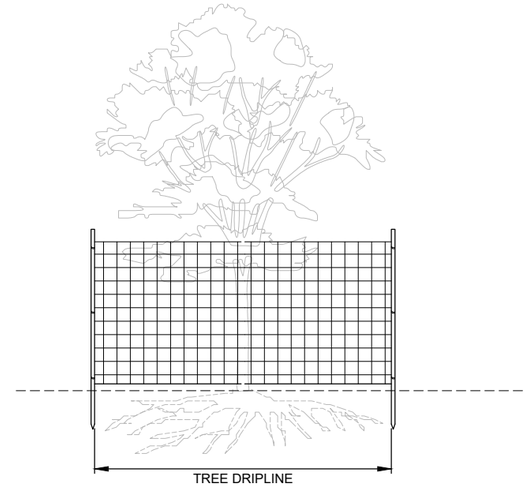
BINDING EDGE

CITY OF TACOMA STANDARD TESC NOTES

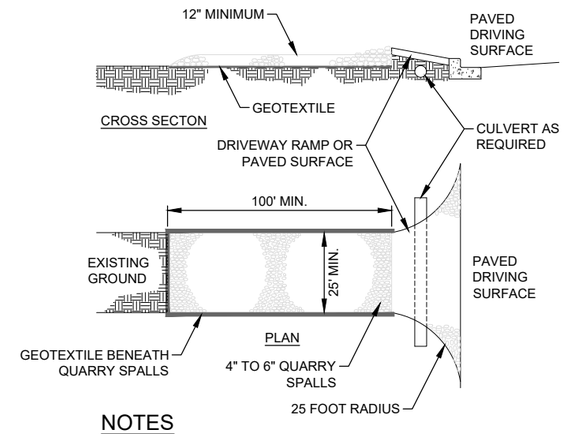
1. THE IMPLEMENTATION OF THESE TESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF TESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED, VEGETATION/LANDSCAPING IS ESTABLISHED AND THE ENTIRE SITE IS STABILIZED.
2. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
3. THE TESC FACILITIES SHOWN ON THIS PLAN SHALL BE CONSTRUCTED PRIOR TO AND/OR IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM OR ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
4. THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
5. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTION.
6. THE TESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 48 HOURS FOLLOWING A MAJOR STORM EVENT OR AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTION.
7. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN SEDIMENT TRAP.
8. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
9. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.



NOTES

1. TREE PROTECTION FENCING SHALL BE MADE OF HIGH VISIBILITY FENCE AT LOCATIONS SHOWN ON THE TESC PLAN. SEE HIGH VISIBILITY FENCE DETAIL FOR INSTALLATION INSTRUCTIONS. AVOID DRIVING STAKES INTO TREE ROOTS. INSTALL TREE PROTECTION AREA SIGNS ON ALL SIDES OF FENCED TREE PROTECTION AREAS.
2. FOR ROOTS OVER 1-IN DIA. THAT ARE DAMAGED DURING CONSTRUCTION, MAKE A CLEAN, STRAIGHT CUT TO REMOVE THE DAMAGED PORTION. ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING, AND SHALL BE COVERED WITH SOIL AS SOON AS POSSIBLE.
3. WORK WITHIN PROTECTION FENCE SHALL BE CONDUCTED BY HAND OR WITH SMALL EQUIPMENT TO PROTECT SMALLER TREE CLUSTERS AND INDIVIDUAL TREES. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMIT OF THE FENCING.

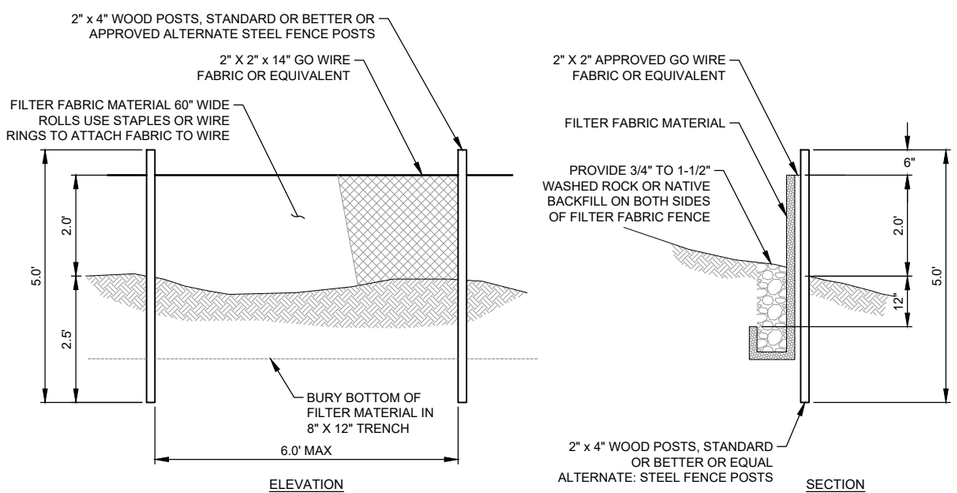
A TREE PROTECTION FENCE
N.T.S.



NOTES

1. PAD SHALL BE REMOVED AND REPLACED WHEN SOIL IS EVIDENT ON THE SURFACE OF THE PAD OR AS DIRECTED BY THE PORT.
2. PAD SHALL BE INSTALLED IN PLANTING STRIP AS APPROPRIATE.
3. PAD THICKNESS SHALL BE INCREASED IF SOIL CONDITIONS DICTATE OR PER THE DIRECTION OF THE PORT.
4. MINIMUM DIMENSIONS MAY BE MODIFIED AS REQUIRED BY SITE CONDITIONS UPON APPROVAL OF THE PORT.
5. PROTECT CONCRETE CURB FROM DAMAGE. CUT, REMOVE AND REPLACE ANY DAMAGED SECTIONS 5' MIN.

B CONSTRUCTION ENTRANCE
N.T.S.



C SILT FENCE
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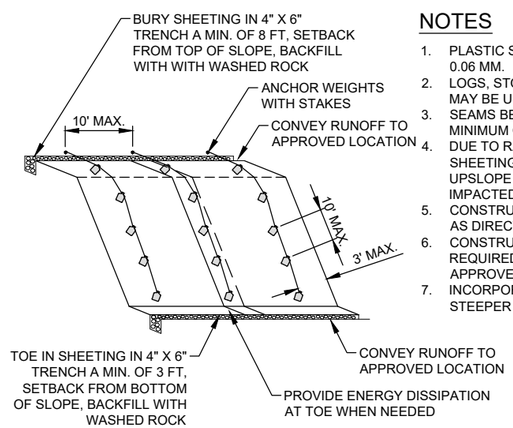
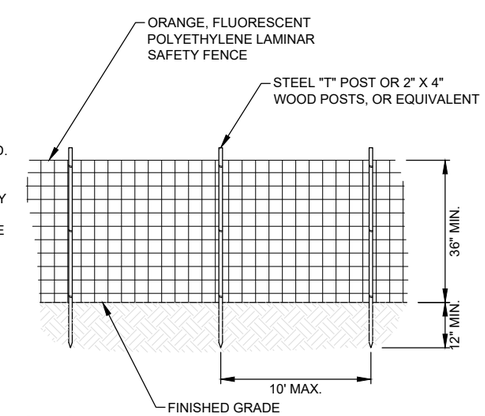


NOTES

1. PLASTIC SHEETING TO BE MIN. THICKNESS OF 0.06 MM.
2. LOGS, STONES, SANDBAGS, OR EQUIVALENT MAY BE USED TO WEIGHT PLASTIC SHEETING.
3. SEAMS BETWEEN SHEETS MUST OVERLAP A MINIMUM OF 12 IN. AND BE WEIGHTED OR TAPED.
4. DUE TO RAPID RUNOFF CAUSED BY PLASTIC SHEETING, THIS METHOD SHALL NOT BE USED UPSLOPE OF AREAS THAT MIGHT BE ADVERSELY IMPACTED BY CONCENTRATED RUNOFF.
5. CONSTRUCT BERM OR SWALE AT TOP OF SLOPE AS DIRECTED BY THE PORT.
6. CONSTRUCT DITCH AT BASE OF SLOPE AS REQUIRED BY THE PORT, DISCHARGE TO APPROVED LOCATION.
7. INCORPORATE WATTLE WHERE NEEDED FOR STEEPER SLOPE STABILIZATION.

D PLASTIC ON SLOPE (FOR TEMPORARY STOCKPILES)
N.T.S.



NOTES

1. DO NOT NAIL OR STAPLE FENCE TO EXISTING TREES OR UTILITY POLES.
2. ANY DAMAGE TO THE FENCE SHALL BE REPAIRED IMMEDIATELY.

E HIGH VISIBILITY CONSTRUCTION FENCE
N.T.S.

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LOWER WAPATO CREEK HABITAT PROJECT

TESC AND DEMOLITION NOTES AND DETAILS

TOWNSHIP: 20N | RANGE: 3E | SECTION: 1

DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)

PARCEL: 14 | DRAWING SCALE: AS NOTED

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CONT/CONS: 071447

M. ID: 101449.01

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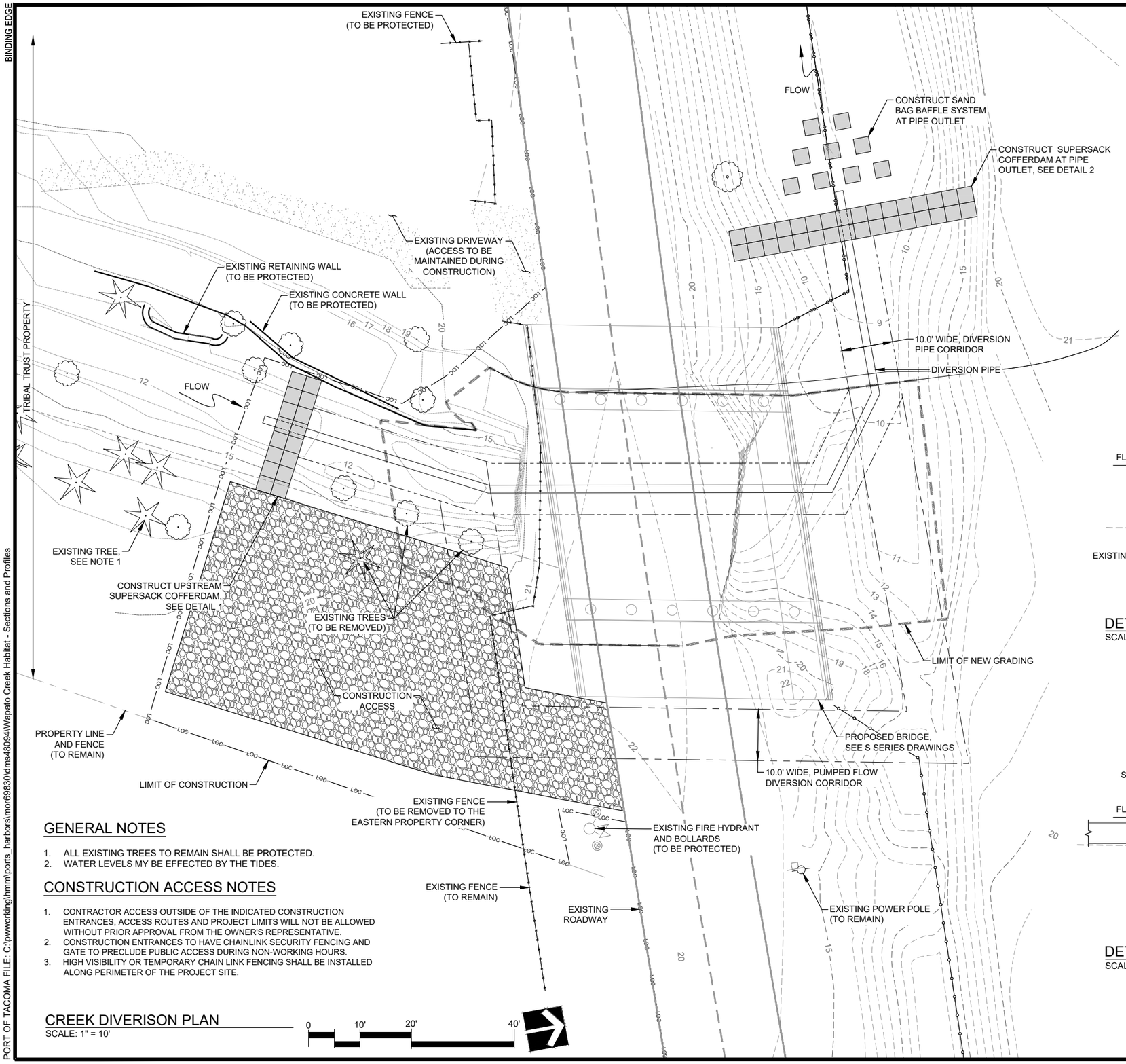


GENERAL NOTES

1. ALL EXISTING TREES TO REMAIN SHALL BE PROTECTED.
2. WATER LEVELS MY BE EFFECTED BY THE TIDES.

CONSTRUCTION ACCESS NOTES

1. CONTRACTOR ACCESS OUTSIDE OF THE INDICATED CONSTRUCTION ENTRANCES, ACCESS ROUTES AND PROJECT LIMITS WILL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE OWNER'S REPRESENTATIVE.
2. CONSTRUCTION ENTRANCES TO HAVE CHAINLINK SECURITY FENCING AND GATE TO PRECLUDE PUBLIC ACCESS DURING NON-WORKING HOURS.
3. HIGH VISIBILITY OR TEMPORARY CHAIN LINK FENCING SHALL BE INSTALLED ALONG PERIMETER OF THE PROJECT SITE.

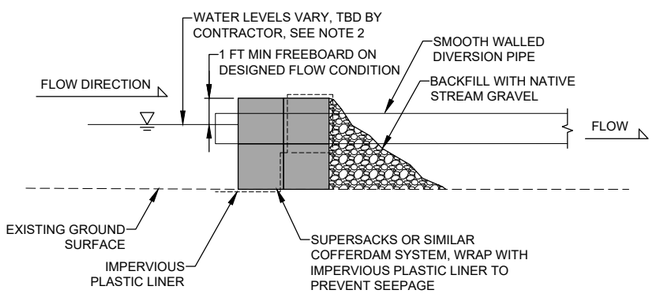
CREEK DIVERISON PLAN

SCALE: 1" = 10'

0 10' 20' 40'

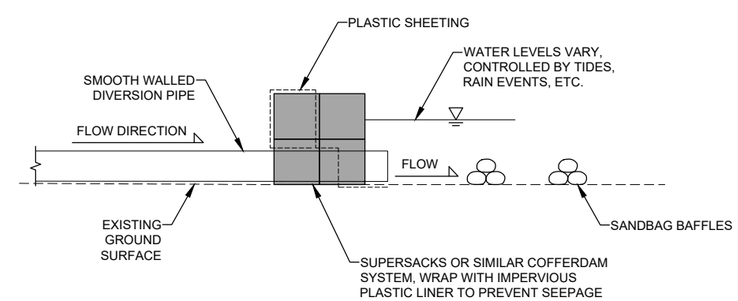
FLOW DIVERSION NOTES

1. THE CONTRACTOR SHALL HAVE A PROFESSIONAL ENGINEER PREPARE A FLOW DIVERSION PLAN, SEE SPECIFICATIONS. FLOW DIVERSION PLAN SHALL INCLUDE A RECOVERY PLAN TO ENSURE SAFE CAPTURE AND RELOCATION OF FISH TRAPPED IN THE WORK ZONE.
2. FLOW DIVERSION SYSTEM SHALL BE DESIGNED FOR, AT A MINIMUM, 2-YR PEAK FLOW CONDITIONS OR THE REQUIREMENTS OF THE HPA, WHICHEVER IS STRICTER.
3. THE PHASING AND DESIGN OF THE FLOW DIVERSION WITH RESPECT TO THE WORK SHALL BE DESIGNED BY THE CONTRACTOR (SEE TECHNICAL SPECIFICATIONS FOR REQUIREMENTS). FLOW DIVERSION IS RECOMMENDED TO OCCUR IN TWO PHASES:
   - PHASE 1 - TEMPORARY FLOW DIVERSION BYPASS PUMP SYSTEM IS USED TO DIVERT FLOW AROUND BRIDGE CONSTRUCTION AREA. COFFERDAMS ARE INSTALLED UPSTREAM AND DOWNSTREAM OF THE BRIDGE CONSTRUCTION AREA TO ISOLATE THE WORK AREA. DEWATER WORK AREA. CULVERTS ARE REMOVED AND A BYPASS PIPE IS INSTALLED TO ALLOW GRAVITY FLOW DIVERSION DURING BRIDGE CONSTRUCTION. LOGISTICS AND TIMING FOR PHASE 2 IS THE RESPONSIBILITY OF THE CONTRACTOR AND PART OF THE FLOW DIVERSION PLAN.
   - PHASE 2 - ONCE BRIDGE CONSTRUCTION IS COMPLETE, CONSTRUCT STREAM CHANNEL WITHIN THE BRIDGE CONSTRUCTION AREA. A TEMPORARY PUMPED FLOW DIVERSION SYSTEM MAY BE NEEDED. ONCE CONSTRUCTION IS COMPLETE, DIVERT FLOW USING A TEMPORARY PUMPED SYSTEM, REMOVE BYPASS PIPE, REMOVE COFFERDAMS, AND RETURN FLOW TO CHANNEL. LOGISTICS AND TIMING FOR PHASE 2 IS THE RESPONSIBILITY OF THE CONTRACTOR AND PART OF THE FLOW DIVERSION PLAN.
4. INSTALLATION OF A DIVERSION PIPE OUTSIDE THE DIVERSION PIPE CORRIDOR WILL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
5. GRADING MAY BE REQUIRED DOWNSTREAM OF THE CULVERTS PRIOR TO INSTALLATION OF THE DIVERSION PIPE.
6. ALL PUMPS REQUIRE SCREENS DESIGNED TO WASHINGTON STATE AND NATIONAL MARINE FISHERIES SERVICE SPECIFICATIONS TO PREVENT HARM TO FISH.
7. PUMPED FLOW DIVERSION IS ONLY PERMITTED ON EAST SIDE OF BRIDGE CONSTRUCTION AREA. EXACT ALIGNMENT TO BE DETERMINED BY THE CONTRACTOR.



DETAIL 1 - UPSTREAM COFFERDAM

SCALE: 1" = 5'



DETAIL 2 - DOWNSTREAM COFFERDAM

SCALE: 1" = 5'

90% DESIGN
FOR AGENCY REVIEW

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LOWER WAPATO CREEK HABITAT PROJECT

SITE ACCESS AND FLOW DIVERSION PLAN

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PARCEL: 14	DRAWING SCALE: AS NOTED	

6656
G7.0
11 OF 50

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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BINDING EDGE
PORT OF TACOMA FILE: C:\pwworking\hmm\ports_harbors\mor69830\dms48094\Wapato Creek Habitat - Sections and Profiles

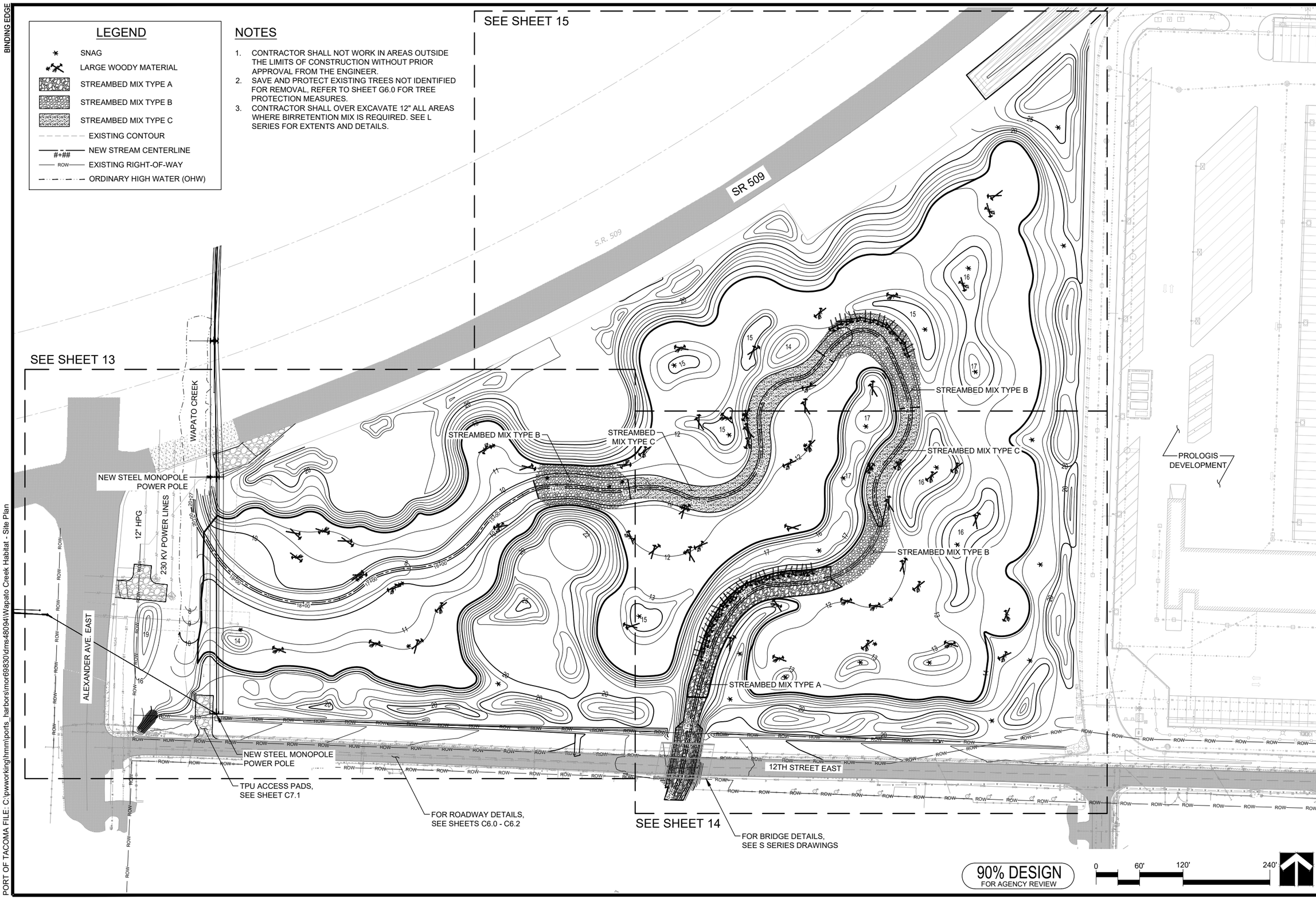
BINDING EDGE

LEGEND

- SNAG
- LARGE WOODY MATERIAL
- STREAMBED MIX TYPE A
- STREAMBED MIX TYPE B
- STREAMBED MIX TYPE C
- EXISTING CONTOUR
- NEW STREAM CENTERLINE (#+##)
- EXISTING RIGHT-OF-WAY (ROW)
- ORDINARY HIGH WATER (OHW)

NOTES

1. CONTRACTOR SHALL NOT WORK IN AREAS OUTSIDE THE LIMITS OF CONSTRUCTION WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
2. SAVE AND PROTECT EXISTING TREES NOT IDENTIFIED FOR REMOVAL, REFER TO SHEET G6.0 FOR TREE PROTECTION MEASURES.
3. CONTRACTOR SHALL OVER EXCAVATE 12" ALL AREAS WHERE BIRRETENTION MIX IS REQUIRED. SEE L SERIES FOR EXTENTS AND DETAILS.



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LOWER WAPATO CREEK HABITAT PROJECT

OVERALL GRADING PLAN

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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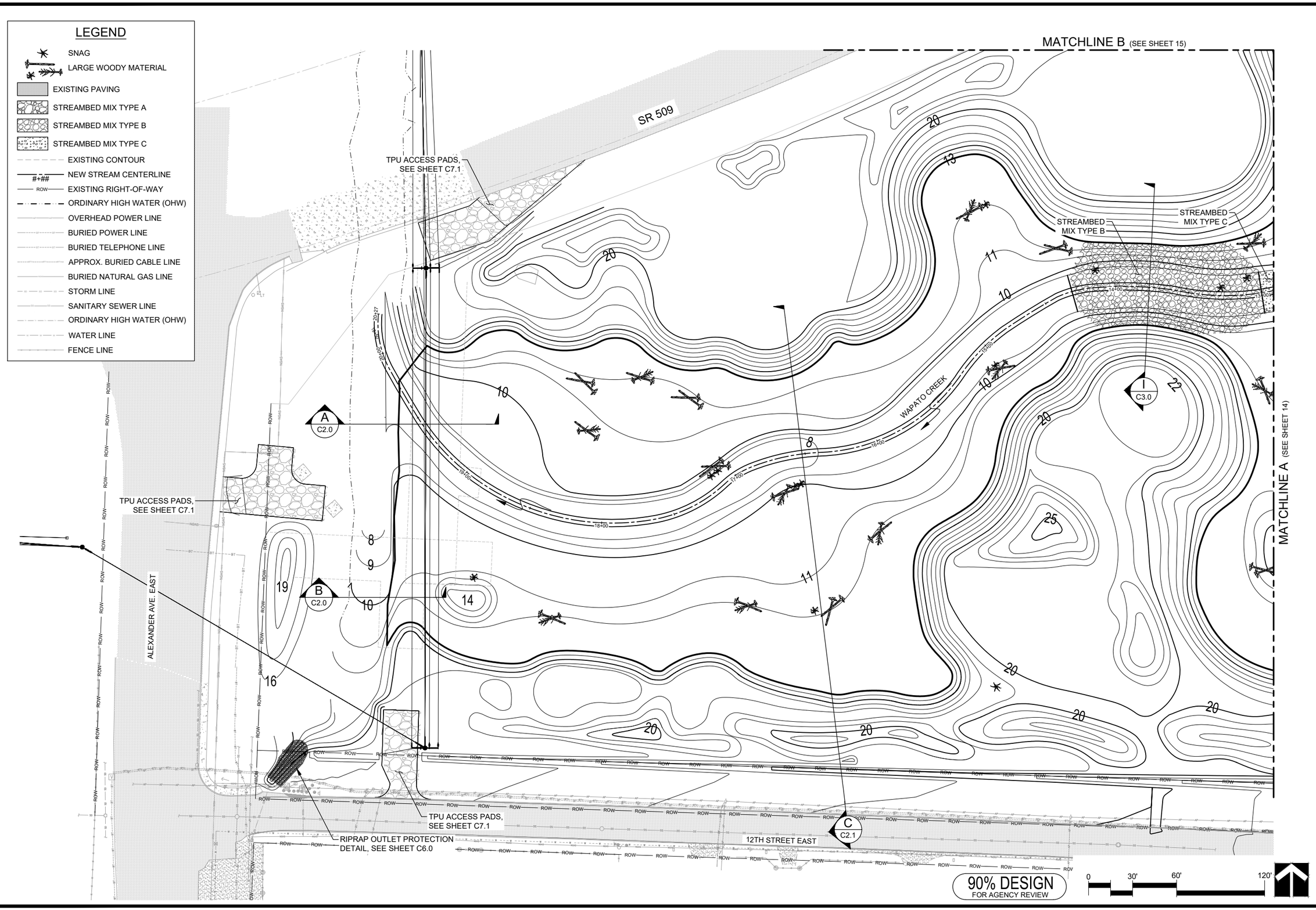
BINDING EDGE



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LOWER WAPATO CREEK HABITAT PROJECT

GRADING PLAN 1

TOWNSHIP: 20N | RANGE: 3E | SECTION: 1
DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)
PARCEL: 14 | DRAWING SCALE: AS NOTED

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13 OF 50

CONT/CONS: 071447
M. ID: 101449.01
PHASE: 90% Design

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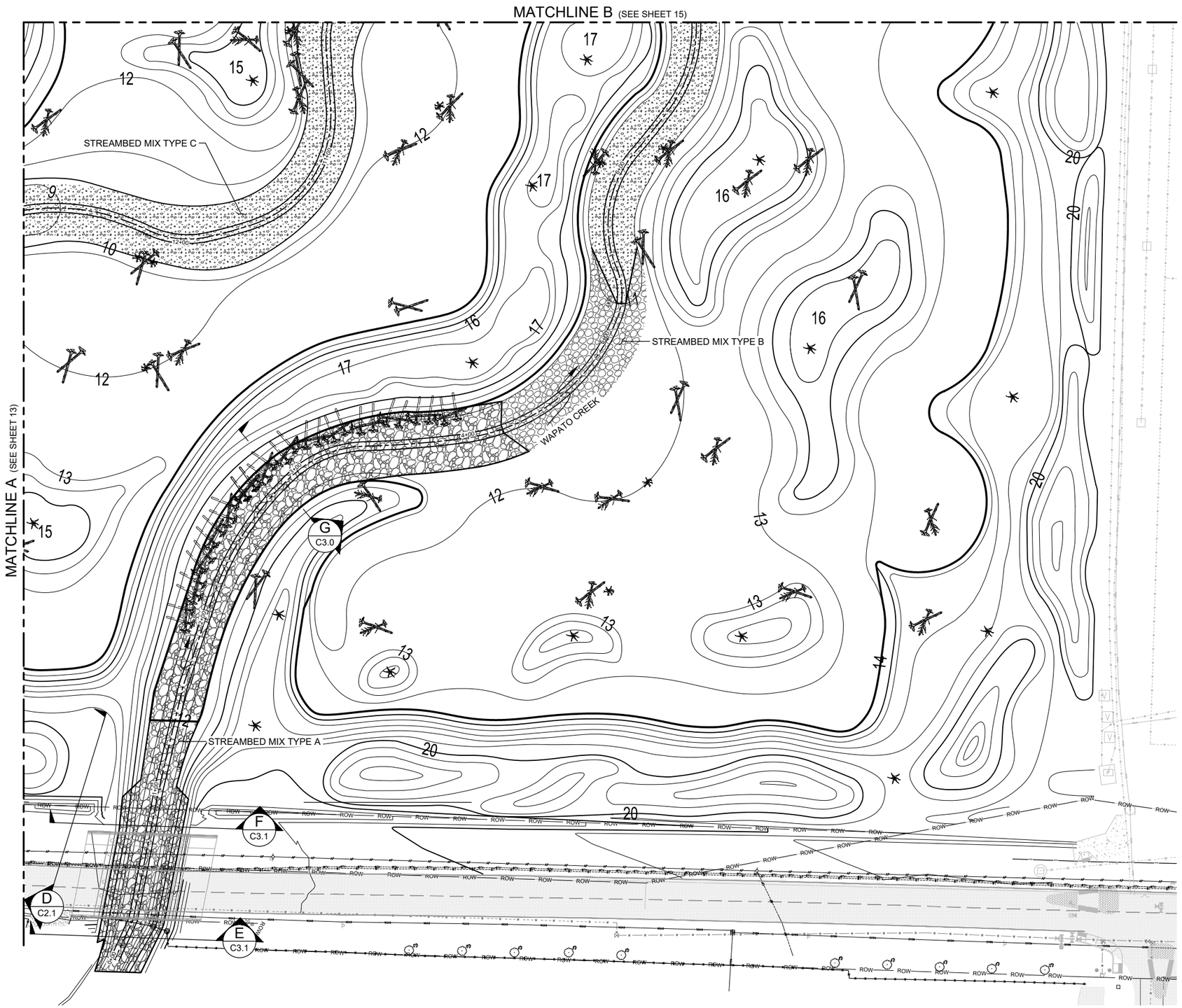
PORT OF TACOMA FILE: C:\pwworking\hmm\ports_harbors\mor69830\dms48094\Wapato Creek Habitat - Site Plan

BINDING EDGE



LEGEND

- SNAG
- LARGE WOODY MATERIAL
- EXISTING PAVING
- STREAMBED MIX TYPE A
- STREAMBED MIX TYPE B
- STREAMBED MIX TYPE C
- EXISTING CONTOUR
- NEW STREAM CENTERLINE
- EXISTING RIGHT-OF-WAY
- ORDINARY HIGH WATER (OHW)
- OVERHEAD POWER LINE
- BURIED POWER LINE
- BURIED TELEPHONE LINE
- APPROX. BURIED CABLE LINE
- BURIED NATURAL GAS LINE
- STORM LINE
- SANITARY SEWER LINE
- ORDINARY HIGH WATER (OHW)
- WATER LINE
- FENCE LINE

90% DESIGN
FOR AGENCY REVIEW

0 30' 60' 120'

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LOWER WAPATO CREEK HABITAT PROJECT

GRADING PLAN 2

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PARCEL: 14	DRAWING SCALE: AS NOTED	

6656
C1.2
14 OF 50

CONT/CONS:	07/1447
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PHASE:	90% Design

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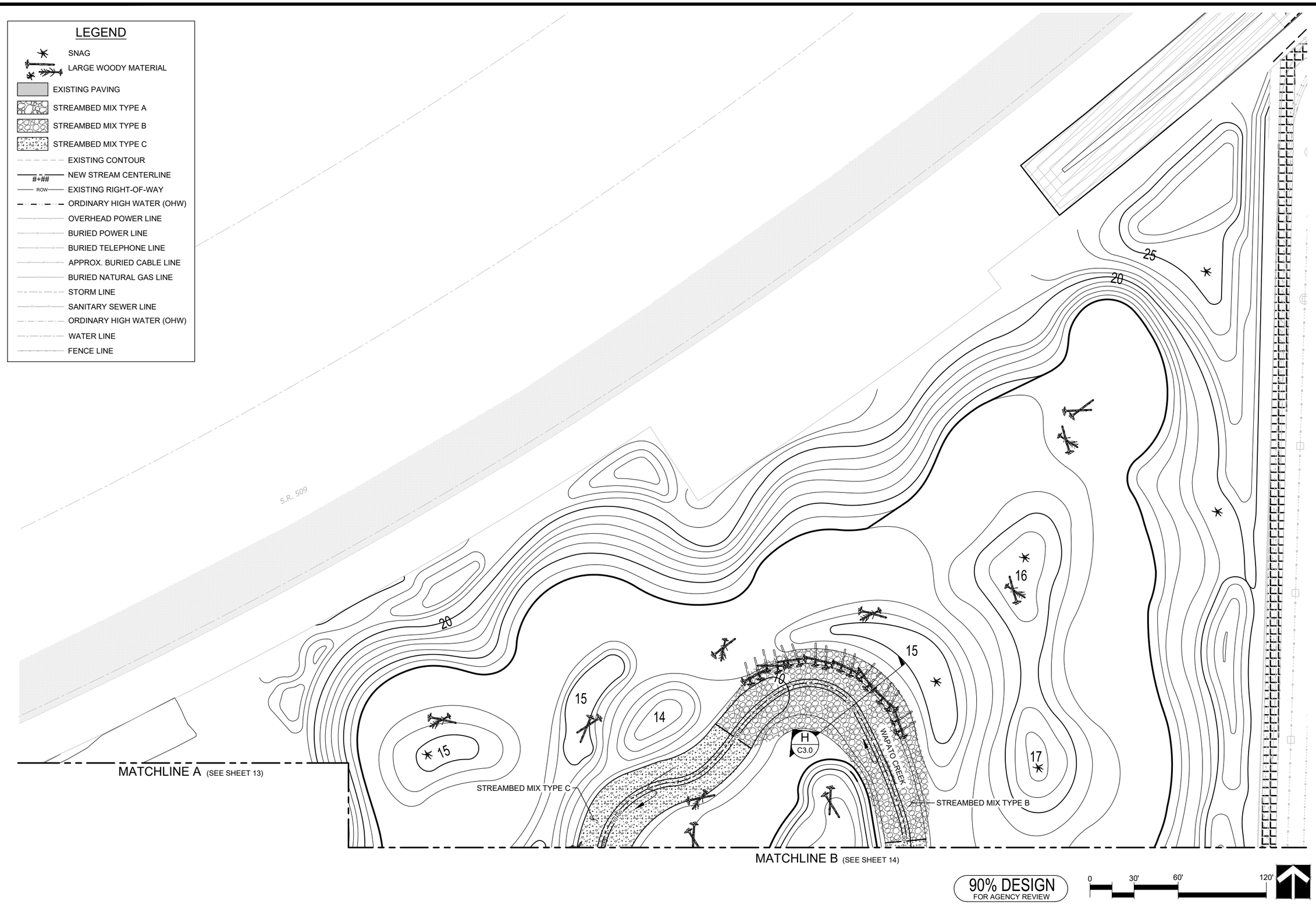

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LOWER WAPATO CREEK HABITAT PROJECT

GRADING PLAN 3

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

6656
C1.3
15 OF 50

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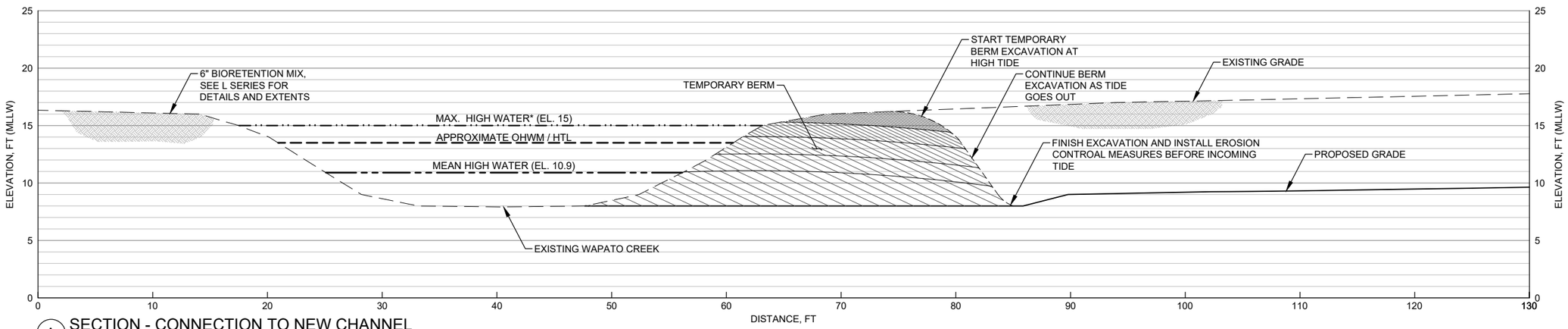
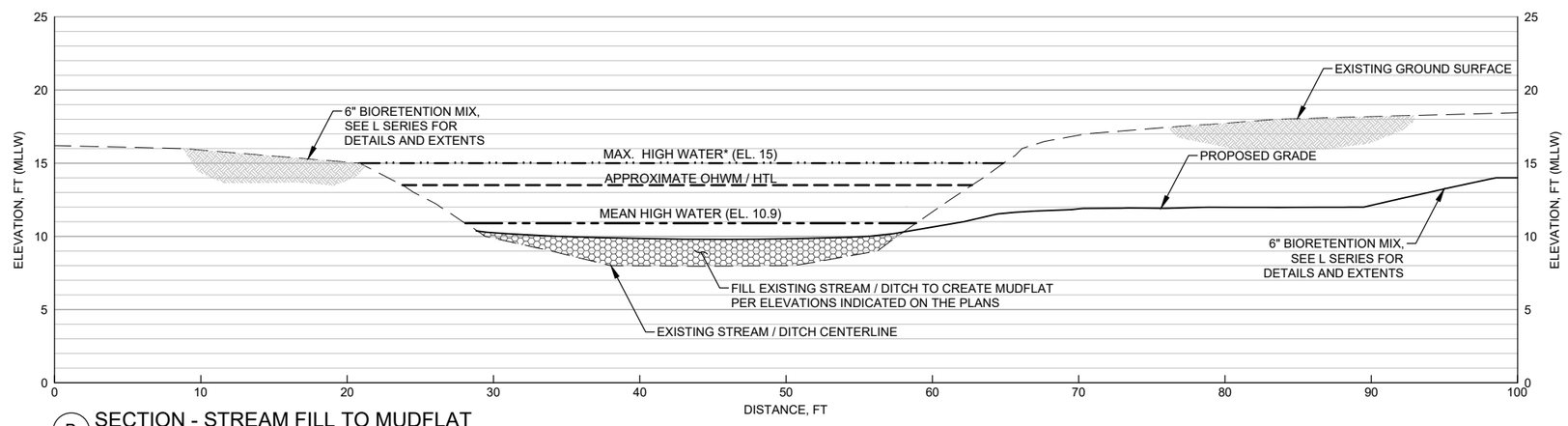
A SECTION - EXISTING CONDITIONS
SCALE: 1" = 5'



A SECTION - CONNECTION TO NEW CHANNEL
SCALE: 1" = 5'



B SECTION - STREAM FILL TO MUDFLAT
SCALE: 1" = 5'

90% DESIGN
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BINDING EDGE

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LOWER WAPATO CREEK HABITAT PROJECT
GRADING SECTIONS 1

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
C2.0
16 OF 50

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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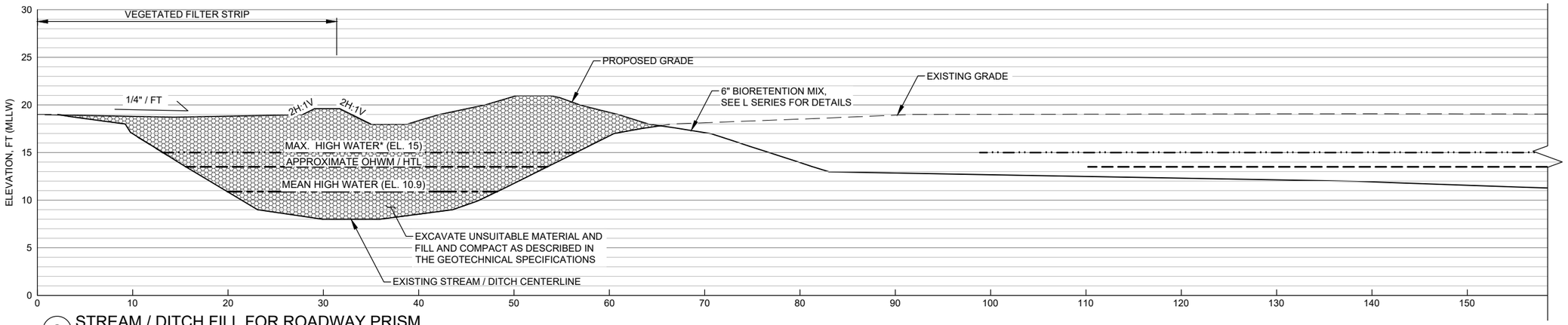
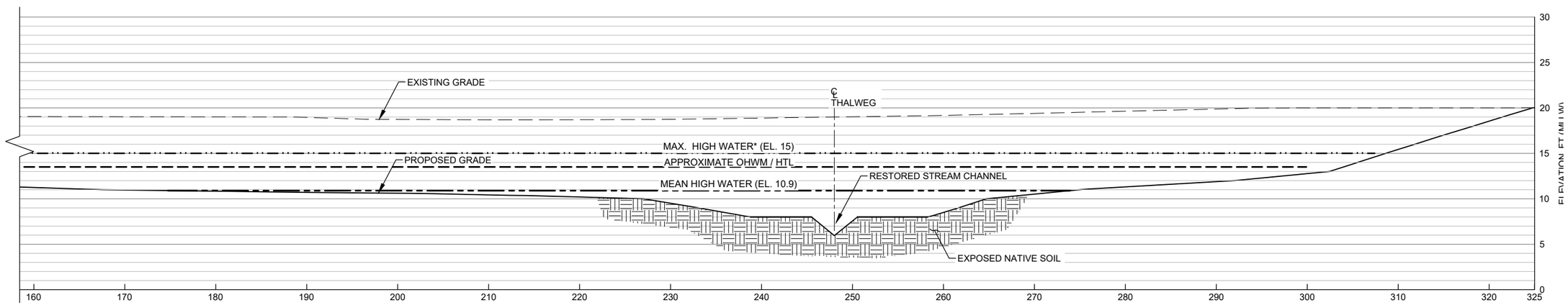
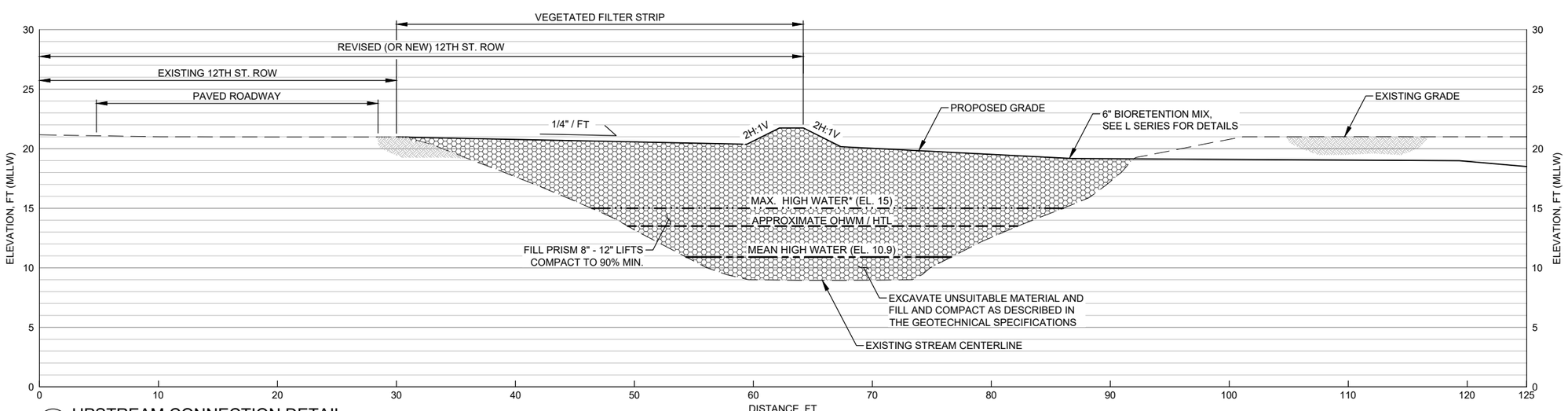


C STREAM / DITCH FILL FOR ROADWAY PRISM
SCALE: 1" = 6'



C STREAM / DITCH FILL FOR ROADWAY PRISM
SCALE: 1" = 6'



D UPSTREAM CONNECTION DETAIL
SCALE: 1" = 5'

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LOWER WAPATO CREEK HABITAT PROJECT
GRADING SECTIONS 2

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
C2.1
17 OF 50

CONT/CONS:	071447
M. ID:	101449.01
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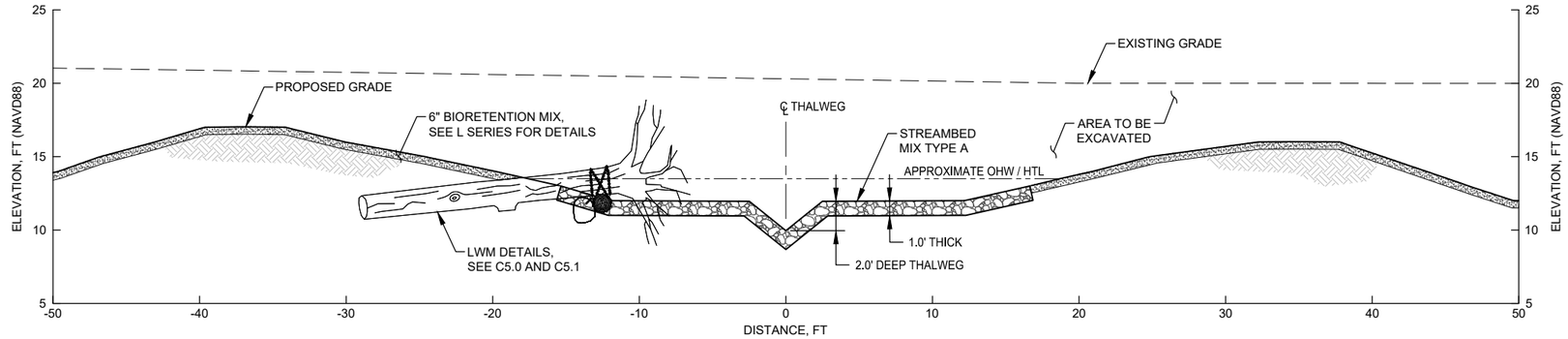
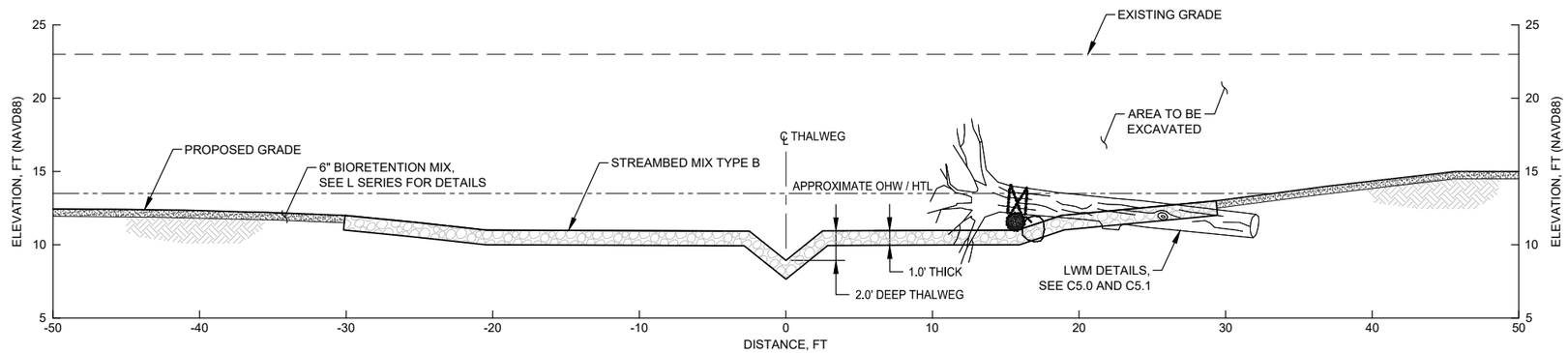
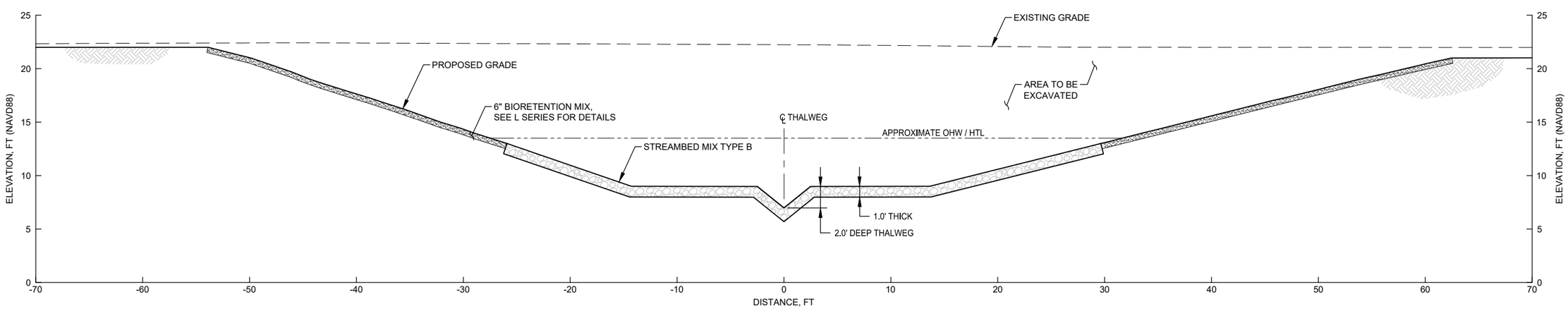


G SECTION - NEW CHANNEL AT STATION 2+90
SCALE: 1" = 5'



H SECTION - NEW CHANNEL AT STATION 8+00
SCALE: 1" = 5'



I SECTION - NEW CHANNEL AT STATION 13+75
SCALE: 1" = 5'

90% DESIGN
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0 5' 10' 20'

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LOWER WAPATO CREEK HABITAT PROJECT
STREAM CROSS SECTIONS 1

TOWNSHIP: 20N
RANGE: 3E
SECTION: 1
DAT-HRZ: WA83-SF
VERT: MLLW (PORT OF TACOMA TIDAL)
PARCEL: 14
DRAWING SCALE: AS NOTED

6656
C3.0
18 OF 50

CONT/CONS: 071447
M. ID: 101449.01
PHASE: 90% Design

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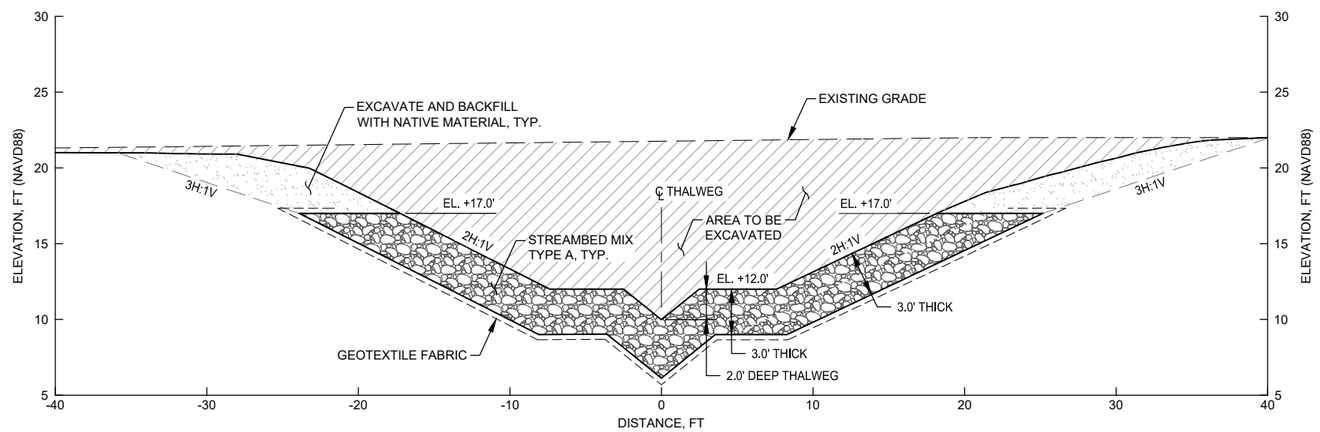
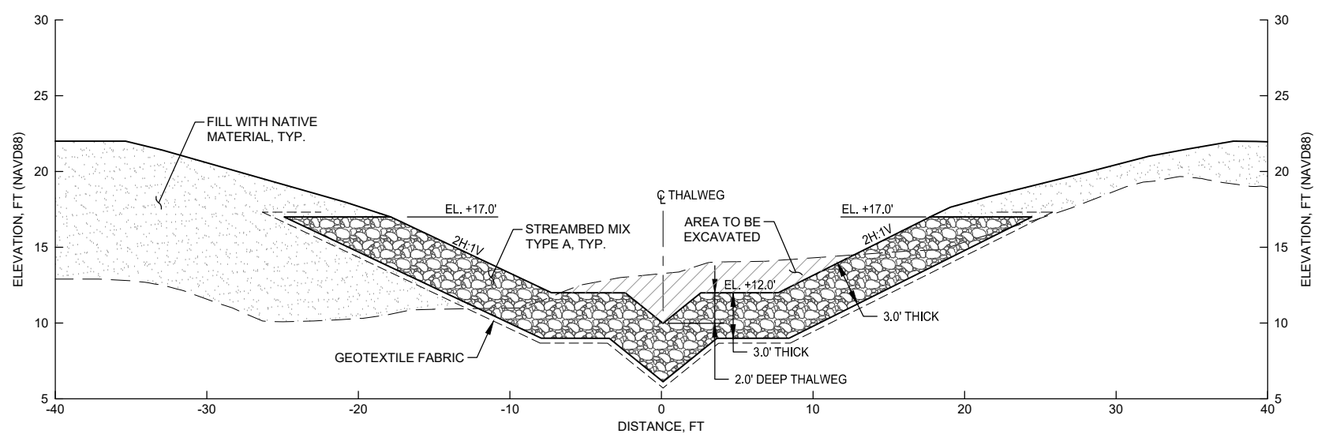


E SECTION - NEW CHANNEL AT BRIDGE (UPSTREAM)
SCALE: 1" = 5'



F SECTION - NEW CHANNEL AT BRIDGE (DOWNSTREAM)
SCALE: 1" = 5'

90% DESIGN
FOR AGENCY REVIEW

0 5' 10' 20'

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JOHN BRETT DAWSON
STATE OF WASHINGTON
53187
REGISTERED PROFESSIONAL ENGINEER
2/5/21

APPROVED:

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PRINTED BY: MOR69830 Feb 05, 2021
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LOWER WAPATO CREEK HABITAT PROJECT

STREAM CROSS SECTIONS 2 - BRIDGE CROSSING

6656
C3.1
19 OF 50

CONT/CONS:	071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID:	101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)
PHASE:	90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED

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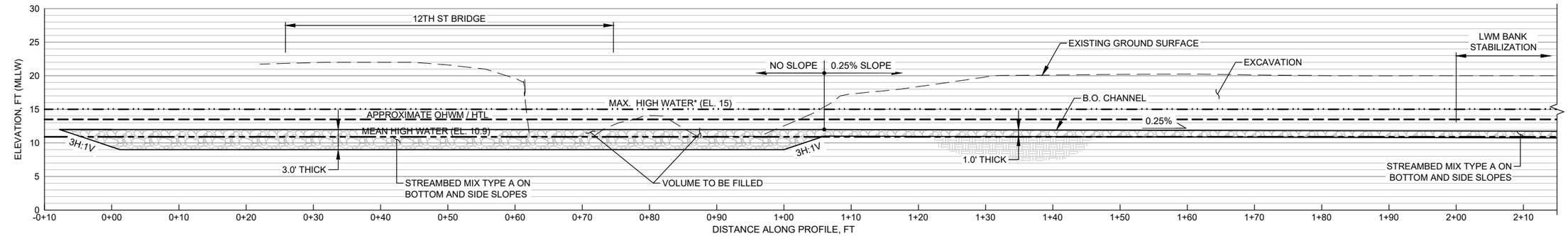

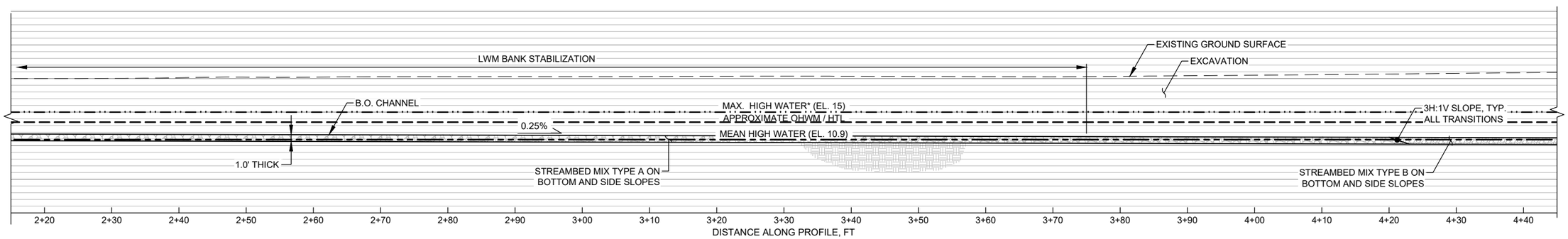

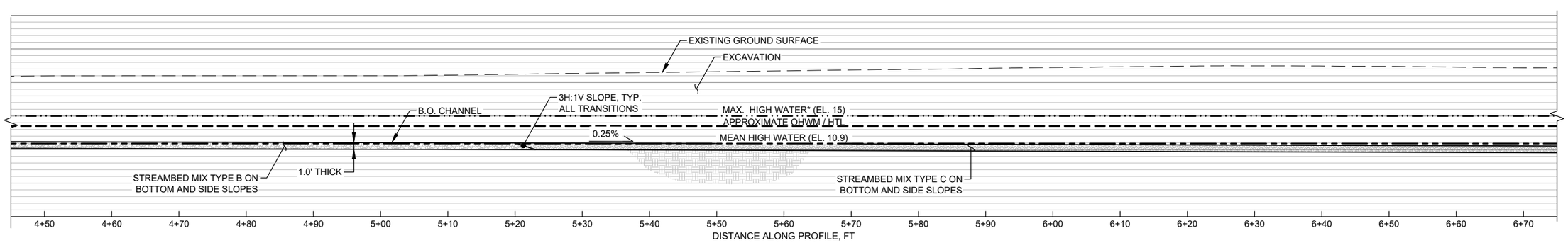

STREAM PROFILE

SCALE: 1" = 8'

90% DESIGN
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LOWER WAPATO CREEK HABITAT PROJECT

STREAM PROFILE 1

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
C4.0
20 OF 50

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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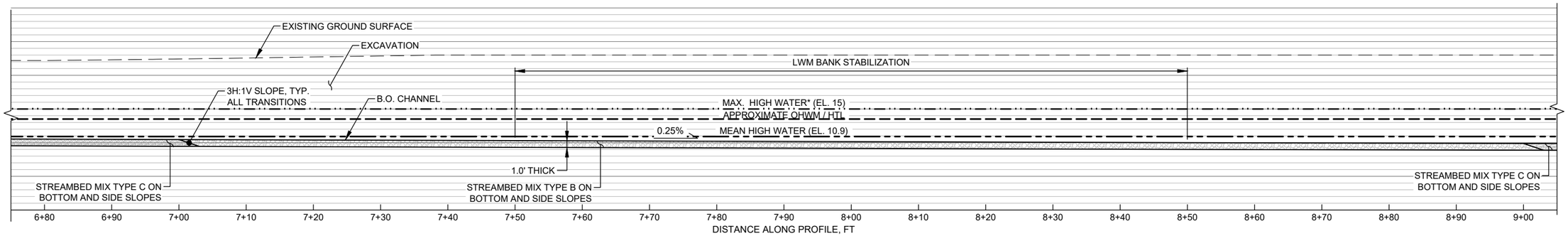

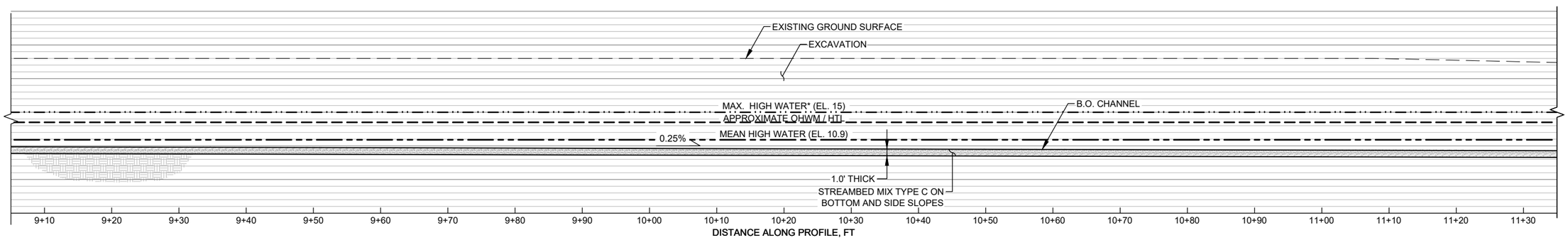

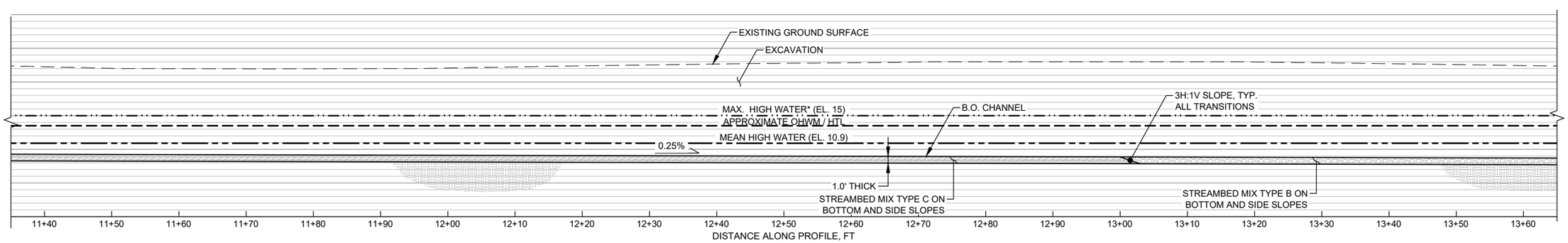

STREAM PROFILE

SCALE: 1" = 8'

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LOWER WAPATO CREEK HABITAT PROJECT

STREAM PROFILE 2

6656
C4.1
21 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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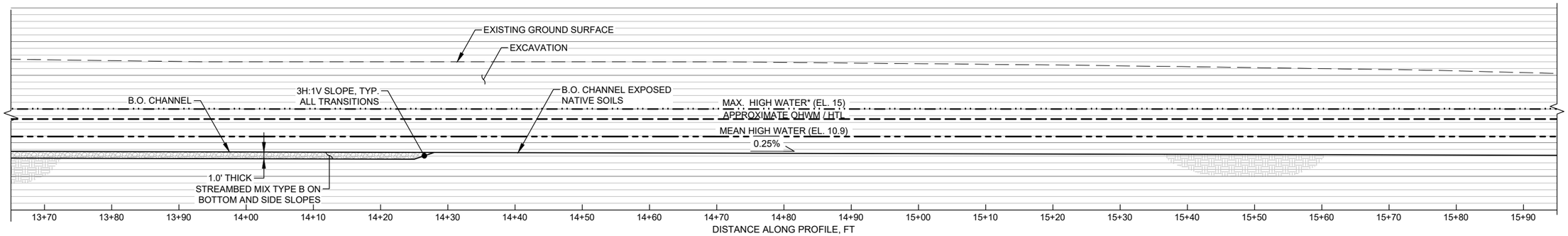

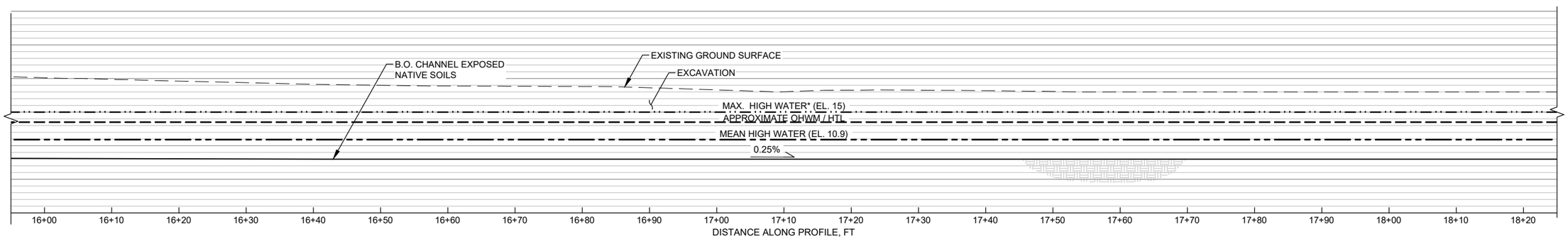

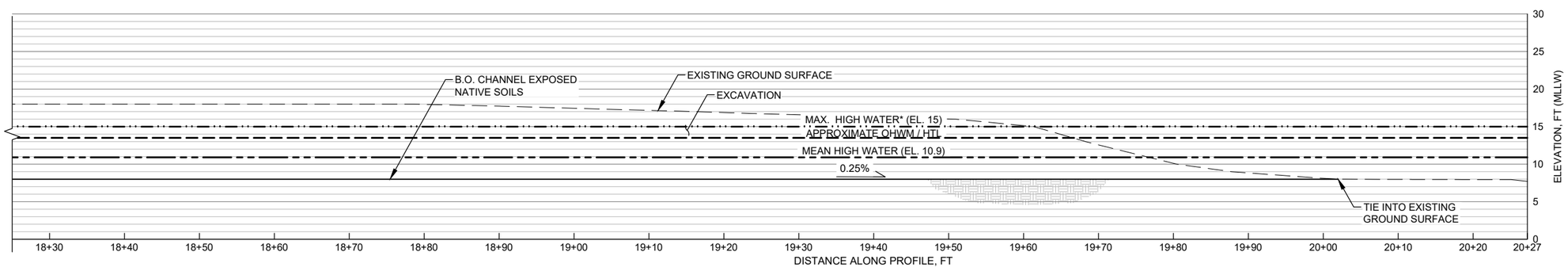

STREAM PROFILE

SCALE: 1" = 10'

90% DESIGN
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LOWER WAPATO CREEK HABITAT PROJECT

STREAM PROFILE 3

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
C4.2
22 OF 50

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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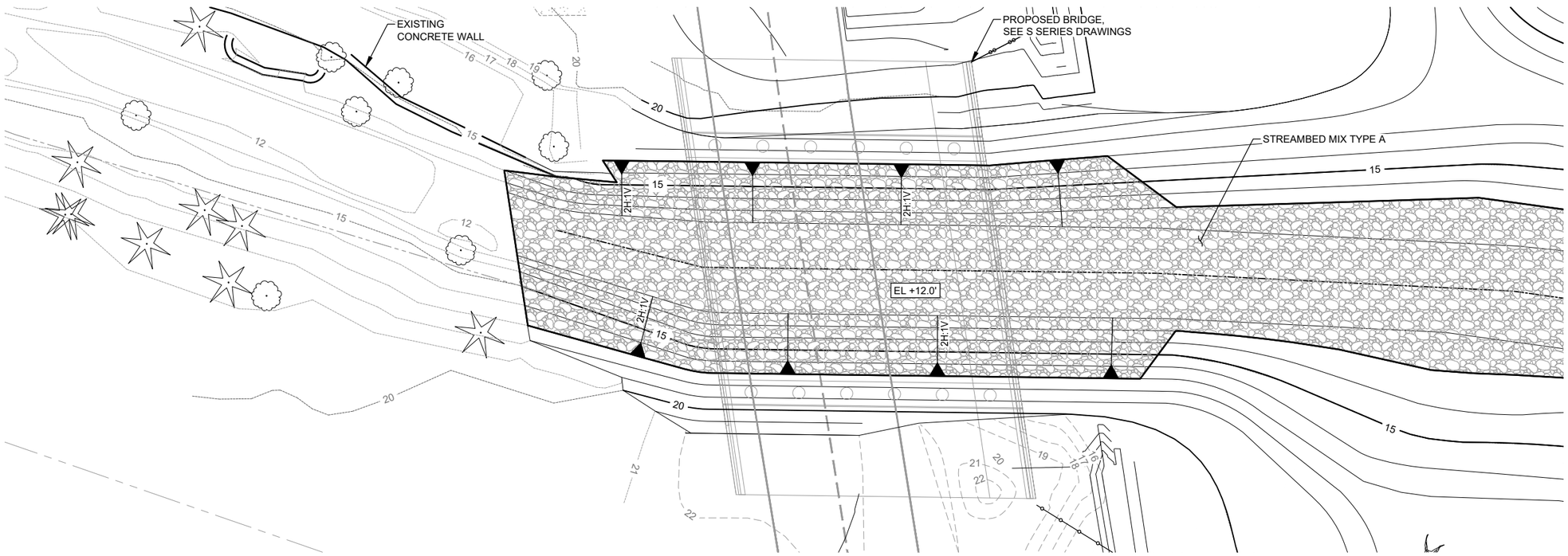
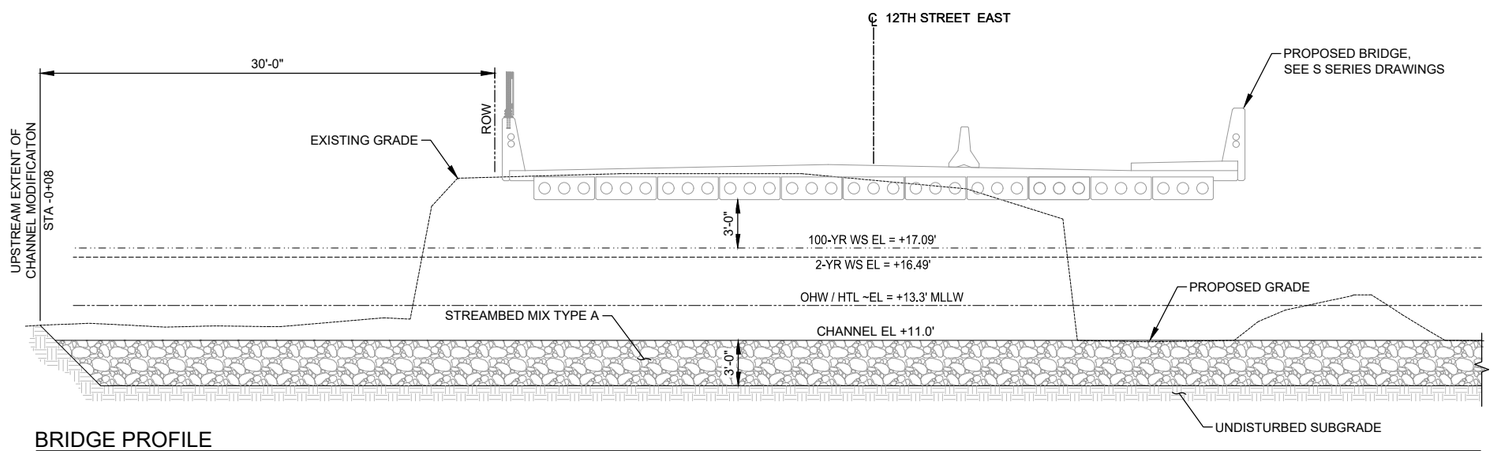


BRIDGE PLAN

SCALE: 1" = 10'



BRIDGE PROFILE

SCALE: 1" = 5'

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LOWER WAPATO CREEK HABITAT PROJECT

STREAM PROFILE 4 - BRIDGE CROSSING

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
C4.3
23 OF 50

CONT/CONS: 071447
M. ID: 101449.01
PHASE: 90% Design

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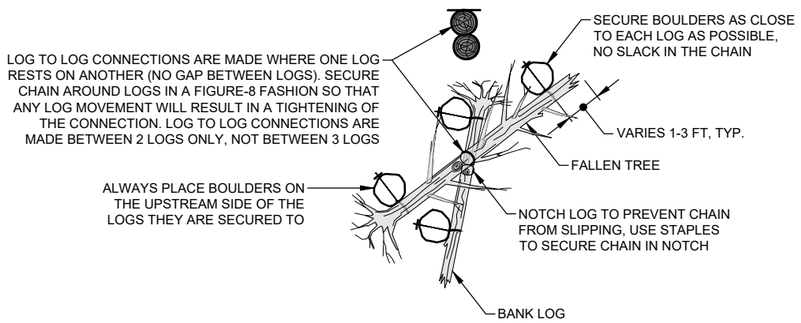
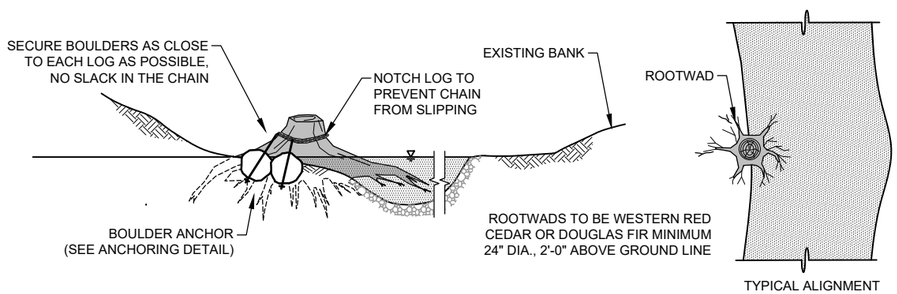
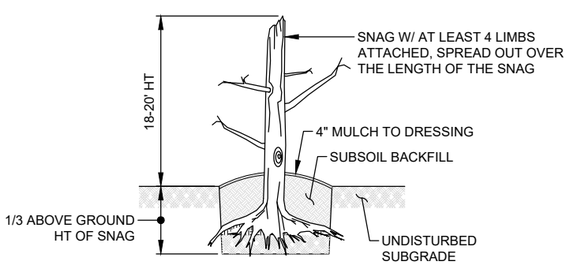


A HABITAT LOG STRUCTURE PLAN VIEW
N.T.S.



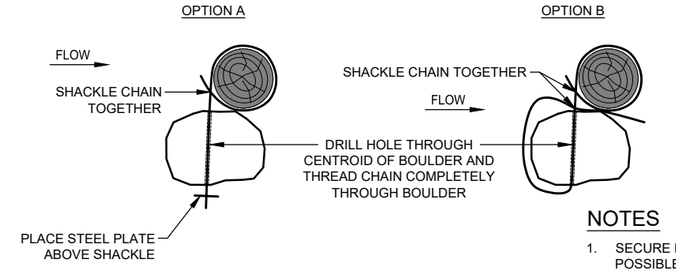
B ROOTWAD
N.T.S.



C SNAG DETAIL
N.T.S.

NOTES

1. UPRIGHT SNAGS ARE TO BE PLACED AT THE LOCATIONS SHOWN ON THE PLAN.
2. ALL SNAGS SHALL BE WESTERN RED CEDAR OR DOUGLAS-FIR TREES WITH A SUBSTANTIAL PORTION OF THEIR LIMBS LEFT INTACT. DO NOT TRIM TOPS, DAMAGED OR BROKEN TOPS ARE PREFERRED. PROVIDE LOGS WITH NUMEROUS UNTRIMMED LIMBS. LOGS USED FOR SNAGS MAY BE PARTIALLY HOLLOW AND CONTAIN CAVITIES AS LONG AS THEY ARE GENERALLY SOUND.
3. SNAGS SHALL BE A MINIMUM OF 24 INCHES IN DIAMETER AT GROUND SURFACE WHEN INSTALLED AND SHALL BE PLACED TO A DEPTH INTO THE GROUND EQUAL TO 1/3RD OF THEIR ABOVE-GROUND HEIGHT.
4. SNAGS WITH SUBSTANTIAL ROOT MASSES ATTACHED MAY BE PLACED TO THE DEPTH INDICATED AND BACKFILLED WITH COMPACTED SOIL ONLY UPON APPROVAL OF EACH SNAG INDIVIDUALLY BY THE ENGINEER.
5. ADDITIONAL LIMBS SHALL BE 2.5' MIN IN LENGTH AND 2" TO 2.5" IN DIAMETER. SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.



D BOULDER ANCHOR
N.T.S.

NOTES

1. SECURE BOULDERS AS CLOSE TO EACH LOG AS POSSIBLE. NO SLACK IN THE CHAIN.
2. ALWAYS PLACE BOULDERS ON THE UPSTREAM SIDE OF THE LOGS THEY ARE SECURED TO.
3. SEE SPECIFICATIONS FOR HARDWARE DESCRIPTIONS.

HABITAT LOG STRUCTURE CONTROL POINTS

STRUCTURE NO.	NORTHING	EASTING

ROOTWAD CONTROL POINTS

STRUCTURE NO.	NORTHING	EASTING

TO BE COMPLETED PRIOR TO FINAL DESIGN

SNAG CONTROL POINTS

STRUCTURE NO.	NORTHING	EASTING

TO BE COMPLETED PRIOR TO FINAL DESIGN

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LOWER WAPATO CREEK HABITAT PROJECT

LARGE WOODY MATERIAL DETAILS 1

6656
C5.0
24 OF 50

CONT/CONS: 071447 TOWNSHIP: 20N RANGE: 3E SECTION: 1
M. ID: 101449.01 DAT-HRZ: WA83-SF VERT: MLLW (PORT OF TACOMA TIDAL)
PHASE: 90% Design PARCEL: 14 DRAWING SCALE: AS NOTED
PRINTED BY: MOR69830 Dec 10, 2020
PORT ADDRESS: 1 SITCOM PLAZA TACOMA, WA 98421

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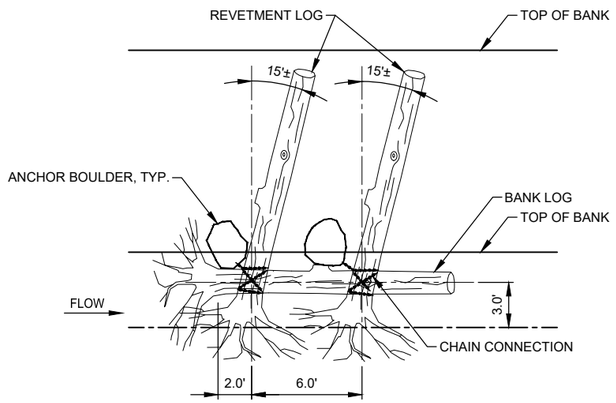
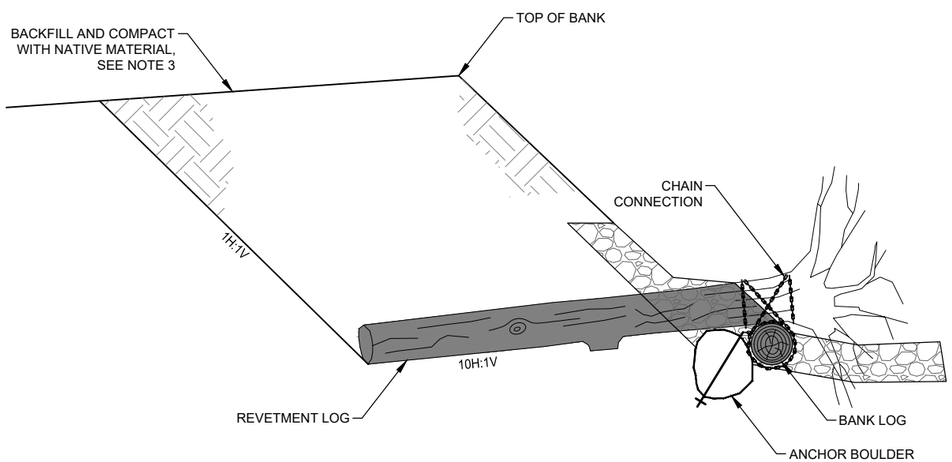


G TYPICAL BANK STABILIZATION STRUCTURE PLAN
N.T.S.



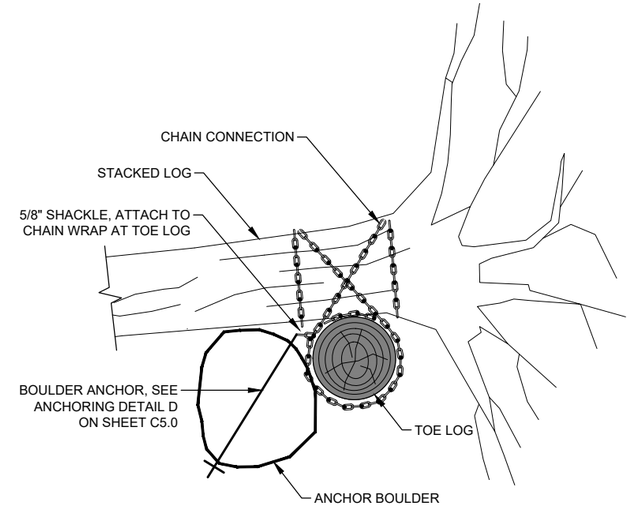
H TYPICAL BANK STABILIZATION STRUCTURE SECTION
N.T.S.

BANK STABILIZATION CONSTRUCTION SEQUENCE

1. EXCAVATE BANK SUFFICIENTLY TO INSTALL STRUCTURE
2. INSTALL BANK LOG
3. INSTALL REVETMENT LOGS, ADJUST EXCAVATION AS NEEDED
4. INSTALL BOULDER ANCHORS AND CHAIN LASHINGS
5. BACKFILL AND COMPACT BANK WITH NATIVE MATERIAL

BANK STABILIZATION CONSTRUCTION NOTES

1. EXCAVATION LIMITS SHOWN ARE APPROXIMATE AND WILL VARY BASED ON CONSTRUCTION MEANS AND METHODS, SUBSURFACE CONDITIONS AND LOCATION OF STRUCTURE. CONTRACTOR SHALL ADJUST EXCAVATION LIMITS AS NECESSARY TO COMPLETE CONSTRUCTION.
2. EXTENTS OF EMBEDDED LOG PORTIONS SHOWN ARE APPROXIMATE AND WILL VARY FOR EACH STRUCTURE. MINIMUM EMBEDMENT OF 2/3 OF THE LENGTH OF THE LOG.
3. BACKFILL IN 6 INCH LIFTS TO ~85% COMPACTION, MINIMUM 3 FT FILL OVER REVETMENT LOGS.



I BOULDER ANCHOR DETAIL
N.T.S.

LOG SCHEDULE		
LOG TYPE	DIA. (IN)	LENGTH (FT)
REVETMENT LOG	16 - 18	20
BANK LOG	12 - 16	20
FALLEN TREE	16 - 18	20

NOTES

1. ALL LARGE WOODY MATERIAL (LWM) TO BE CEDAR, FIR OR ANOTHER APPROVED CONIFEROUS SPECIES WITH ROOTWAD ATTACHED.
2. LOG DIAMETER TO BE MEASURED 8' FROM THE ROOTWAD.
3. LWM SHALL NOT BE TREATED WITH PRESERVATIVES.

BANK STABILIZATION STRUCTURE CONTROL POINTS		
STRUCTURE NO.	NORTHING	EASTING

TO BE COMPLETED PRIOR TO FINAL DESIGN

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LOWER WAPATO CREEK HABITAT PROJECT
LARGE WOODY MATERIAL DETAILS 2

6656
C5.1
25 OF 50

CONT/CONS: 071447
M. ID: 101449.01
PHASE: 90% Design
TOWNSHIP: 20N
DAT-HRZ: WA83-SF
PARCEL: 14
RANGE: 3E
VERT: MLLW (PORT OF TACOMA TIDAL)
DRAWING SCALE: AS NOTED
SECTION: 1

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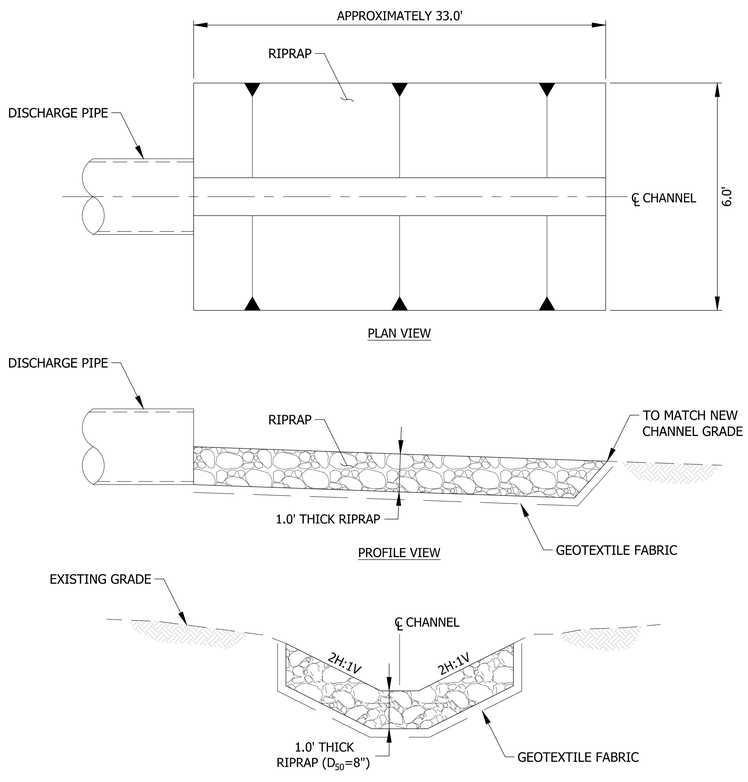
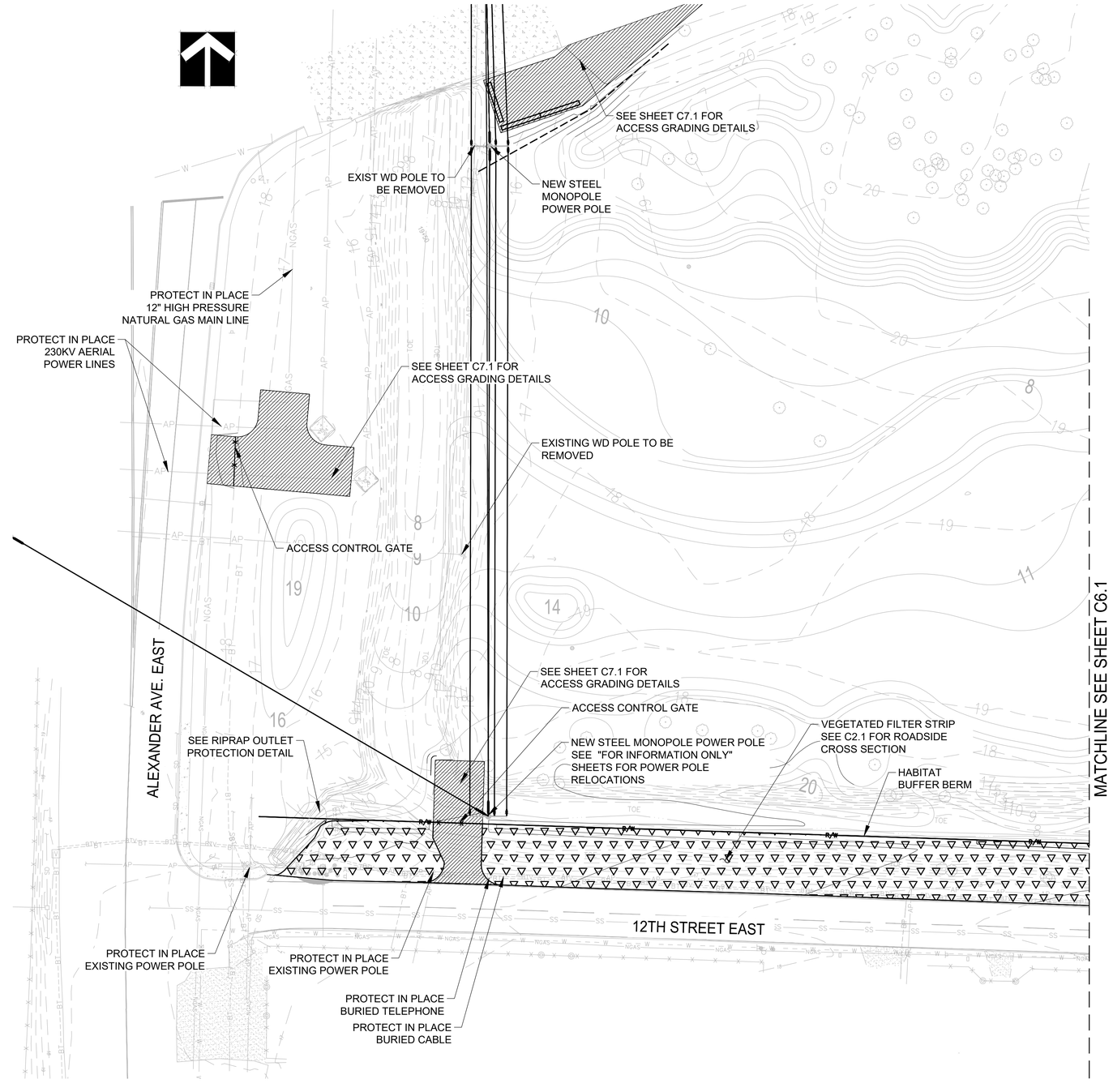
BINDING EDGE

LEGEND

- VEGETATED FILTER STRIP
- UTILITY ACCESS - +/- 2" CRUSHED SURFACING TOP BASE, 12" QUARRY SPALLS, 12" CRUSHED SURFACING BASE COURSE



A RIPRAP OUTLET PROTECTION DETAIL
N.T.S.



SITE PLAN - AREA 1
N.T.S.

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LOWER WAPATO CREEK HABITAT PROJECT
CIVIL / ROADWAY PLAN 1

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
C6.0
26 OF 50

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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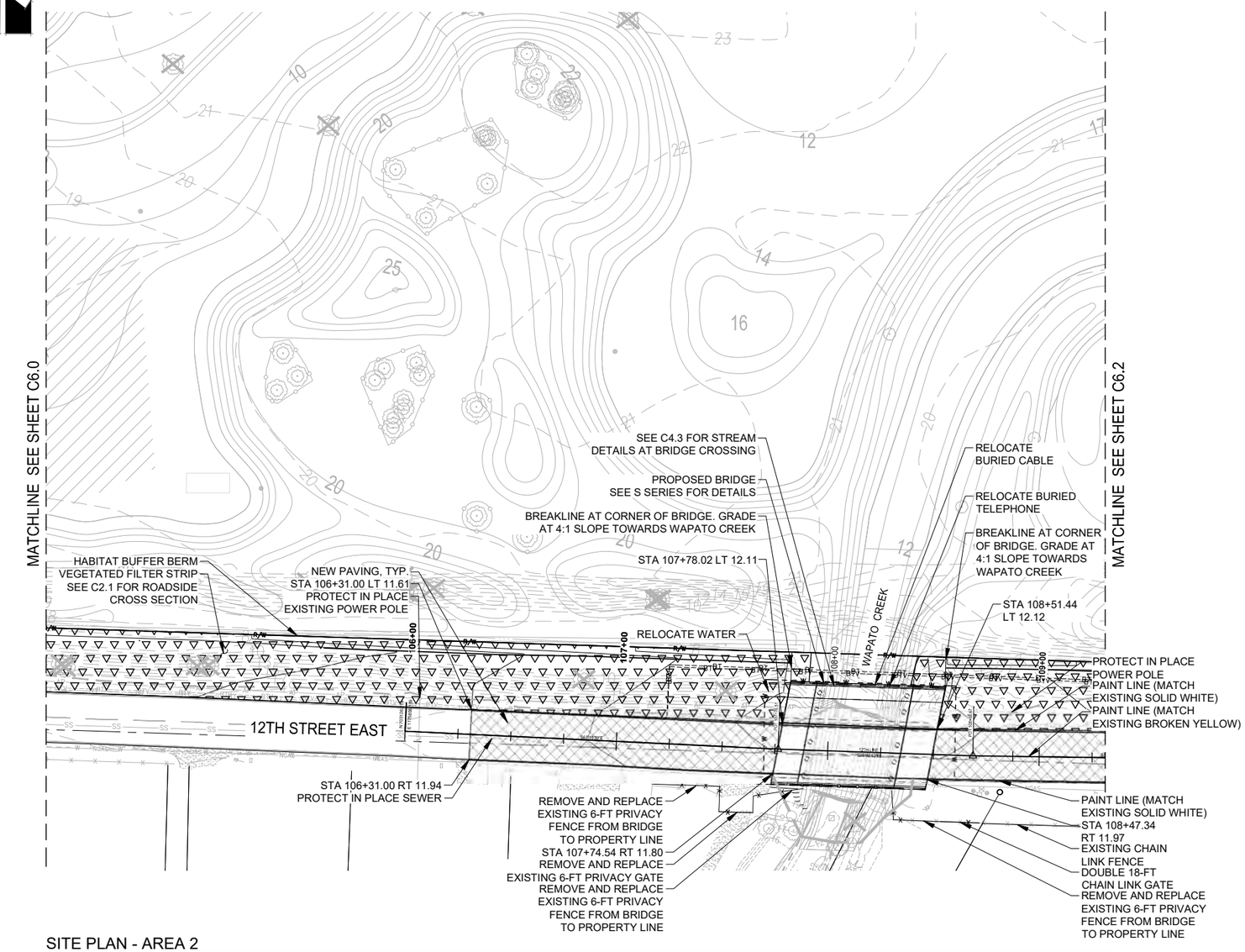
PORT OF TACOMA FILE: C:\pwworking\hmm\ports_harbors\pay77565\dms48042\C6.1

LEGEND

- NEW ASPHALT PAVEMENT - 6" HMA CL. 1/2 IN. PG, 8" CRUSHED SURFACING BASE COURSE
- VEGETATED FILTER STRIP



SITE PLAN - AREA 2

N.T.S.

NOTES:

1. CONTRACTOR TO COORDINATE WITH PSE FOR NEW GAS LINE DESIGN.
2. CONTRACTOR TO PROVIDE TEMPORARY SUPPORT FOR WATER LINE OVER WAPATO CREEK PER SPECIFICATION.

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LOWER WAPATO CREEK HABITAT PROJECT

CIVIL / ROADWAY PLAN 2

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

C6.1
27 OF 50

CONT/CONS:	071447
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LEGEND

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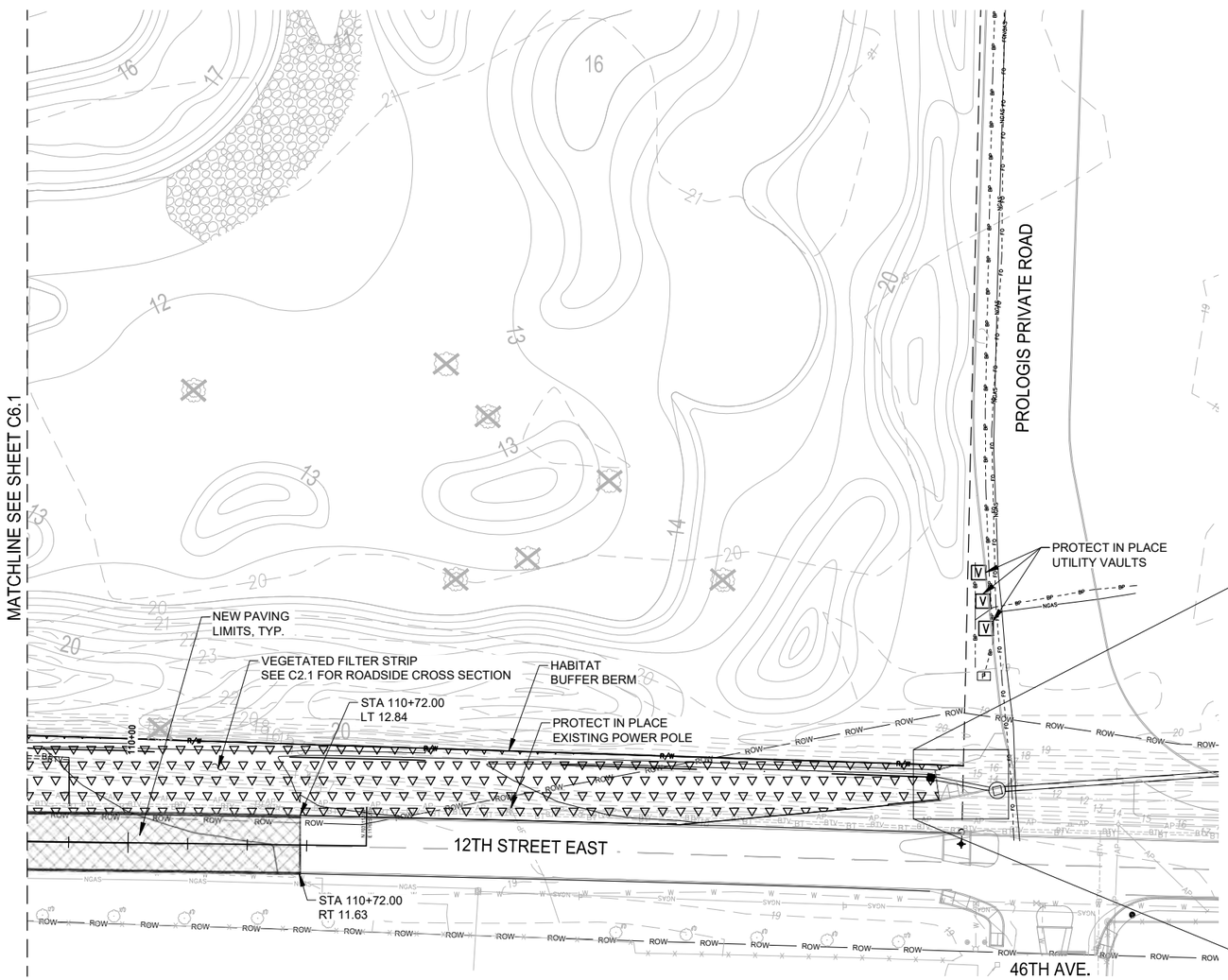
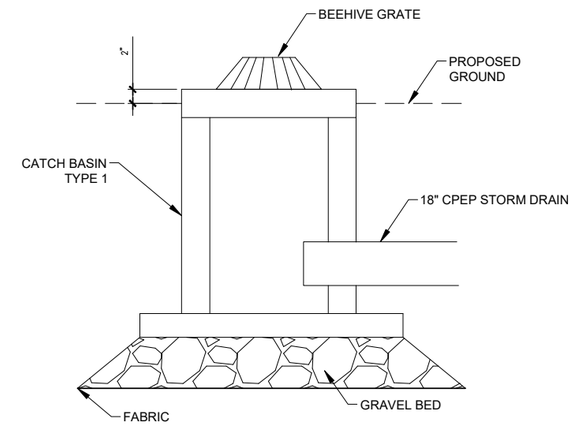
VEGETATED FILTER STRIP



SITE PLAN - AREA 3

N.T.S.



CATCH BASIN TYPE 1 DETAIL

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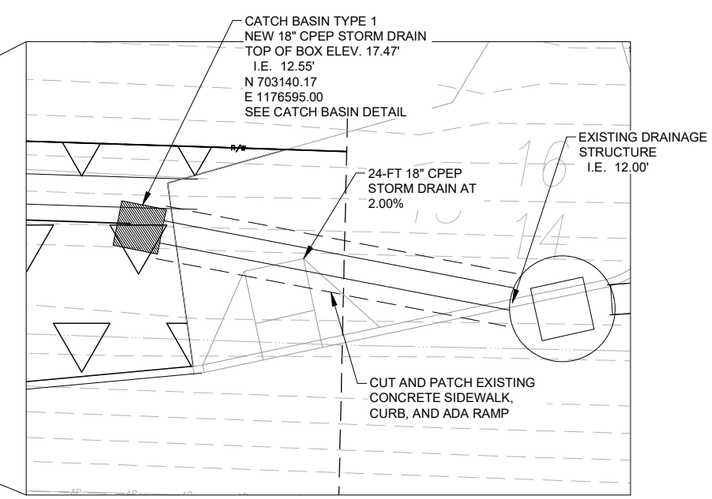

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LOWER WAPATO CREEK HABITAT PROJECT

CIVIL / ROADWAY PLAN 3

TOWNSHIP: 20N | RANGE: 3E | SECTION: 1

DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)

PARCEL: 14 | DRAWING SCALE: AS NOTED

C6.2
28 OF 50

CONT/CONS: 071447

M. ID: 101449.01

PHASE: 90% Design

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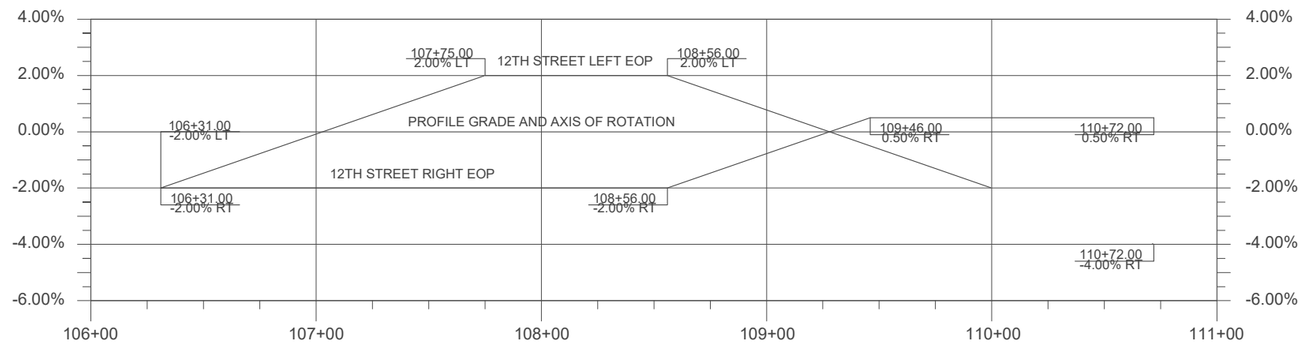
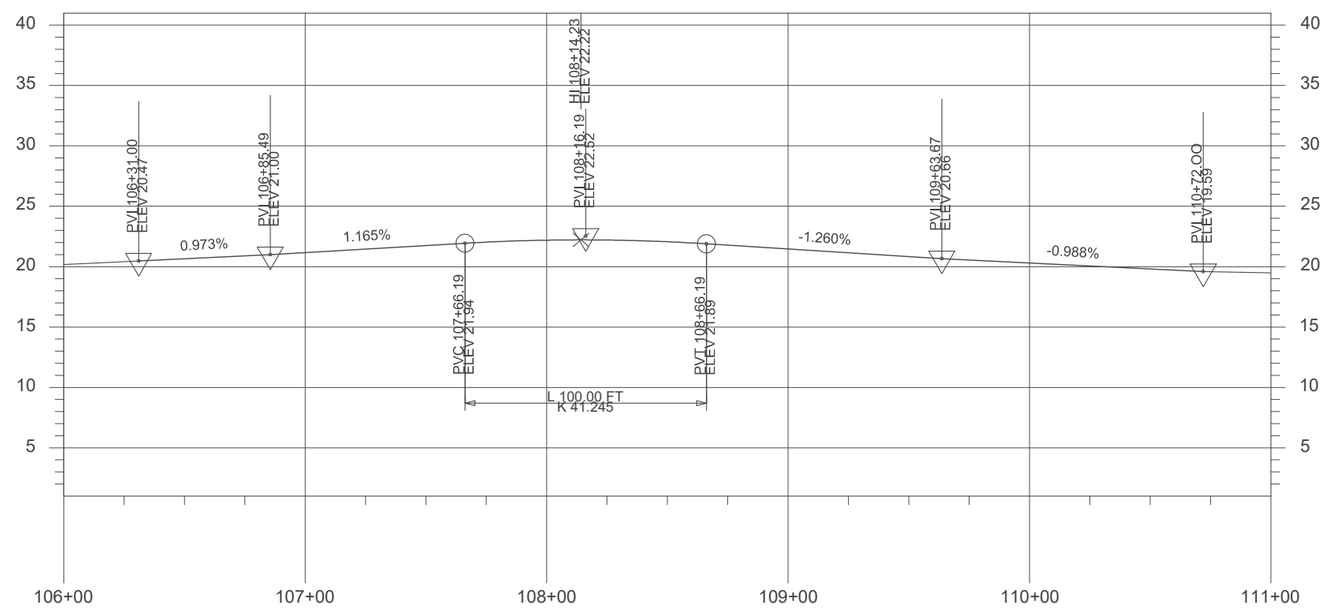


12TH STREET SUPERELEVATION DIAGRAM



12TH STREET ROADWAY PROFILE

BINDING EDGE

PORT OF TACOMA FILE: C:\pwworking\hmm\ports_harbors\pay77565\dms48042\C7.0

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PRINTED BY: PAY77565 Nov 11, 2020
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LOWER WAPATO CREEK HABITAT PROJECT

ROADWAY GRADING 1

C7.0
29 OF 50

CONT/CONS: 071447 | TOWNSHIP: 20N | RANGE: 3E | SECTION: 1
M. ID: 101449.01 | DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)
PHASE: 90% Design | PARCEL: 14 | DRAWING SCALE: AS NOTED

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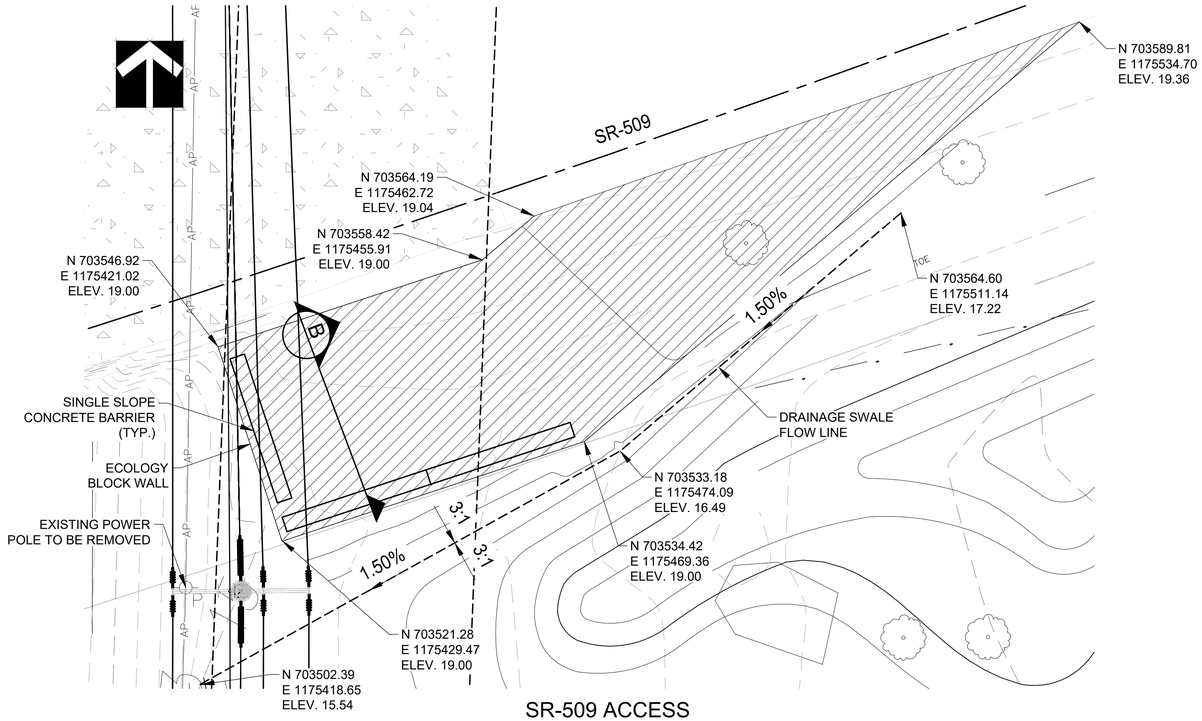
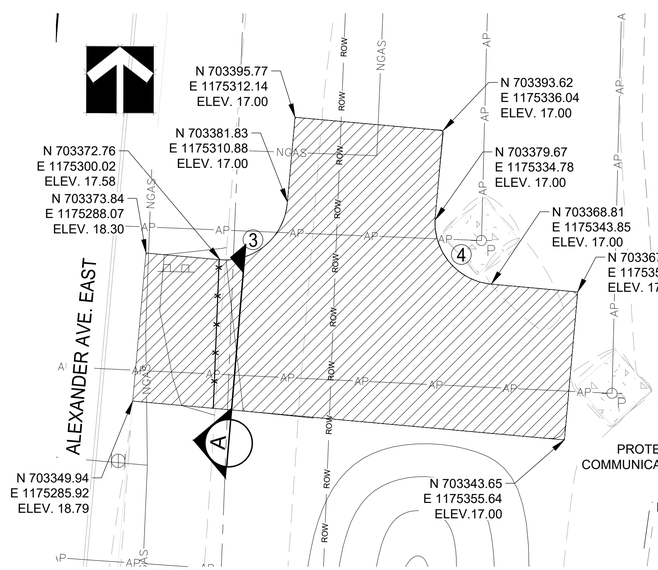
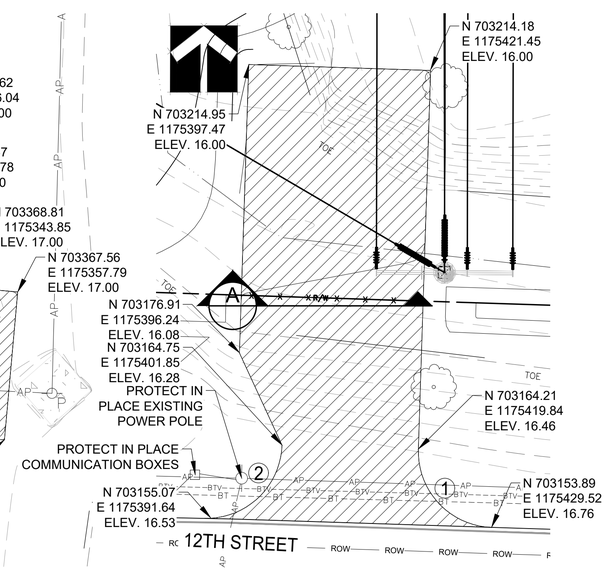


SR-509 ACCESS

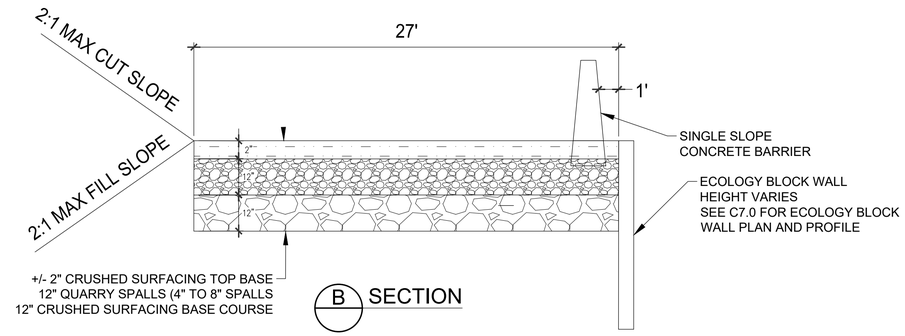


ALEXANDER AVE. ACCESS

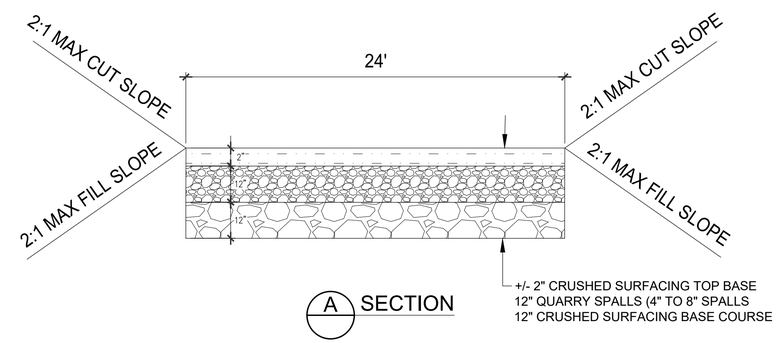


12TH STREET ACCESS

UTILITY ACCESS DETAILS
N.T.S.



B SECTION



A SECTION

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OLI87950 Dec 30, 2020

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LOWER WAPATO CREEK HABITAT PROJECT

ACCESS GRADING

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
C7.1
30 OF 50

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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BINDING EDGE

BRIDGE GENERAL STRUCTURAL DESIGN NOTES

BRIDGE DESIGN SPECIFICATIONS

THE BRIDGE DESIGN IS IN ACCORDANCE WITH THE FOLLOWING DESIGN SPECIFICATIONS:

1. AASHTO LRFD BRIDGE DESIGN SPECIFICATION, 8TH EDITION (2017).
2. WSDOT STANDARD SPECIFICATION LATEST EDITION.
3. WSDOT BRIDGE DESIGN MANUAL.

BRIDGE DESIGN PROCEDURES

1. TRAFFIC BARRIER AND RAILING IS DESIGNED TO MEET THE TEST LEVEL FIVE CRITERIA SET FORTH IN AASHTO LRFD BDS SECTION 13.7.2 AND RELATED SECTIONS.
2. ABUTMENT AND PILE FOUNDATION DESIGN IS IN ACCORDANCE WITH THE FORCE BASED SEISMIC DESIGN PROCEDURES SET FORTH IN THE 2014 AASHTO SEISMIC GUIDE SPECIFICATIONS.

BRIDGE DESIGN GEOTECHNICAL PARAMETERS

1. FOR DETAILED GEOTECHINICAL REPORT SEE GEOTECHNICAL REPORT - DATED NOVEMBER XX, 2020 BY GEOENGINEERS, INC.

BRIDGE GENERAL CONSTRUCTION NOTES

1. CONSTRUCTION SPECIFICATIONS: MATERIALS, CONSTRUCTION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
2. MATERIALS:
   - (A) CONCRETE: SHALL CONFORM TO THE REQUIREMENTS OF SECTION 03 30 00 OF THE PROJECT SPECIFICATION
     - APPROACH SLAB = CLASS 4000A
     - BRIDGE DECK = CLASS 4000D
     - TRAFFIC BARRIER, ABUTMENTS = CLASS 4000
     - CONCRETE-FILLED STEEL TUBES = CLASS 4000P
     - PRECAST PRESTRESSED GIRDERS AT RELEASE = CLASS 6000
     - PRECAST PRESTRESSED GIRDERS AT 28 DAYS = CLASS 7000
     - CONCRETE-FILLED STEEL TUBE REINFORCING: ASTM A706, GRADE 60-WELDABLE
     - ALL OTHER REINFORCING STEEL: ASTM A615, GRADE 60
   - (B) PRESTRESSING STRANDS: AASHTO M203 GRADE 270 0.6" DIAMETER LOW RELAXATION 7-WIRE STRAND, Fpu = 270 KSI
   - (C) STAGGER ALL CAP SPLICES IN ADJACENT BARS BY ONE LENGTH MINIMUM, NO MORE THAN 50% OF REINFORCING BARS IN ANY LAYER SHALL BE SPLICED AT ONE LOCATION.
   - (D) THE PRECAST PRESTRESSED GIRDERS SHALL CONFORM TO SECTION 03 40 00 OF THE PROJECT SPECIFICATIONS. THE TYPE OF LIFTING DEVICE FOR PRECAST MEMBERS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER. PRECAST PRESTRESSED GIRDERS SHALL BE LIFTED NEAR REARING POINTS.
   - (E) UNLESS OTHERWISE NOTED, CONCRETE COVER SHALL BE AS FOLLOWS:
     - CONCRETE CAST AGAINST AND PERMANENTLY IN CONTACT WITH THE GROUND.....3" CLR
     - CONCRETE IN CONTACT WITH GROUND OR EXPOSED TO WEATHER.....2" CLR

SPECIAL INSPECTION SCHEDULE

ESTABLISHED PER IBC 2015 CHAPER 17

ITEMS	CONTINUOUS INSPECTION	PERIODIC INSPECTION	COMMENTS
SOILS			
GRADING, EXCAVATION & FILL		X	BY GEOTECHNICAL ENGINEER
GRADING, EXCAVATION & FILL		X	BY GEOTECHNICAL ENGINEER
STEEL PILES - INSTALLATION & TESTING	X		BY GEOTECHNICAL ENGINEER
CONCRETE			
REINFORCING PLACEMENT		X	
REINFORCING WELDING	X		
REINFORCING COUPLING	X	X	REF. NOTE 5
ANCHOR BOLTS & INSERTS		X	
FORMWORK		X	
PREPARATION OF MIX DESIGNS		X	
PREPARATION OF TEST SPECIMENS	X		
CONCRETE PLACEMENT	X		
EMBEDDED STEEL ITEMS		X	
CURING		X	
PRECAST CONCRETE ERECTION		X	
STRUCTURAL STEEL			
SINGLE PASS FILLET WELDS </ 5/16"		X	REF. NOTE 6
PARTIAL/COMPLETE PENETRATION WELD	X		REF. NOTE 7
OTHER WELDING			
WELDING OF ANCHORS AND STUDS		X	REF. NOTE 8
PREFABRICATED CONSTRUCTION			REF. NOTE 4

f'c 4000PSI SPLICE TABLE

BAR SIZE	TOP BARS	OTHER STRAIGHT BARS	HOOKED BARS
#3	24"	19"	7"
#4	32"	25"	10"
#5	40"	31"	12"
#6	4 "	37"	15"
#7	70"	54"	17"
#	0"	62"	19"
#9	91"	70"	22"
#10	102"	79"	24"
#11	113"	7"	27"

NOTES

1. LENGTHS ARE BASED CLASS "B", CASE 1 SPLICES (MAX OF 50% OF BARS SPLICED AT ONE LOCATION).
2. TOP BARS ARE DEFINED AS ANY HORIZONTAL BAR PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR.
3. STAGGER ALL LAP SPLICES IN ADJACENT BARS BY ONE LAP LENGTH +1'-0" MINIMUM.
4. NO MORE THAN 50% OF THE REINFORCING BARS IN ANY LAYER SHALL BE SPLICED AT ONE LOCATION.
5. FOR EPOXY COATED BARS, LAP SPLICE AND DEVELOPMENT LENGTHS SHALL BE 1.5 TIMES THE VALUE IDENTIFIED IN THE SCHEDULE OF MINIMUM LAP SPLICE AND DEVELOPMENT LENGTHS SHOWN IN THE f'c = 4000PSI SPLICE TABLE.
6. DEVELOPMENT & SPLICE LENGTHS ARE APPLICABLE FOR TENSION OR COMPRESSION.
7. FOR NON-CONTACT LAP SPLICES THE TRANSVERSE CENTER-TO-CENTER SPACING OF SPLICED BARS SHALL NOT EXCEED THE LESSER OF ONE-FIFTH THE REQUIRED LAP SPLICE LENGTH AND 6IN.

BRIDGE DESIGN LOADS

BRIDGE DESIGN LOADS

1. PERMANENT LOADS:

- DC	CONCRETE WEIGHT	155 PCF
	STRUCTURAL STEEL WEIGHT	490 PCF
- DW	FUTURE HMA OVERLAY WEIGHT	35 PSF (ASSUMED 4" OVERLAY)
- EV	UNIT WEIGHT OF SOIL	115-125 PCF
	(TRIANGULAR DISTRIBUTION)	(SEE PROJECT GEOTECH REPORT)
- EH	ACTIVE PRESSURE	244 PSF
	(TRIANGULAR DISTRIBUTION)	
	H STRUCTURE HEIGHT, FT	55/30 PCF ABOVE/BELOW WATER TABLE
	D = SLOPED SOIL HEIGHT ABOVE BOTTOM OF STRUCTURE	900 PSF (MAX)
	PASSIVE PRESSURE	900 PSF
	TRIANGULAR DISTRIBUTION)	

2. TRANSIENT LOADS:

- LL	HL-93 DESIGN TRUCK AXLE LOAD INCLUDING DESIGN LANE LOAD OF 0.064 KSF
- IM	VEHICULAR DYNAMIC LOAD ALLOWANCE APPLIED TO DESIGN TRUCK = 33%
- LS	LIVE LOAD SURCHARGE APPLIED TO ABUTMENT = 64 PSF
- TU	UNIFORM TEMPERATURE RANGE FROM 0' TO 100' FAHRENHEIT

3. SEISMIC DESIGN LOADS AND PARAMETERS: (2014 AASHTO)

- OPERATIONAL IMPORTANCE η_1	1.0
- SITE CLASS	= E
- SPECTRAL ACCELERATION AT 0.2s (S_S)	0. 9g
- SPECTRAL ACCELERATION AT 1.0s (S_1)	0.301g
- S_{DS}	0.918g
- S_{D1}	0. 41g
- PGA	0.56g
- A_S	0.363g
- SEISMIC EARTH PRESSURE (TRIANGULAR DISTRIBUTION) H STRUCTURE HEIGHT, FT	5 .7H PSF (MAX)
- TOTAL STRUCTURE DEAD WEIGHT	1098k

4. LOAD COMBINATIONS: AASHTO LRFD BDS T3.4.1-1

- SERVICE I	: 1.0 DC + 1.0 DW + 1.0 (LL + IM)
- SERVICE II	: 1.0 DC + 0.8 DW + 1.0 (LL + IM)
- STRENGTH I	: 0.9 / 1.25 DC + 0.65 / 1.5 DW + 1.75 (LL + IM)
- FATIGUE I	: 0.5 DC + 0.5 DW + 1.50 (LL + IM)
- EXTREME EVENT I	: 0.9 / 1.25 DC + 0.65 / 1.5 DW + 0.5 (LL + IM) + 1.0 EQ
- EXTREME EVENT II	: 0.9 / 1.25 DC + 0.65 / 1.5 DW + 0.5 (LL + IM) + 1.0 CT

INSPECTION SCHEDULE NOTES:

1. THE ITEMS CHECKED WITH AN "X" SHALL BE INSPECTED IN ACCORDANCE WITH IBC CHAPTER 17 BY A CERTIFIED SPECIAL INSPECTOR FORMAN APPROVED TESTING AGENCY. FOR MATERIAL SAMPLING AND TESTING REQUIREMENTS, REFER TO PROJECT SPECIFICATIONS THE STRUCTURAL NOTES AND THE NOTES BELOW. THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE ARCHITECT, ENGINEER, CONTRACTOR AND BUILDING OFFICIAL. ANY MATERIALS WHICH FAIL TO MEET THE PROJECT SPECIFICATIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER. SPECIAL INSPECTION TESTING REQUIREMENTS APPLY EQUALLY TO ALL BIDDER DESIGNED COMPONENTS. INSPECTION AND TESTING REQUIREMENTS FOR SYSTEMS DESIGNED BY OTHERS SHALL BE DEFINED BY THE REGISTERED DESIGN PROFESSIONAL RESPONSIBLE FOR THEIR DESIGN, EXCEPT THAT THE INSPECTION REQUIREMENTS SHALL NOT BE LESS THAN SPECIFIED IN THIS SCHEDULE.
2. SPECIAL INSPECTION IS NOT REQUIRED FOR WORK PERFORMED BY AN APPROVED FABRICATOR PER IBC 1704.2.5.1 SEE SPECIFICATIONS FOR APPROVAL REQUIREMENTS.
3. CONTINUOUS SPECIAL INSPECTION MEANS THAT THE SPECIAL INSPECTOR IS ON THE SITE AT ALL TIMES OBSERVING THE WORK REQUIRING SPECIAL INSPECTION. PERIODIC SPECIAL INSPECTION MEANS THAT THE SPECIAL INSPECTOR IS ON SITE AT TIME INTERVALS NECESSARY TO CONFIRM THAT ALL WORK REQUIRING SPECIAL INSPECTION IS IN COMPLIANCE (IBC 1702.1).
4. INSPECTION FOR PREFABRICATED CONSTRUCTION SHALL BE THE SAME AS IF THE MATERIAL USED IN THE CONSTRUCTION TOOK PLACE ON SITE. CONTINUOUS INSPECTION WILL NOT BE REQUIRED DURING PREFABRICATION IF THE APPROVED AGENCY CERTIFIES THE CONSTRUCTION AND FURNISHES EVIDENCE OF COMPLIANCE. SEE SPECIFICATIONS FOR APPROVED AGENCIES AND SUBMITTAL REQUIREMENTS.
5. CONTINUOUS INSPECTION IS REQUIRED FOR INSTALLATION OF COUPLERS. PERIODIC INSPECTION MAY BE USED FOR VERIFICATION OF COUPLER MATERIALS.
6. ALL WELDS SHALL BE VISUALLY INSPECTED.
7. ALL COMPLETE PENETRATION WELDS SHALL BE TESTED ULTRASONICALLY OR BY USING ANOTHER APPROVED METHOD.

. WELDED DOWELS AT THE TOP OF PILES SHALL BE PERIODICALLY INSPECTED PRIOR TO INSTALLATION OF CAP REBAR REINFORCEMENT.

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LOWER WAPATO CREEK HABITAT PROJECT
FOUNDATION PLAN

6656
S1.1
31 OF 50

PRINTED BY: OLI87950 Nov 13, 2020
PORT ADDRESS: 1 SITCOM PLAZA TACOMA, WA 98421

CONT/CONS: 071447 | TOWNSHIP: 20N | RANGE: 3E | SECTION: 1
M. ID: 101449.01 | DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)
PHASE: 90% Design | PARCEL: 14 | DRAWING SCALE: AS NOTED

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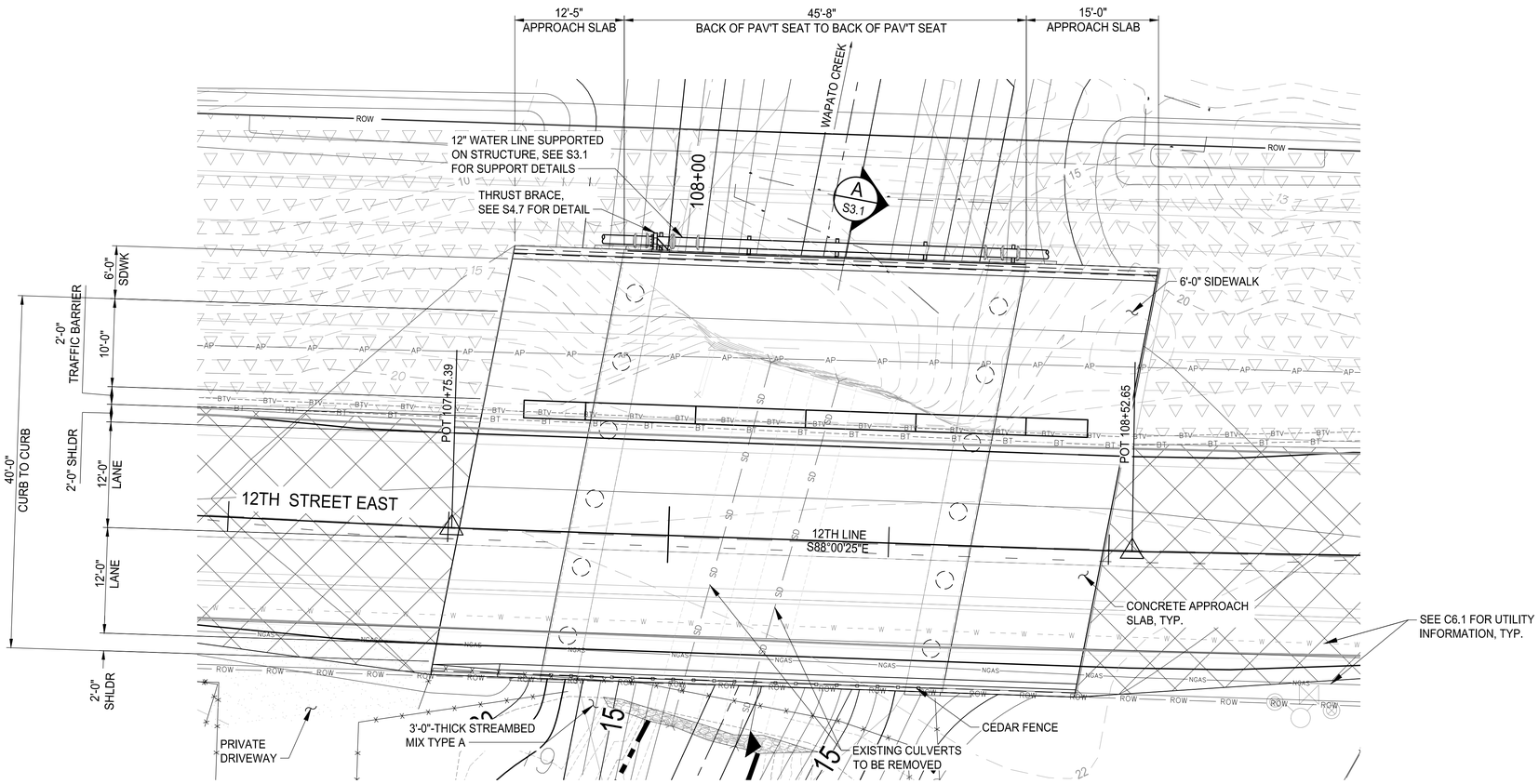
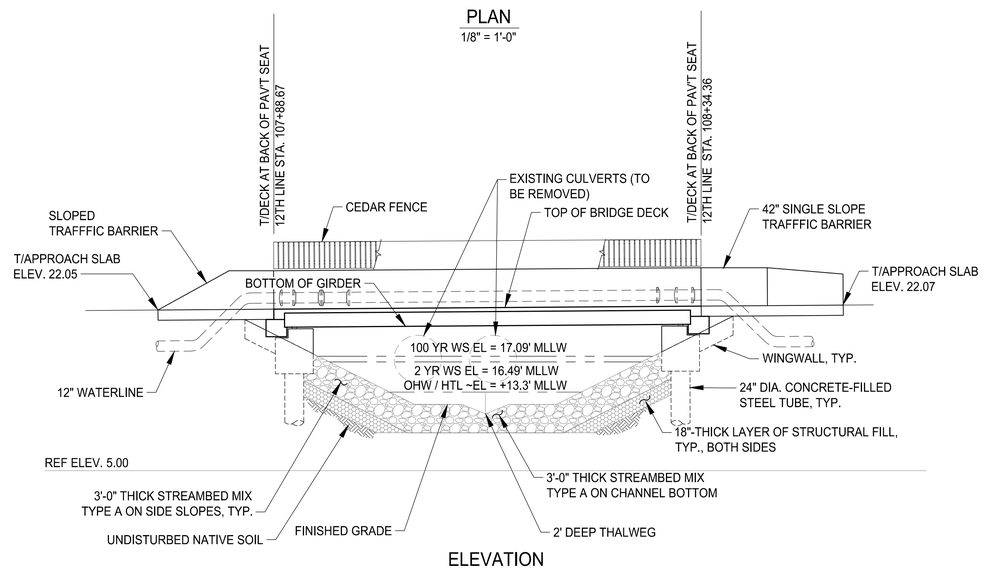
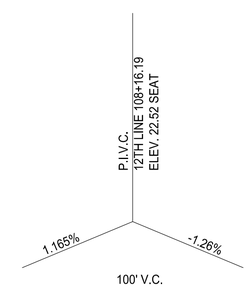


PLAN
1/8" = 1'-0"



ELEVATION
1/8" = 1'-0"



12TH LINE PROFILE

PC GIRDER (18" VOIDED SLAB)
LOADING: HL-93

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LOWER WAPATO CREEK HABITAT PROJECT
BRIDGE LAYOUT

TOWNSHIP: 20N | RANGE: 3E | SECTION: 1
DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)
PARCEL: 14 | DRAWING SCALE: AS NOTED

6656
S1.2
32 OF 50

CONT/CONS: 071447
M. ID: 101449.01
PHASE: 90% Design

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FOUNDATION PLAN

3/16" = 1'-0"

PILE SCHEDULE				
PILE #	LENGHT (FT)	TIP ELEV. (FT)	TOP OF PILE ELEV. (FT)	REQUIRED GEOTECHNICAL CAPACITY (KIPS)
1	75.00	-59.99	~~15.01~~ 15.18	360
2	75.00	-59.99	~~15.01~~	360
3	75.00	-59.99	~~15.01~~	360
4	75.00	-59.99	~~15.01~~	360
5	75.00	-59.99	~~15.01~~	360
6	75.00	-59.99	~~15.01~~	360
7	75.00	-59.96	~~15.04~~ 15.21	360
8	75.00	-59.96	~~15.04~~	360
9	75.00	-59.96	~~15.04~~	360
10	75.00	-59.96	~~15.04~~	360
11	75.00	-59.96	~~15.04~~	360
12	75.00	-59.96	~~15.04~~	360

NOTES

1. ALL ELEVATIONS RELATIVE TO MLLW (PORT OF TACOMA TIDAL DATUM).
2. REQUIRED GEOTECHNICAL CAPACITY IS THE MINIMUM REQUIRED ULTIMATE SHAFT CAPACITY. A RESISTANCE FACTOR OF 0.55 IS USED TO DETERMINE NOMINAL GEOTECHNICAL STRENGTH OF PILES.

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LOWER WAPATO CREEK HABITAT PROJECT

FOUNDATION PLAN

6656
S2.1
33 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M.ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
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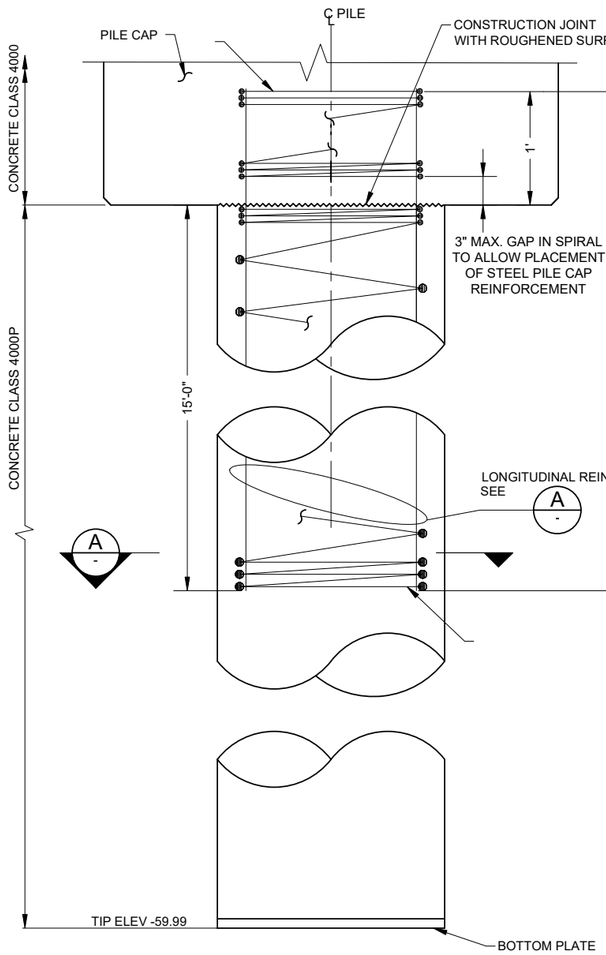
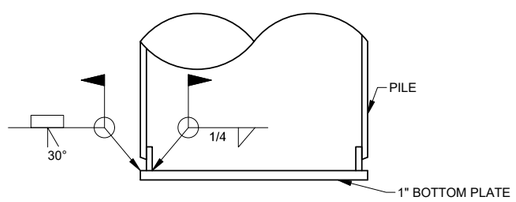


ELEVATION

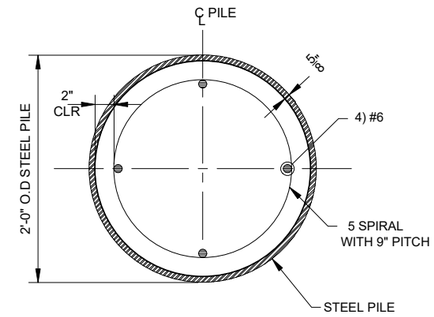


D - BOTTOM PLATE DETAILS
NTS

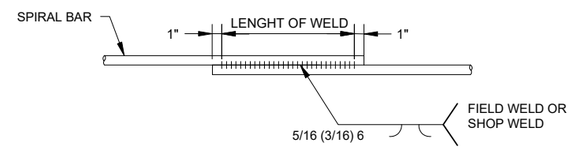
NOTES:

1. SEE "CENTRALIZER DETAIL" THIS SHEET

* SEE SPIRAL TERMINATION DETAIL.



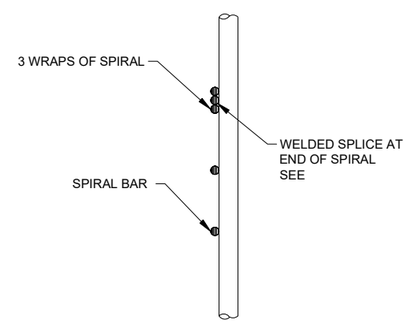
A - DETAIL
1/2" = 1'-0"



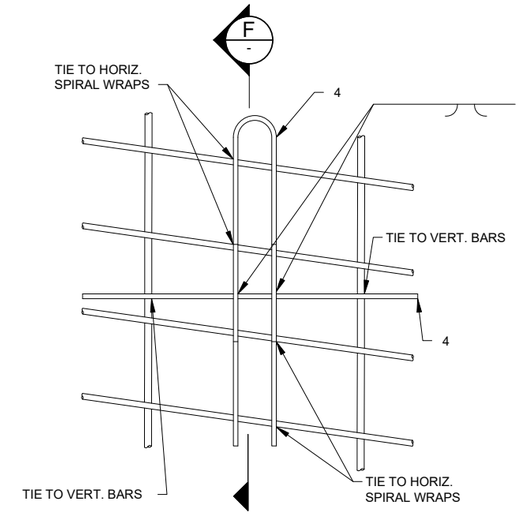
C - WELDED LAP SPLICE DETAIL
NTS

WELDING SHALL MEET THE REQUIREMENTS OF STD. SPEC. 6-02.3(24)E.

PILE SPIRAL OPTIONS



E - SPIRAL TERMINATION DETAIL
NTS



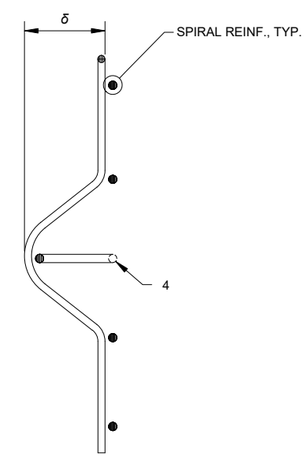
B - CENTRALIZER DETAIL
NTS

EPOXY COAT CENTRALIZER OR PAINT
WITH INORGANIC ZINC AFTER
FABRICATION

NOTES:
EACH LEG SHOULD BE TIED TO TWO SPIRALS.

SEE SPECIAL PROVISIONS FOR SPACING
REQUIREMENTS.

δ - CONCRETE COVER - 1/2"



F - VIEW
NTS

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LOWER WAPATO CREEK
HABITAT PROJECT
TYPICAL PILE DETAILS

6656
S2.2
34 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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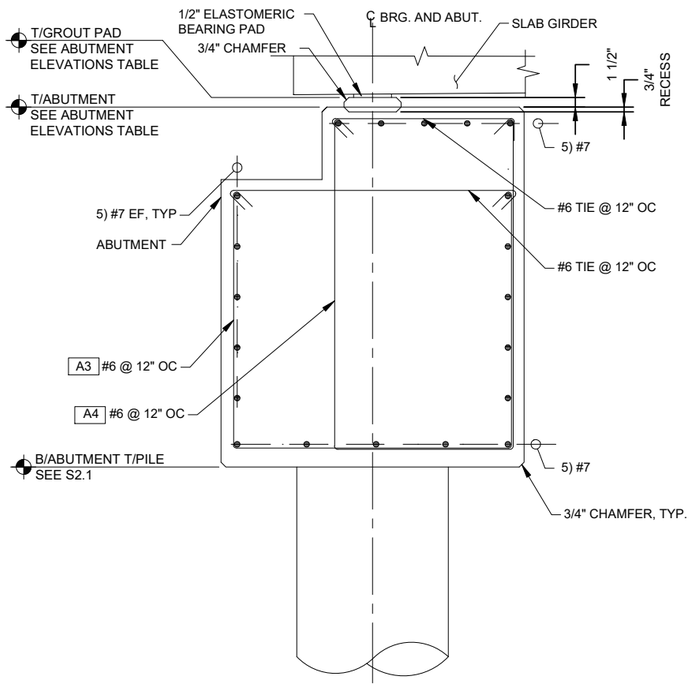
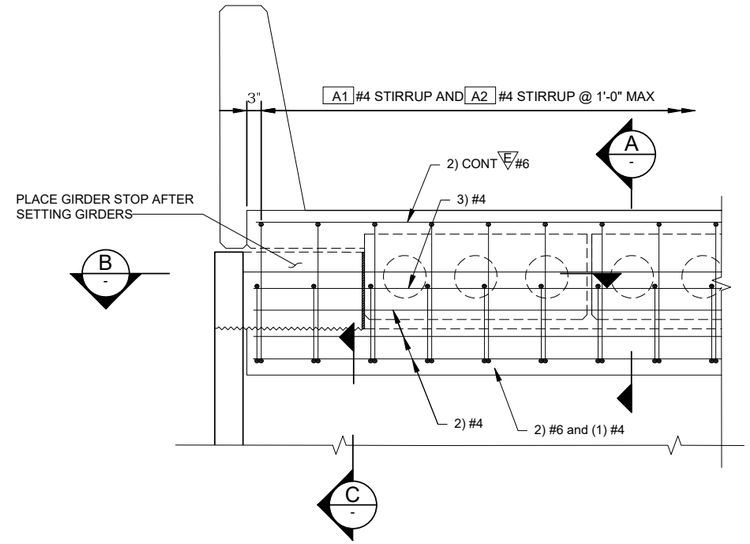
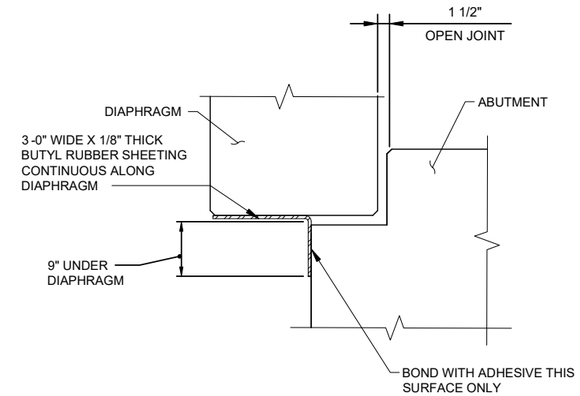


A S2.1 SECTION 1" 1'-0"

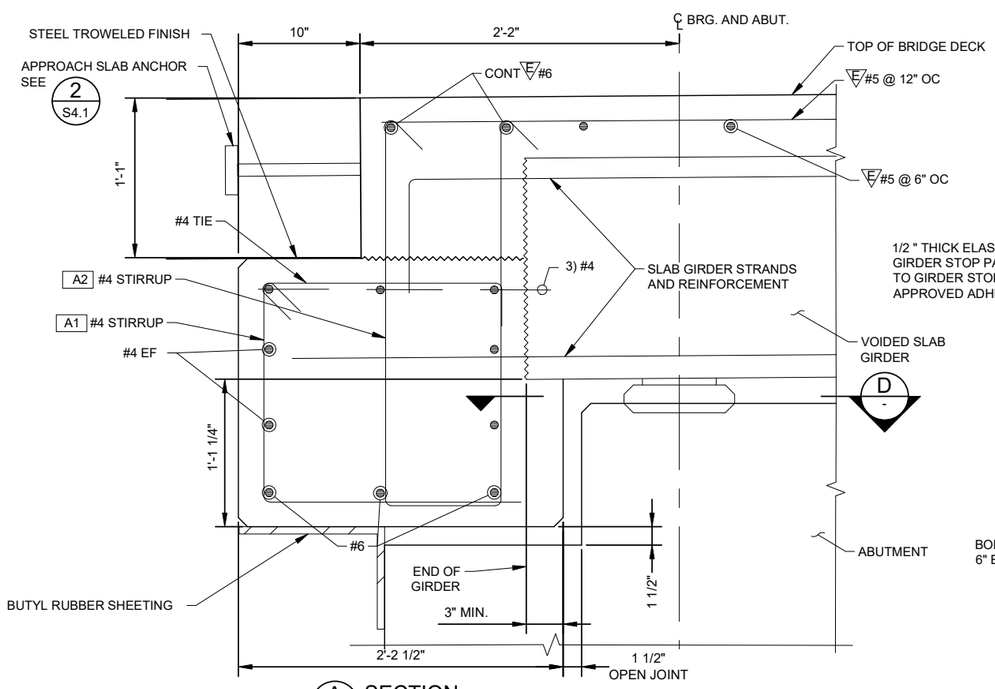


B - SECTION 3/4" 1'-0"

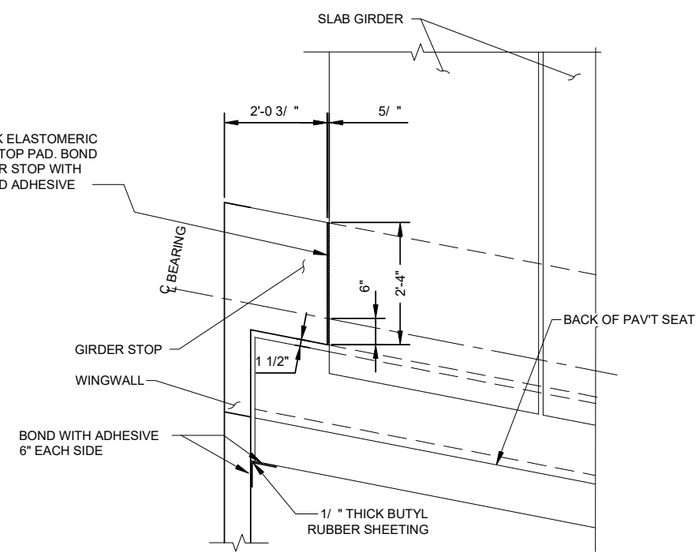
ABUTMENT ELEVATIONS		
LOCATION	ABUTMENT 1	ABUTMENT 2
TOP OF ABUTMENT	19.76	19.79
TOP OF GROUT PAD	19. 9	19.92



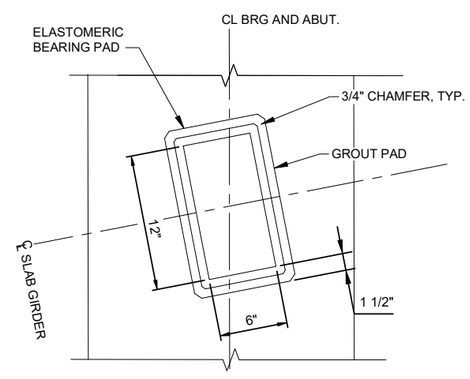
C - SECTION 1" 1'-0"



A - SECTION 3/4" = 1'-0"



B - SECTION 3/4" 1'-0"



D - SECTION 1" 1'-0"

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NOTE:
FULL BEARING OF SLAB UNIT IS REQUIRED
AT EACH ELASTOMERIC BEARING.

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LOWER WAPATO CREEK
HABITAT PROJECT
ABUTMENT DETAILS

6656
S2.3
35 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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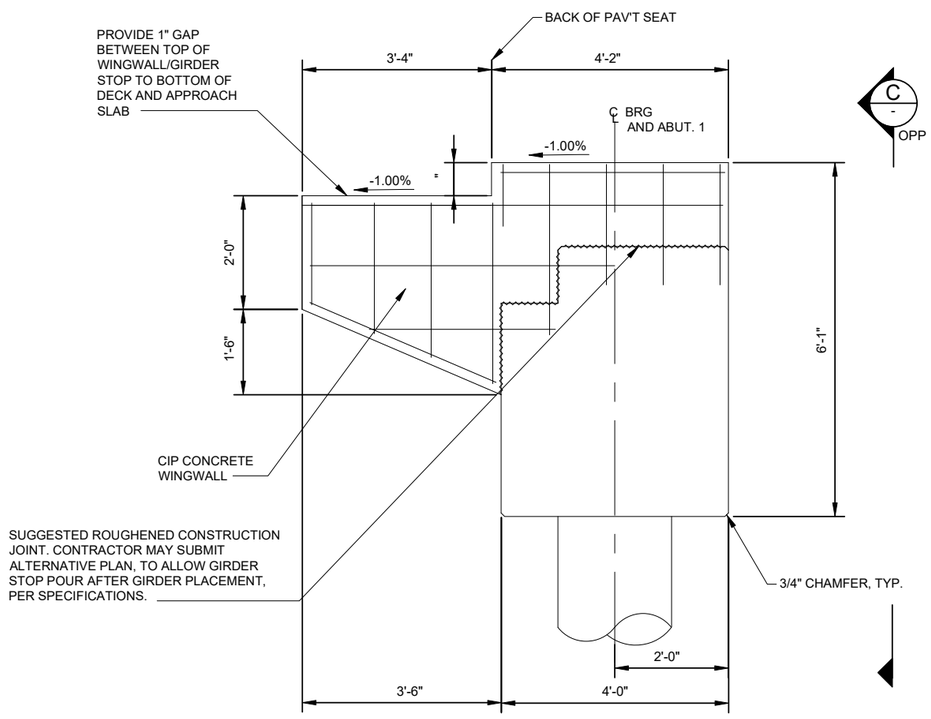
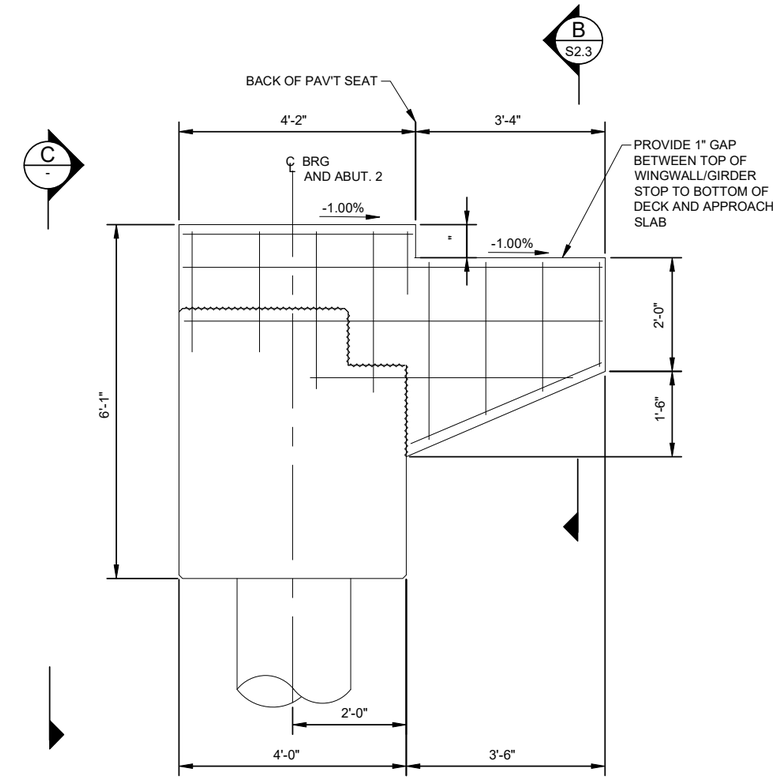
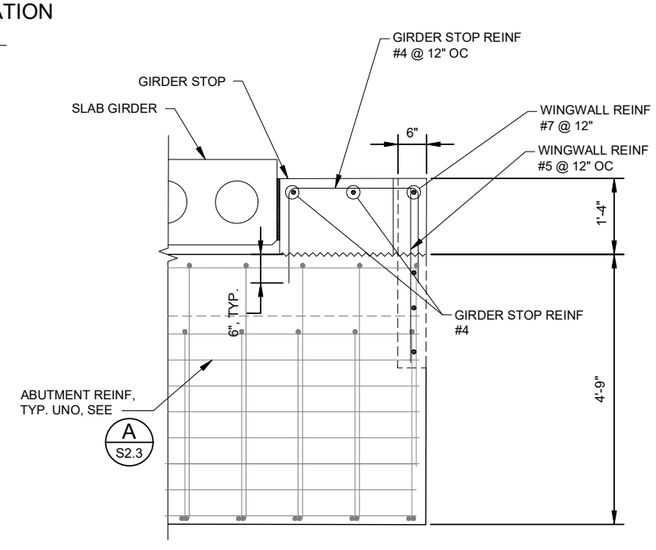


SW WINGWALL ELEVATION (NW OPP HAND)
A / S2.1 3/4" 1'-0"



SE WINGWALL ELEVATION (NE OPP HAND)
B / S2.1 3/4" 1'-0"



EAST SECTION (WEST OPP HAND)
C / - 3/4" 1'-0"

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LOWER WAPATO CREEK HABITAT PROJECT
WINGWALL DETAILS

6656
S2.4
36 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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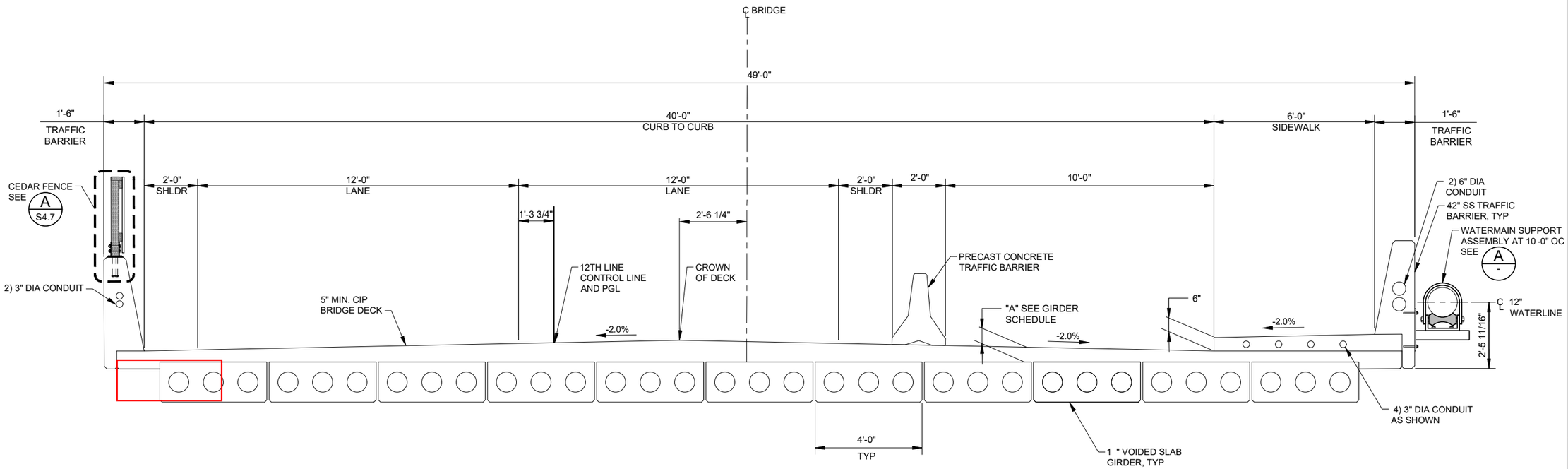
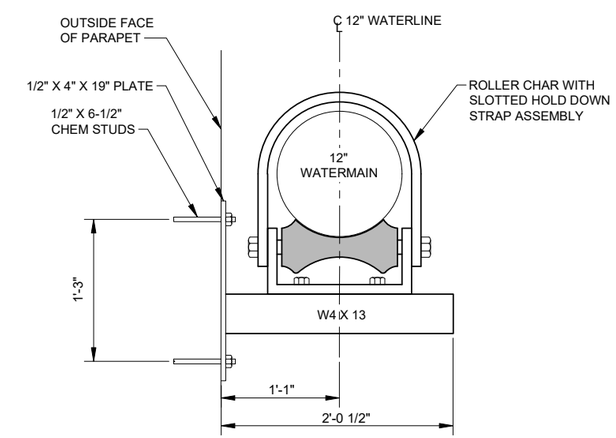


A S1.2 TYPICAL SECTION
1/2" 1'-0"



A - DETAIL
1 1/2" 1'-0"

NOTE:

DO NOT PIN PRECAST CONCRETE TRAFFIC BARRIER TO BRIDGE DECK.

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LOWER WAPATO CREEK HABITAT PROJECT

TYPICAL SECTION

6656
S3.1
37 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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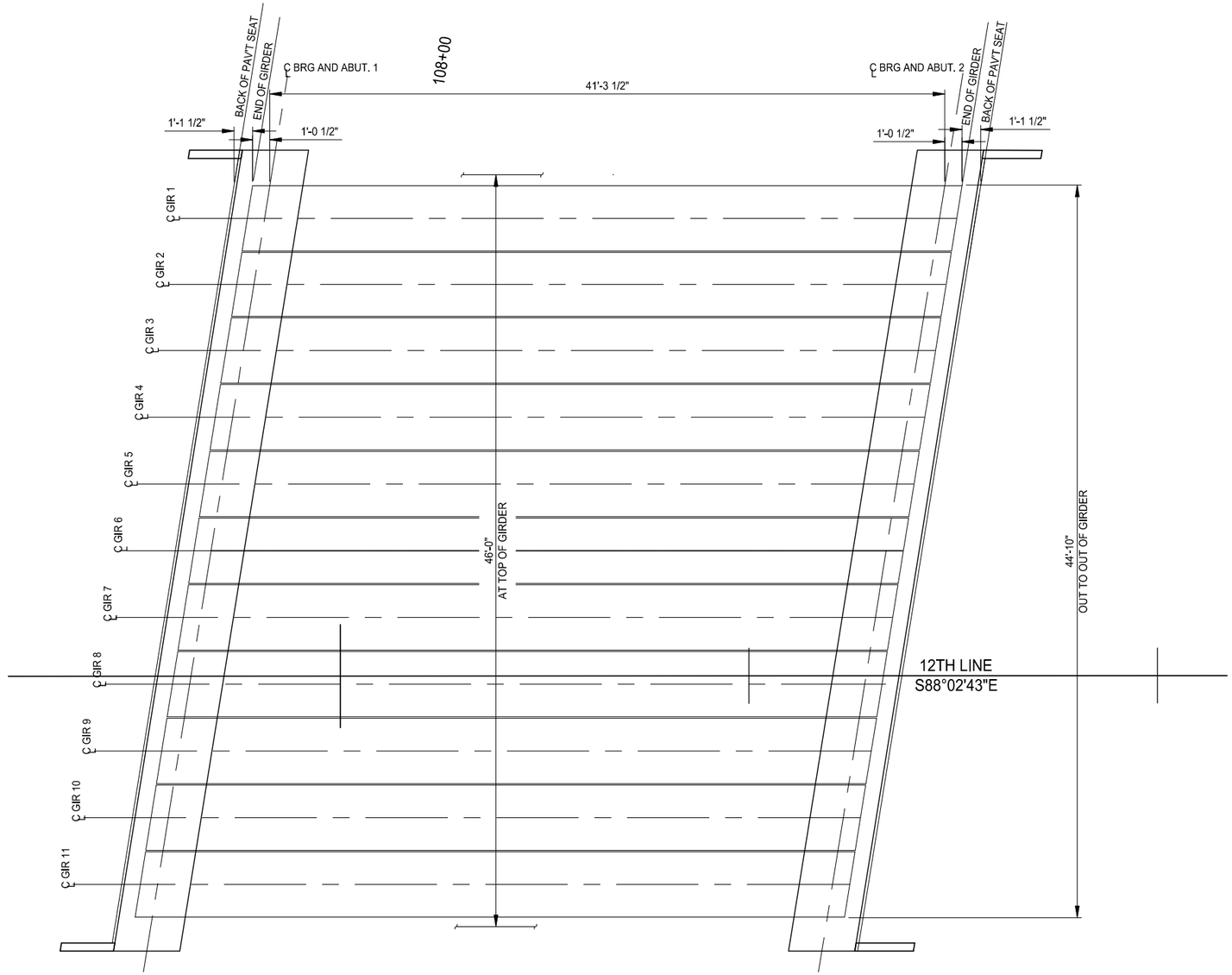
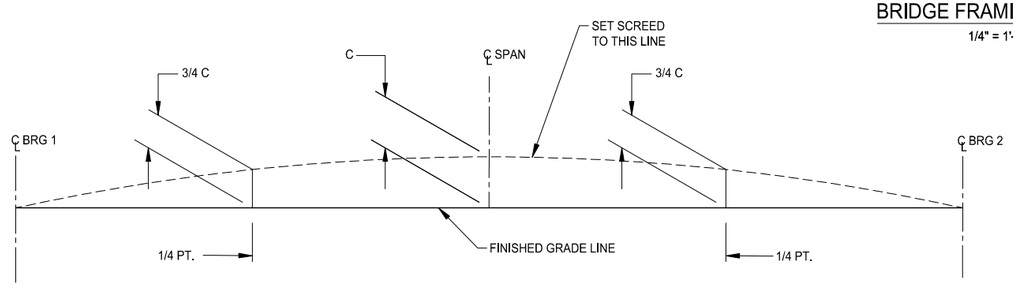


BRIDGE FRAMING PLAN

1/4" = 1'-0"



SCREED SETTING DIMENSIONS

FOR DIMENSION "C" SEE GIRDER SCHEDULE

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LOWER WAPATO CREEK HABITAT PROJECT

FRAMING PLAN AND CAMBER DIAGRAM

6656
S3.2
38 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101400	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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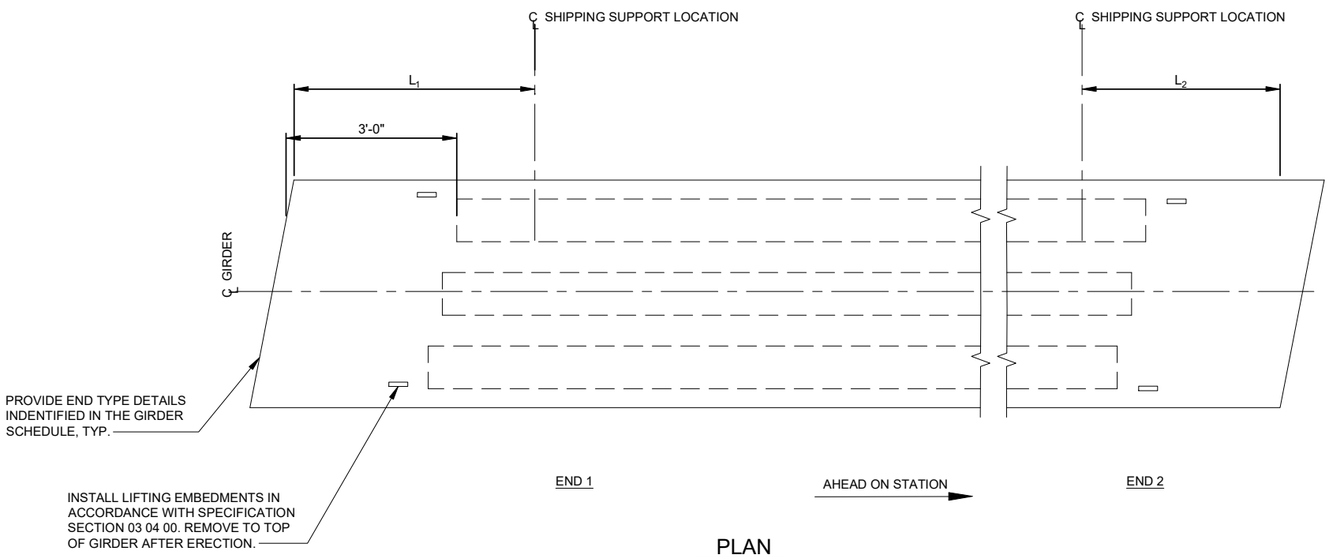
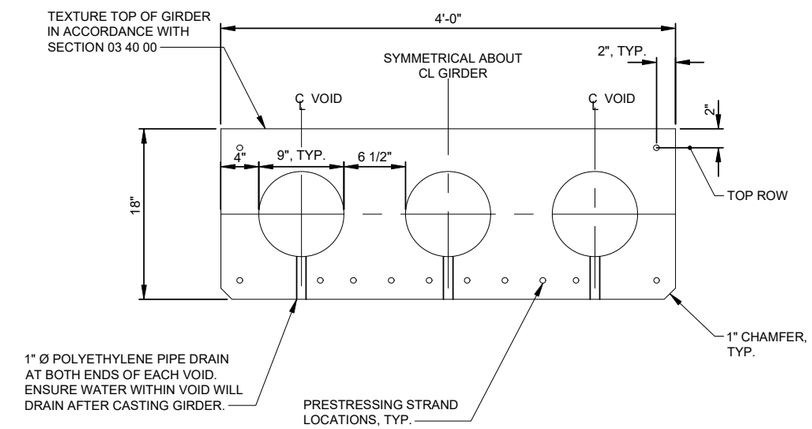


PLAN
3/4" 1'-0"



A / - TYPICAL GIRDER SECTION
1 1/2" 1'-0"

GIRDER SCHEDULE

SPAN	GIRDER	GIRDER HEIGHT H	GIRDER WIDTH W	PLAN LENGTH (ALONG GIRDER GRADE) SEE GIRDER NOTE 1)	VOIDS		GIRDER END DETAILS		MIN. CONC. COMP. STRENGTH		PRESTRESSING STRANDS (SEE GIRDER NOTES 2-4)								"A" DIMENSION AT CL BEARINGS	DECK SCREED CAMBER C	MIDSPAN VERTICAL DEFLECTION D		TRANSVERSE REINFORCEMENT									LONGITUDINAL REINFORCEMENT				SHIPPING AND HANDLING DETAILS				
											ROW 1			ROW 2			TOP ROW						ZONE 1			ZONE 2			ZONE 3			G1		G2						
					NUMBER	DIAMETER	END 1 TYPE	END 2 TYPE	@ 28- DAYS F'C (KSI)	@ RELEASE F'CI (KSI)	PERMANENT STRANDS	EXTENDED NUMBER AND LENGTH	DEBONDED NUMBER AND LENGTH	PERMANENT STRANDS	EXTENDED NUMBER AND LENGTH	DEBONDED NUMBER AND LENGTH	PERMANENT STRANDS	TEMPORARY STRANDS			LOWER BOUND @ 40 DAYS	UPPER BOUND @ 120 DAYS	BAR SIZE	SPACING	LENGTH	BAR SIZE	SPACING	LENGTH	BAR SIZE	SPACING	LENGTH	BAR SIZE	NO. OF BARS	BAR SIZE	NO. OF BARS	L	L1	L2	K ø MINIMUM SHIPPING SUPPORT ROTATIONAL SPRING CONSTANT	Wcc MINIMUM SHIPPING SUPPORT CNTR-TO-CNTR WHEEL SPACING
1	1	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	5 1/2"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5'	4	9"	6	4	4	4	4	2	2	2'	40000 KP-IN/RAD	6 -0"
1	2	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	6 1/2"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5	4	6'-9"	6	4	4	4	4	2	2'	2	40000 KP-IN/RAD	
1	3	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	7 1/2"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5'	4	6'-9"	6	4	4	4	4	2	2	2'	40000 KP-IN/RAD	
1	4	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	1/2"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5	4	6'-9"	6	4	4	4	4	2	2'	2	40000 KP-IN/RAD	
1	5	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	9 1/2"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5'	4	6'-9"	6	4	4	4	4	2	2	2'	40000 KP-IN/RAD	
1	6	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	9"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5	4	6'-9"	6	4	4	4	4	2	2'	2	40000 KP-IN/RAD	
1	7	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5'	4	6'-9"	6	4	4	4	4	2	2	2'	40000 KP-IN/RAD	
1		1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	7"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5	4	6'-9"	6	4	4	4	4	2	2'	2	40000 KP-IN/RAD	
1	9	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	6"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5'	4	6'-9"	6	4	4	4	4	2	2	2'	40000 KP-IN/RAD	
1	10	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	5"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5	4	6'-9"	6	4	4	4	4	2	2'	2	40000 KP-IN/RAD	
1	11	1	4	43'-4 1/2"	3	9.0"	A	A	7.0	6.0	10	4 @ 1 -4"	0	0	0	0	2	0	5"	1/4"	3/ "	7/ "	4	3"	1	4	5"	5'	4	6'-9"	6	4	4	4	4	2	2	2'	40000 KP-IN/RAD	

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LOWER WAPATO CREEK HABITAT PROJECT
GIRDER DETAILS
1 OF 2

6656
S3.3
39 OF 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M.ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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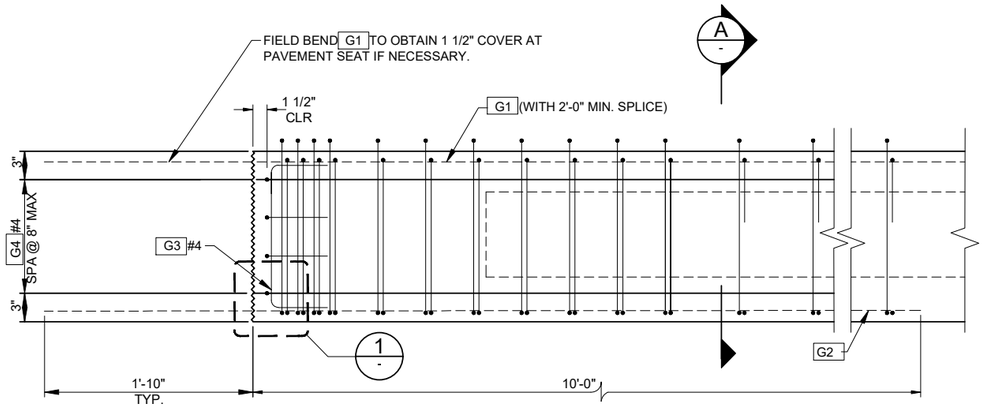
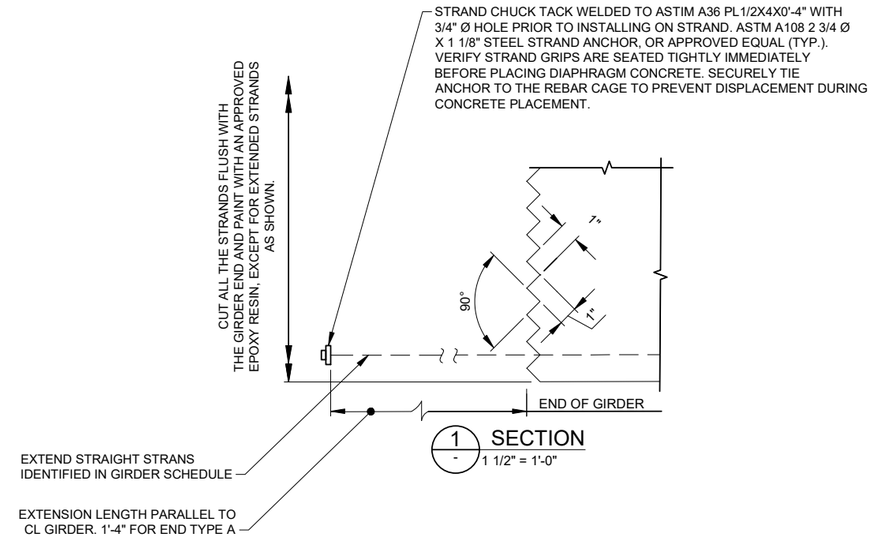
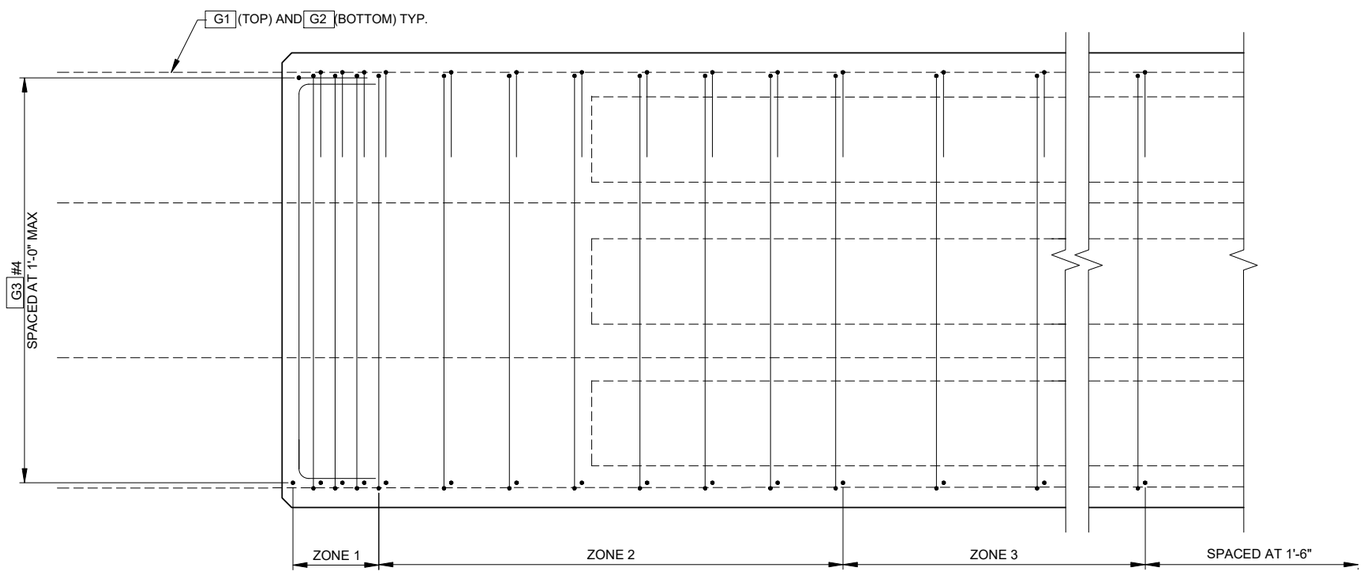


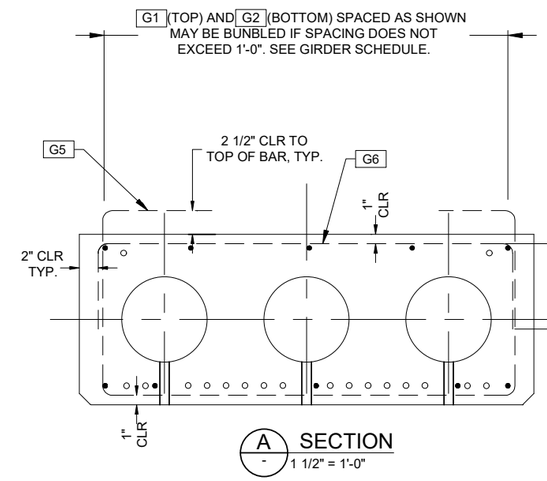
B ELEVATION
1 1/2" = 1'-0"
(STRANDS NOT SHOWN)



1 SECTION
1 1/2" = 1'-0"



C PLAN
1 1/2" = 1'-0"



A SECTION
1 1/2" = 1'-0"

GIRDER NOTES

1. PLAN LENGTH SHALL BE INCREASED AS NECESSARY TO COMPENSATE FOR SHORTENING DUE TO RESTRESS AND SHRINKAGE.
2. ALL STRANDS SHALL BE 0.6" DIA AASHTO M202 GRADE 270 LOW RELAXATION STRANDS, JACKED TO 202.5 KSI. STANDS SHALL BE SYMMETRICAL ABOUT THE GIRDER CENTERLINE. EXTERIOR STRANDS IN EACH ROW SHALL BE FULLY BONDED.
3. SPACE EXTENDED STRANDS SYMMETRICALLY AND EVENLY ACROSS GIRDER WIDTH. STAGGER EXTENDED STAND LOCATIONS WITH RESPECT TO GIRDERS IN ADJACENT SPANS.
4. DEBONDED STRANDS SHALL BE DEBONDED AT EACH GIRDER END FOR THE INDICATED LENGTH PARALLEL TO THE GIRDER CENTERLINE. DEBONDED STRANDS SHALL NO BE EXTENDED PAST GIRDER ENDS. DEBONDED STRAND SHALL BE SYMMETRICALLY PLACED ABOUT THE GIRDER CENTERLINE. DEBONDED LENGTHS OF PAIRS OF STRANDS THAT ARE SYMMETRICALLY POSITIONED ABOUT THE GIRDER CENTERLINE SHALL BE EQUAL.
5. DEFORMED WELDED WIRE REINFORCEMENT MAY BE SUBSTITUTED FOR MILD REINFORCEMENT IN ACCORDANCE WITH SPECIFICATION SECTION 03 40 00.

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LOWER WAPATO CREEK HABITAT PROJECT
GIRDER DETAILS
2 OF 2

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PARCEL: 14	DRAWING SCALE: AS NOTED	

6656
S3.4
40 OF 50

CONT/CONS:	071447	M. ID:	101449.01
PHASE:	90% Design		

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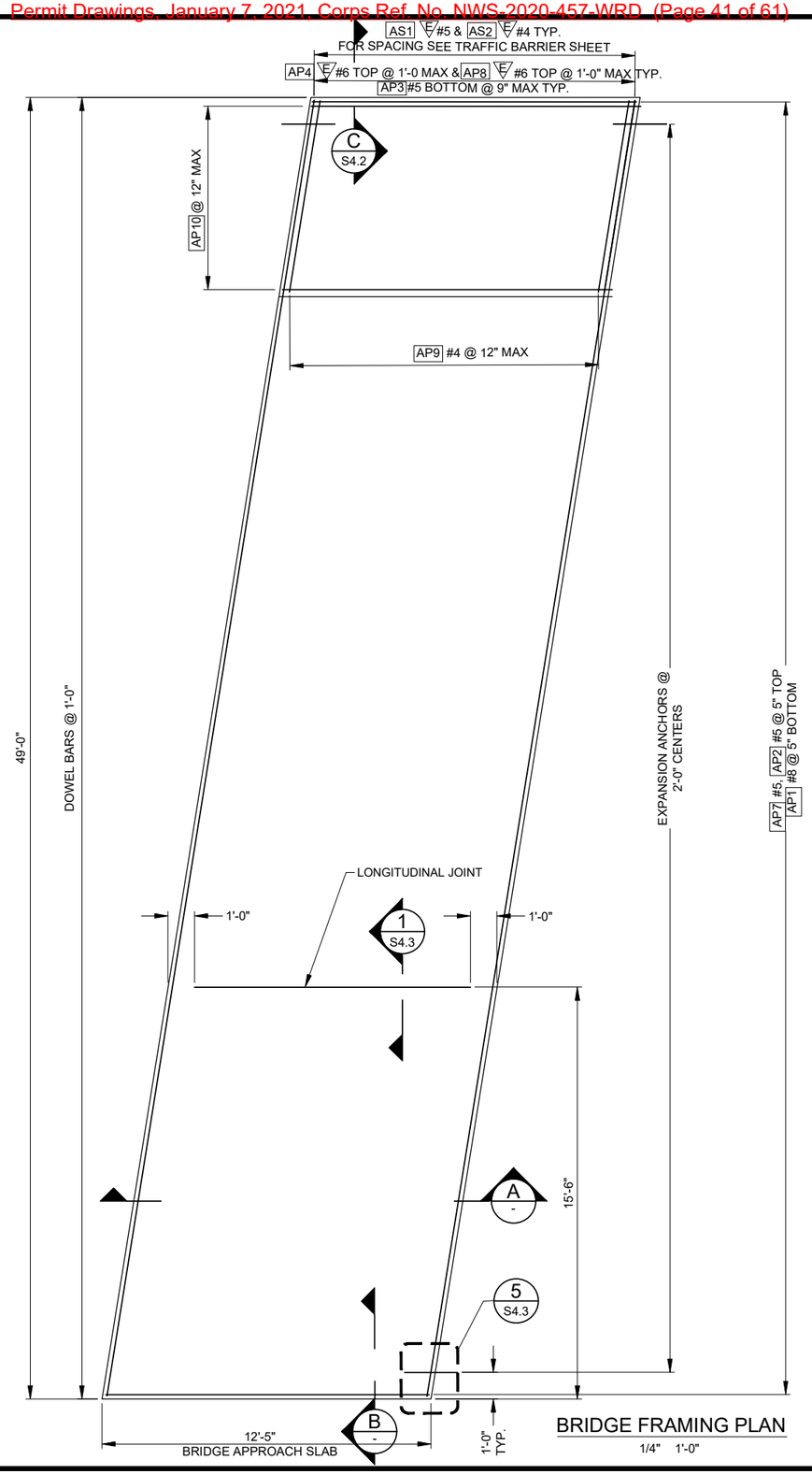
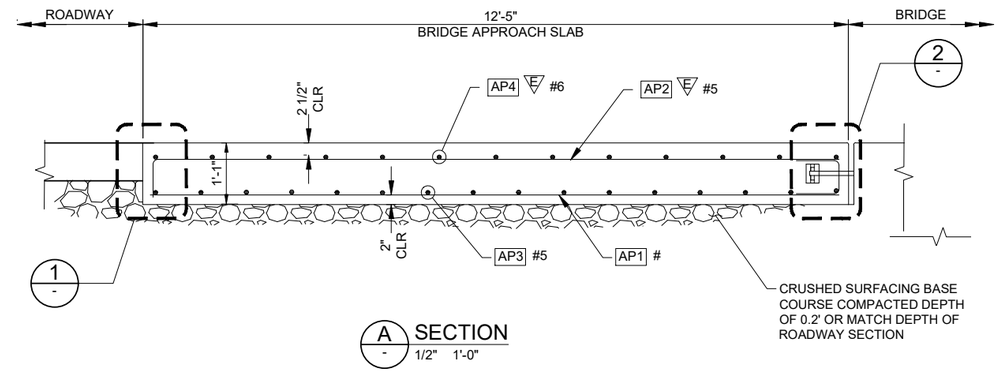
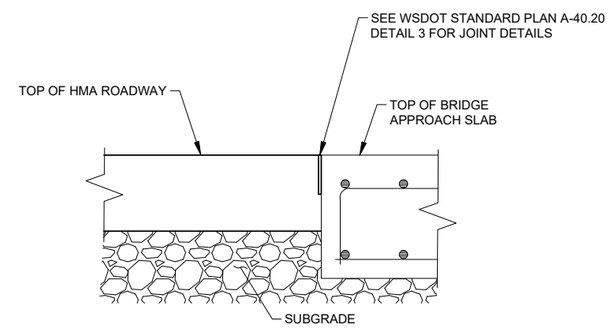


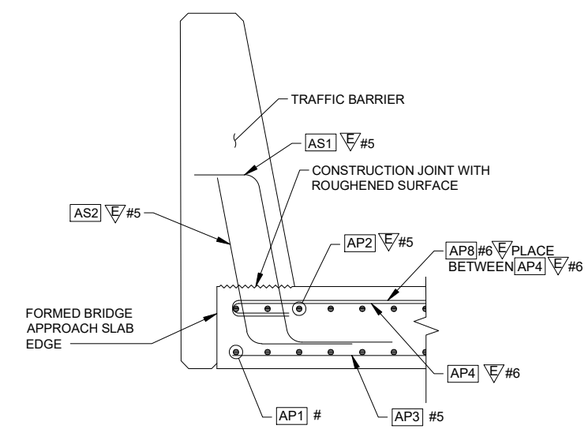
BRIDGE FRAMING PLAN
1/4" 1'-0"



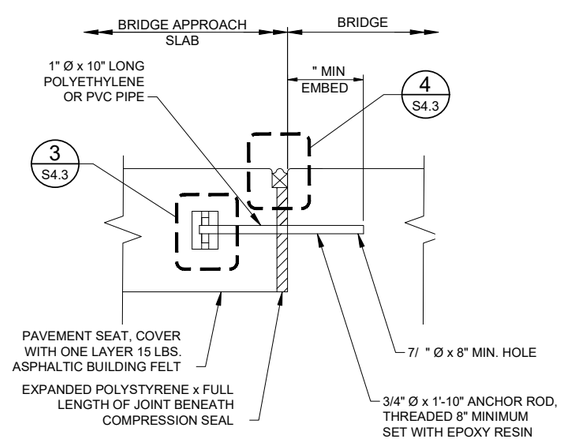
A - SECTION
1/2" 1'-0"



A - HMA ROADWAY JOINT DETAIL
1" 1'-0"



B - SECTION
S4.1, S4.2 3/4" 1'-0"



2 - DETAIL
1 1/2" 1'-0"

NOTES

1. ALL EDGES OF BRIDGE APPROACH SLAB SHALL HAVE 1/2" RADIUS EXCEPT AT LONGITUDINAL JOINTS.
2. LONGITUDINAL JOINTS SHALL BE PLACED ON LANE LINES AND SHALL BE CONSTRUCTED AND SEALED IN ACCORDANCE WITH SPECIFICATION SECTION 03 30 00. JOINTS MAY BE EITHER A SAWCUT CRACK CONTROL JOINT OR A CONSTRUCTION JOINT. SAWCUT JOINTS SHALL TERMINATE 1'-0" BEFORE REACHING EDGE OF SLAB AND MUST BE SAW CUT AS SOON AS POSSIBLE AFTER PLACEMENT OF CONCRETE. SEE "LONGITUDINAL JOINT DETAIL" ON BRIDGE APPROACH SLAB DETAILS 3 OF 3.
3. THE MINIMUM LAP SPLICE OF #5 IS 2'-0" #5 IS 2'-6", #6 IS 3'-0" AND #8 IS 3'-3". ALL LAP SPLICES SHALL BE STAGGERED SO THAT NO MORE THAN 50% OF REBAR IS SPLICED AT THE SAME LOCATION. LAP SPLICES SHALL BE LOCATED WITHIN THE MIDDLE HALF OF THE BRIDGE APPROACH SLAB. OPTIONAL SPLICES ARE ALLOWED FOR AP4 #6.
4. FOR TRAFFIC BARRIER, INCLUDING ANY BRIDGE APPROACH SLAB BLOCKOUT INFORMATION, SEE TRAFFIC BARRIER SHEETS.

90% DESIGN
FOR AGENCY REVIEW

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MOTT MACDONALD
1601 5th Avenue
Suite 800
Seattle, Washington 98101
T +1 (425) 77 6243

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PORT ADDRESS: 1 SITCOM PLAZA
TACOMA, WA 98421

LOWER WAPATO CREEK HABITAT PROJECT
APPROACH SLAB DETAILS
1 of 3

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PARCEL: 14	DRAWING SCALE: AS NOTED	

6656
S4.1
41 OF 50

CONT/CONS: 071447	
M. ID: 101449.01	
PHASE: 90% Design	

BINDING EDGE

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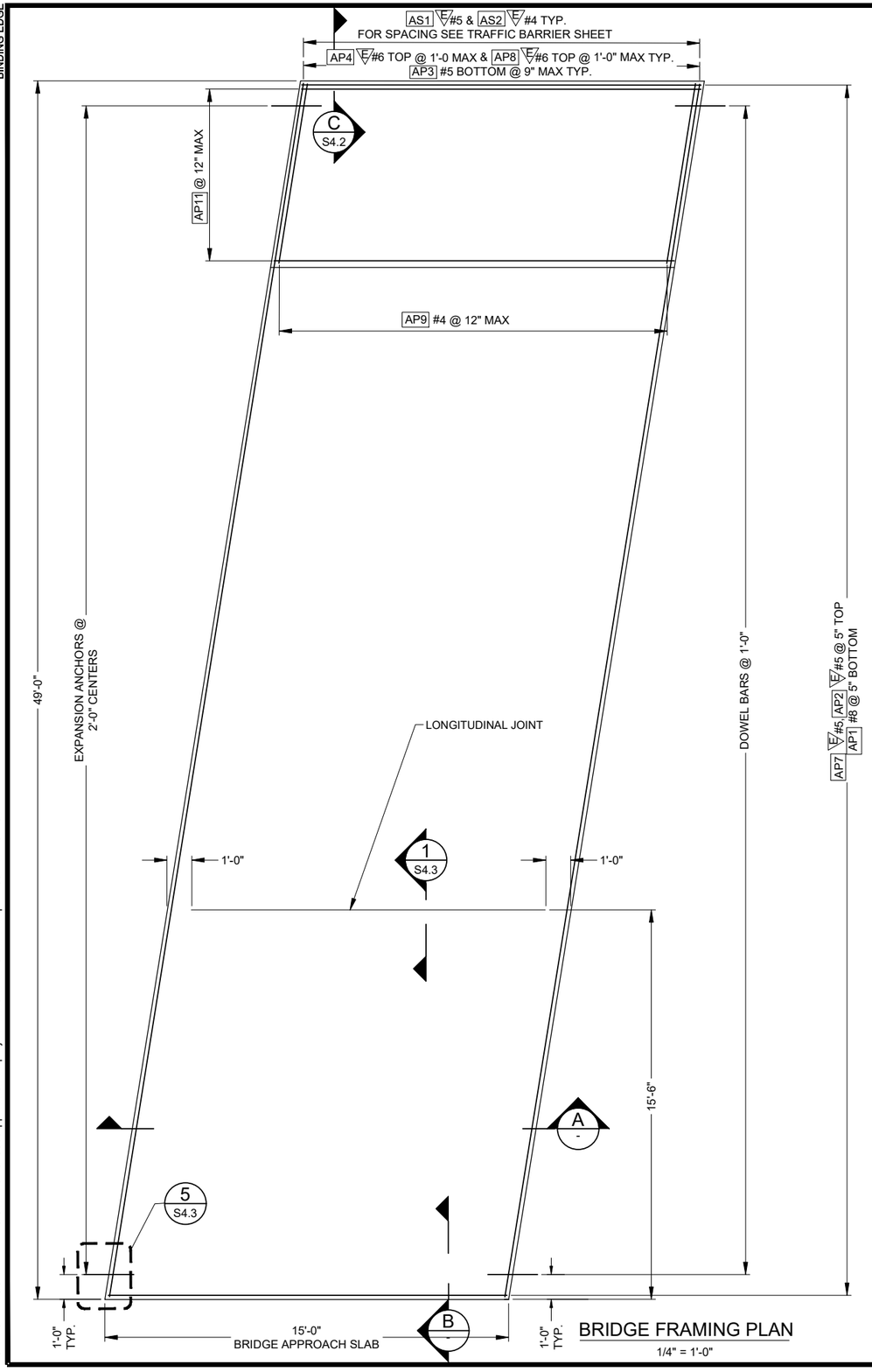
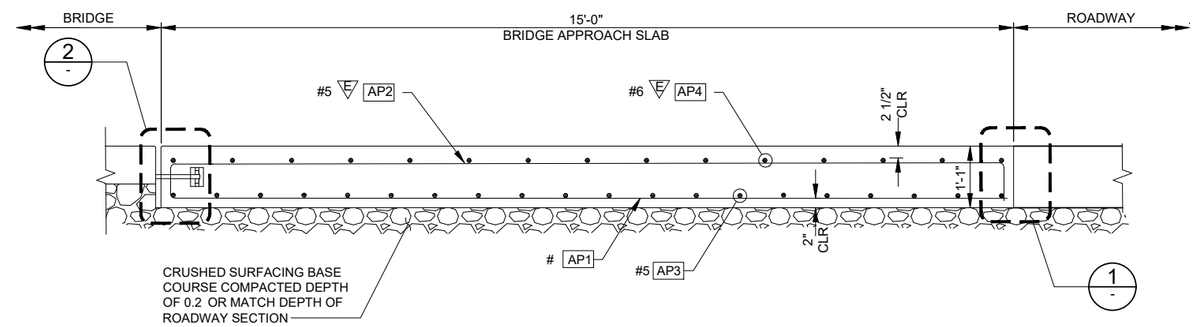
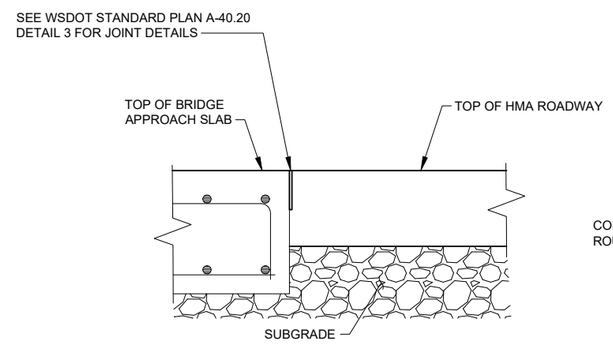


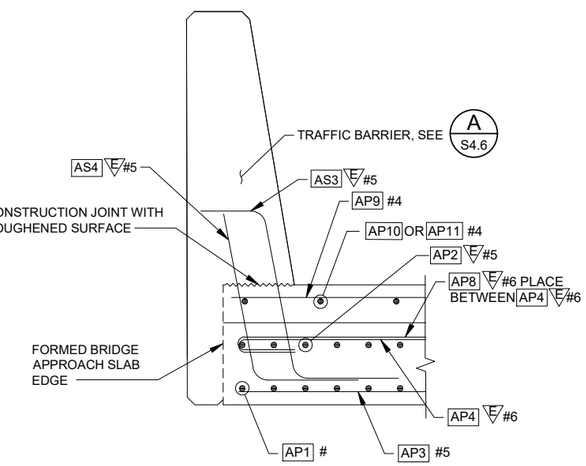
BRIDGE FRAMING PLAN
1/4" = 1'-0"



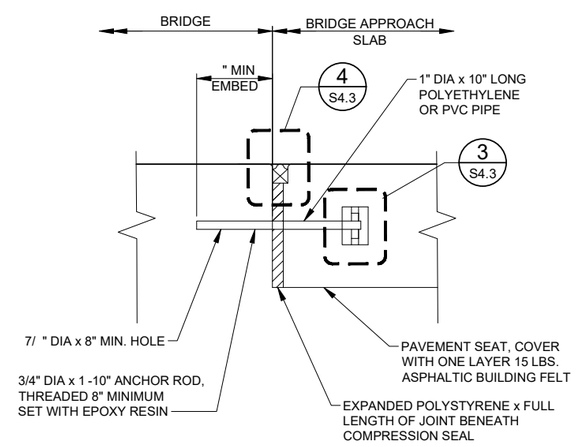
A SECTION
1/2" 1'-0"



A HMA ROADWAY JOINT DETAIL
1" 1'-0"



C SECTION
S4.1, S4.2 3/4" 1'-0"



2 DETAIL
1 1/2" 1'-0"

NOTES

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90% DESIGN
FOR AGENCY REVIEW

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Suite 800
Seattle, Washington 9 101
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LOWER WAPATO CREEK HABITAT PROJECT

APPROACH SLAB DETAILS
SHEET 2 OF 3

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

6656
S4.2
42 OF 50

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BINDING EDGE
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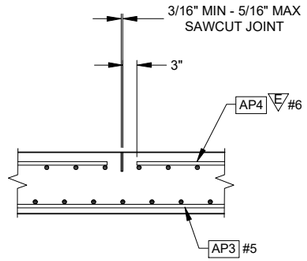
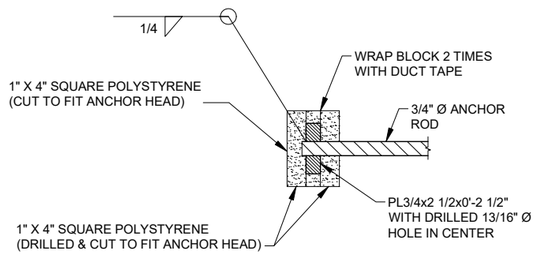
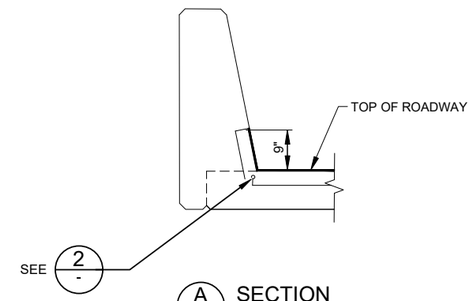
BINDING EDGE



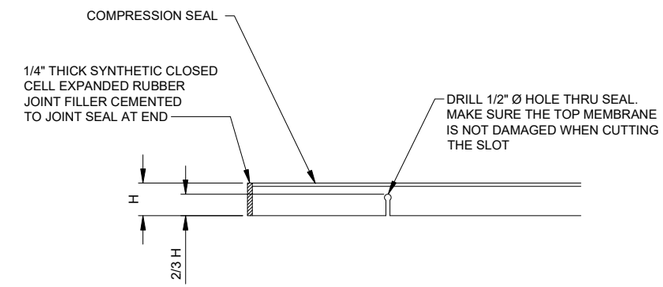
1 LONGITUDINAL JOINT DETAIL
S4.1, S4.2 3/4"=1'-0"



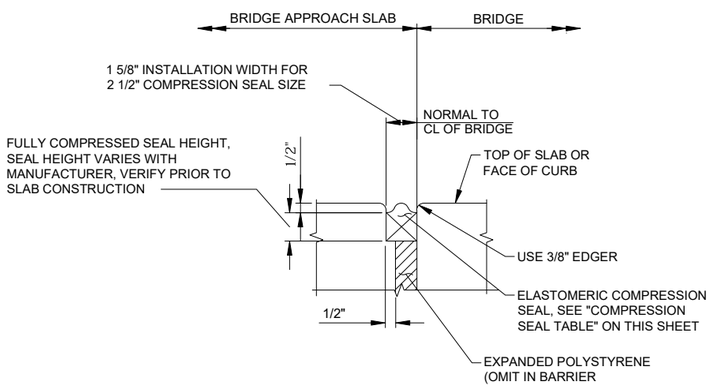
3 DETAIL
S4.1, S4.2 3"=1'-0"



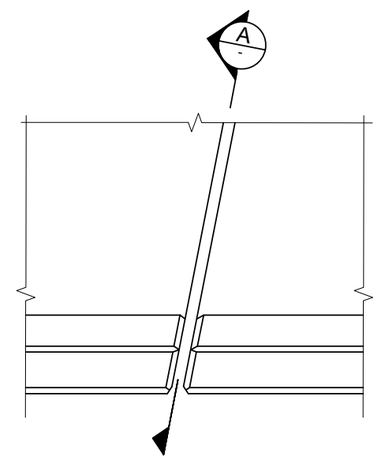
A - SECTION
3/4" 1'-0"



2 SEAL CUTTING DETAIL
NTS



4 DETAIL
S4.1, S4.2 3"=1'-0"



5 PLAN EXPANSION JOINT
S4.1, S4.2 3/4"=1'-0"

COMPRESSION SEAL TABLE			
D.S. BROWN		WATSON BOWMAN ACME	
SEAL	WIDTH	SEAL	WIDTH
CV-2502	2 1/2"	WA-250	2 1/2"

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LOWER WAPATO CREEK
HABITAT PROJECT
APPROACH SLAB DETAILS
3 OF 3

6656
S4.3
43 of 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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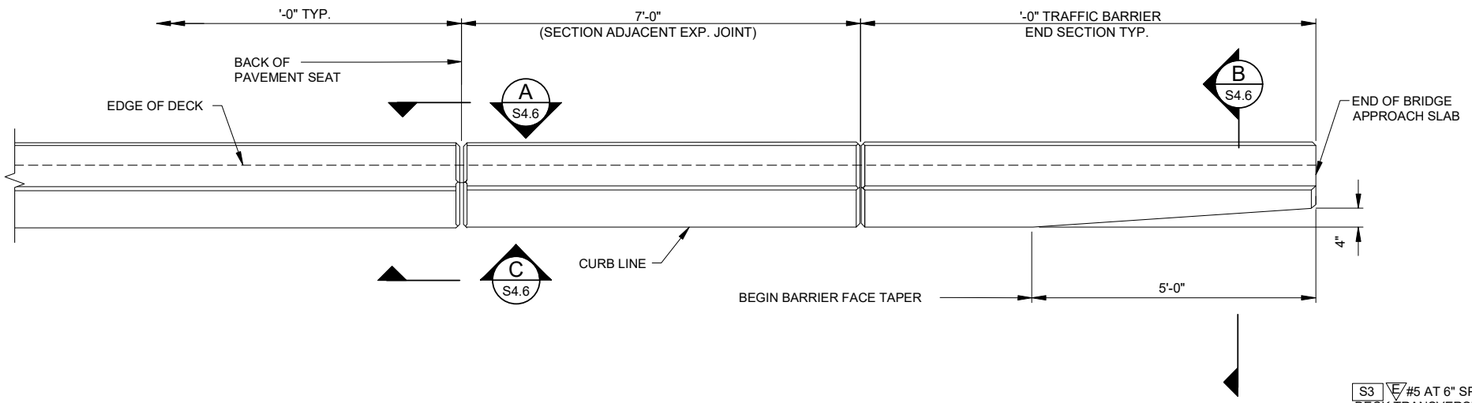
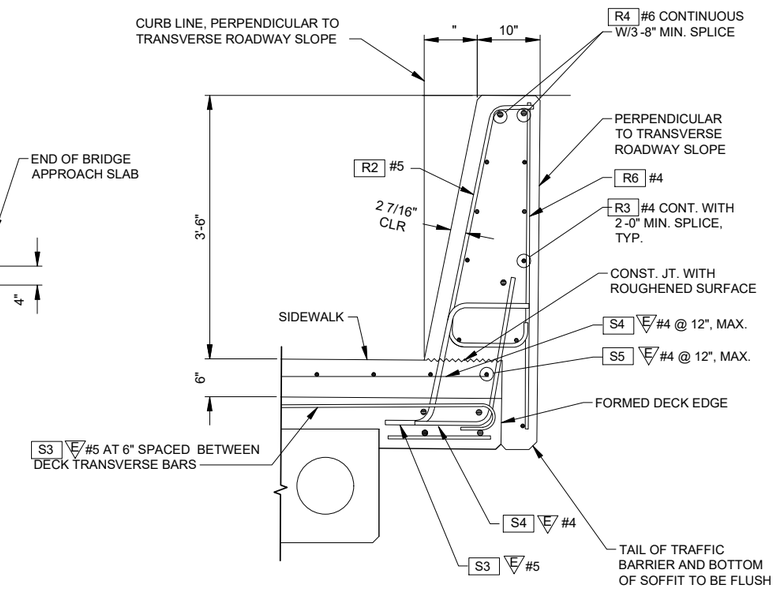


PLAN NE END OF TRAFFIC BARRIER (SE OPP HAND)

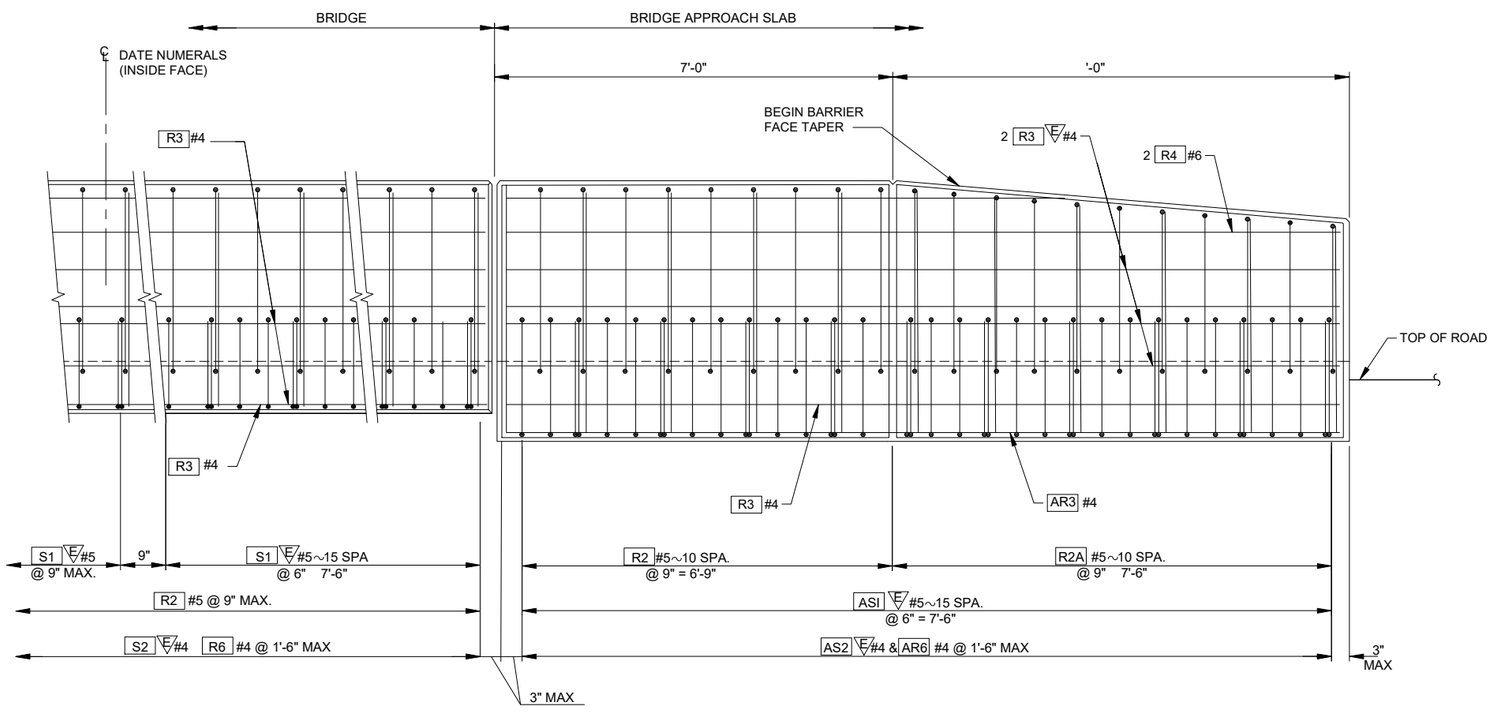
1/4" 1'-0"

BARRIER CONTINUOUS BETWEEN BRIDGE DECK EXPANSION JOINTS.
CONSTRUCTION JOINTS WITH SHEAR KEYS ARE PERMISSIBLE AT DUMMY JOINT LOCATIONS.
FORM JOINTS BETWEEN DUMMY JOINTS SHALL NOT BE PERMITTED.



A NORTH TRAFFIC BARRIER W SIDEWALK

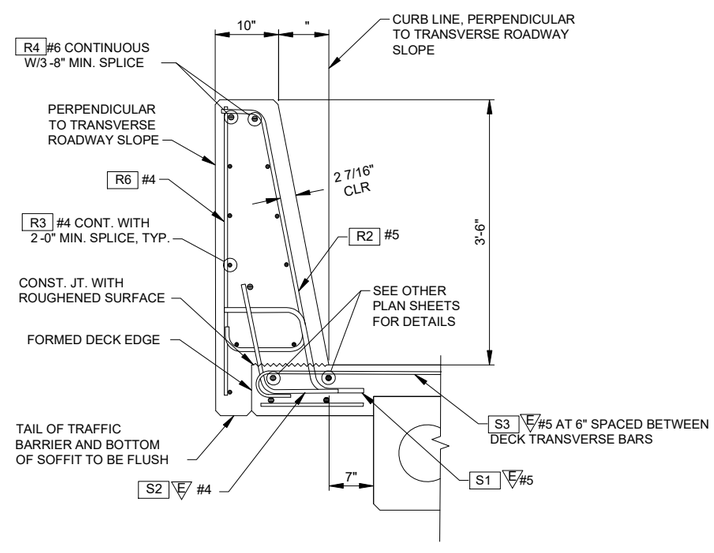
S4.4, S4.5 1" 1'-0"



OUTSIDE ELEVATION NE END OF TRAFFIC BARRIER (SE OPP HAND)

1/4" 1'-0"

(SHOWN WITH BRIDGE APPROACH SLAB)



B SOUTH SECTION TRAFFIC BARRIER

S4.5 1" 1'-0"

(FENCE NOT SHOWN)

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Suite 800
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	TACOMA, WA 98421		

LOWER WAPATO CREEK HABITAT PROJECT

TRAFFIC BARRIER DETAILS

1 OF 3

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PARCEL: 14	DRAWING SCALE: AS NOTED	

6656

S4.4

44 OF 50

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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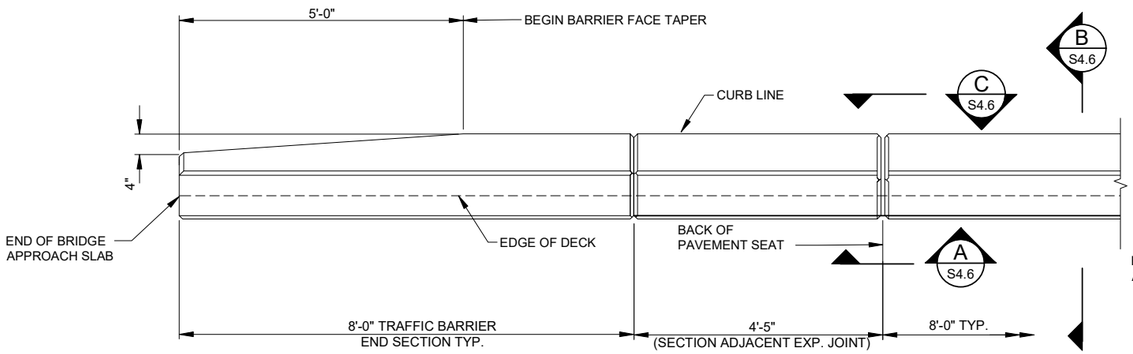
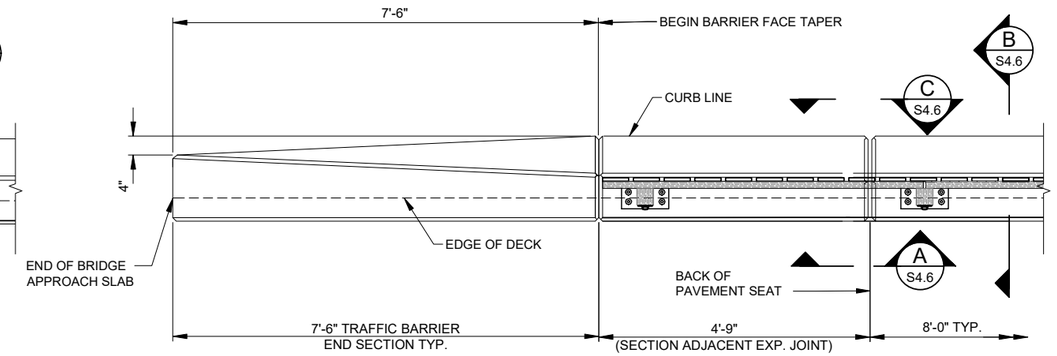


PLAN NW END OF TRAFFIC BARRIER

1/4" = 1'-0"

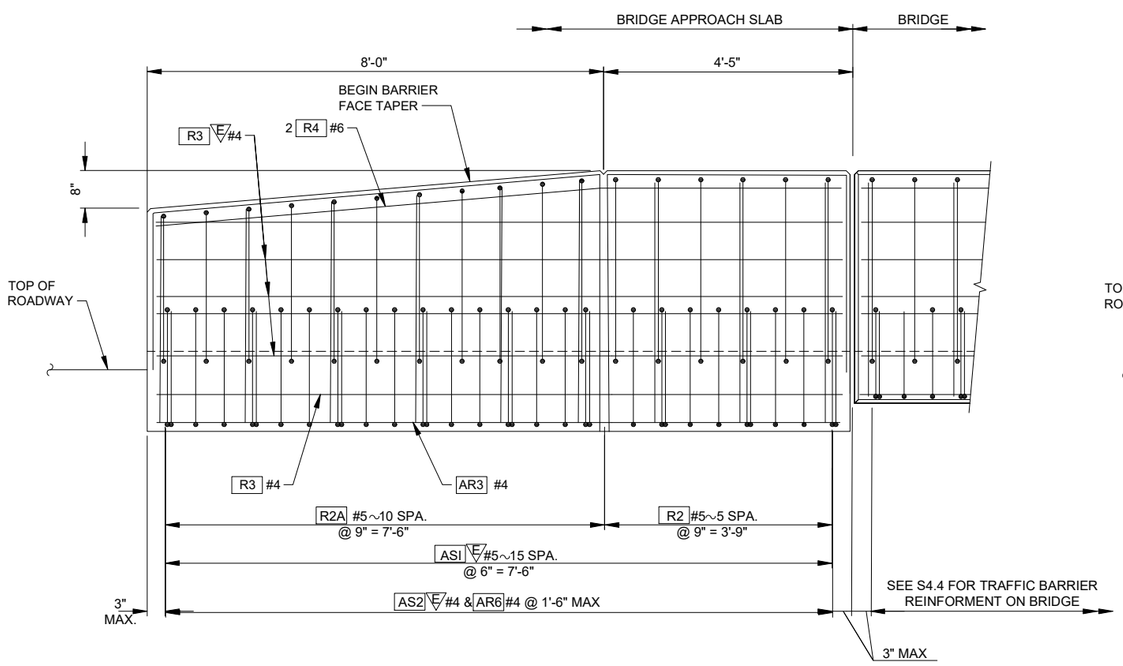
BARRIER CONTINUOUS BETWEEN BRIDGE DECK EXPANSION JOINTS.
CONSTRUCTION JOINTS WITH SHEAR KEYS ARE PERMISSIBLE AT DUMMY JOINT LOCATIONS.
FORM JOINTS BETWEEN DUMMY JOINTS SHALL NOT BE PERMITTED.



PLAN SW END OF TRAFFIC BARRIER

1/4" = 1'-0"

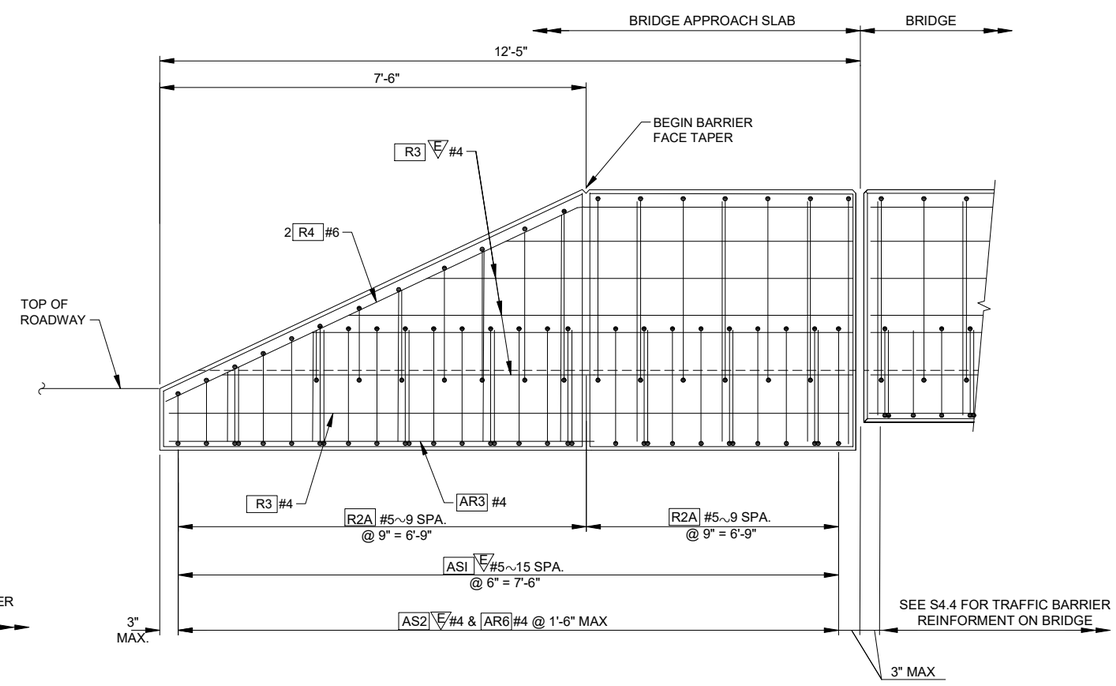
BARRIER CONTINUOUS BETWEEN BRIDGE DECK EXPANSION JOINTS.
CONSTRUCTION JOINTS WITH SHEAR KEYS ARE PERMISSIBLE AT DUMMY JOINT LOCATIONS.
FORM JOINTS BETWEEN DUMMY JOINTS SHALL NOT BE PERMITTED.



OUTSIDE ELEVATION NE END OF TRAFFIC BARRIER

1/4" = 1'-0"

(SHOWN WITH BRIDGE APPROACH SLAB)



OUTSIDE ELEVATION SW END OF TRAFFIC BARRIER

1/4" = 1'-0"

(SHOWN WITH BRIDGE APPROACH SLAB)

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LOWER WAPATO CREEK HABITAT PROJECT

TRAFFIC BARRIER DETAILS

2 OF 3

6656
S4.5
45 of 50

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
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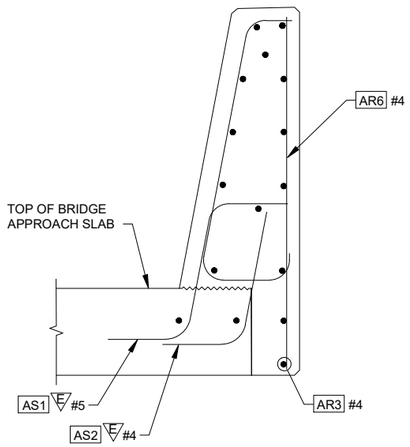
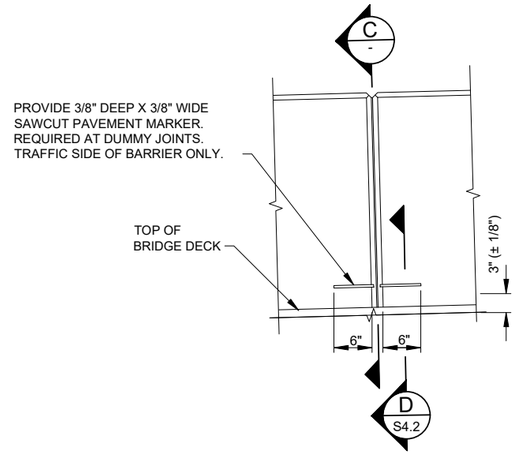
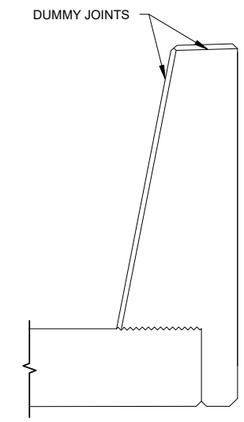


SECTION BRIDGE

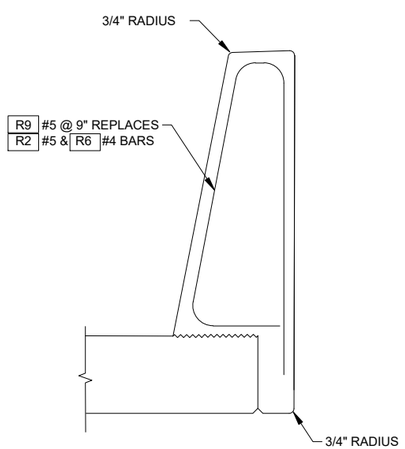
A APPROACH SLAB
S4.4, S4.5 1" = 1'-0"



B VIEW
S4.1 1" = 1'-0"



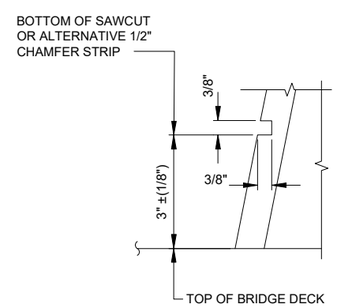
C SECTION
- 1" = 1'-0"



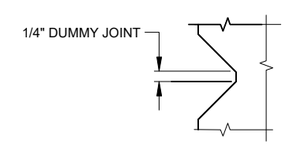
SLIPFORM ALTERNATE
1" = 1'-0"

SEE "TYPICAL SECTION - TRAFFIC BARRIER"
FOR ADDITIONAL DETAILS.

THE CONTRACTOR IS ADVISED THAT THE SLIPFORM
CONSTRUCTION METHOD IS A PATENTED PROPRIETARY
PROCESS FOR BARRIERS.



D SECTION
- 1" = 1'-0"



DUMMY JOINT DETAIL
1" = 1'-0"

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DIRECTOR ENG.	DATE	CHECKED BY	DATE
		PROJ. ENGR	DATE

PRINTED BY: OLI87950 Nov 13, 2020
PORT ADDRESS: 1 SITCOM PLAZA
TACOMA, WA 98421

LOWER WAPATO CREEK
HABITAT PROJECT
TRAFFIC BARRIER DETAILS
3 OF 3

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
S4.6
46 OF 50

CONT/CONS: 071447
M. ID: 101449.01
PHASE: 90% Design

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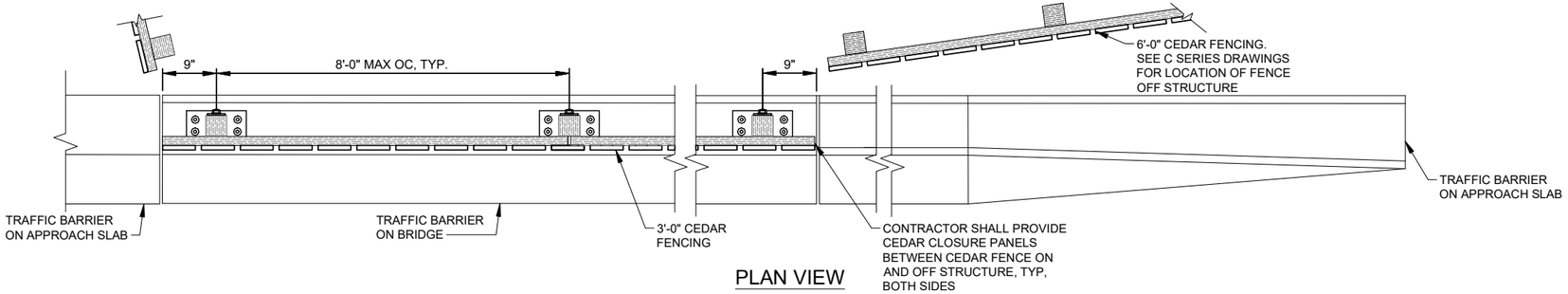
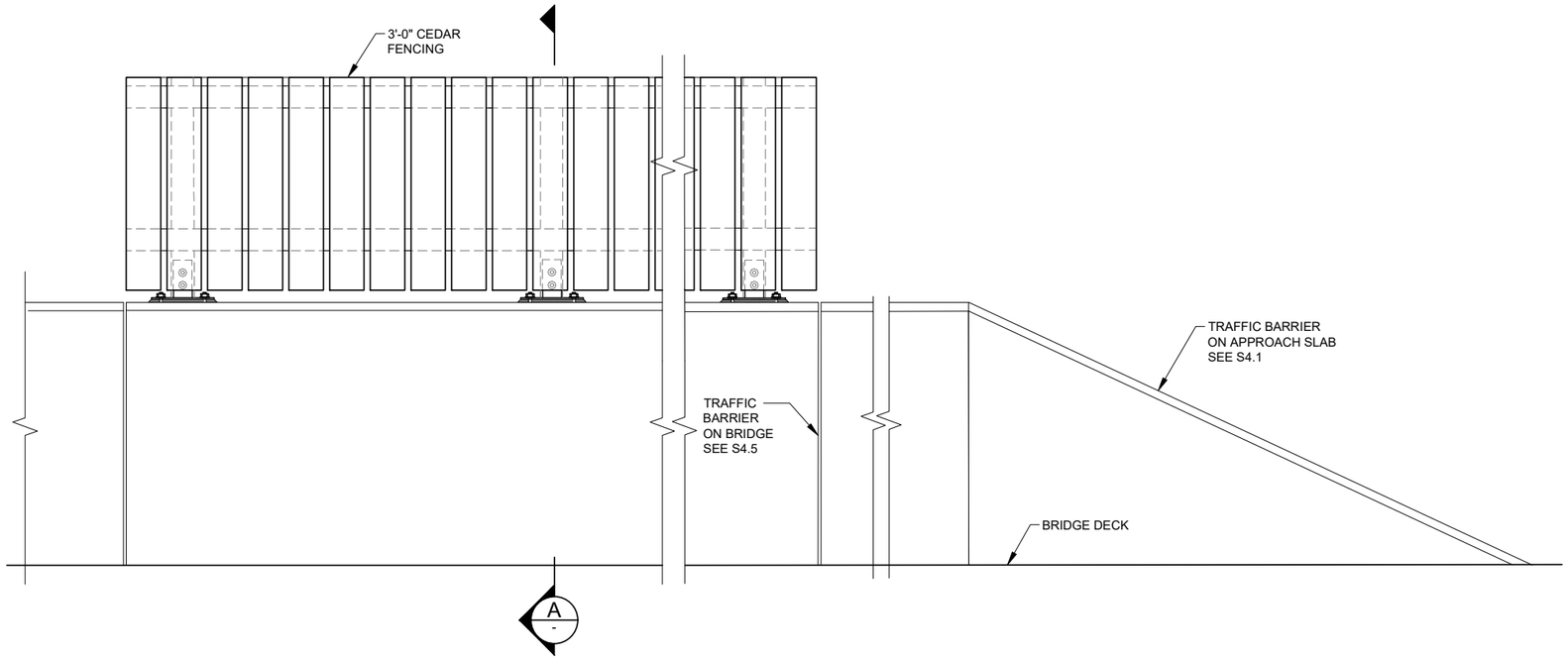
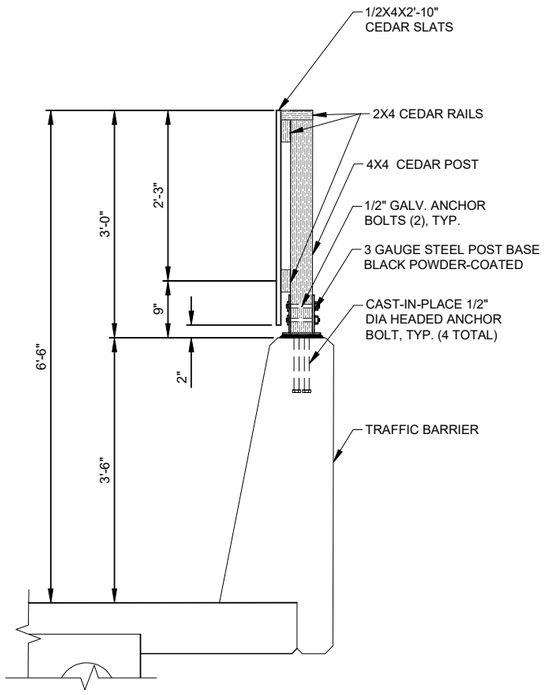
BINDING EDGE



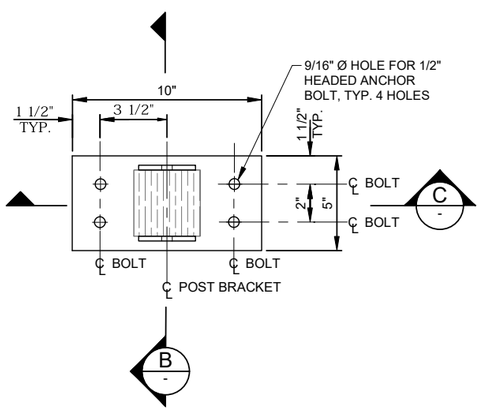
PLAN VIEW



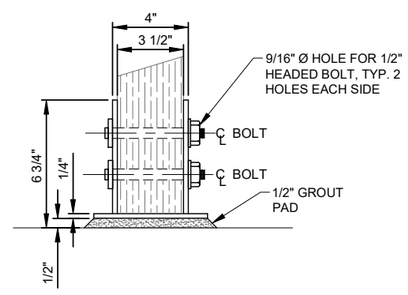
ELEVATION
1/8" = 1'-0"



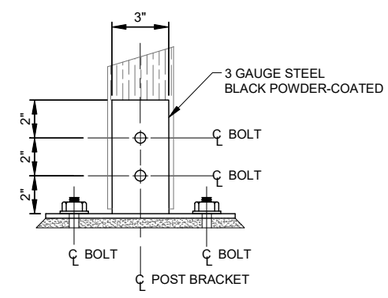
A - SECTION
NTS



BASE PLATE PLAN
3" = 1'-0"



B - SECTION
3"=1'-0"



C - SECTION
3"=1'-0"

NOTES

1. FENCE POSTS ARE PLUMB.
2. CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PLUMBNESS OF ANCHOR BOLTS.

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LOWER WAPATO CREEK HABITAT PROJECT
FENCE DETAILS

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
S4.7
47 OF 50

CONT/CONS: 071447
M. ID: 101449.01
PHASE: 90% Design

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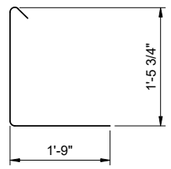
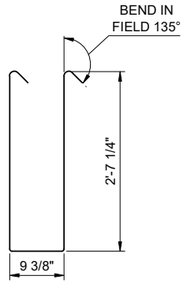
BINDING EDGE
PORT OF TACOMA FILE: C:\users\oli87950\appdata\local\projectwise\workdir\mott-use-pw-10\dms48042\S4.7

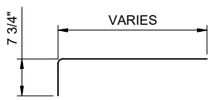
BINDING EDGE



A1 #4 STIRRUP

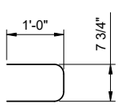


A2 #4 STIRRUP



AP2 #5

AP4 #6



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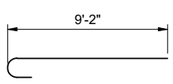
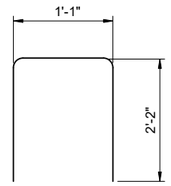
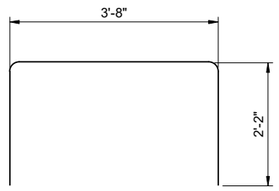


AP8 #6



G3 #4



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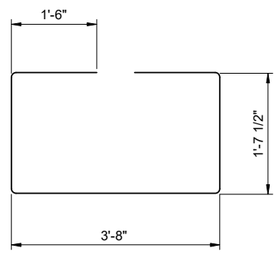

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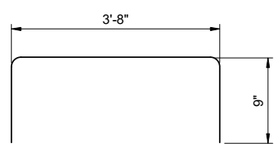
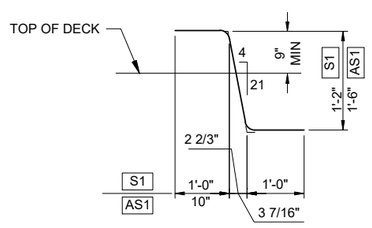
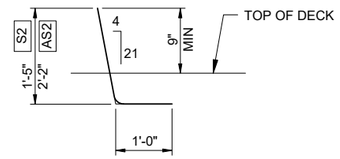


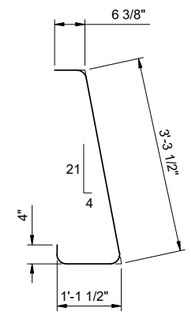
G6 #4



S1 #5 AND AS1



S2 #4 AND AS2 #4



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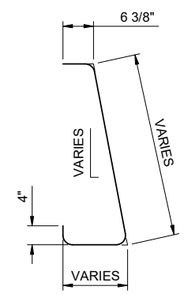
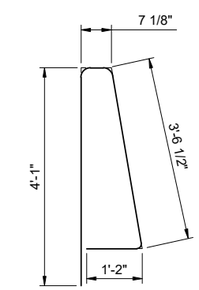


R2A #4



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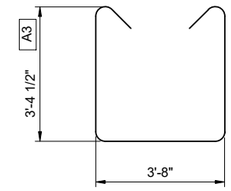

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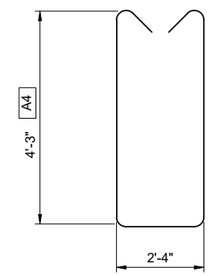

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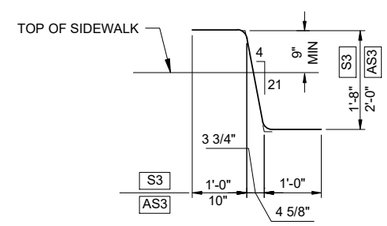
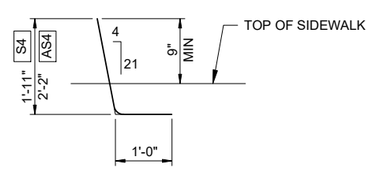


S3 #5 AND AS3



S4 #4 AND AS4 #4

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TACOMA, WA 98421			

LOWER WAPATO CREEK HABITAT PROJECT

BAR BENDING DIAGRAM

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)		
PARCEL: 14	DRAWING SCALE: AS NOTED		

6656
S5.1
48 OF 50

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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BINDING EDGE

SOIL AMENDMENT SECTION

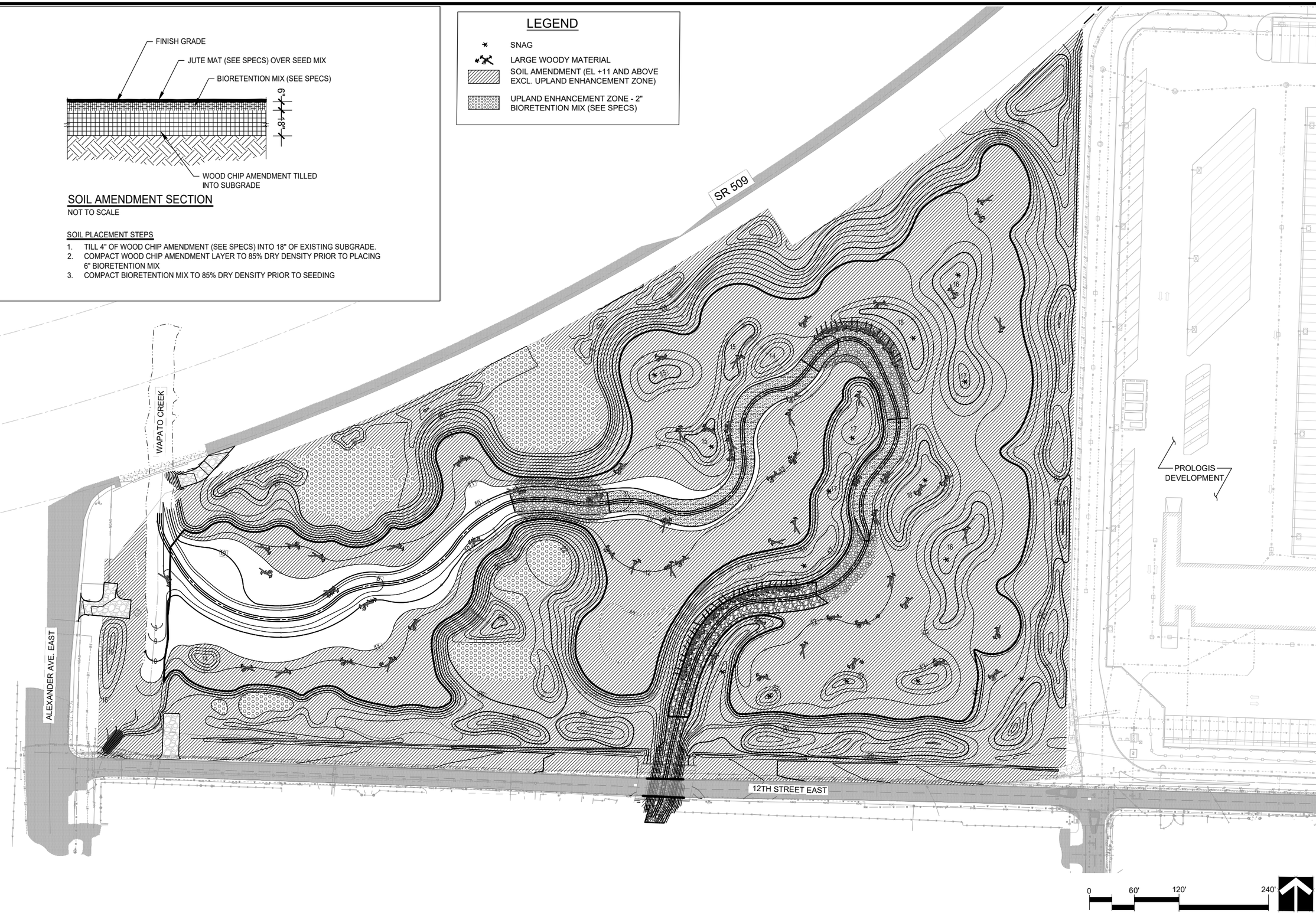
NOT TO SCALE

SOIL PLACEMENT STEPS

1. TILL 4" OF WOOD CHIP AMENDMENT (SEE SPECS) INTO 18" OF EXISTING SUBGRADE.
2. COMPACT WOOD CHIP AMENDMENT LAYER TO 85% DRY DENSITY PRIOR TO PLACING 6" BIORETENTION MIX
3. COMPACT BIORETENTION MIX TO 85% DRY DENSITY PRIOR TO SEEDING

LEGEND

- SNAG
- LARGE WOODY MATERIAL
- SOIL AMENDMENT (EL +11 AND ABOVE EXCL. UPLAND ENHANCEMENT ZONE)
- UPLAND ENHANCEMENT ZONE - 2" BIORETENTION MIX (SEE SPECS)



PORT OF TACOMA FILE: P:\1491.1 POT Lower Wapato Restoration\3_Design\4_Cad\Sheets\Phase I\90% Design Sheets\L1.0 Soils Plan

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206.285.3629 fax

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LOWER WAPATO CREEK HABITAT PROJECT

SOILS PLAN

TOWNSHIP: 20N | RANGE: 3E | SECTION: 1
DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)
PARCEL: 14 | DRAWING SCALE: AS NOTED

L1.0
50 OF 51

CONT/CONS: 071447
M. ID: 101449.01
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BINDING EDGE

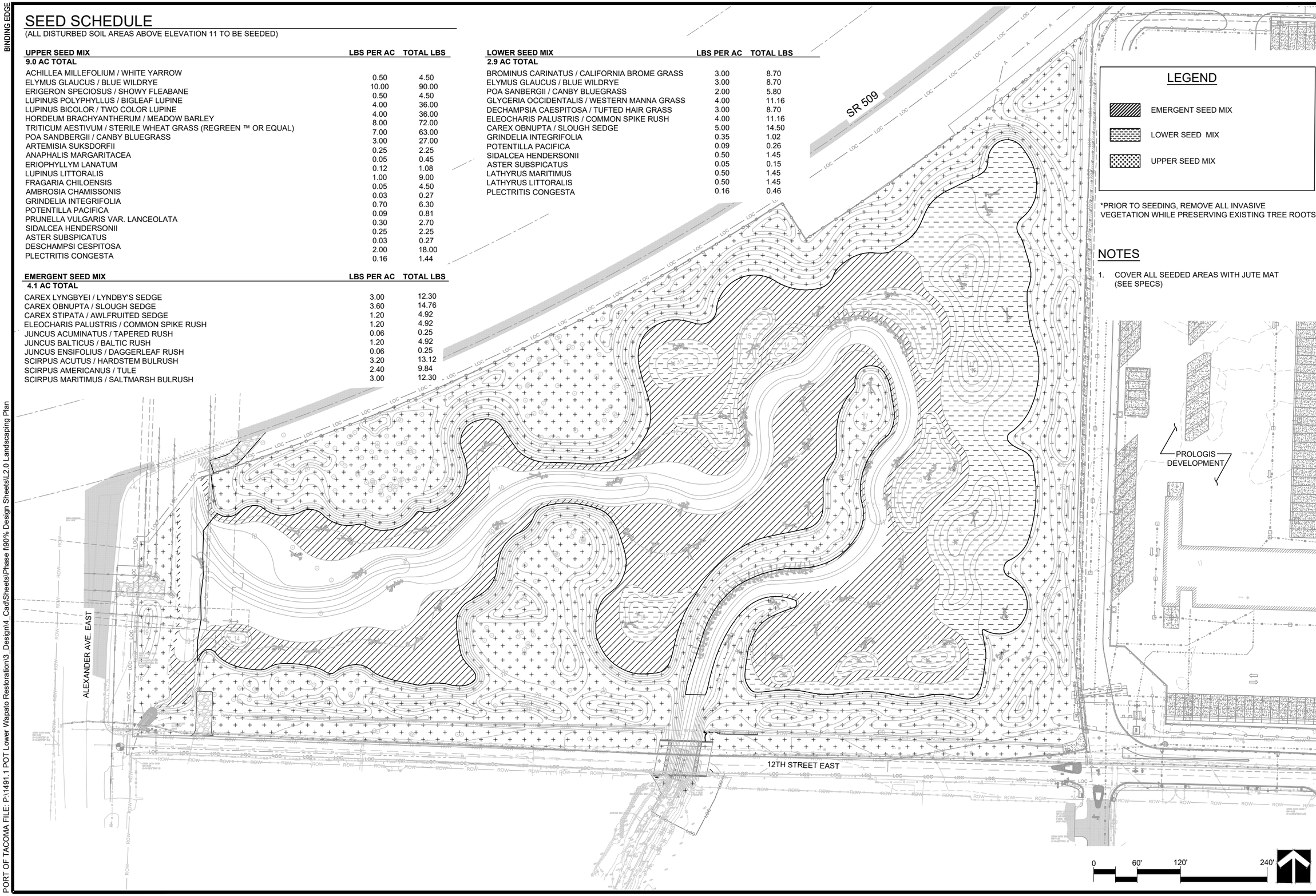
SEED SCHEDULE

(ALL DISTURBED SOIL AREAS ABOVE ELEVATION 11 TO BE SEEDED)

UPPER SEED MIX	LBS PER AC	TOTAL LBS
9.0 AC TOTAL		
ACHILLEA MILLEFOLIUM / WHITE YARROW	0.50	4.50
ELYMUS GLAUCUS / BLUE WILDRYE	10.00	90.00
ERIGERON SPECIOSUS / SHOWY FLEABANE	0.50	4.50
LUPINUS POLYPHYLLUS / BIGLEAF LUPINE	4.00	36.00
LUPINUS BICOLOR / TWO COLOR LUPINE	4.00	36.00
HORDEUM BRACHYANTHERUM / MEADOW BARLEY	8.00	72.00
TRITICUM AESTIVUM / STERILE WHEAT GRASS (REGREEN ™ OR EQUAL)	7.00	63.00
POA SANDBERGII / CANBY BLUEGRASS	3.00	27.00
ARTEMISIA SUKSDORFII	0.25	2.25
ANAPHALIS MARGARITACEA	0.05	0.45
ERIOPHYLLYM LANATUM	0.12	1.08
LUPINUS LITTORALIS	1.00	9.00
FRAGARIA CHILOENSIS	0.05	4.50
AMBROSIA CHAMISSONIS	0.03	0.27
GRINDELIA INTEGRIFOLIA	0.70	6.30
POTENTILLA PACIFICA	0.09	0.81
PRUNELLA VULGARIS VAR. LANCEOLATA	0.30	2.70
SIDALCEA HENDERSONII	0.25	2.25
ASTER SUBSPICATUS	0.03	0.27
DESCHAMPSI CESPITOSA	2.00	18.00
PLECTRITIS CONGESTA	0.16	1.44

EMERGENT SEED MIX	LBS PER AC	TOTAL LBS
4.1 AC TOTAL		
CAREX LYNGBYEI / LYNDBY'S SEDGE	3.00	12.30
CAREX OBNUPTA / SLOUGH SEDGE	3.60	14.76
CAREX STIPATA / AWLFRUITED SEDGE	1.20	4.92
ELEOCHARIS PALUSTRIS / COMMON SPIKE RUSH	1.20	4.92
JUNCUS ACUMINATUS / TAPERED RUSH	0.06	0.25
JUNCUS BALTICUS / BALTIC RUSH	1.20	4.92
JUNCUS ENSIFOLIUS / DAGGERLEAF RUSH	0.06	0.25
SCIRPUS ACUTUS / HARDSTEM BULRUSH	3.20	13.12
SCIRPUS AMERICANUS / TULE	2.40	9.84
SCIRPUS MARITIMUS / SALTMARSH BULRUSH	3.00	12.30

LOWER SEED MIX	LBS PER AC	TOTAL LBS
2.9 AC TOTAL		
BROMINUS CARINATUS / CALIFORNIA BROME GRASS	3.00	8.70
ELYMUS GLAUCUS / BLUE WILDRYE	3.00	8.70
POA SANBERGII / CANBY BLUEGRASS	2.00	5.80
GLYCERIA OCCIDENTALIS / WESTERN MANNA GRASS	4.00	11.16
DECHAMPSIA CAESPITOSA / TUFTED HAIR GRASS	3.00	8.70
ELEOCHARIS PALUSTRIS / COMMON SPIKE RUSH	4.00	11.16
CAREX OBNUPTA / SLOUGH SEDGE	5.00	14.50
GRINDELIA INTEGRIFOLIA	0.35	1.02
POTENTILLA PACIFICA	0.09	0.26
SIDALCEA HENDERSONII	0.50	1.45
ASTER SUBSPICATUS	0.05	0.15
LATHYRUS MARITIMUS	0.50	1.45
LATHYRUS LITTORALIS	0.50	1.45
PLECTRITIS CONGESTA	0.16	0.46



LEGEND

- EMERGENT SEED MIX
- LOWER SEED MIX
- UPPER SEED MIX

*PRIOR TO SEEDING, REMOVE ALL INVASIVE VEGETATION WHILE PRESERVING EXISTING TREE ROOTS

NOTES

1. COVER ALL SEEDED AREAS WITH JUTE MAT (SEE SPECS)

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3800 Woodland Park Ave N Suite 200
Seattle, Washington 98103
206.285.3020
206.285.3620 fax

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DIRECTOR ENG.	DJE	12-11-2020
PRINTED BY: DerrickE Dec 14, 2020	PROJ. ENGR	DATE
PORT ADDRESS: 1 SITCOM PLAZA TACOMA, WA 98421		

LOWER WAPATO CREEK HABITAT PROJECT

LANDSCAPING PLAN

L2.0

51 OF 51

CONT/CONS: 071447	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE: 90% Design	PARCEL: 14	DRAWING SCALE: AS NOTED	

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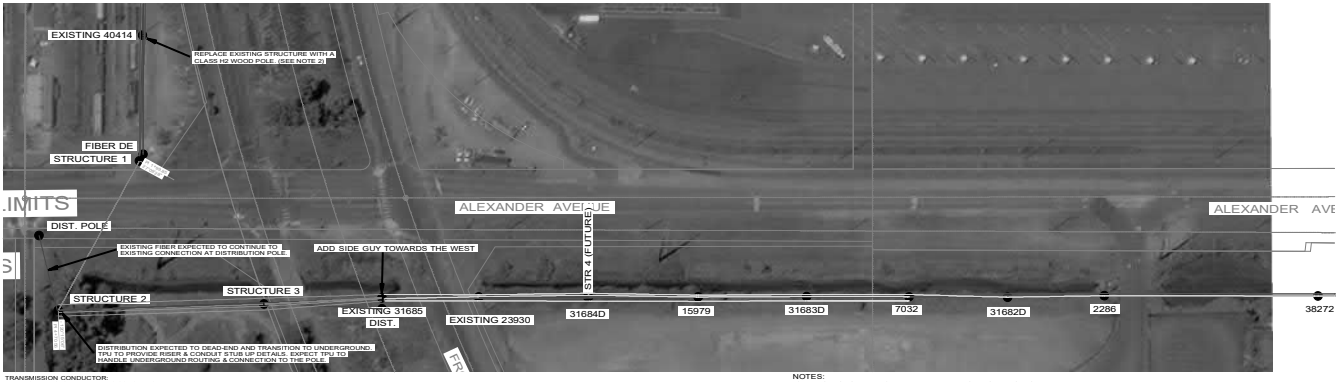
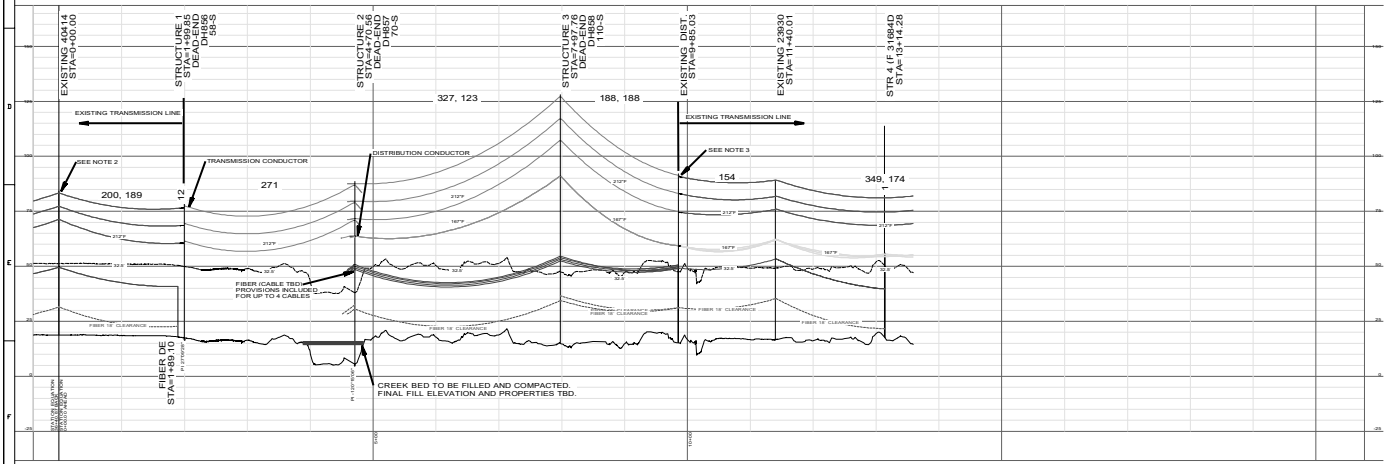


TRANSMISSION CONDUCTOR:
1272 KCMIL 61/0 STRAND "NARCISSUS" AAC
DESIGN TENSION OF 5,500LBS INITIAL @ NESC MEDIUM

DISTRIBUTION CONDUCTOR:
795 KCMIL 37/0 STRAND "ARBUTUS" AAC
DESIGN TENSION OF 3,475LBS INITIAL @ NESC MEDIUM

NOTES:
1) PHASING IS UNKNOWN. MAINTAIN EXISTING PHASING.
2) REPLACE STRUCTURE 40414 WITH A CLASS H2 WOOD POLE.
3) SIDE GUY TO BE ADDED ON WEST SIDE OF STRUCTURE 2. BELOW BOTTOM TRANSMISSION PHASE. ALSO MIDDLE DISTRIBUTION PHASE DEAD-END TO BE MOVED TO THE MIDDLE POSITION ON THE EAST SIDE OF THE POLE.

70.0 FT HORIZ. SCALE
20.0 FT VERT. SCALE

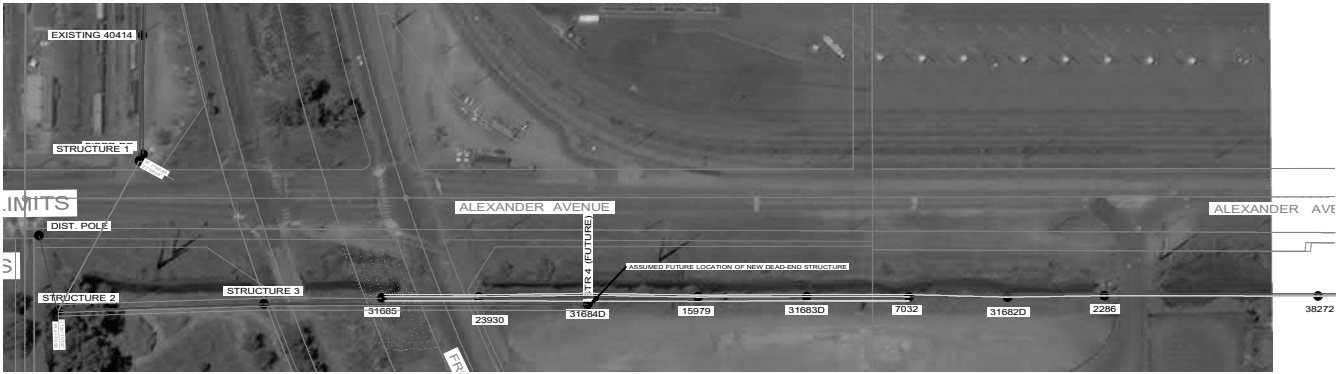


PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	ENGINEER	DES./ DR.	CHECKED	APPROVED
A	10/30/20	30% SUBMITTAL	MB	MB	SA	SA
B	10/06/20	REVISED 30% SUBMITTAL	MB	BK	SA	SA
C	11/11/20	90% SUBMITTAL	BK	BK	SA	SA

PROJECT MANAGER: A. BIRGSALL
DESIGN ENGINEER: B. MCKEE
PROJECT ENGINEER: B. MCKEE
APPROVAL ENGINEER: B. ARSES
PROJ/DV 8/27/2020
DATE 8/27/2020
DR. B. MCKEE
SCALE 1" = 20' H, 1" = 20' V
DATE 8/27/2020
CK. B. ARSES
SHEET 1 OF 1
REVISION C

WAPATO CREEK RELOCATION PROJECT
HIGH VOLTAGE TRANSMISSION LINE
TEMPORARY PLAN & PROFILE
WASHINGTON
DH853

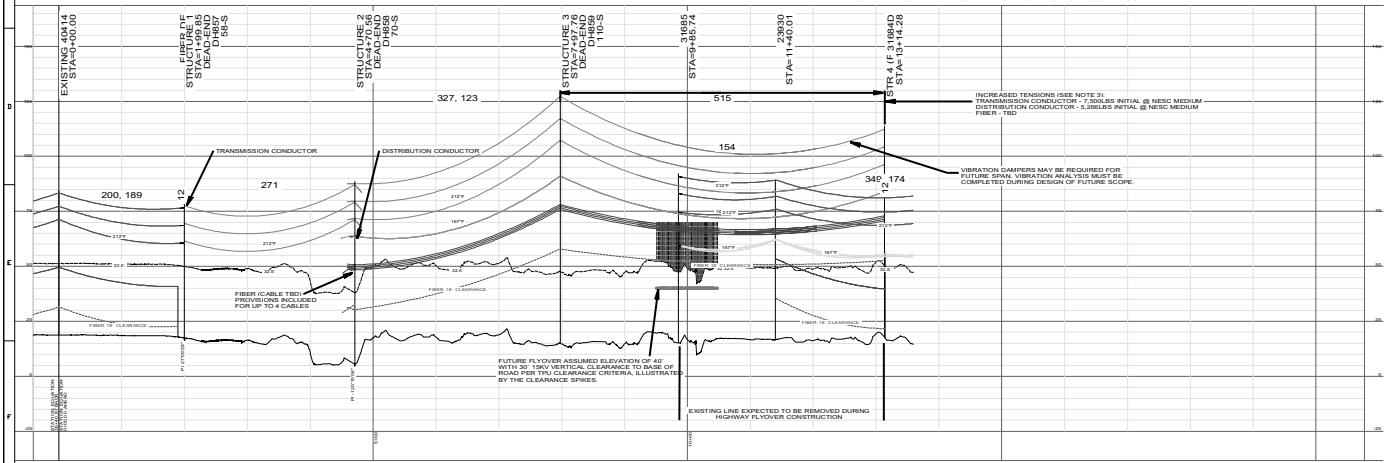


TRANSMISSION CONDUCTOR:
1272 KCMIL 61/0 STRAND "NARCISSUS" AAC
DESIGN TENSION OF 5,500LBS INITIAL @ NESC MEDIUM

DISTRIBUTION CONDUCTOR:
795 KCMIL 37/0 STRAND "ARBUTUS" AAC
DESIGN TENSION OF 3,475LBS INITIAL @ NESC MEDIUM

NOTES:
1) PHASING IS UNKNOWN, MAINTAIN EXISTING PHASING.
2) THIS PROFILE SHEET IS MEANT TO SHOW THE ASSUMED FUTURE SCENARIO AFTER EXISTING STRUCTURE 31685 IS REMOVED AND A FLYOVER ON HIGHWAY 509 IS CONSTRUCTED.
3) TENSIONS INCREASED ABOVE TPU CRITERIA FOR SPECIAL LONGER SPAN. ASSUME THESE TENSIONS ARE ACCEPTABLE FOR THIS WORST CASE SCENARIO AND EXPECT THEM TO BE RE-EVALUATED DURING DESIGN OF FUTURE SCOPE.

70.0 FT HORIZ. SCALE
20.0 FT VERT. SCALE



PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	ENGINEER	DES./ DR.	CHECKED	APPROVED
A	10/30/20	30% SUBMITTAL	MB	MB	SA	SA
B	10/06/20	REVISED 30% SUBMITTAL	MB	BK	SA	SA
C	11/11/20	90% SUBMITTAL	BK	BK	SA	SA

PROJECT MANAGER: A. BIRGSALL
SUPVR. ENG.: B. ANDERSON
PROJECT ENG.: M. BOLLMAN
PROJ. DIR.: S. ANDERSON
PROJ.DIV: 02/17/2020
DATE: 10/18/2020
DR: B. KUKER
SCALE: 1" = 20' H, 1" = 20' V
EST. BY: S. ANDERSON
CK.: S. ANDERSON
SHEET: 1 OF 1
REVISION: C

WAPATO CREEK RELOCATION PROJECT
HIGH TENSION TRANSMISSION LINE
FUTURE PLAN & PROFILE
WASHINGTON
DH854

BINDING EDGE

PORT OF TACOMA

LOWER WAPATO CREEK HABITAT PROJECT
MASTER ID #101449.01
CONTRACT #071490

PORT COMMISSIONERS:

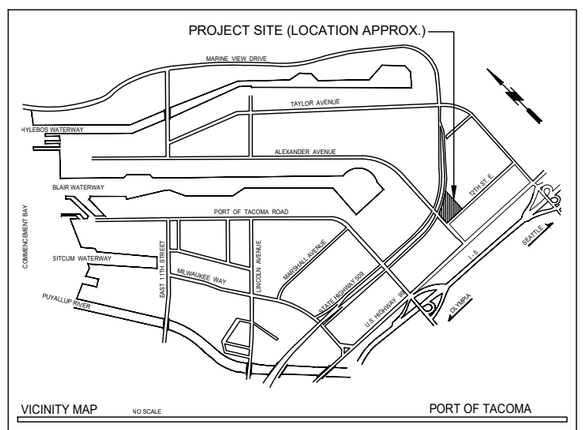
JOHN MCCARTHY
DON MEYER
DICK MARZANO
DEANNA KELLER
KRISTIN ANG

PORT STAFF:

ERIC JOHNSON
Executive Director

THAIS HOWARD, PE
Director of Engineering

DAVID R. MYERS, NCARB, CSI
Engineering Project Manager



CONSULTANT:

SITE WORKSHOP
917 MLK WAY
TACOMA, WA 98405
(253) 844-4131

PROJECT MANAGER: DERRICK EBERLE

DRAWING LIST

SHEET DESIGNATION	SHEET #	SHEET TITLE
LANDSCAPING		
G1.0	1	COVER SHEET
L1.0	2	LAYOUT PLAN
L2.0	3	IRRIGATION PLAN
L3.0	4	PLANTING PLAN
L3.1	5	PLANTING DETAILS
L3.2	6	PLANTING DETAILS
L3.3	7	PLANTING SCHEDULE

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LOWER WAPATO CREEK
HABITAT PROJECT
COVER SHEET

6657
G1.0

CONT/CONS: 071490	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE:	PARCEL: 14	DRAWING SCALE: AS NOTED	

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PORT OF TACOMA FILE: P:\11491.1 POT Lower Wapato Restoration\3_Design\4_Cad\Sheets\Phase II\JARPA Sheets\G1.0 Cover Sheet

BINDING EDGE

LEGEND

- CONTRACTOR STAGING
- SITE PERIMETER FENCE
- DOUBLE SWING GATE (TRUCK ACCESS)
- 5' WIDE PEDESTRIAN GATE
- LIMIT OF CONSTRUCTION
- EXISTING TREE
- WETLAND BOUNDARY

PLANTING ZONES

- UPLAND ZONE
- UPLAND ENHANCEMENT ZONE
- WETLAND PALUSTRINE FORESTED ZONE
- TRANSITIONAL PLANTING ZONE
- WETLAND EMERGENT ZONE

POST CAP

(4) STRANDS 9 GA. VINYL COATED WIRE AT 12" O.C. (THRU 1/4" DIA. HOLES IN POSTS), PROVIDE EYE BOLTS AND TURNBUCKLES W/LOCKNUTS AT TERMINAL CORNER, AND PULL POSTS (BOTH SIDES) (TYP)

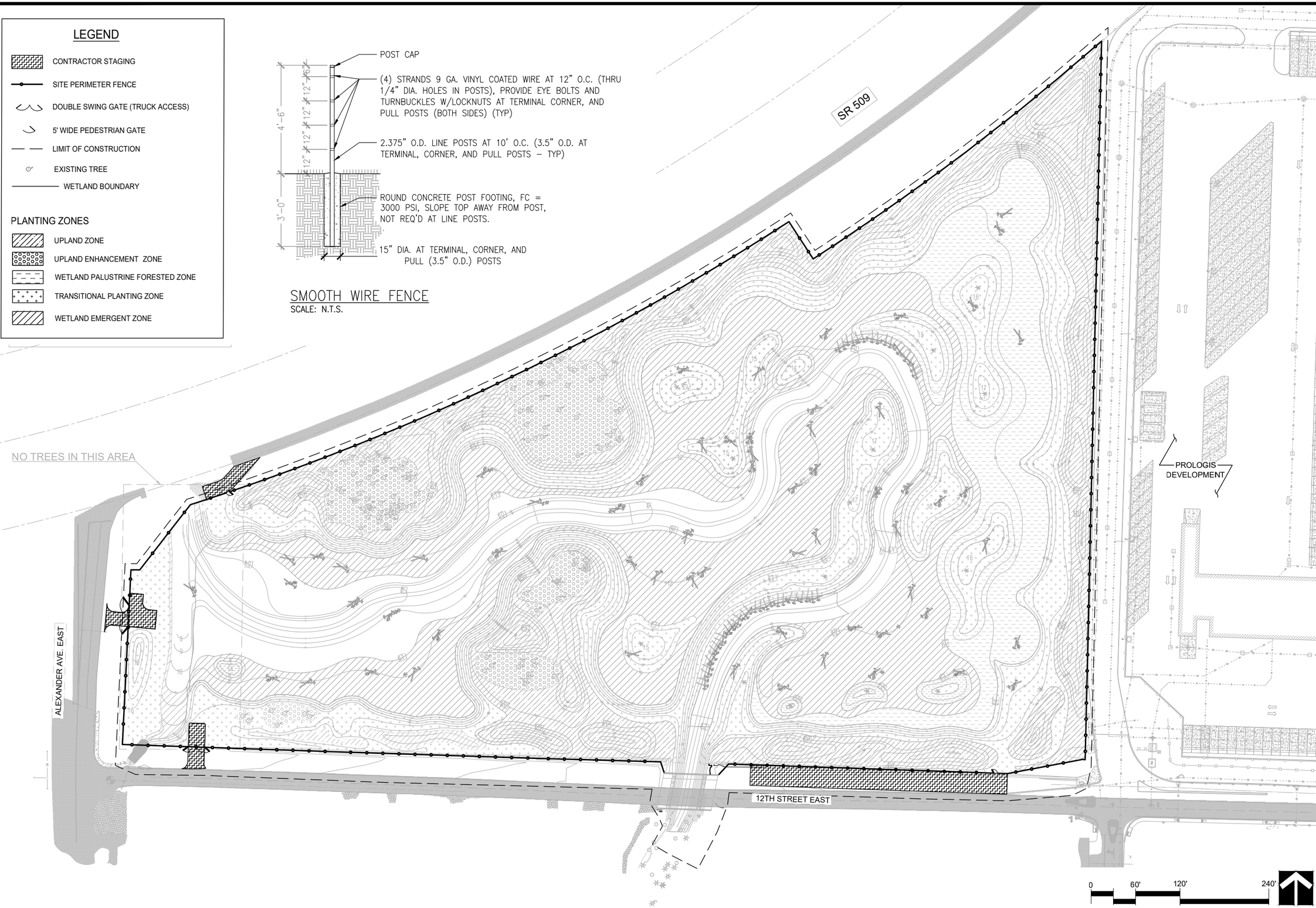
2.375" O.D. LINE POSTS AT 10' O.C. (3.5" O.D. AT TERMINAL, CORNER, AND PULL POSTS – TYP)

ROUND CONCRETE POST FOOTING, FC = 3000 PSI, SLOPE TOP AWAY FROM POST, NOT REQ'D AT LINE POSTS.

15" DIA. AT TERMINAL, CORNER, AND PULL (3.5" O.D.) POSTS

SMOOTH WIRE FENCE

SCALE: N.T.S.



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LOWER WAPATO CREEK HABITAT PROJECT

LAYOUT PLAN

6657
L1.0
2 OF 7

CONT/CONS: 071490	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PHASE:	PARCEL: 14	DRAWING SCALE: AS NOTED	

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LOWER WAPATO CREEK HABITAT PROJECT

IRRIGATION PLAN

TOWNSHIP: 20N | RANGE: 3E | SECTION: 1
DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)
PARCEL: 14 | DRAWING SCALE: AS NOTED

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L2.0
3 OF 7

CONT/CONS: 071490
M. ID: 101449.01
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BINDING EDGE

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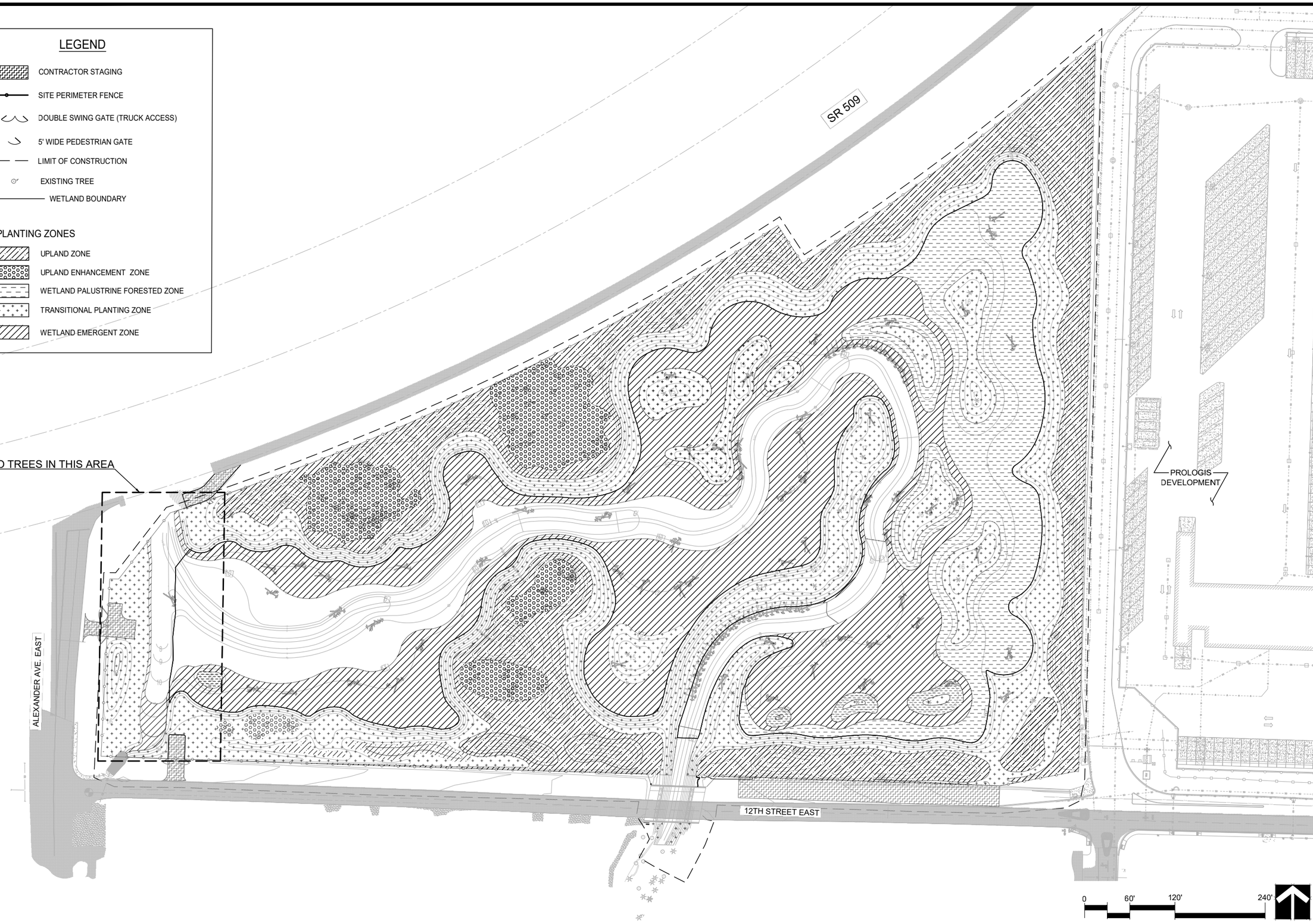

BINDING EDGE

PORT OF TACOMA FILE: P:\1491.1 POT Lower Wapato Restoration\3_Design\4_Cad\Sheets\Phase II\JARPA Sheets\L3.X LWCHP Planting Plan and Schedule

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LOWER WAPATO CREEK HABITAT PROJECT

PLANTING PLAN

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	
PARCEL: 14	DRAWING SCALE: AS NOTED	

6657
L3.0
4 OF 7

CONT/CONS: 071490
M. ID: 101449.01
PHASE:

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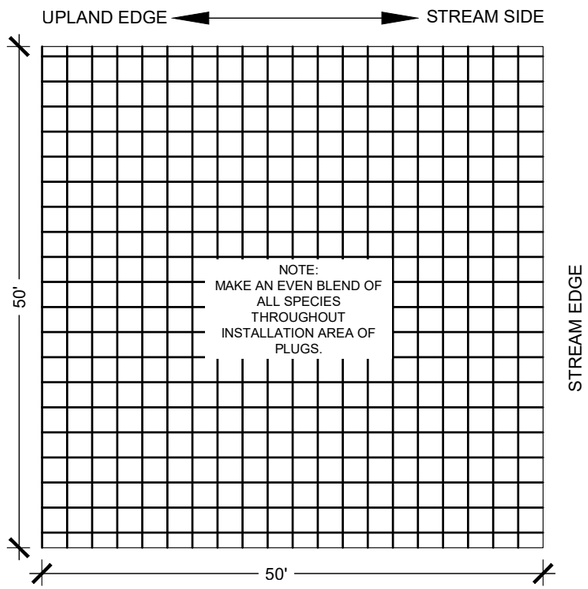
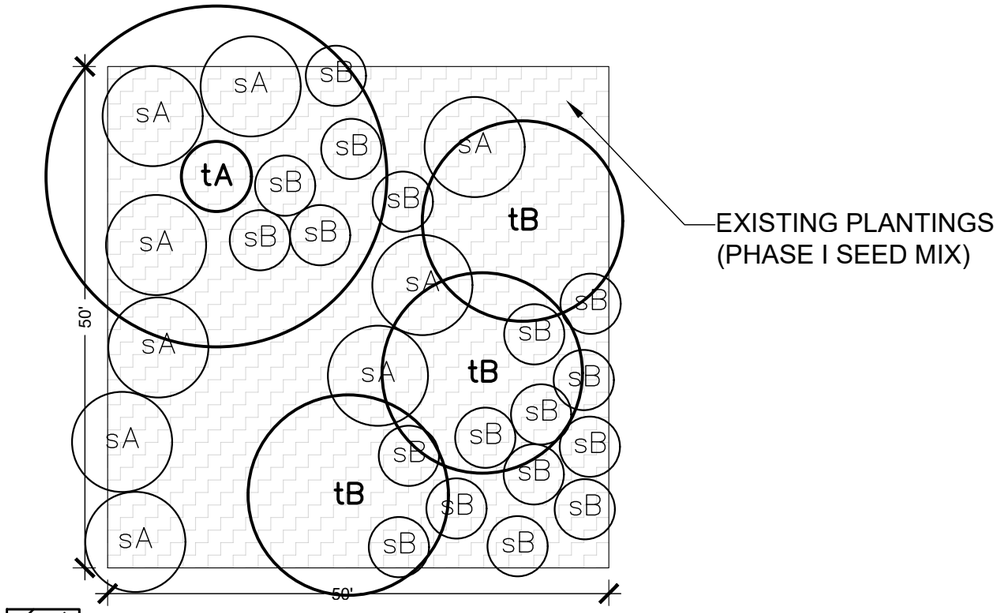
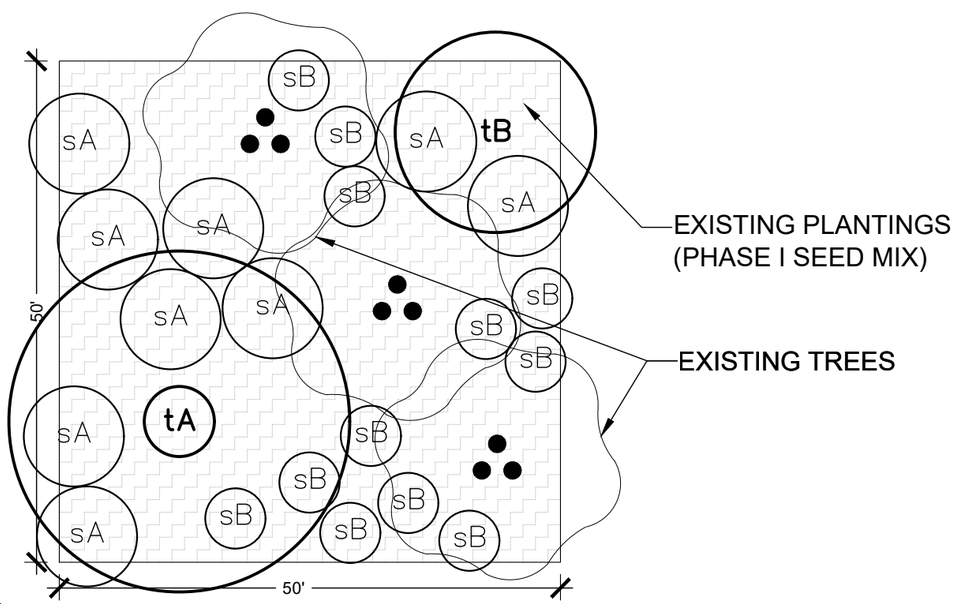


WETLAND EMERGENT ZONE (ABOVE ELEVATION 11 AND BELOW ELEVATION 13)



UPLAND ZONE



UPLAND ENHANCEMENT ZONE (AREAS WITHIN DENSE EXISTING VEGETATION)

BINDING EDGE

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LOWER WAPATO CREEK
HABITAT PROJECT
PLANTING DETAILS

6657
L3.1
5 OF 7

CONT/CONS: 071490	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID: 101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)
PHASE:	PARCEL: 14	DRAWING SCALE: AS NOTED

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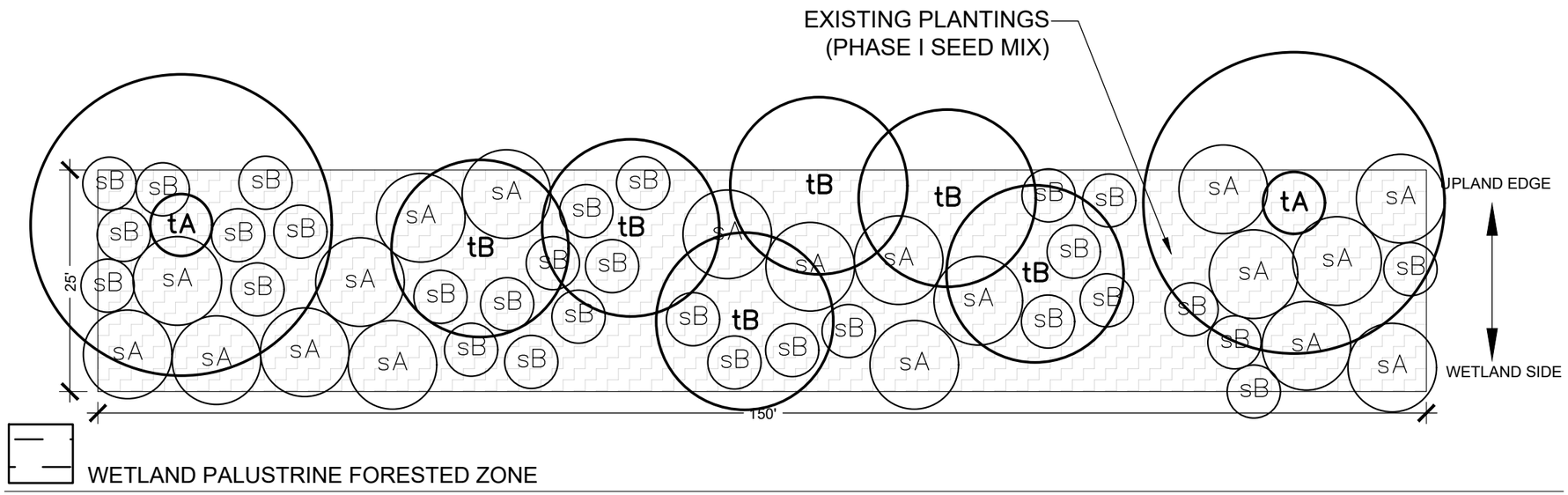
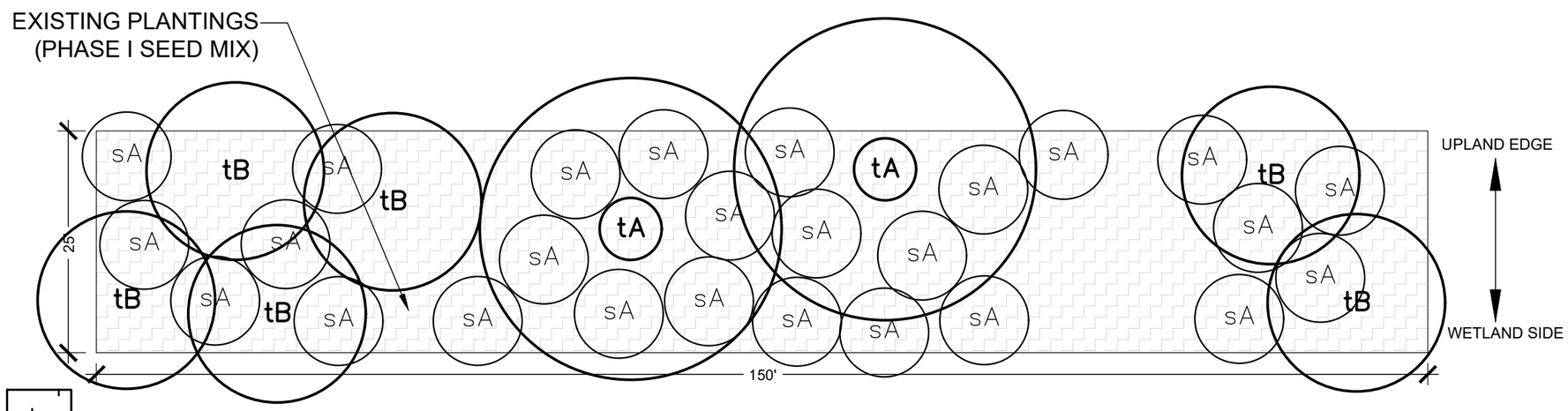


WETLAND PALUSTRINE FORESTED ZONE



TRANSITIONAL PLANTING ZONE

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LOWER WAPATO CREEK HABITAT PROJECT

PLANTING DETAILS

6657

L3.2

6 OF 7

CONT/CONS:	071490	TOWNSHIP: 20N	RANGE: 3E	SECTION: 1
M. ID:	101449.01	DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)
PHASE:		PARCEL: 14	DRAWING SCALE: AS NOTED

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SCIENTIFIC / COMMON NAME	TYPE	ZONE	QTY	SIZE
tB ALNUS RUBRA RED ALDER	Tree-B	UE, U, T	204	10 CU. IN. PLUG
tB FRAXINUS LATIFOLIA OREGON ASH	Tree-B	T, W	255	10 CU. IN. PLUG
tA PICEA SITCHENSIS SITKA SPRUCE	Tree-A	T, W	70	10 CU. IN. PLUG
tA POPULUS BALSAMIFERA BLACK COTTONWOOD	Tree-A	UE, U	38	10 CU. IN. PLUG
tB PSEUDOTSUGA MENZIESII DOUGLAS-FIR	Tree-B	UE, U	106	10 CU. IN. PLUG
tA THUJA PLICATA WESTERN RED CEDAR	Tree-A	UE,U,T,W	111	10 CU. IN. PLUG

SHRUBS	TYPE	ZONE	QTY	SIZE
sB ACER CIRCINATUM VINE MAPLE	Shrub-B	UE, U	442	10 CU. IN. PLUG
sA CORNUS SERICEA RED TWIG DOGWOOD	Shrub-A	W	94	10 CU. IN. PLUG
sB CORYLUS CORNUTA WESTERN HAZELNUT	Shrub-B	UE, U	442	10 CU. IN. PLUG
sA CRATAEGUS DOUGLASII BLACK HAWTHORN	Shrub-A	T, W	369	10 CU. IN. PLUG
sB LONICERA INVOLUCRATA BLACK TWINBERRY	Shrub-B	W	249	10 CU. IN. PLUG
sB MAHONIA AQUIFOLIUM TALL OREGON GRAPE	Shrub-B	UE, U	444	10 CU. IN. PLUG
sA MALUS FUSCA WESTERN CRABAPPLE	Shrub-A	UE, U	177	10 CU. IN. PLUG
sA PHYSOCARPUS CAPITATUS PACIFIC NINEBARK	Shrub-A	T, W	369	10 CU. IN. PLUG
sA ROSA GYMNOCARPA BALDHIP ROSE	Shrub-A	UE, U	177	10 CU. IN. PLUG
sA ROSA NUTKANA NOOTKA ROSE	Shrub-A	T, W	369	10 CU. IN. PLUG
sA ROSA PISOCARPA PEA-FRUIT ROSE	Shrub-A	UE, U, T	452	10 CU. IN. PLUG
sA SPIRAEA DOUGLASII HARDHACK	Shrub-A	W	95	10 CU. IN. PLUG
sA SYMPHORICARPOS ALBUS SNOWBERRY	Shrub-A	UE, U, T	452	10 CU. IN. PLUG

LIVE CUTTINGS	TYPE	ZONE	QTY	SIZE
sB SALIX HOOKERIANA HOOKER'S WILLOW	Shrub-B	W	1240	FIVE (5) 3/4 - 1 1/2" DIA., 36" MIN. LENGTH
tA SALIX LUCIDA PACIFIC WILLOW	Tree-A	W	80	FIVE (5) 3/4 - 1 1/2" DIA., 36" MIN. LENGTH
sB SALIX SITCHENSIS SITKA WILLOW	Shrub-B	W	1240	FIVE (5) 3/4 - 1 1/2" DIA., 36" MIN. LENGTH
tB SALIX SCOULERIANA SCOULER'S WILLOW	Tree-B	T	530	FIVE (5) 3/4 - 1 1/2" DIA., 36" MIN. LENGTH

EMERGENTS – SPACED 24 INCHES O.C.	ZONE	QTY	SIZE
CAREX LYNGBYEI LYNDBY'S SEDGE	E	6866	10 CU. IN. PLUG
CAREX OBNUPTA SLOUGH SEDGE	E	6866	10 CU. IN. PLUG
CAREX STIPATA AWLFRUITED SEDGE	E	6866	10 CU. IN. PLUG
ELEOCHARIS PALUSTRIE CREEPING SPIKERUSH	E	6866	10 CU. IN. PLUG
JUNCUS ACUMINATUS TAPERED RUSH	E	6866	10 CU. IN. PLUG
JUNCUS ENSIFOLIUS DAGGERLEAF RUSH	E	6866	10 CU. IN. PLUG
SCIRPUS ACUTUS HARDSTEM BULRUSH	E	6866	10 CU. IN. PLUG
SCIRPUS AMERICANUS TULE	E	6866	10 CU. IN. PLUG
SCIRPUS MARITIMUM SALTMARSH BULRUSH	E	6866	10 CU. IN. PLUG

SCHEDULE KEY

ZONES
UE: UPLAND ENHANCEMENT
U: UPLAND
T: TRANSITIONAL
W: WETLAND PALUSTRINE FORESTED
E: WETLAND EMERGENT

Tree-A: SPREADING-TYPE TREE
Tree-B: GROUPING-TYPE TREE
Shrub-A: SPREADING-TYPE SHRUB
Shrub-B: GROUPING-TYPE SHRUB

NOTE: EACH QUANTITY OF LIVE CUTTINGS CONSITS OF FIVE INDIVIDUAL LIVE CUTTINGS SPACED 1' O.C.

NOTE: PLANT LAYOUT, QUANTITY, SIZES, & SPACING SUBJECT TO FURTHER REFINEMENT

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LOWER WAPATO CREEK HABITAT PROJECT
PLANTING SCHEDULE

6657
L3.3
7 OF 7

CONT/CONS: 071490 | TOWNSHIP: 20N | RANGE: 3E | SECTION: 1
M. ID: 101449.01 | DAT-HRZ: WA83-SF | VERT: MLLW (PORT OF TACOMA TIDAL)
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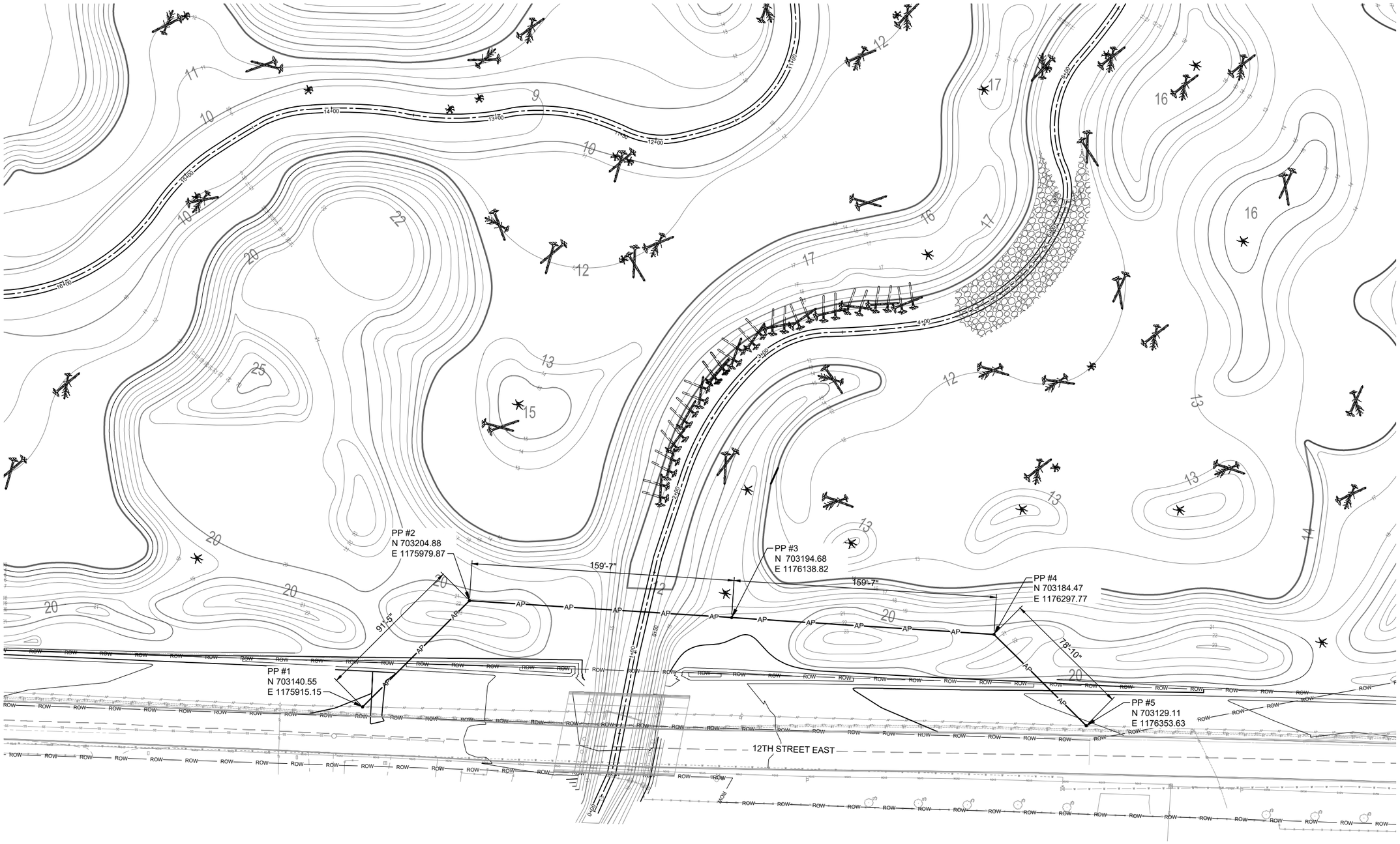

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1601 5th Avenue
Suite 800
Seattle, Washington 98101
T +1 (425) 778 6243

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LOWER WAPATO CREEK HABITAT PROJECT

LWCHP SHOOFLY PROPOSED POLE LOCATIONS ON PROPOSED CONTOURS

TOWNSHIP: 20N	RANGE: 3E	SECTION: 1	PROJ. ENGR
DAT-HRZ: WA83-SF	VERT: MLLW (PORT OF TACOMA TIDAL)	PRINTED BY: OLI87950 Dec 17, 2020	
PARCEL: 14	DRAWING SCALE: AS NOTED	PORT ADDRESS: 1 SITCOM PLAZA TACOMA, WA 98421	

6656

EX 3.1

1 OF 2

CONT/CONS:	071447
M. ID:	101449.01
PHASE:	90% Design

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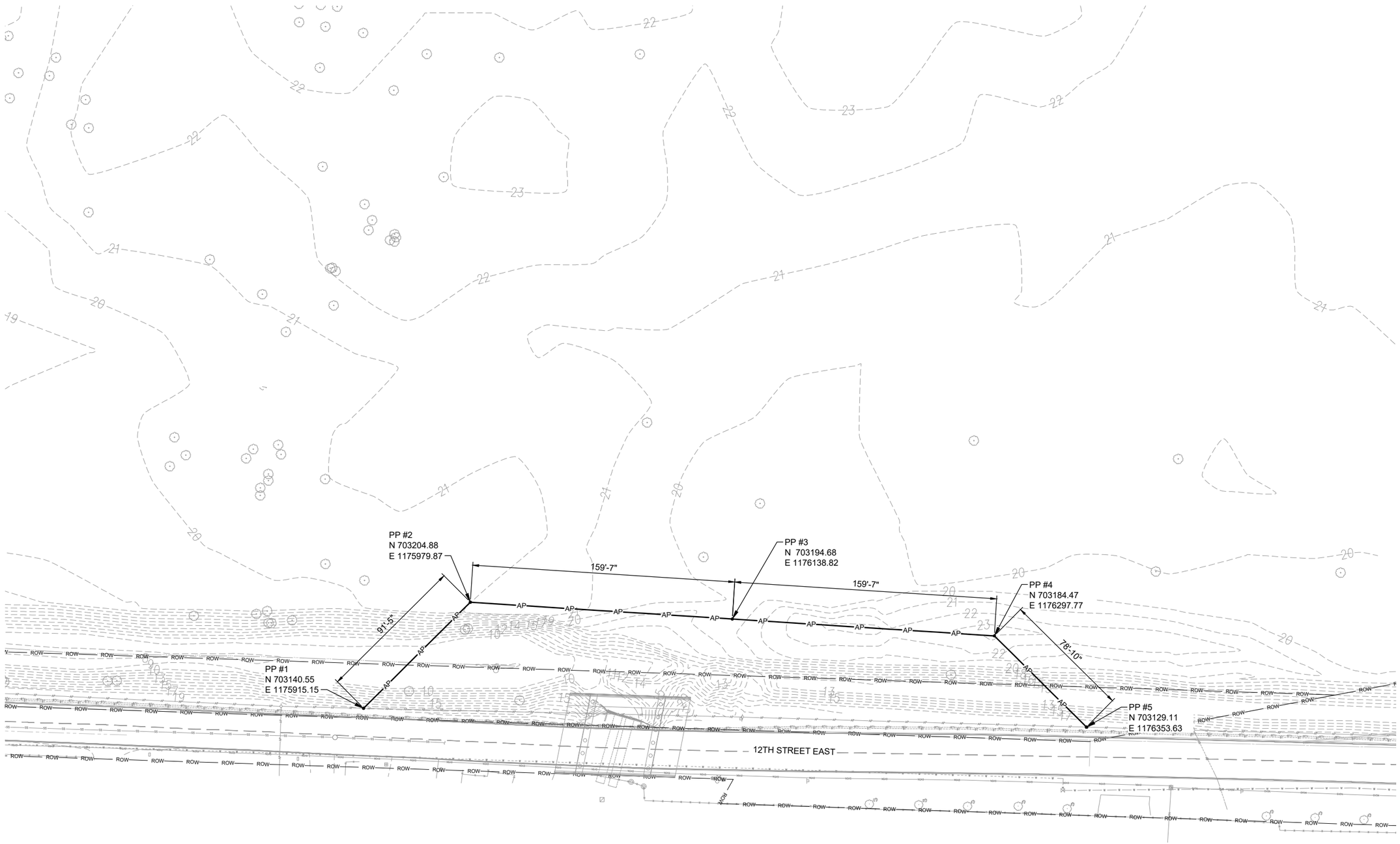

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DIRECTOR ENG. DATE PROJ. ENGR DATE

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MARK:	REVISION:	BY:	APPR:	DATE:

LOWER WAPATO CREEK HABITAT PROJECT

LWCHP SHOOFLY PROPOSED POLE LOCATIONS ON EXISTING CONTOURS

TOWNSHIP: 20N RANGE: 3E SECTION: 1

DAT-HRZ: WA83-SF VERT: MLLW (PORT OF TACOMA TIDAL)

PARCEL: 14 DRAWING SCALE: AS NOTED

6656

EX 3.1

2 OF 2

CONT/CONS: 071447

M. ID: 101449.01

PHASE: 90% Design

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BINDING EDGE