

Ecological No Net Loss Assessment Report

Prepared for

Jenn Henry
6802 96th Ave SE
Mercer Island, WA 98040

Prepared by

 **Northwest**
Environmental Consulting, LLC

Northwest Environmental Consulting, LLC
600 North 36th Street, Suite 423
Seattle, WA 98103
206-234-2520

March 2023

Purpose

The purpose of this report is to fulfill the requirements of City of Mercer Island Municipal Code (MICC) 19.13.050 Shoreline Master Program by assessing overall project impacts and proposed mitigation to determine if the project meets the “No Net Loss” General Regulation of the Shoreline Master Program.

No Net Loss is defined as “An ecological concept whereby conservation losses in one geographic or otherwise defined area are equaled by conservation gains in function in another area.”

Permits are being applied for a dock extension, bulkhead repair, and associated moorage improvements.

Location

The subject property is located at 6802 96th Ave SE (King County parcel number 2580700005) in the City of Mercer Island, Washington (see Appendix A – Sheet A1.0). The parcel is on the waterfront of Lake Washington, a shoreline of the state, that contains several endangered fish species listed under the Endangered Species Act and Washington State designated priority fish species.

Project Description

The proposed construction involves driving 8 new 8-inch epoxy coated steel piles and constructing a new deck with grated decking material at the waterward side of the existing dock. A single mooring pile will be removed. The existing unpermitted boat lift will be moved waterward towards the end of the new dock extension. ThruFlow grated decking will be used for decking on the new dock.

The existing bulkhead will be repaired by removing 74 linear feet of the existing rock bulkhead and removal of the existing submerged concrete slabs. The new bulkhead will be reconstructed by constructing a new rock bulkhead along the shoreline and around the 181 square foot beach cove with stairs.

The existing personal watercraft lift and existing boat lift were not permitted and are included in this analysis to be permitted. See Appendix A – Sheets A2.0 to A 6.0).

During construction, a floating boom will surround the work barge and dock. A silt curtain will be used during bulkhead repair. (See Appendix A – Sheets A7.0)

A shoreline vegetation plan is proposed, that will add 2 native conifer trees and 3 native shrubs and preserve the existing vegetation. These shoreline plantings will provide shade and allow beneficial allochthonous material to enter the lake along the shoreline (see Appendix A – Sheet A8.0 and a9.0).

Project drawings are included in Attachment A.

Approach

Northwest Environmental Consulting LLC (NVEC) biologist Brad Thiele conducted a site visit on September 9, 2022 to evaluate conditions on site and adjacent to the site. NVEC also

consulted the following sources for information on potential critical fish and wildlife habitat along this shoreline:

- Washington Department of Fish and Wildlife (WDFW): Priority Habitats and Species online database (<http://apps.wdfw.wa.gov/phsontheweb/>)
- WDFW SalmonScape online database of fish distribution and ESA listing units (<https://apps.wdfw.wa.gov/salmonscape/>)
- Mercer Island GIS online database (<https://chgis1.mercergov.org/Html5Viewer/Index.html?viewer=PubMaps&viewer=PubMaps>)

Site Description

The subject property is a shoreline tract in a residential neighborhood. It has shoreline on its eastern boundary with single-family homes to the north and south along the shoreline.

The only existing structures on the property are the house, and the existing wood decked dock.

The shoreline is armored with a basalt bulkhead. The substrate of the lake is sand and gravel with some remnant Eurasian milfoil still present towards the end of the dock.

The shoreline is lawn with ornamental beds along the top of the bulkhead and fence lines. The neighboring properties are similar in shoreline armoring and have docks. See attached photos in Appendix B- Photos.

Species Use

WDFW's PHS mapping and SalmonScape mapping tools show the following salmonid species using Lake Washington for migration and/or rearing: residential coastal cutthroat (*Oncorhynchus clarkii*), winter steelhead (*O. mykiss*), Dolly Varden/bull trout (*Salvelinus malma*), sockeye salmon (*O. nerka*), fall Chinook (*O. tshawytscha*), coho salmon (*O. kisutch*), and kokanee (*O. nerka*). The SalmonScape database maps the site as accessible to the Endangered Species Units (ESU) of Threatened Chinook and steelhead. Juveniles migrate and may rear in the waters near the project when traveling from spawning sites on other lake tributaries to the lake's outlet at the Hiram M. Chittenden Locks. The project site is accessible to any fish migrating or rearing in the lake. The shoreline is mapped as or very near a sockeye salmon spawning location.

Priority Habitats and Species mapping, maps a biodiversity area at Pioneer Park about 1,600 feet to the west but no other terrestrial priority species or habitats at or near the site.

The City of Mercer Island GIS Portal does not indicate any environmental features at the site.

Project Impacts and Conservation Measurements

Direct Impacts:

Sediments: Sediment disturbance will occur below the OHWM and along the shoreline of Lake Washington during pile removal installation, and removal of a section of the bulkhead.

Additionally, the tug and barge propwash may disturb sediments temporarily when making trips to/from the site.

Impacts to sediments should be minimal from installation and removal of the pilings.

The reconstruction and removal of the bulkhead has the potential to create a significant sediment plume. A weighted silt curtain will be installed around the perimeter to contain any suspended sediments that occur during construction of the bulkhead.

Shoreline: Removing the bulkhead will improve shoreline conditions by removing a section of bulkhead that creates a reflecting wave at high water that can cause erosion of shoreline sediments. In addition the beach cove can be beneficial to outmigrating salmonids at high water.

Planting additional native vegetation, including a native cedar tree, will increase the habitat functions of the shoreline by creating shade along the shoreline that will be an improvement from the existing baseline habitat conditions at the project site. These plants will provide overhanging cover for fish, structural diversity for birds and wildlife, detritus for aquatic invertebrates and long-term recruitment of woody material and other allochthonous food sources. The proposed planting plan is included (see Appendix A - Sheet A8.0).

Lakebed: Construction of the dock extension includes driving 8 8-inch pilings and removal of 1 10-inch pile. This will result in 2.3 square feet of lake bottom displacement.

Noise: Construction equipment will create noise audible to neighbors and in-water. Noise disturbance will be short-term and should have negligible effects on fish and wildlife in the area. Work will be completed during the in-water work window when juvenile fish are not expected to be present.

Potential spills: Short-term risks include the potential for petroleum spills that can occur with any equipment operation. The level of impact to the aquatic environment is expected to be minor because a trained crew will be onsite that will implement spill containment measures should a spill occur.

Shading: The proposed dock will increase overwater coverage by 233 square feet. The proposed decking will be ThruFlow grated decking. Grated decking allows more light to penetrate the waters below a dock, which can increase productivity in the water column, and reduce the full shade favored by salmonid predators. Salmonid predators are known to use hard shadowing under solid-decked docks to ambush juvenile salmonids. Reducing these hard shadows limits their ability to effectively hunt salmonids. In addition, hard shadowing may reduce juvenile salmonid outmigration times when encountered along the shoreline.

ThruFlow grated decking has measured performance at 43 percent light penetration (ThruFlow, 2021). Thus, the increase in lighting under the pier is effectively 57% of the area of a solid decked structure. Table 1 provides a summary of effective coverage:

Table 1 – Effective coverage

	Existing/ Proposed	Proposed grated	Conversion	Effective coverage	Reduction in effective coverage
New Grated Dock (SF)	0	233	0.57	133	100

The use of grated decking at the site reduces the effective coverage of the new structure by 100 square feet.

In addition the new dock configuration will place moorage into water 7 to 12 feet deep.

Recreational Boating: The project supports continued recreational boating, which has been identified as a limiting factor for salmonid populations in Lake Washington. The pier will not introduce additional boating to Lake Washington, as the owners could still access the lake from a public boat launch or private moorage facility.

Other Conservation measures:

Work window: The work will be completed during the prescribed in-water work window for this area of Lake Washington (July 16 to December 31). Operating within this time frame helps protect Chinook salmon, steelhead, bull trout and other salmonid fish species by doing work when juvenile fish are not expected to be present.

Best Management Practices: Applicable BMPs will be used, such as a floating boom around the in-water work area, to contain any floating debris that may escape during construction. The barge will have a perimeter containment sock to absorb oil and grease that might inadvertently wash from the barge during construction. A silt curtain will be used to contain turbidity that may be generated from removal of a section of existing bulkhead.

Hazardous material containment supplies such as spill absorbent pads and trained personnel will be required onsite during any phase of construction where machinery is in operation near surface waters.

Conclusion

Juvenile Chinook salmon, and other salmonids, rear and migrate along the Lake Washington shoreline.

There will be temporary impacts from noise and disturbed sediments during construction and bulkhead repair. Construction disturbance and dock reconfiguration will degrade ecological conditions at the site by increasing overwater coverage at the site. The effects of construction will be short term. The dock will use grated decking to minimize the effective overwater coverage to a net gain of 133 square feet. The grating reduces the hard shadows favored by salmonid predators and increases productivity under the pier. In addition, the new structure is in deeper water more than 30 feet from shore. Overwater structures may slow juvenile salmonid outmigration times. Constructing the new moorage away from shore will reduce the chances of delaying outmigrating juvenile salmonids.

The project will displace about 2.3 square feet of lakebed from installation of new pilings.

Ecological conditions at the site will be improved by placing the watercraft lift in the deeper water to prevent or reduce sediment disturbance during docking and castoff from propwash over the existing condition.

A shoreline planting plan will be implemented that will add native trees and shrubs to the shoreline that will provide natural shading, allochthonous food sources and will eventually be a source of woody materials that will improve shoreline conditions at the site in the long-term.

Removing the concrete slabs will restore shoreline substrates at the cove.

The project will minimize construction effects on the environment by following the prescribed fish window and using applicable BMPs to prevent construction spills, turbidity, and floating

debris from escaping the area. The construction crew will retrieve all dropped items from the bottom and dispose of them properly.

This project has been designed to meet current residential dock standards and will use Best Management Practices to reduce project impacts. The conservation measures are designed to improve ecological functions or prevent further degradation of habitat **and will result in No Net Loss of ecological functions.**

Document Preparers

Brad Thiele

Biologist

28 years of experience

Northwest Environmental
Consulting, LLC (NVEC)

NVEC followed standard acceptable field methods and protocols at the time work was performed. These standards may include delineation of wetland and stream boundaries, characterization, rating, functional analyses, impact assessments and mitigation of impacts. The conclusions and findings in this report are based on field observations and measurements and represent our best professional judgment and to some extent rely on other professional service firms and available site information. Within the limitations of project scope, budget, and seasonal variations, we believe the information provided herein is accurate and true to the best of our knowledge. Northwest Environmental Consulting does not warrant any assumptions or conclusions not expressly made in this report or based on information or analyses other than what is included herein.

REFERENCES

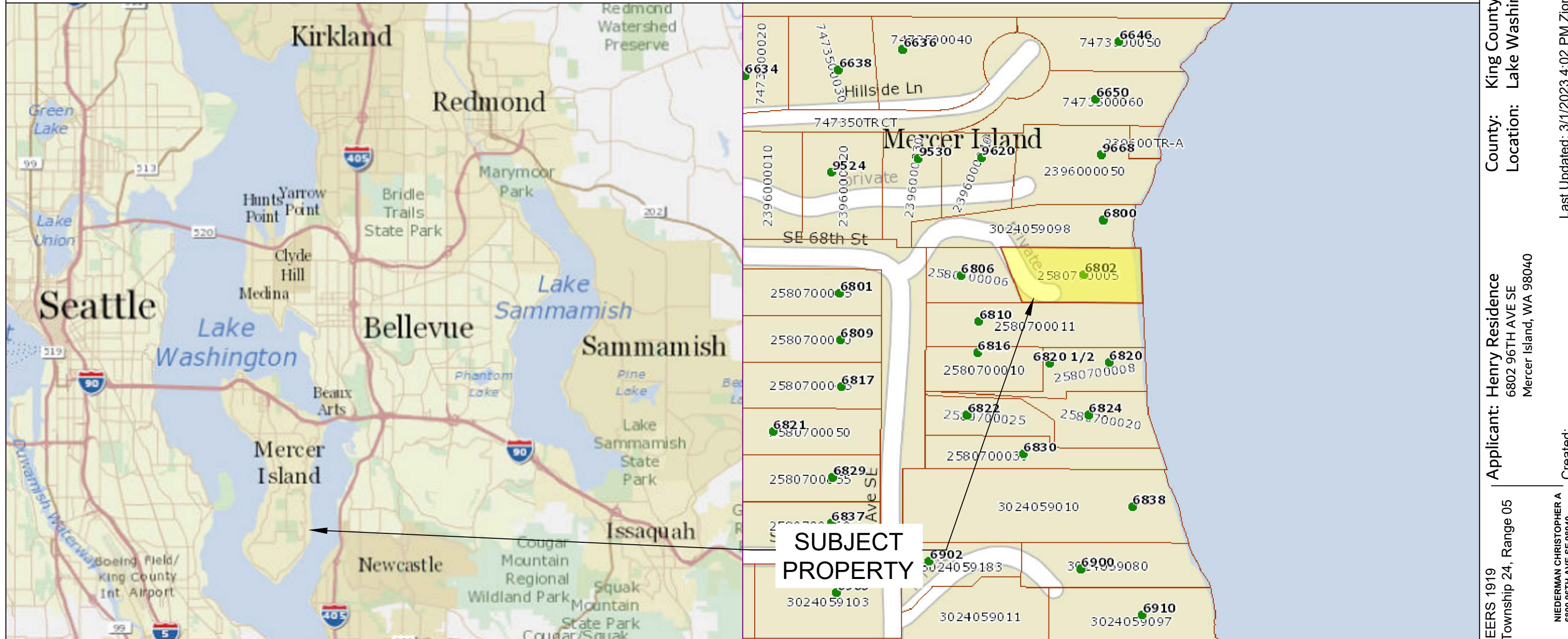
King County. 2022. King County iMap. Online database. Accessed September 2022 at <https://gismaps.kingcounty.gov/iMap/>

Washington Department of Fish and Wildlife (WDFW). 2022. Priority Habitats and Species. Online database. Accessed September 2022 at <http://apps.wdfw.wa.gov/phsontheweb/>

WDFW. 2022. SalmonScape. Online database. Accessed September 2022 at <http://apps.wdfw.wa.gov/salmonscape/>

Appendix A: Project Drawings

SITE PLAN



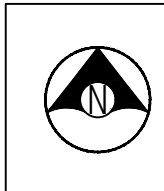
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Legal Description: FLOODS LAKE SIDE TRS DIV #3 LOT B MERCER ISLAND SHORT PLAT HOLYOKE AF #7507230710 SD PLAT DAF LOT 1 BLK 1 FLOODS LAKE SIDE TRS DIV #3 TGW SH LDS ADJ

Plat Block: 1
Plat Lot: 1

PARCEL
LAT: 47.54198
LONG: -122.21001

DOCK
LAT: 47.541889
LONG: -122.209674



Seaborn Pile Driving
1080 W Ewing St
Seattle, WA 98119

Office: 206-236-1700 ext. 3
www.seabornpiledriving.com

Scope of Work: We propose to drive (8) new steel piles, remove (1) existing mooring pile, construct a 233 SQFT extension, repair 74 LnFt of existing bulkhead, remove 12.44 cu yd concrete slabs, install a new cove with stairs, and permit (2) existing boat lifts.

County: King County
Location: Lake Washington

Applicant: Henry Residence
6802 96TH AVE SE
Mercer Island, WA 98040

Datum: CORPS OF ENGINEERS 1919
NE Quarter Of Section 30, Township 24, Range 05

Adjacent Owners:
STIVERS, JEAN GILLILAND-TTEE
6810 96TH AVE SE 98040

NIEDERMAN CHRISTOPHER A
6800 96TH AVE SE 98040

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GENERAL NOTES:

MATERIALS SPEC LIST:

Decking Material: FRPP - Fiberglass reinforced polypropylene

Light permeable percentage:

- * Surface - 43%
- * 18" Dock Height - 61%

Sewer:

- * All sewer is field verified by probing the lake bed manually during the allowed work windows for the area.

Piles:

- * All new piles are epoxy coated steel piles *size varies, see plan set
- * Piles are driven using the vibro method

CODE REFERENCES: Mercer Island

We are applying for the permit to be reviewed under the:

“Alternative Development Standards” per MIMC 19.13050(F)(3).

The code official shall approve moorage facilities not in compliance with the development standards in subsection (F)(1) or (F)(2) of this section subject to both U.S. Army Corps of Engineers and Washington Department of Fish and Wildlife approval to an alternate project design. The following requirements and all other applicable provisions in this chapter shall be met:

i. The dock must be no larger than authorized through state and federal approval; Ch. 19.13 Shoreline Master Program | Mercer Island City Code Page 30 of 34 The Mercer Island City Code is current through Ordinance 20C-13, passed June 16, 2020.

The dock is no longer than authorized.

ii. The maximum width must comply with the width of moorage facilities standards specified in standards specified in subsection D of this section (Table D);

The maximum width is within compliance.

iii. The minimum water depth must be no shallower than authorized through state and federal approval;

The minimum water depth is within compliance.

iv. The applicant must demonstrate to the code official's satisfaction that the proposed project will not create a net loss in ecological function of the shorelands; and

The No Net Loss report is attached.

v. The applicant must provide the city with documentation of approval of the moorage facilities by both the U.S. Army Corps of Engineers and the Washington Department of Fish and Wildlife.

The plan set is is review by CORPS and WDFW.

Mitigation" Disturbance of bank vegetation shall be limited to the minimum amount necessary to accomplish the project. Disturbed bank vegetation shall be replaced with native, locally adapted herbaceous and/or woody vegetation. Herbaceous plantings shall occur within 48 hours of the completion of construction. Woody vegetation components shall be planted in the fall or early winter, whichever occurs first. The applicant shall take appropriate measures to ensure revegetation success;

Last permit issued for property: Permit # 0408-290 Sep 29, 2004

Dock established/constructed: 5/1/1967



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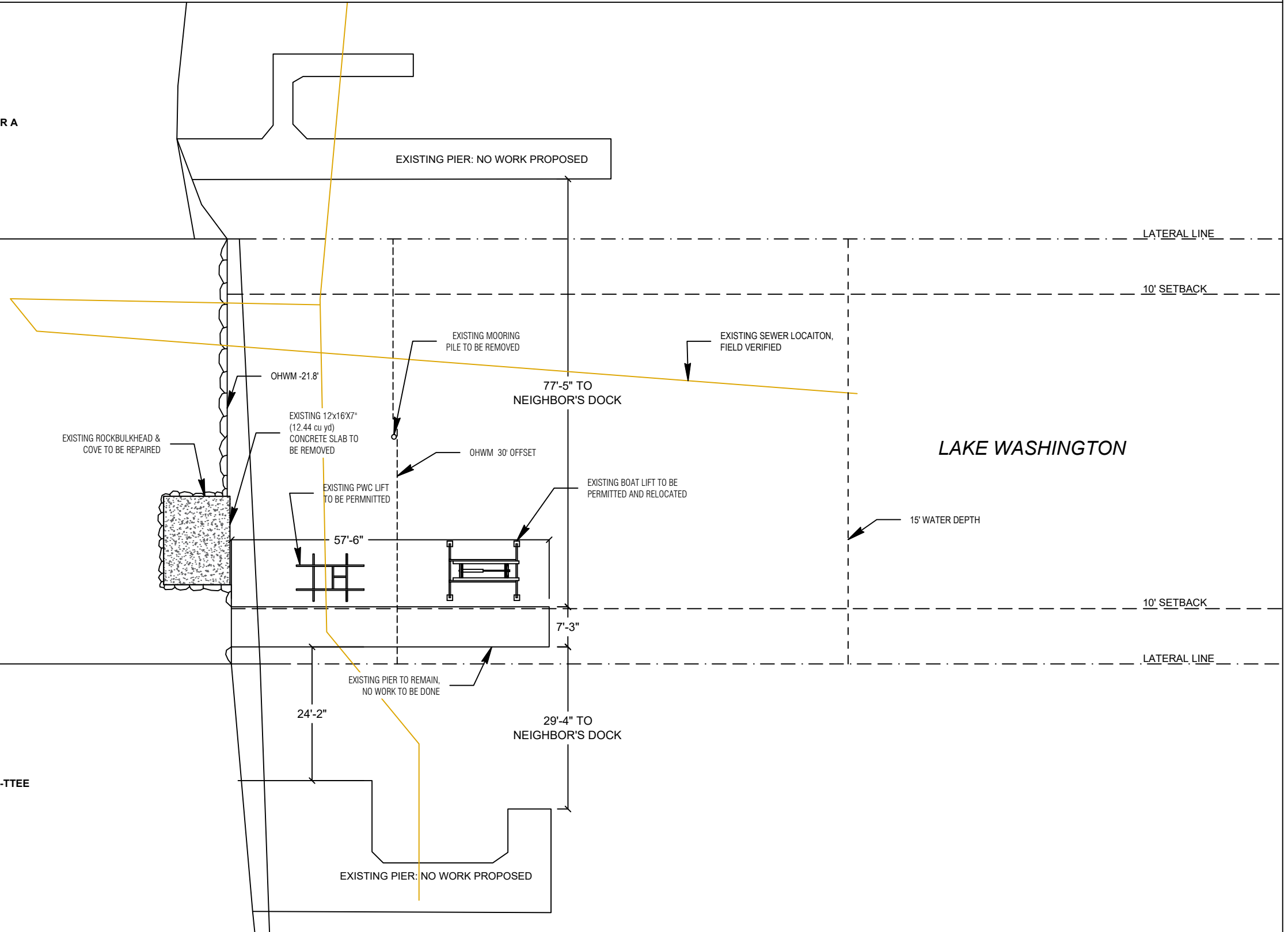
EXISTING CONDITIONS

****CLEAN UP LAKE AROUND PROJECT****

NIEDERMAN CHRISTOPHER A
6800 96TH AVE SE 98040

SUBJECT PROPERTY:
Henry Residence
6802 96th Ave SE 98040
Parcel #: 258070-0005

STIVERS JEAN GILLILAND-TTEE
6810 96TH AVE SE 98040



SCALE: 1" = 20'-0"
0' 5' 10' 20'



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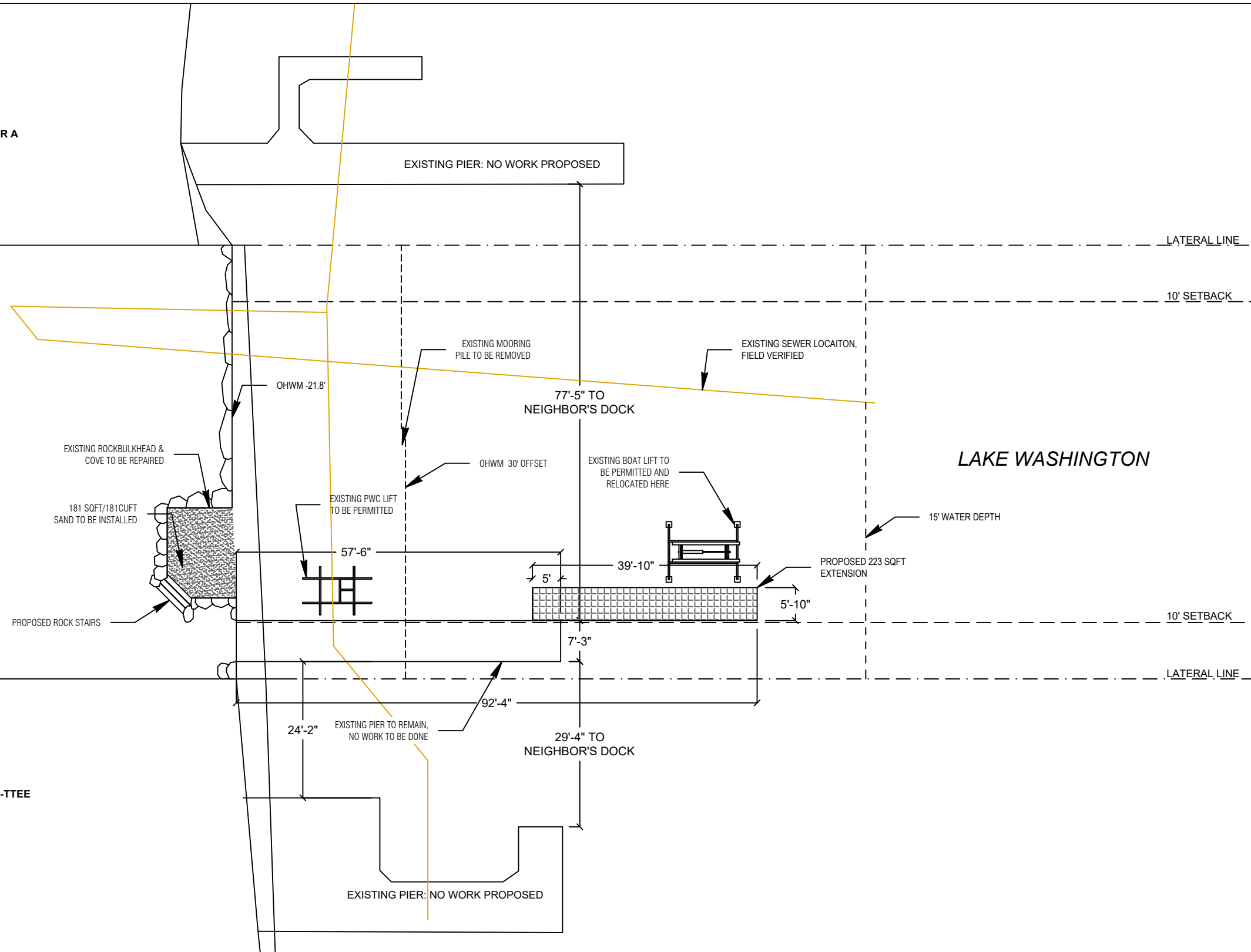
PROPOSED CONDITIONS

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PIER DETAILS - EXISTING/PROPOSED PLAN VIEW

LEGEND

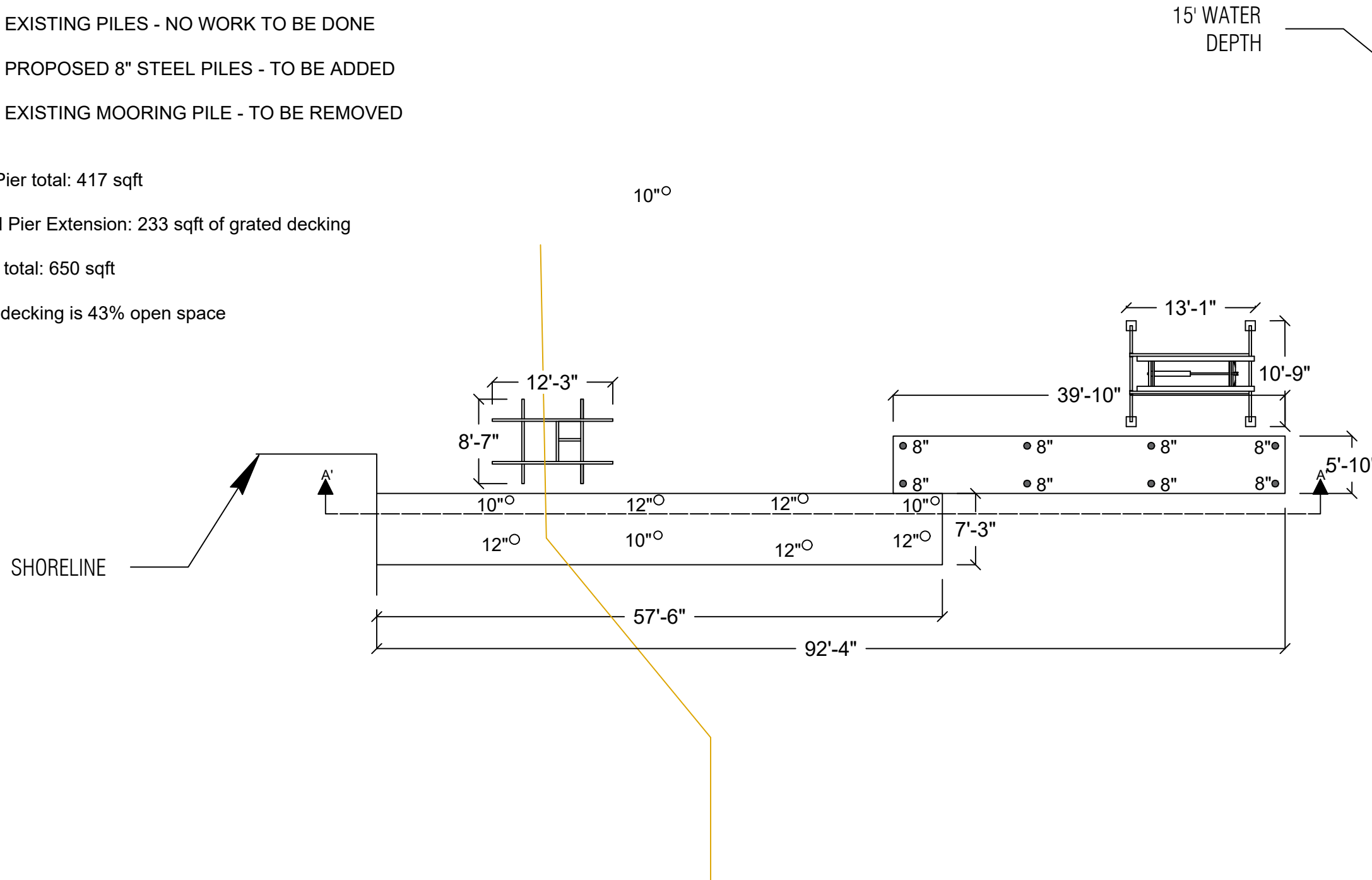
- (8) EXISTING PILES - NO WORK TO BE DONE
- (8) PROPOSED 8" STEEL PILES - TO BE ADDED
- (1) EXISTING MOORING PILE - TO BE REMOVED

Existing Pier total: 417 sqft

Proposed Pier Extension: 233 sqft of grated decking

New Pier total: 650 sqft

**Grated decking is 43% open space



PLAN VIEW



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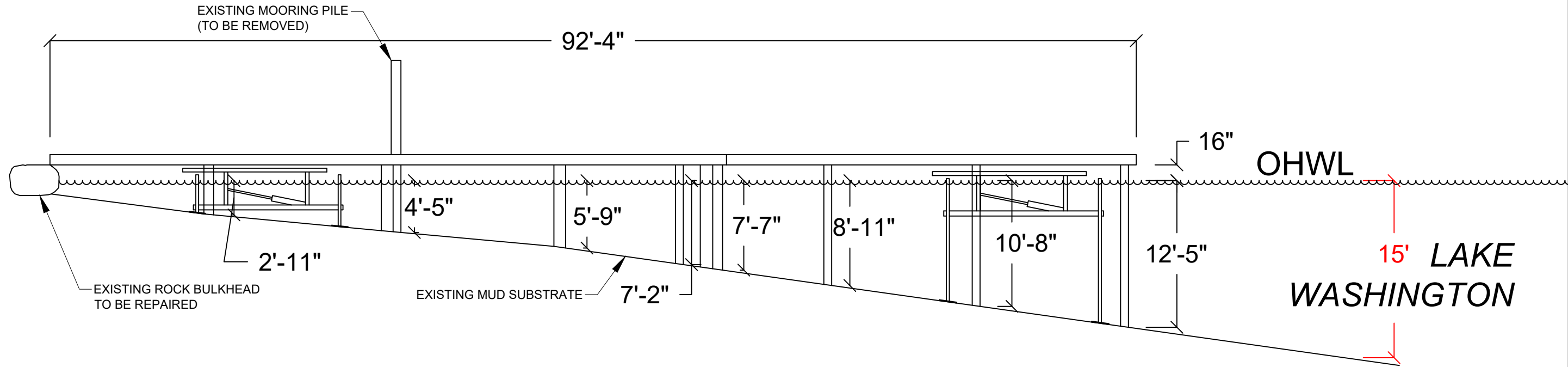
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PIER DETAILS EXISTING/PROPOSED - SECTION VIEW



SECTION VIEW: A'-A'



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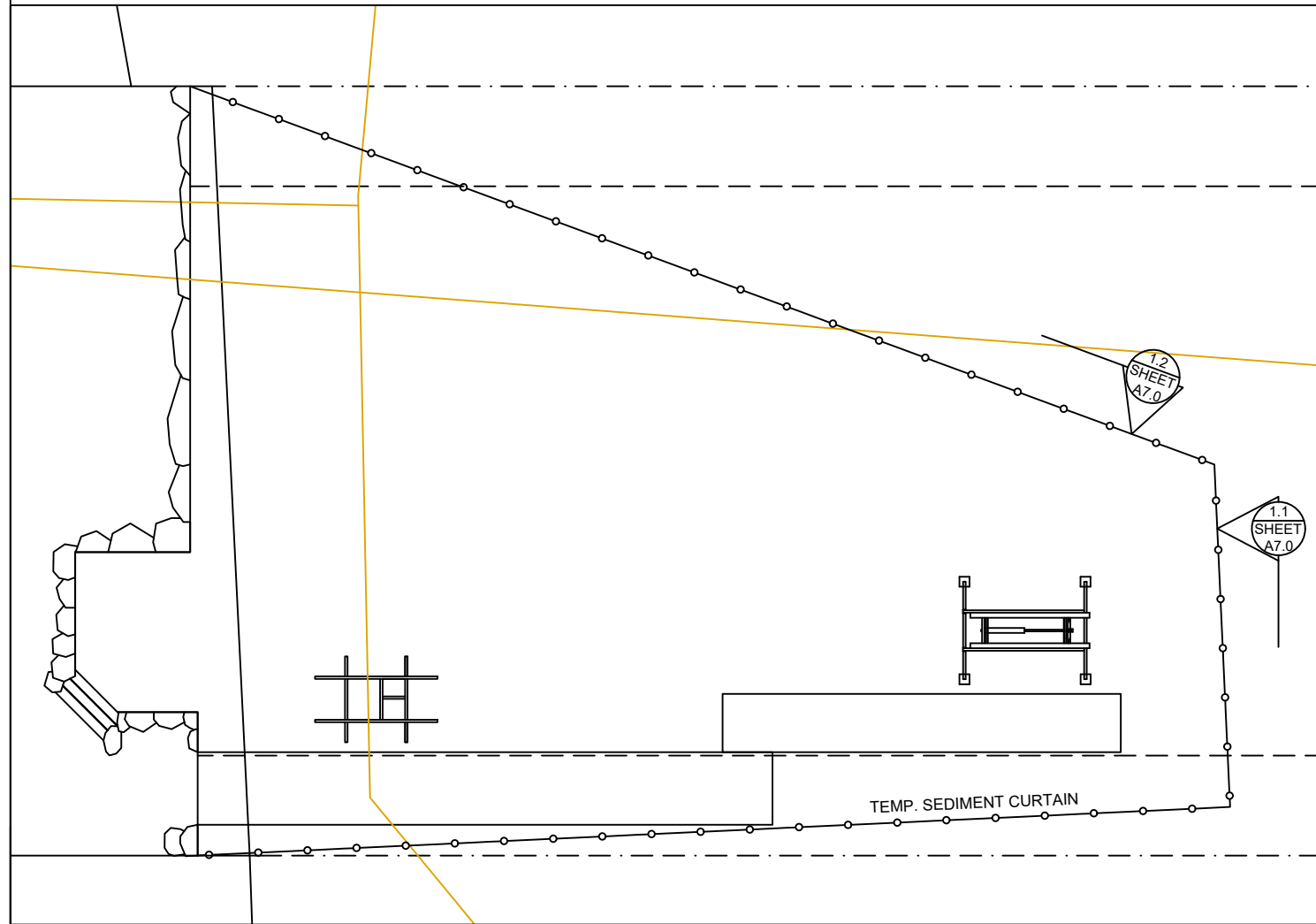
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BMP INFORMATION

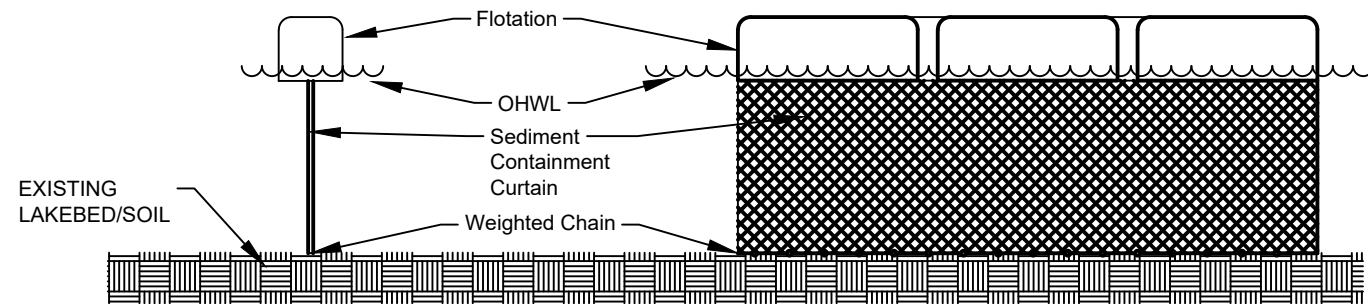


BMP NOTES:

- A. Constant vigilance shall be kept for the presence of protected fish species during all aspects of the proposed action, particularly during in-water activities such as vessel movement, deployment of anchors & spuds, pile driving, dredging, and placement of gravels and other fill.
1. The project manager shall designate an appropriate number of competent observers to survey the project site and adjacent areas for protected species, including the presence of fish as conditions allow.
 2. Visual surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than an hour. Periodic additional visual surveys throughout the work day are strongly recommended.
 3. All in-water work shall be done during the in-water work window for the waterbody. Where there is a difference between the USCOE and WDFW work windows, the overlap of the two shall apply.
 4. All pile driving and extraction shall be postponed or halted when obvious aggregations or schooling of fish are observed within 50 yards of that work, and shall only begin/resume after the animals have voluntarily departed the area.
 5. When piloting vessels, vessel operators shall operate at speeds and power settings to avoid grounding vessels, and minimize substrate scour and mobilization of bottom sediments.
- B. No contamination of the marine environment shall result from project-related activities.
1. Appropriate materials to contain and clean potential spills shall be stored and readily available at the work site and/or aboard project-related vessels.
 2. The project manager and heavy equipment operators shall perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations shall be postponed or halted should a leak be detected, and shall not proceed until the leak is repaired and the equipment is cleaned.
 3. To the greatest extent practicable, utilize biodegradable oils for equipment that would be operated in or near water.
 4. Fueling of land-based vehicles and equipment shall take place at least 50 feet away from the water, preferably over an impervious surface. Fueling of vessels shall be done at approved fueling facilities.
 5. Turbidity and siltation from project-related work shall be minimized and contained through the appropriate use of erosion control practices, effective silt containment devices, and the curtailment of work during adverse weather and tidal/flow conditions.
 6. All wastes shall be collected and contained for proper disposal at approved upland disposal sites appropriate for the material(s).
 7. When removing piles and other similarly treated wood, containment curtain must fully enclose the work area. Wood debris, oils, and any other materials released into lake waters must be collected, removed, and properly disposed of at approved disposal sites.
 8. All in- and over-water wood cutting would be limited to the minimum required to remove the subject wood component, and all cutting work should be enclosed within floating containment curtain.
 9. When removing piles, no actions shall be taken that would cause adhering sediments to return to lake waters.
 10. Above-water containment shall be installed around removed piles to prevent sediment laden waters from returning to lake waters.
 11. Construction staging (including stocking of materials, etc.) will occur on the supply barge.
 12. All Exposed wood to be used on the project will be treated with a cheminite treatment.

DETAIL 1.1

DETAIL 1.2



DETAIL 1.1 & 1.2



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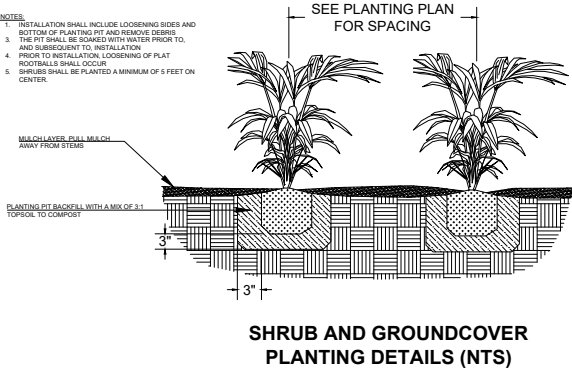
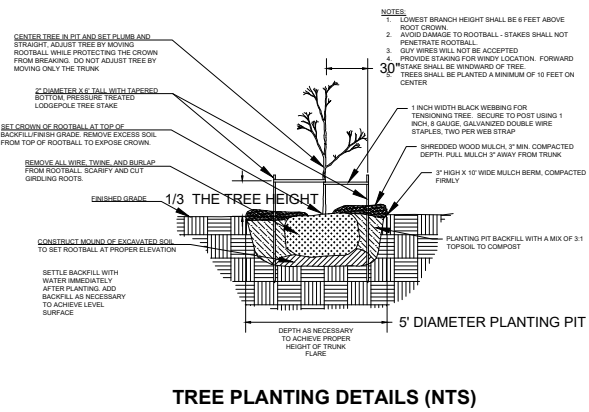
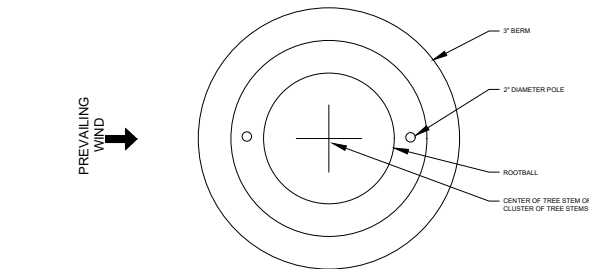
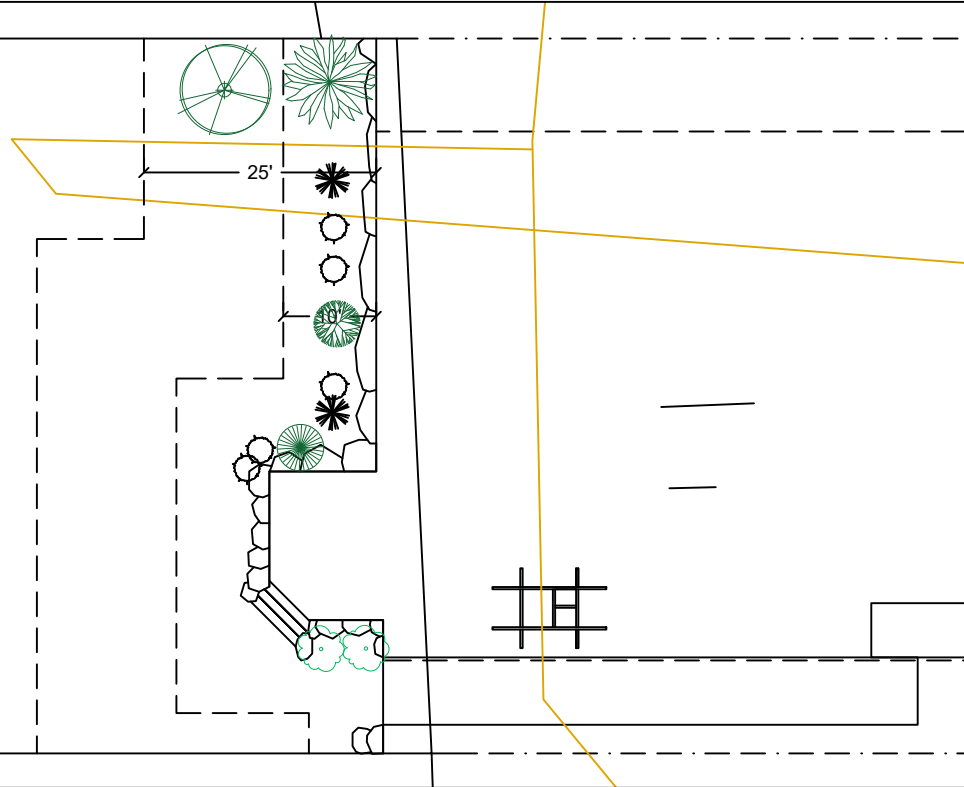
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MITIGATION PLAN



Notes:

1. Shrubs are show, and shall be planted, at least five feet on center. Trees are show, and shall be planted, at least ten feet to center.
2. The property owner will implement and abide by the shoreline planting plan. The plants shall be installed before or concurrent with the work authorized by this permit. A report, as-built drawing and photographs demonstrating the plants have been installed or a report on the status of project construction will be submitted to the U.S. Army Corps of Engineers, Seattle District, Regulatory Branch, within 12 months from the date of permit issuance. This reporting requirement may be met by completing and submitting a U.S. Army Corps of Engineers approved Report for Mitigation Work Completion form.
3. The property owner will maintain and monitor the survival of installed shoreline plantings for five years after the U.S. Army Corps of Engineers accepts the as-built report. Installed plants shall achieve 100% survival during monitoring Years 1 and 2. Installed plants shall achieve at least 80% survival during monitoring Years 3, 4 and 5. Percent survival is based on the total number of plants installed in accordance with the approved riparian planting plan. Individual plants that die will be replaced with native riparian species in order to meet the survival performance standards.
4. The property owner will provide annual monitoring reports for five years (Monitoring Years 1-5). Each annual monitoring report will include written and photographic documentation on plant mortality and replanting efforts and will document whether the performance standards are being met. Photos will be taken from established points and used repeatedly for each monitoring year. In addition to photos at designated points, photo documentation will include a panoramic view of the entire planting area. Submitted photos will be formatted on standard 8 1/2 x 11" paper, dated with the date the photo was taken, and clearly labeled with the direction from which the photo was taken. The photo location points will be identified on an appropriate drawing. Annual shoreline planting monitoring reports will be submitted to the U.S. Army Corps of Engineers, Seattle District, Regulatory Branch, by November 31 of each monitoring year. This reporting requirement may be met by completing and submitting a U.S. Army Corps of Engineers approved Mitigation Planting Monitoring Report form.

PROPOSED PLANTING SPECIES/QUANTITIES

SYMBOL	LATIN NAME	COMMON NAME	QTY	SIZE
	Pinaceae Menziesii	Douglas Fir	1	3 ft
	Pinus contorta v contorta	Shore pine	1	3 ft
	Philadelphus lewisii	Mock Orange	1	1 Gallon
	Acer Circinatum	Vine Maple	1	1 Gallon
	Rubus Parviflorus	Thimbleberry	2	1 Gallon

PLANTS: Shrubs to be installed 5ft on center and trees to be installed 10ft on center. All proposed existing plants for credit have been established for 5 years or more on the property.

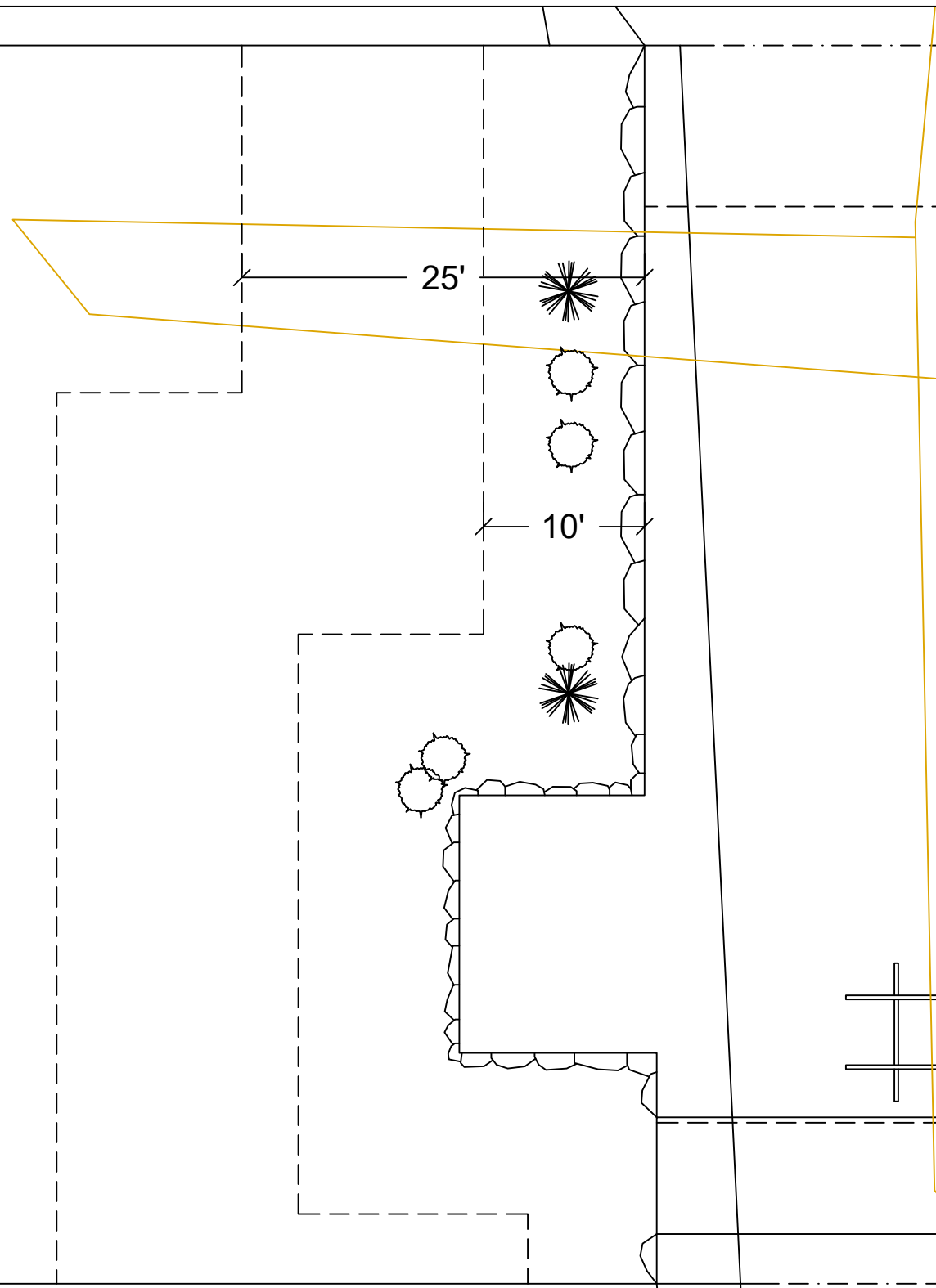


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EXISTING PLANT PLAN



EXISTING PLANTING SPECIES/QUANTITIES

SYMBOL	SCIENTIFIC NAME	COMMON NAME	QTY	SIZE
	Cichorium Intybus	Common Chicory	2	~3ft
	Hemerocallis Fulva	Orange Daylily	4	~2ft
	Festuca Glauca	Blue Fescue	N/A	~ 1ft

PLAN VIEW

EXISTING PLANTS TABLE



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GENERAL ENGINEERING NOTES:

GENERAL

- ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS.
- CONTRACTOR SHALL VERIFY ALL LEVELS, DIMENSIONS, AND EXISTING CONDITIONS IN THE FIELD BEFORE PROCEEDING. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR FIELD CHANGES PRIOR TO INSTALLATION OR FABRICATION. IN CASE OF DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS, THE CONTRACTOR SHALL OBTAIN DIRECTION FROM THE ENGINEER BEFORE PROCEEDING. DIMENSIONS NOTED AS PLUS OR MINUS (\pm) OR REF INDICATE UNVERIFIED DIMENSIONS AND ARE APPROXIMATE. NOTIFY ENGINEER IMMEDIATELY OF CONFLICTS OR EXCESSIVE VARIATIONS FROM INDICATED DIMENSIONS, NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS – DO NOT SCALE DRAWINGS. DIMENSIONS OF EXISTING CONDITIONS ARE BASED ON RECORD DRAWINGS AND ARE TO BE FIELD-VERIFIED BY THE CONTRACTOR.
- CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND BRACING OF ALL STRUCTURAL MEMBERS AND EXISTING MEMBERS, AS REQUIRED, AND IN A MANNER SUITABLE TO WORK SEQUENCE. TEMPORARY SHORING AND BRACING SHALL NOT BE REMOVED UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE DRAWINGS AND MATERIALS HAVE ACHIEVED DESIGN STRENGTH.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES REQUIRED TO PERFORM THE WORK.
- ALL MATERIALS SHALL BE NEW, UNO.
- ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE DRAWINGS, NOTES, AND MANUFACTURER RECOMMENDATIONS. IF THERE ARE ANY CONFLICTS BETWEEN THESE DOCUMENTS, THE ENGINEER SHALL BE CONTACTED FOR DIRECTION.
- THE CONTRACTOR SHALL CAREFULLY DECONSTRUCT EXISTING ELEMENTS AS NECESSARY TO ACCESS THE WORK AREAS. SUCH DECONSTRUCTION MAY INCLUDE, INTERIOR AND EXTERIOR FINISHES. ALL DECONSTRUCTION ELEMENTS SHALL BE RECONSTRUCTED TO MATCH THE ORIGINAL APPEARANCE AND MEET THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE.
- ALL MOORAGE COVERS AND LIFTS SHALL BE FREESTANDING AND SHALL NOT BE ATTACHED TO THE DOCK, UNLESS NOTED OTHERWISE.

CODES AND STANDARDS

- ALL METHODS AND MATERIALS SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE, 2018 EDITION.
- AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD 7-16 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
- WOOD WORK SHALL CONFORM TO THE NATIONAL DESIGN SPECIFICATION (NDS) 2018 EDITION.
- AMERICAN SOCIETY FOR TESTING AND MATERIALS, CURRENT EDITION

DESIGN CRITERIA

WIND DESIGN: WIND LOAD IS BASED ON ASCE 7 CHAPTER 29 WITH THE FOLLOWING FACTORS

EXPOSURE CATEGORY = D RISK CATEGORY = II
 $V_{3s} = 98\text{MPH}$ WIND IMPORTANCE FACTOR, $I_w = 1.0$

DESIGN VESSEL IS 30' LONG WITH AVERAGE FREEBOARD OF 11'-6"
 DESIGN VESSEL IS 60' LONG WITH AVERAGE FREEBOARD OF 14'

WAVE LOADS: $P = 328\text{ LBS}$

LIVE LOADS: LIVE LOAD = 40 PSF
 SNOW LOAD = 25 PSF

SEISMIC LOADS: DOCK PILING $R = 2.0$
 SEISMIC IMPORTANCE = 1.0
 $SD_1 = 0.595g$

STRUCTURAL STEEL

- ALL MISCELLANEOUS STEEL SHAPES AND PLATES, EXCEPT AS NOTED BELOW, SHALL CONFORM TO ASTM 36.
- ALL WF SHAPES SHALL CONFORM TO ASTM A992, $F_y = 50\text{ KSI}$
- ALL PILES SHALL CONFORM TO ASTM A252 GRADE 3, $F_y = 45\text{ KSI}$
- ALL BOLTS SHALL BE ASTM A307, UNO.
- ALL NUTS SHALL BE ASTM A563, UNO.
- ALL WASHERS SHALL BE ASTM F436, UNO.
- ALL THREADED RODS SHALL CONFORM TO ASTM F1554, GRADE 36.
- ALL STEEL MEMBERS AND FASTENERS THAT ARE NOT EPOXY COATED SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153 AS APPLICABLE.

WELDING

- ALL WELDING SHALL BE PERFORMED BY WELDERS QUALIFIED FOR THE WELD AND POSITION SHOWN IN ACCORDANCE WITH AWS AND HAVING CURRENT CERTIFICATION FROM WABO.
- ALL WELDS SHALL BE PERFORMED WITH PROCEDURES PREQUALIFIED OR QUALIFIED IN ACCORDANCE WITH AWS D1.1.
- THE WELDS SHOWN ARE FOR THE FINAL CONNECTIONS, FIELD WELD SYMBOLS ARE SHOWN WHERE FIELD WELDS ARE REQUIRED BY THE STRUCTURAL DESIGN. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING IF A WELD SHOULD BE SHOP OR FIELD WELDED IN ORDER TO FACILITATE THE STRUCTURAL STEEL ERECTION.
- WELDING ELECTRODES SHALL BE 70 KSI STRENGTH AND SHALL BE "LOW-HYDROGEN ELECTRODES."

WOOD

- EACH PIECE OF LUMBER SHALL BEAR A STAMP INDICATING A GRADE MARK OF THE WEST COAST LUMBER INSPECTION BUREAU (WCLIB), WESTERN WOOD PRODUCTS ASSOCIATION (WWPA), OR OTHER AGENCY ACCREDITED BY THE AMERICAN STANDARD COMMITTEE (ALSC).
- DIMENSION LUMBER SHALL BE P.T. DOUG-FIR NO 2 OR BETTER, UNLESS NOTED OTHERWISE.
- STRUCTURAL GLUED LAMINATED TIMBER SHALL BE ALASKAN CEDAR AC.AC 20F-V12.
- WOOD SHALL BE SEASONED DRY WITH A MAXIMUM MOISTURE CONTENT OF 19%.
- PRESERVATIVE TREATED WOOD SHALL CONFORM TO THE AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) UC4A. ALL WOOD SHALL BEAR A TREATMENT IDENTIFICATION MARK BY THE CERTIFYING AGENCY.
- ALL BOLT HOLES IN WOOD MEMBERS SHALL BE A MINIMUM OF 1/32" TO MAXIMUM OF 1/16" LARGER THAN THE BOLT DIAMETER. PROVIDE PLATE WASHERS WHERE NUTS, BEAR ON WOOD. CUT WASHERS SHALL MEASURE 2 1/4" ϕ x 3/16" THICK.

GRATING

- DECK GRATING SHALL BE SUNWALK 90 SERIES OR APPROVED EQUAL.

ABBREVIATIONS

⊙	AT
AWS	AMERICAN WELDING SOCIETY
CL	CENTER LINE
CLR	CLEAR
COL	COLUMN
CONT.	CONTINUOUS
DF	DOUG FIR
EA	EACH
EX OR (E)	EXISTING
GLB	GLULAM BEAM
LLH	LONG LEG HORIZONTAL
MIN	MINIMUM
MNFR	MANUFACTURER
OC	ON CENTER
OPP	OPPOSITE
PL	PLATE
PSI	POUNDS PER SQUARE INCH
PSF	POUNDS PER SQUARE FOOT
P.T.	PRESERVATIVE TREATED
SF	SQUARE FOOT
REF	REFERENCE
SIM	SIMILAR
SS	STAINLESS STEEL
t	THICK
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
WABO	WASHINGTON ASSOCIATION OF BUILDING OFFICIALS
WF	WIDE FLANGE
W/	WITH



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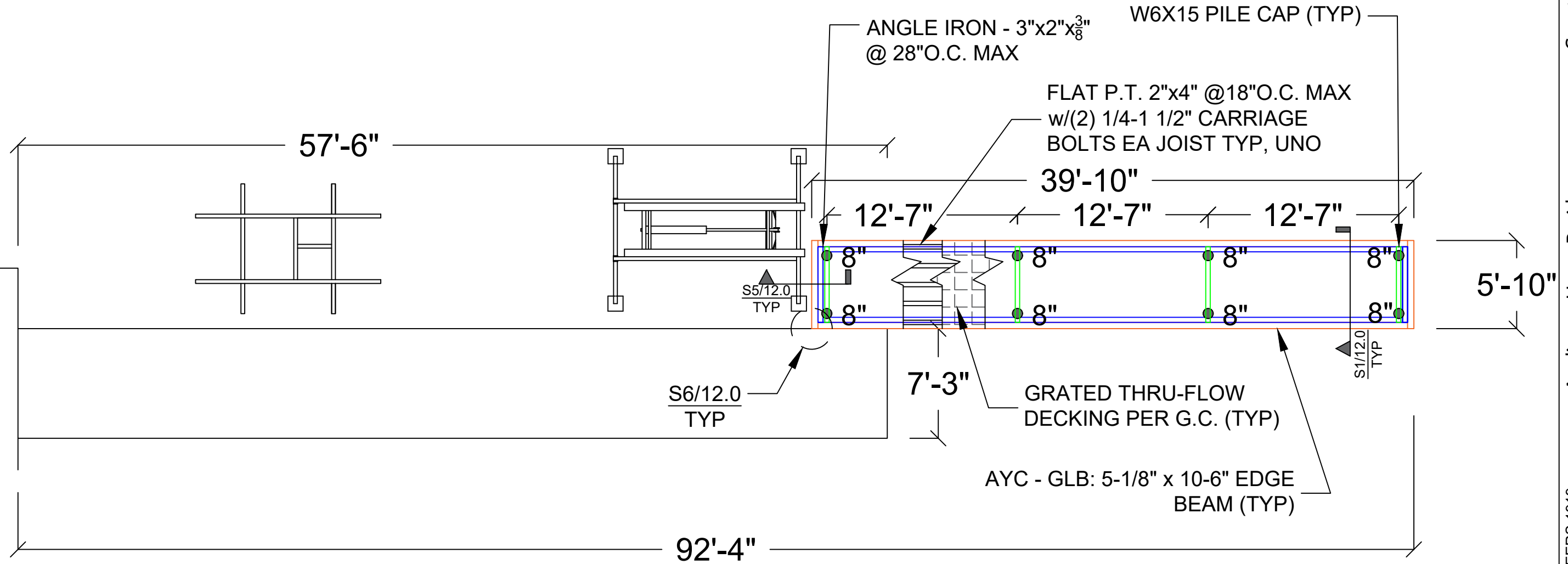
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FRAMING PLAN



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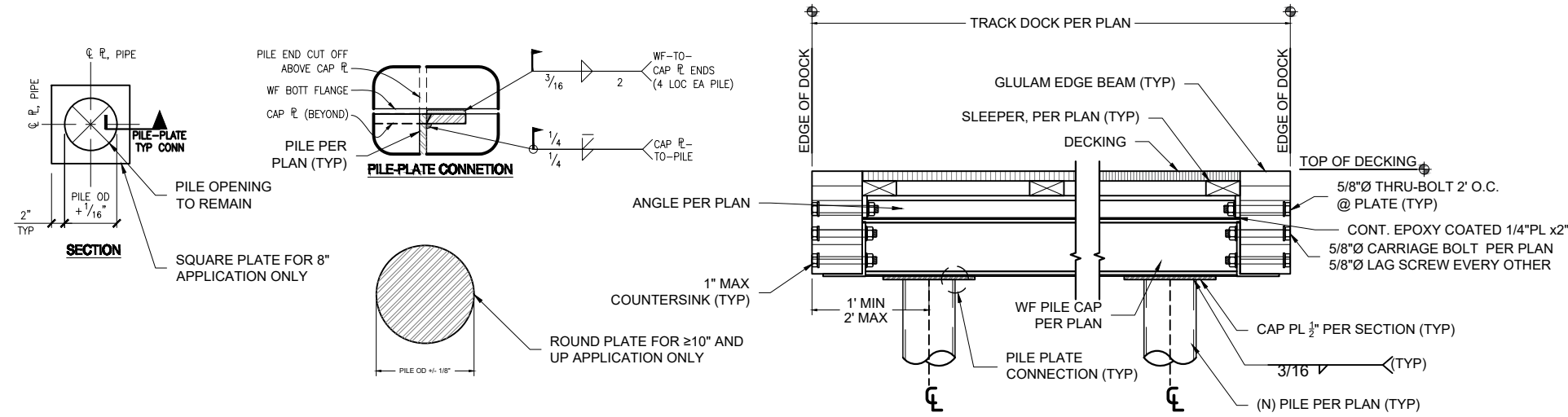


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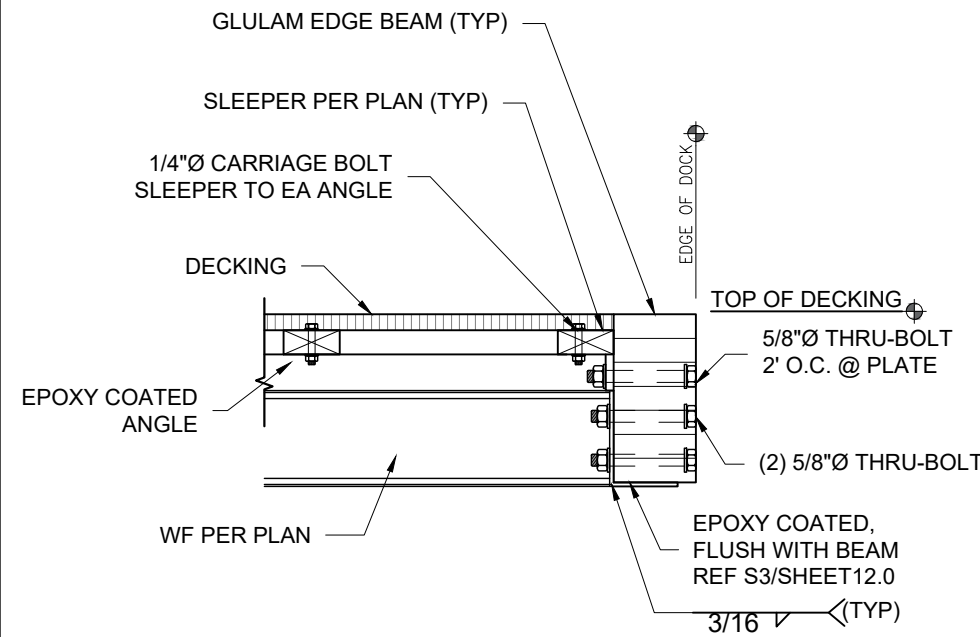
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DETAILS - TRACK

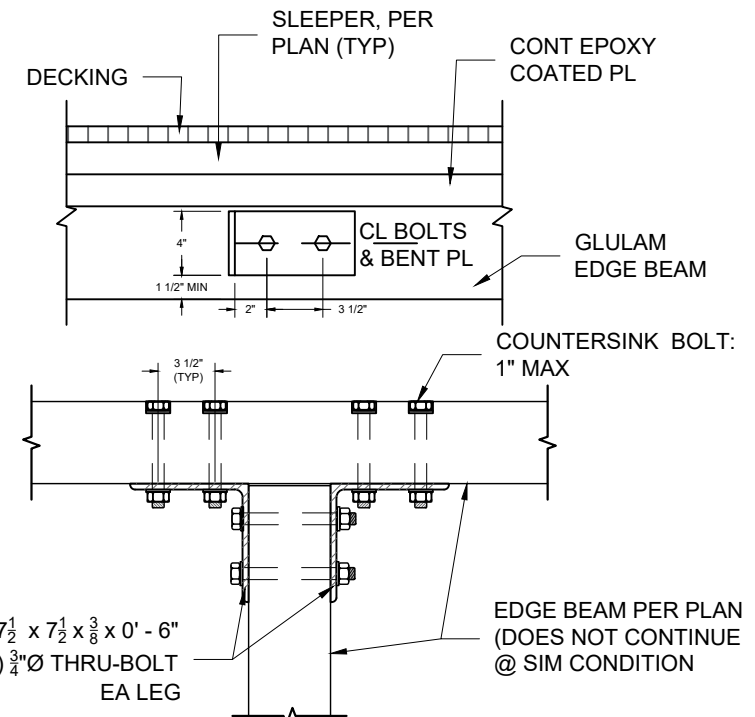


S1 DOCK SECTION w/PILES - TYP
SCALE: 1" = 1'

S3 DETAIL NOT IN USE



S5 EDGE SECTION (STEEL TRACK) - TYP
SCALE: 1" = 1'



S6 BEAM TO BEAM - TYP
SCALE: 1" = 1'

S4 DETAIL NOT IN USE



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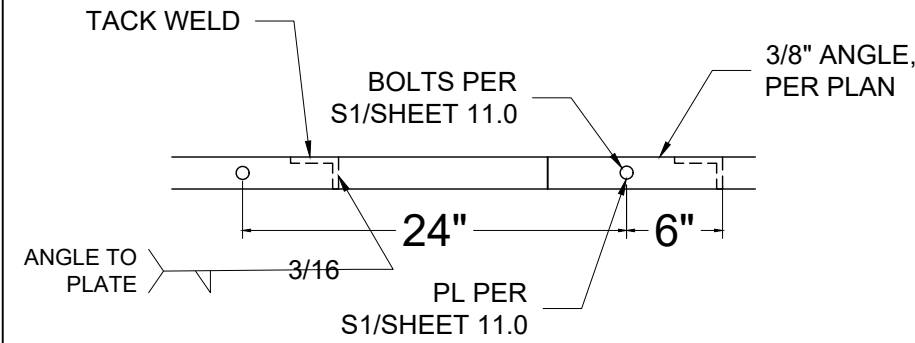
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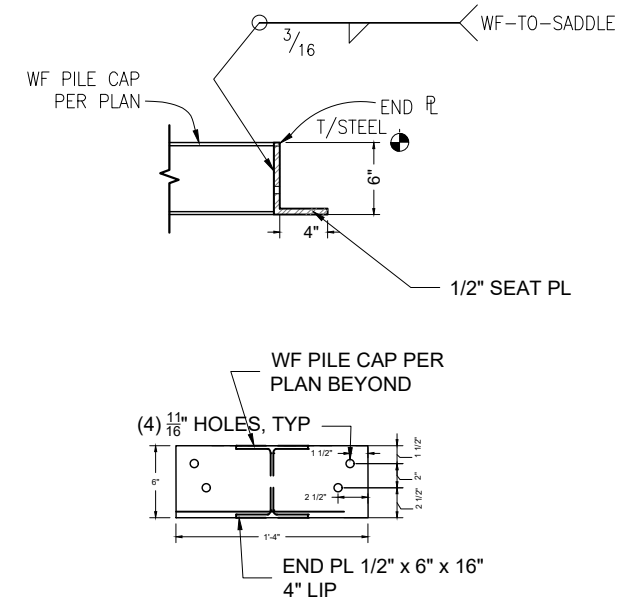
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DETAILS - TRACK

S1 DETAIL NOT IN USE



S2 ANGLE TO PLATE - TYP
SCALE: 1" = 1"



S3 BEAM SADDLE BRACKET
SCALE: 3/4" = 1"

S4 DETAIL NOT IN USE

S5 DETAIL NOT IN USE

S6 DETAIL NOT IN USE



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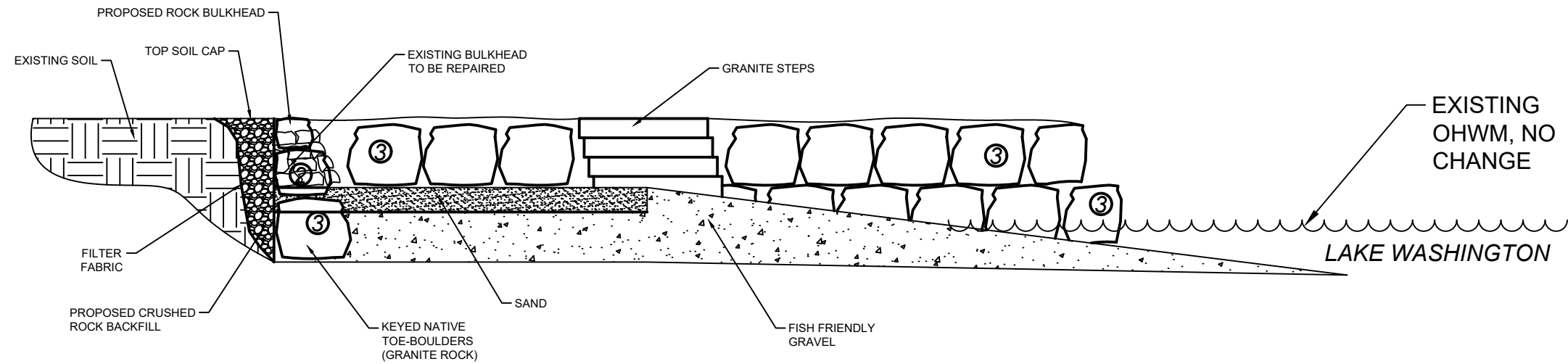
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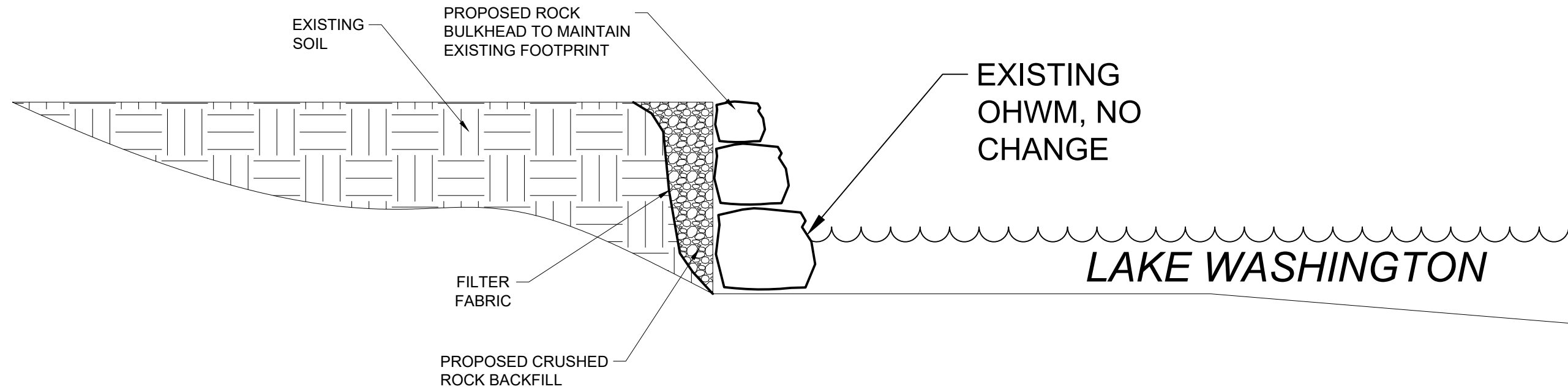
DETAILS- COVE



LEGEND

- S1 BULKHEAD W/ COVE AND STEPS
SCALE: NTS
- ② SIZE OF ROCK (2 MAN)
- ③

COVE AND BEACH SECTION VIEW



S2 BULKHEAD SECTION VIEW
SCALE: NTS



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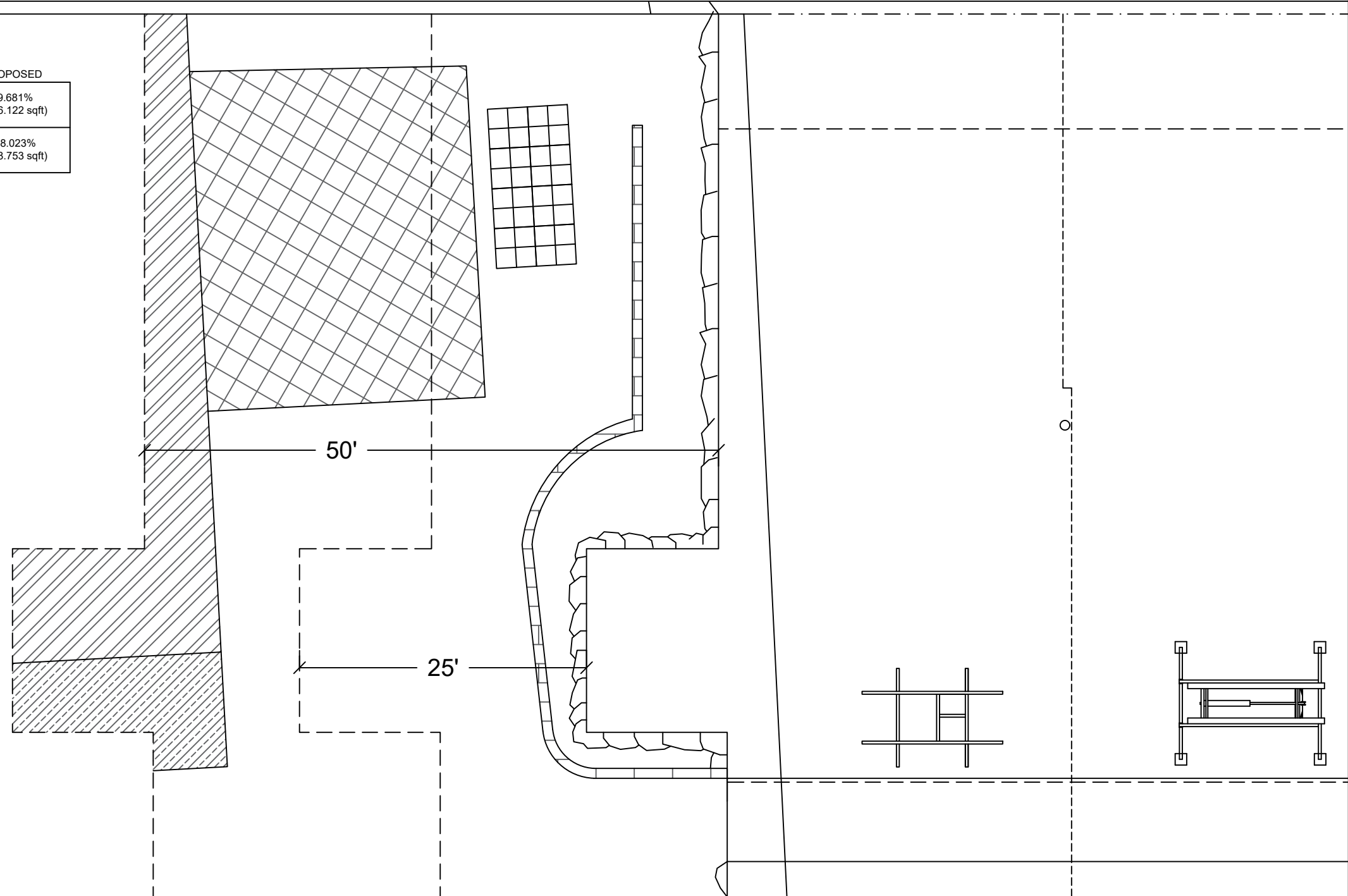
EXISTING HARDSCAPE CALCULATION DRAWING

Allowed Hardscape Quantities

SETBACK (total sqft)	ALLOWED	CURRENTLY USED	REMOVING	PROPOSED
0' - 25' SETBACK (1,922.577 sqft)	10% (192.258 sqft)	20.497% (394.075 sqft)	10.816% (207.953 sqft)	9.681% (186.122 sqft)
25' - 50' SETBACK (1,922.577 sqft)	30% (576.773 sqft)	58.988% (1134.092 sqft)	30.966% (595.339 sqft)	28.023% (538.753 sqft)

LEGEND

DESCRIPTION	AREA	HATCH
PATIO (25' SETBACK)	111.186 sqft	
RETAINING WALL (25' SETBACK)	65.919 sqft	
ROCK BULKHEAD (25' SETBACK)	120.203 sqft	
STEPPING STONES (25' SETBACK)	96.767 sqft	
DECK (50' SETBACK) (PERMIT SHL07-018)	398.986 sqft	
STEPS (50' SETBACK) (PERMIT SHL07-018)	139.767 sqft	
PATIO (50' SETBACK)	595.339 sqft	



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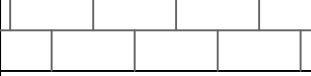

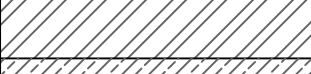

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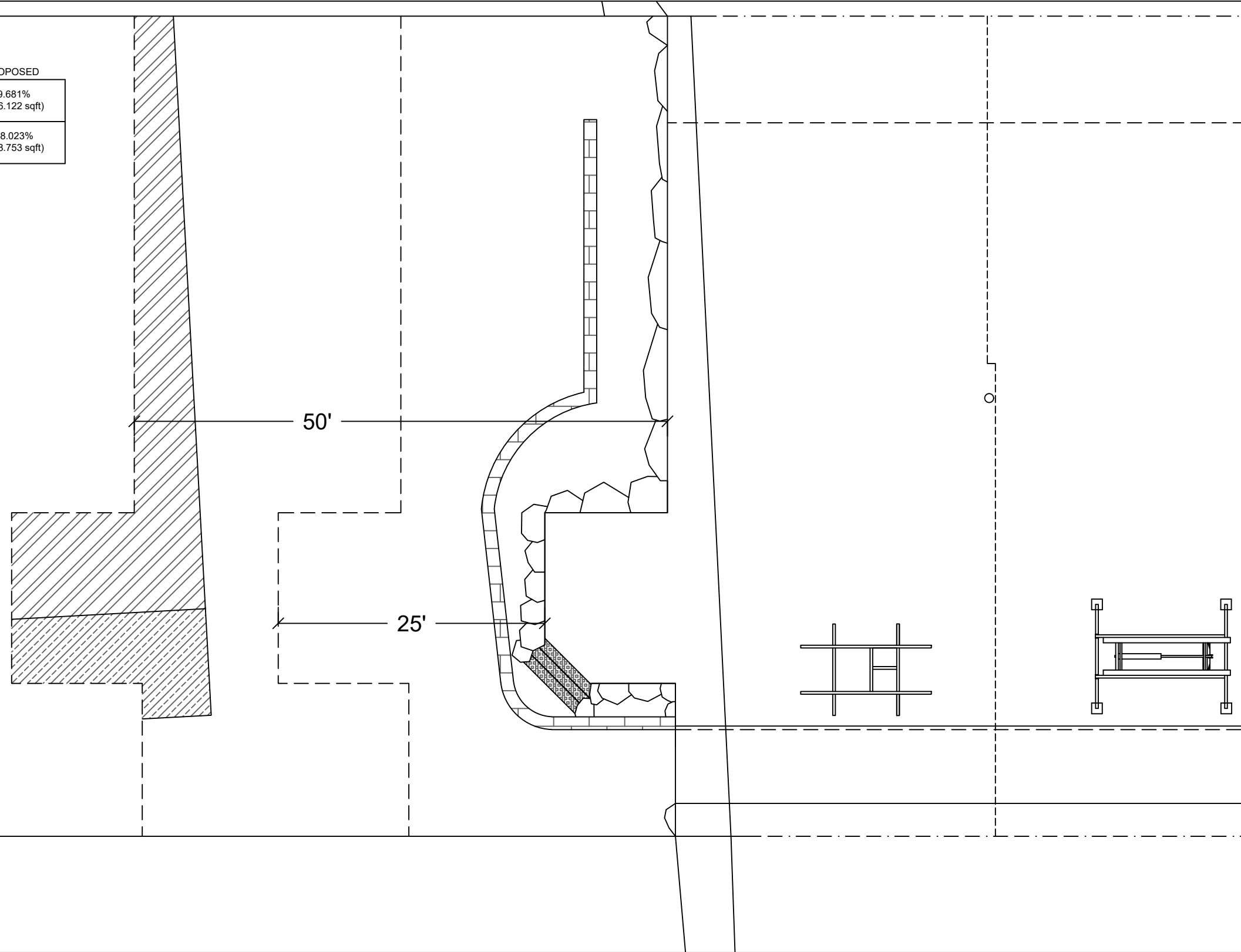
PROPOSED HARDSCAPE CALCULATION DRAWING

Allowed Hardscape Quantities

SETBACK (total sqft)	ALLOWED	CURRENTLY USED	REMOVING	PROPOSED
0' - 25' SETBACK (1,922.577 sqft)	10% (192.258 sqft)	20.497% (394.075 sqft)	10.816% (207.953 sqft)	9.681% (186.122 sqft)
25' - 50' SETBACK (1,922.577 sqft)	30% (576.773 sqft)	58.988% (1134.092 sqft)	30.966% (595.339 sqft)	28.023% (538.753 sqft)

LEGEND

DESCRIPTION	AREA	HATCH
BULKHEAD STEPS (25' SETBACK)	19.086 sqft	
RETAINING WALL (25' SETBACK)	65.919 sqft	
ROCK BULKHEAD (25' SETBACK)	101.117 sqft	
DECK (50' SETBACK) (PERMIT SHL07-018)	398.986 sqft	
STEPS (50' SETBACK) (PERMIT SHL07-018)	139.767 sqft	



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Appendix B: Site Photographs



Photo 1 - Existing dock looking waterward.



Photo 2 - Existing dock looking landward.



Photo 3 - Existing shoreline conditions north of dock showing cove and bulkhead.

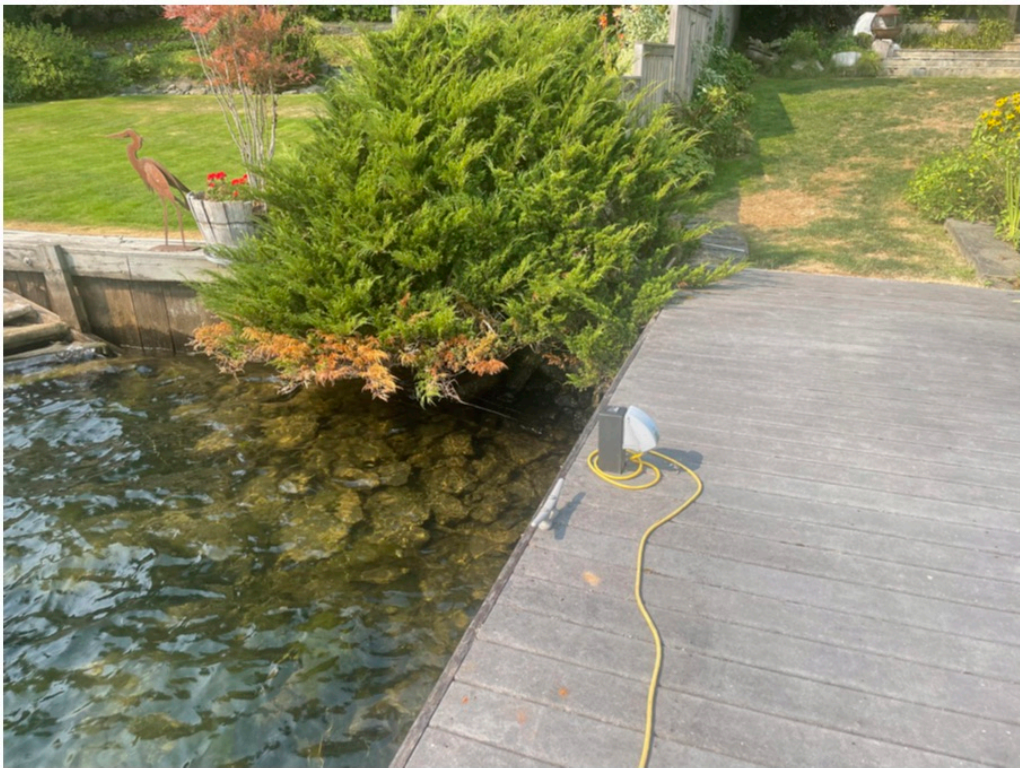


Photo 4 - Existing shoreline conditions south of dock.



Photo 5 - Shoreline conditions north of the site.



Photo 6 - Shoreline conditions south of the site.