

# **Ecological No Net Loss Assessment Report**

Prepared for

**Kan Cui**  
**8636 North Mercer Way**  
**Mercer Island, WA 98040**

Prepared by

 **Northwest**  
Environmental Consulting, LLC

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

**October 2022**

## Purpose

The purpose of this report is to fulfill the requirements of City of Mercer Island Municipal Code (MICC) 19.13 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 and associated moorage improvements.

## Location

The subject property is located at 8636 N Mercer Way (King County parcel number 810610-0100) 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 proposal is to repair the existing dock by repairing 9 existing piles by pile splicing. An extension will be added to the existing dock by driving 10 new 8-inch epoxy coated steel piles and building the dock superstructure and decking the extension with grated decking. The existing platform lift and dual jet ski lift will be relocated into deeper water. See Appendix A – Sheets A2.0 to A6.0.

During construction, a floating boom will surround the work barge and dock. (See Appendix A – Sheets A7.0)

A shoreline vegetation plan is proposed, that will add 1 native conifers, 12 native willows and 3 native shrubs. These shoreline plantings will provide shade and allow beneficial allochthonous material to enter the lake along the shoreline. Existing vegetation will be persevered. (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 March 28, 2023 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 northern boundary with single-family homes to the east and west along the shoreline.

The only existing structures on the property are the house and a few outbuildings. The property includes an access path to the shoreline. The existing dock is a shared dock.

The shoreline access is stepping stones down to a sandy beach. A small wood walkway leads to the dock. Shoreline in the area is lawn that leads to the edge of the beach. Some ornamental beds are present along the shoreline.

The lake substrates are generally sand. Eurasian milfoil is present waterward of the existing boat house.

The neighboring shorelines are similar with beaches and 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 lakes system'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 close to a Sockeye spawning location.

Priority Habitats and Species mapping, maps a wetland about 100 feet to the west. The mapped wetland is on private property with a house and a pool. NVEC did not have access to this property and was not able to confirm if a wetland exists or not.

The City of Mercer Island GIS Portal indicates a watercourse east of the property about 220 feet from the proposed dock. No upland work will be completed on the site except for the planting plan.

## Project Impacts and Conservation Measurements

### **Direct Impacts:**

**Sediments:** Sediment disturbance may occur below the OHWM during pile installation, Additionally, the tug and barge propwash may disturb sediments temporarily when making trips to and from the site.

Pile driving and repair is not a significant source of turbidity from sediment disturbance. Impacts to sediments should be minimal from installation of the pilings. The project will meet state water quality standards.

**Shoreline:** Planting native vegetation, including native willows, western red cedar and shrubs, 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 Mitigation Planting Schedule).

**Lakebed:** Construction of the dock includes driving 10, 8-inch pilings. This will result in 3.5 square feet of lake bottom displacement.

**Stream and Wetlands:** A watercourse is present about 220 feet south of the dock and a wetland is mapped about 100 feet to the west. The wetland is mapped as being a yard with a pool and lawn and would not be of exceptional rating if present. No upland work except for planting native vegetation is proposed. The extension will not affect the watercourse, wetland, or associated buffers.

**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 in larger numbers.

**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 364 square feet. The proposed decking will be ThruFlow grated decking. Grated decking allows light to penetrate the waters below the 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 increase juvenile salmonid outmigration times when encountered along the shoreline.

ThruFlow grated decking has a 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**

	Proposed grated	Conversion	Effective coverage	Reduction in effective coverage
New Grated Dock (SF)	364	0.57	207	157

The use of grated decking at the site reduces the effective coverage of the new extension by 157 square feet.



In addition moving the platform lift and dual jet ski will place moorage into water 4 to 5 feet deep to 5 to 10 feet deep. Juvenile salmonids often follow the shoreline while migrating so placing the moorage away from shore is least impacting to the salmonid using the Lake.

**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 April 30). 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.

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.

**In-lieu Fee:** The shoreline on the subject property will be planted with native, overhanging vegetation. The project also requires approval from the National Marine Fisheries Service (NMFS). NMFS has developed a calculator to determine appropriate mitigation costs for proposed in-water structures in Lake Washington. This calculator has established a fund that owners can pay into if they are not willing or cannot find mitigation to offset impacts from the project. The owner is not able to complete the required mitigation at the subject property required by NMFS and the property owners will pay into the in-lieu fee program to mitigate project impacts. An in-lieu fee program is defined as follows:

“A program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements... Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor.” (Fed. Reg. 40 CFR Part 230)

The fee has been determined using the Restoration And Permitting (RAP) Calculator for Lake Washington and will be paid to King County Water & Land Resources Division. This funding has been used to remove 350 derelict piles from the mouth of the Cedar River in Lake Washington.

## **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. Extending the dock will degrade ecological conditions at the site by increasing overwater coverage at the site.

The dock will use grated decking to minimize the effective overwater coverage to a net gain of 207 square feet. The grating reduces the hard shadows favored by salmonid predators and increases productivity under the pier. In addition, the new moorage 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 3.5 square feet of lakebed from installation of new pilings.

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. The effects of construction will be short term.

A shoreline planting plan will be implemented that will add 4 native trees and 12 native 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. The owner has also opted to pay into the In Lieu Fee program that will be used for conservation projects that benefit salmon in King County.

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

29 years of experience

Northwest Environmental Consulting, LLC (NVEC)

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

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King County. 2022. King County iMap. Online database. Accessed March 2023 at <https://gismaps.kingcounty.gov/iMap/>

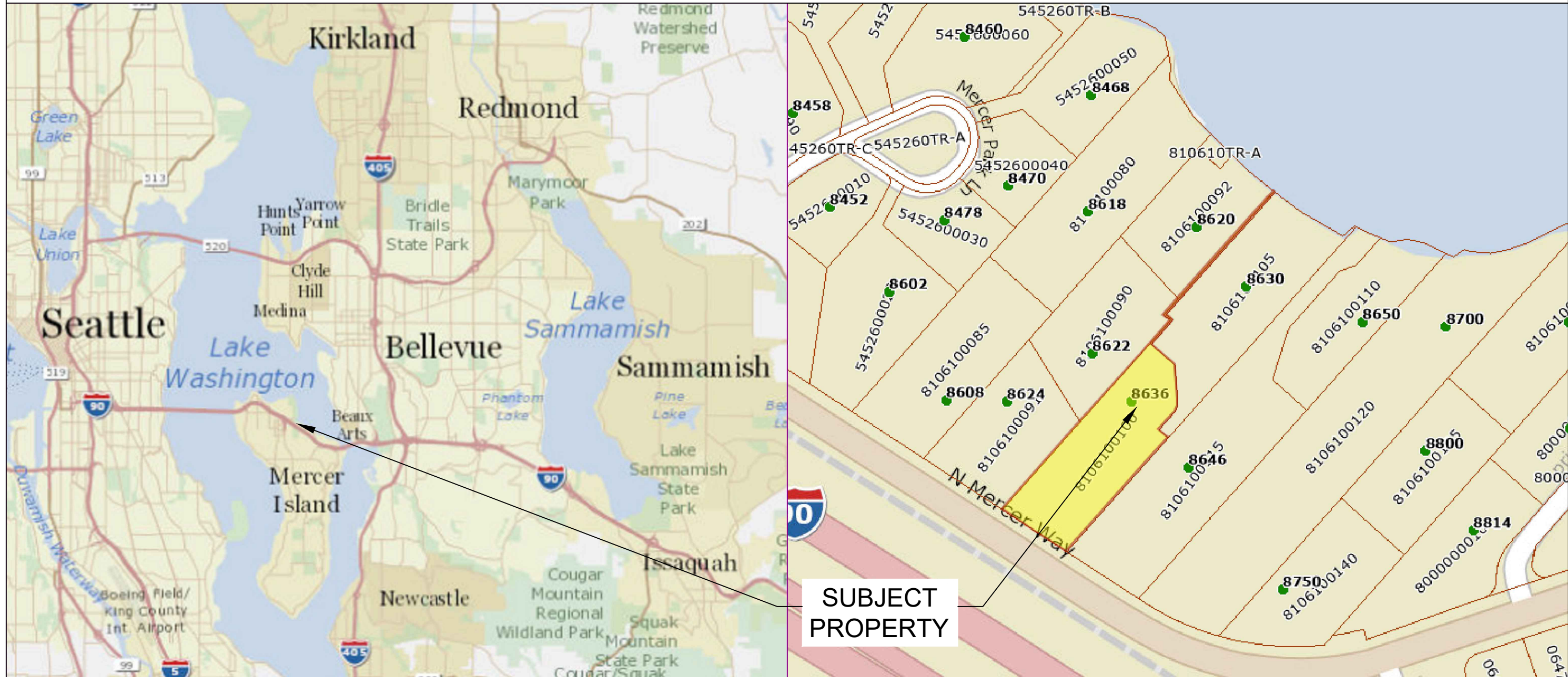
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WDFW. 2022. SalmonScape. Online database. Accessed march 2023 at <http://apps.wdfw.wa.gov/salmonscape/>

# **Appendix A: Project Drawings**

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# SITE PLAN



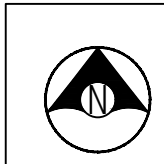
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Legal Description: SUNNY BANK ADD POR NLY & WLY OF LN BEG ON SELY LN THOF 179.96 FT NELY FR SE COR TH N 48-30 W 14.51 FT TH N 41-30 E 25.01 FT TH ON CRV LFT RAD 22 FT C/A 46-23-27 DIST 17.81 FT TH N 04-53-27 W 41.19 FT TH N 48-30 W 36.84 FT TH N 41-30 E 39.33 FT TH N 57-08-50 W 10.11 FT TH N 41-30 E TO SH LN OF LAKE LESS NWLY 10 FT OF SWLY 300 FT SD LOT 10 AS MEAS ALG NWLY LN THOF TGW SH LD ADJ AKA PARCEL A MI BLA #83-05-17 REC NO 8309159010

Plat Block:  
Plat Lot: 10

Parcel  
LAT: 47.58443  
LONG: -122.2222

Dock  
LAT: 47.585240  
LONG: -122.221302



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 repair (9) existing piles, drive (10) new 8" steel piles, relocate the existing platform lift, relocate the existing dual jet ski lift, and install a (364 sqft) new extension.

County: King County  
Location: Lake Washington

Applicant: Cui Residence  
8636 N Mercer Way  
Mercer Island, WA 98040

Datum: CORPS OF ENGINEERS 1919  
NW Quarter Of Section 07, Township 24, Range 05

Adjacent Owners:  
LIN MELINA  
8630 N MERCER WAY 98040

**SHEET**  
**1.0**

NWS-2023-XXX  
PAGE 1 OF 14

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Created: 12/08/2022

RUAN HANG+QIAOZHEN LU  
8620 N MERCER WAY 98040



# GENERAL NOTES:

## MATERIALS SPEC LIST:

### Boat Lifts: Aluminum

- \* SL10014ARW - 146" x 191"
- \* SL8012ARW - 146" x 167"
- \* SL2008AR2D2 - 104" x 132" (dual jet ski)

### 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
- \* Repair piles are done as a sleeve/strap method
- \* 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:

The dock must be no larger than authorized through state and federal approval;

**The dock will be no larger 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 dock will comply with the specified standards.**

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

**The dock will comply with authorized depth requirements.**

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

**NNL report 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.

**Project is under review by CORPS and WDFW.**

Last permit issued for property: 2207-241 11/03/2022

Dock established/constructed: 1959 Sewer Easement

\* Boat lifts permitted under 2207-241 11/03/2022



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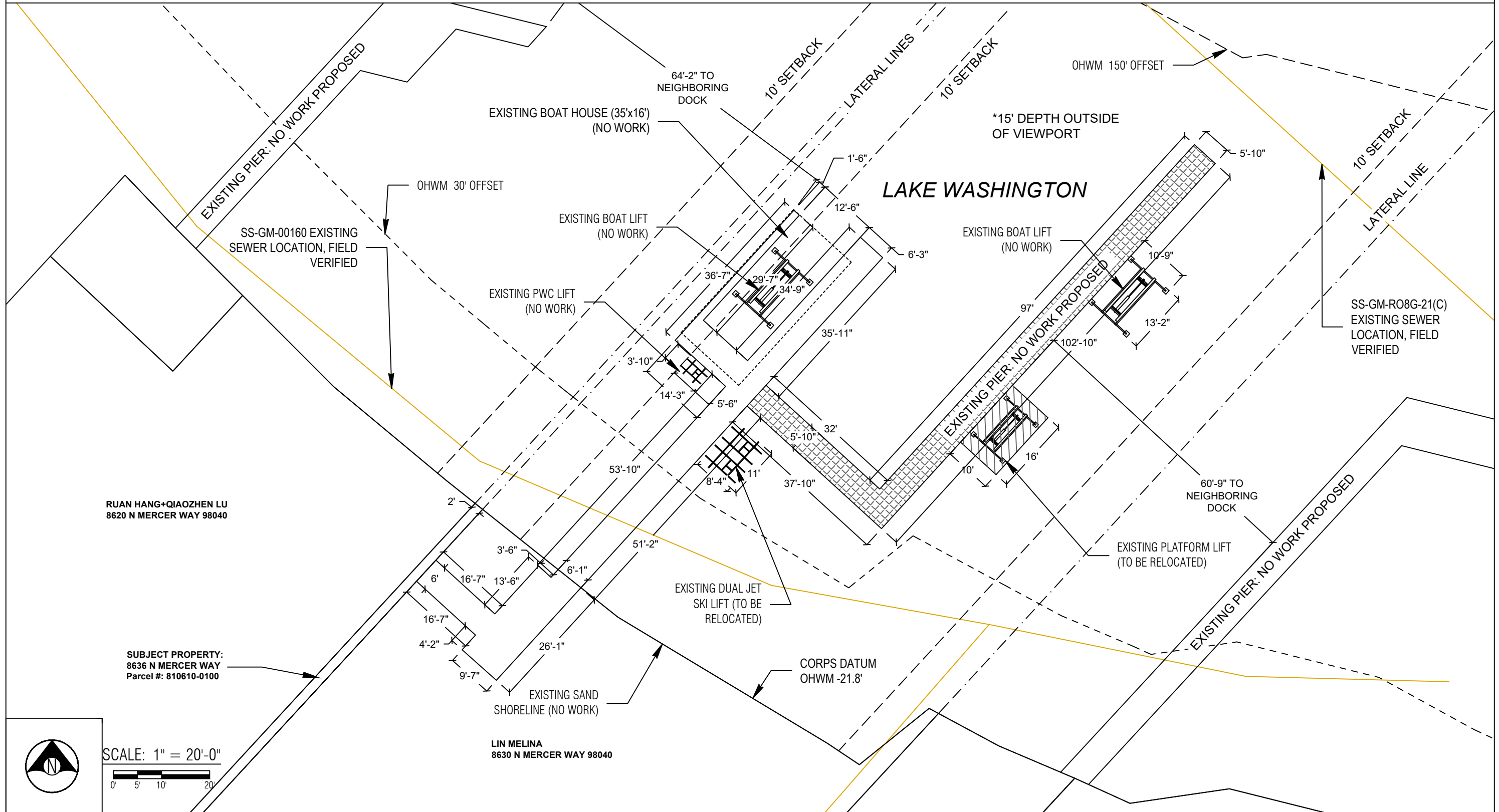
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PAGE 2 OF 14

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# EXISTING CONDITIONS

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



RUAN HANG+QIAOZHEN LU  
8620 N MERCER WAY 98040

SUBJECT PROPERTY:  
8636 N MERCER WAY  
Parcel #: 810610-0100

LIN MELINA  
8630 N MERCER WAY 98040



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



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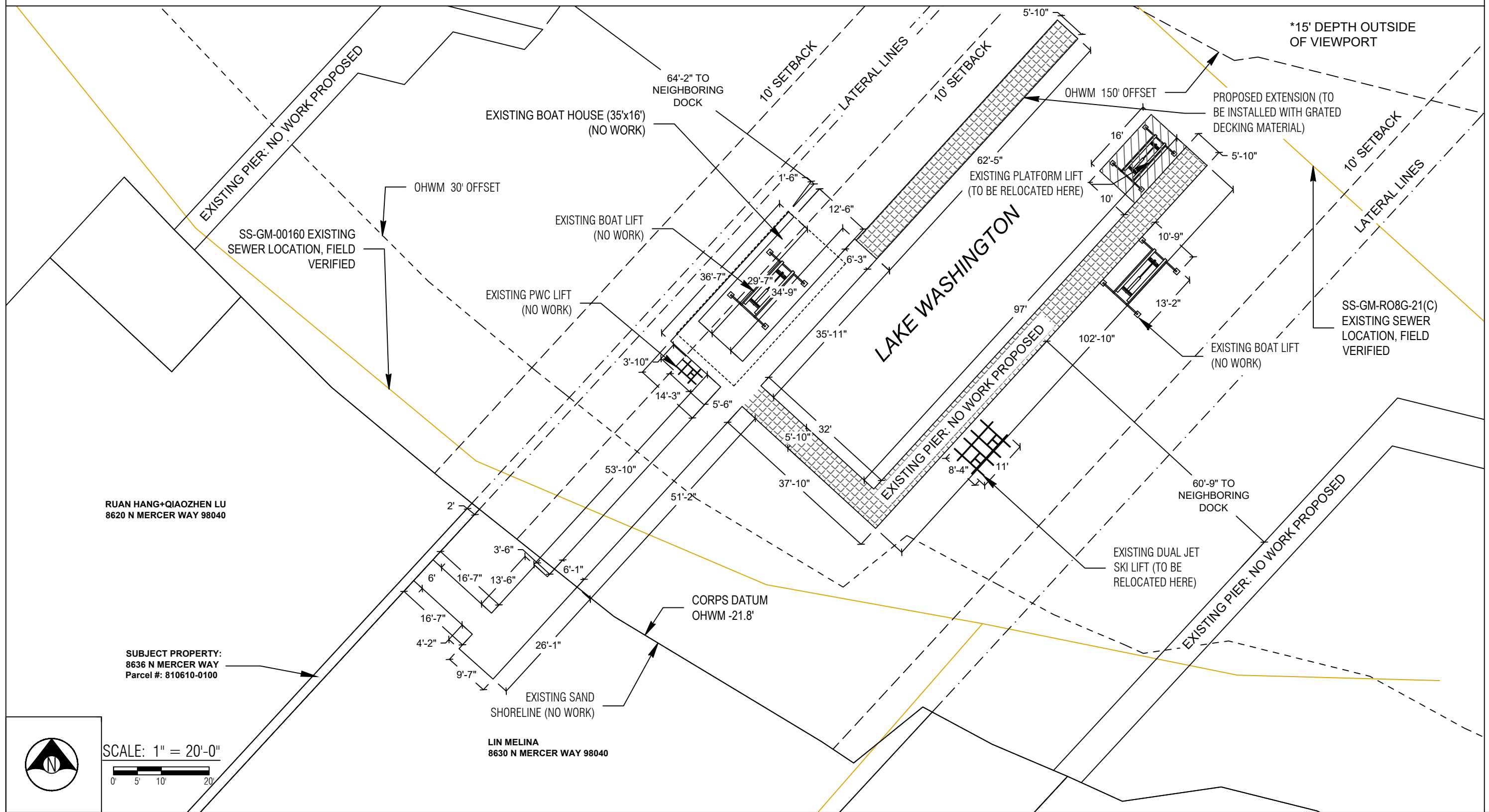
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PAGE 3 OF 14

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# PROPOSED CONDITIONS

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



King County  
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# PIER DETAILS - EXISTING/PROPOSED PLAN VIEW

## LEGEND

- ⊕ (9) EXISTING PILES - TO BE REPAIRED
- (10) PROPOSED STEEL PILES - TO BE ADDED
- (32) EXISTING PILES - NO WORK TO BE DONE

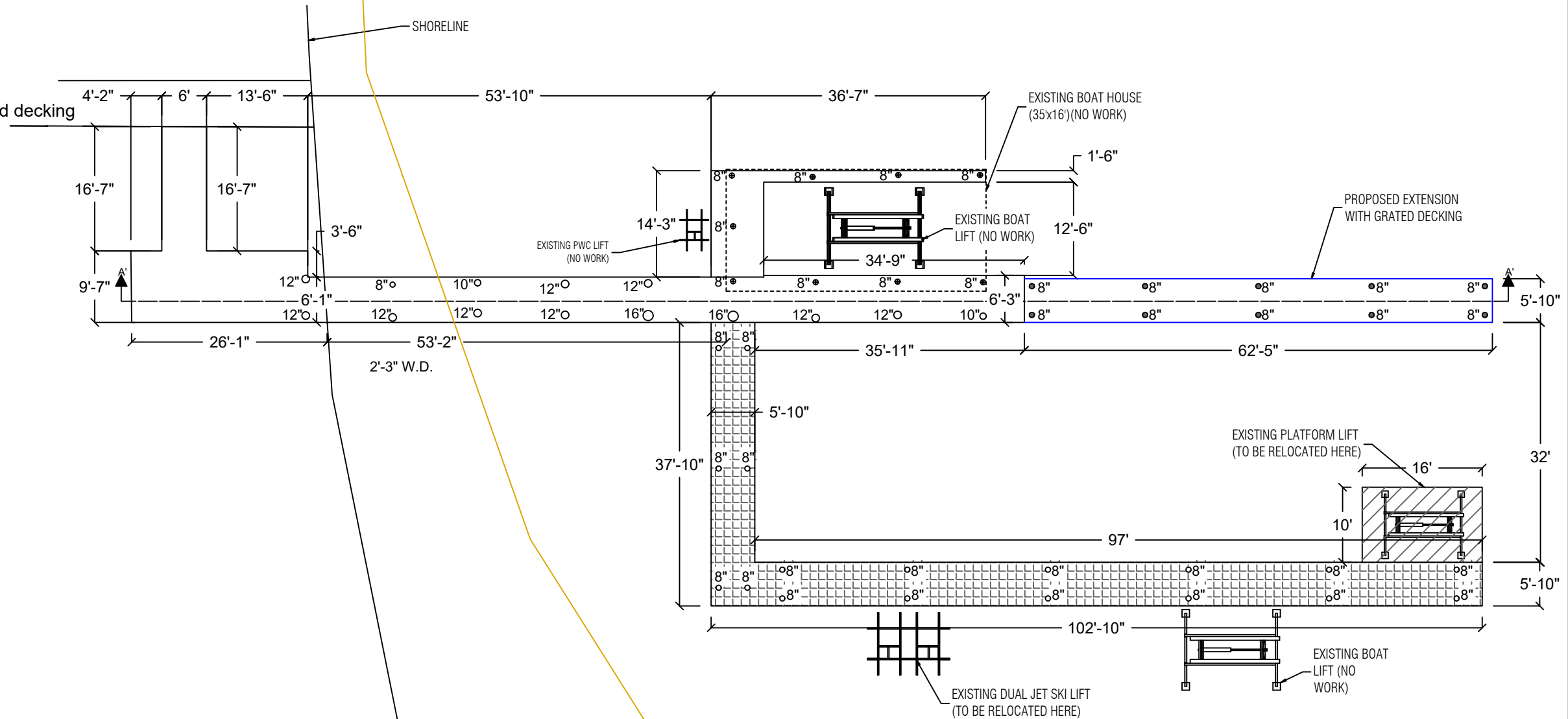
Existing Pier Overwater: 1503 sqft  
Existing Pier total: 1841 sqft

Existing Platform Lift: 160 sqft

Proposed Pier Extension: 364 sqft of grated decking

New Pier Overwater: 1867 sqft  
New Pier total: 2205 sqft

\*\*Grated decking is 43% open space



PLAN VIEW



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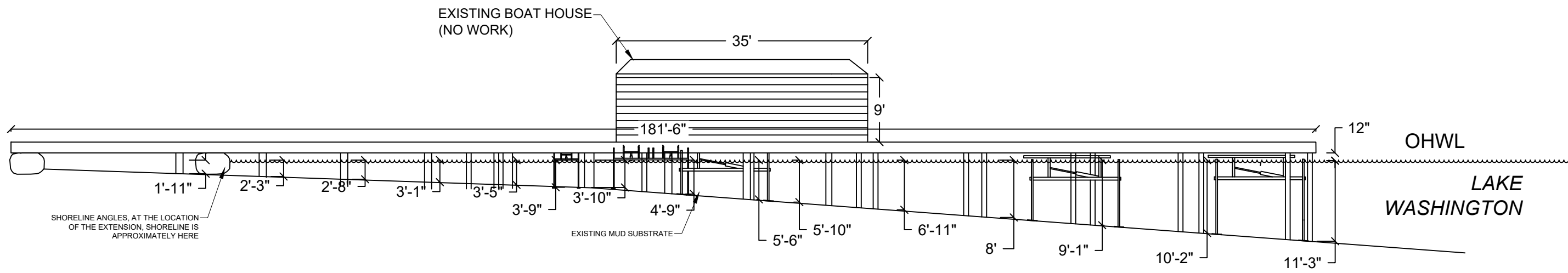
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# PIER DETAILS EXISTING/PROPOSED - SECTION VIEW



SECTION VIEW: A'-A'



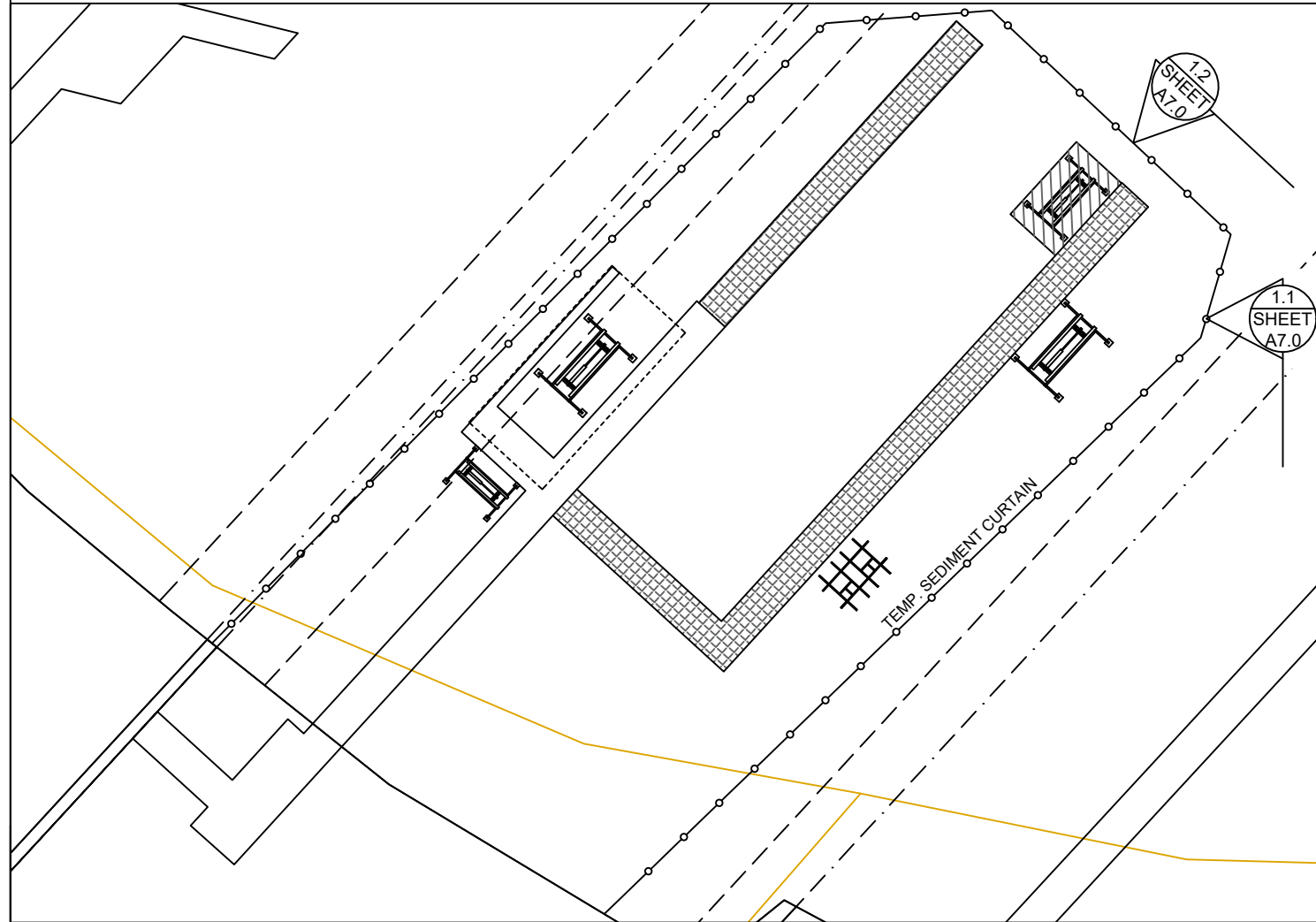
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 NWS-2023-XXX  
 PAGE 6 OF 14

# BMP INFORMATION

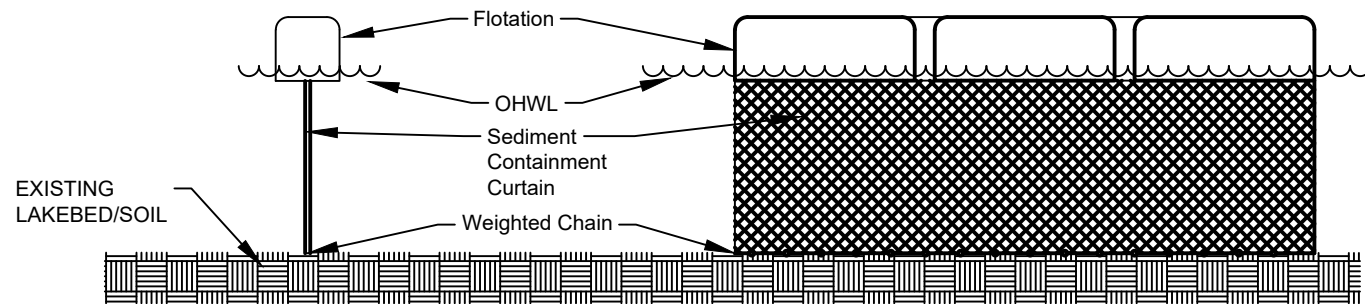


## BMP NOTES:

- 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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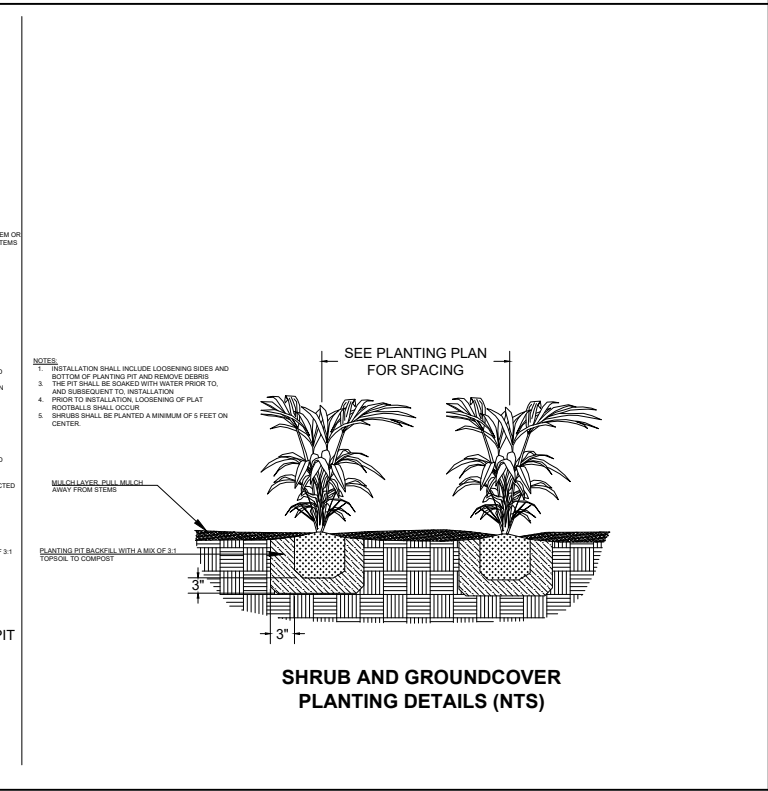
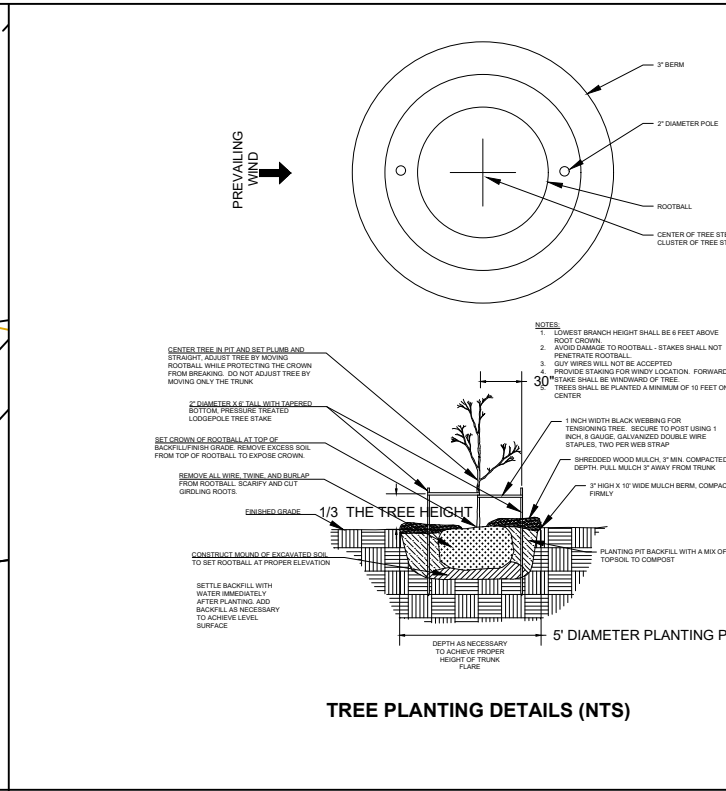
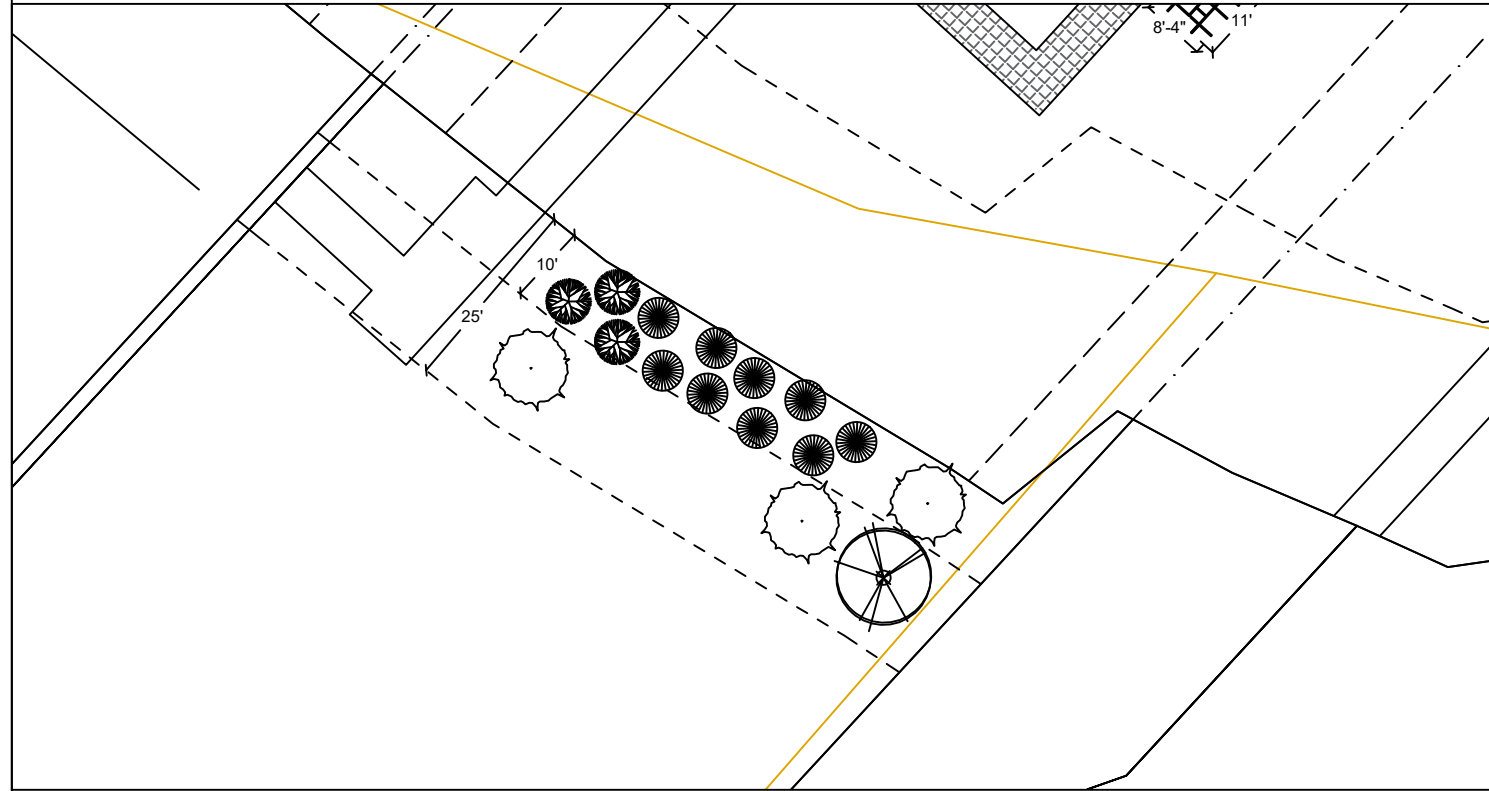
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**SHEET**  
**7.0**

# 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.

**PLANTS:** No additional plants are proposed due to fully planted shoreline and easement restriction.

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 Mercer Island, WA 98040  
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 Adjacent Owners:  
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 8630 N MERCER WAY 98040  
 RUAN HANG+QIAOZHEN LU  
 8620 N MERCER WAY 98040  
 Created: 12/08/2022  
 Last Updated: 2/10/2023 9:32 AM Zion



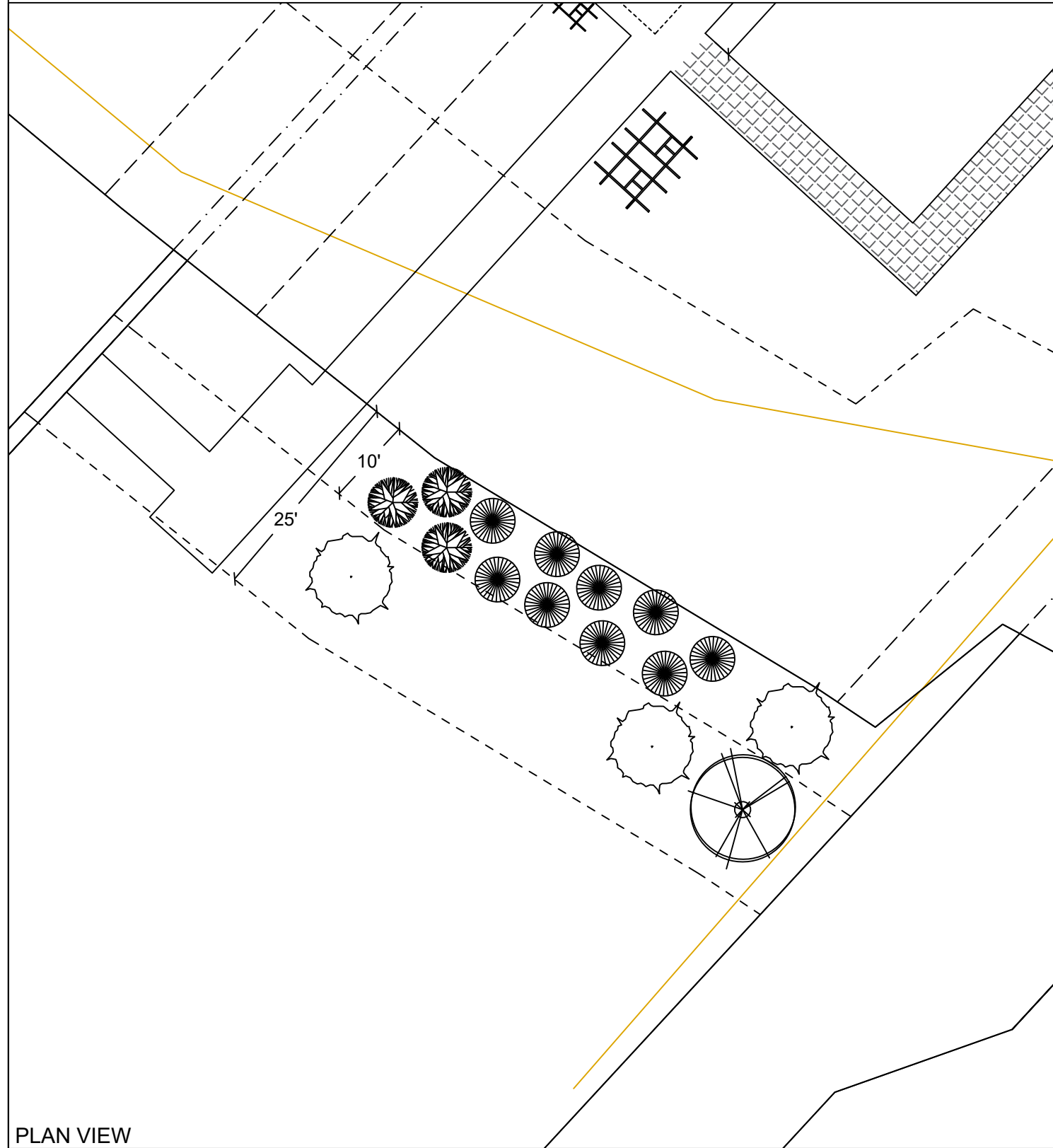
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 NWS-2023-XXX  
 PAGE 8 OF 14



# EXISTING PLANT PLAN



## EXISTING PLANTING SPECIES/QUANTITIES

SYMBOL	LATIN NAME	COMMON NAME	QTY	SIZE
	<i>Thuja picatta</i>	Western Redcedar	1	3 ft
	<i>Rosa nutkana</i>	Nootka Rose	3	1 Gallon
	<i>Salix sitchensis</i>	Sitka Willow	9	1 Gallon
	<i>Salix lasiandra</i>	Pacific Willow	3	3 ft

EXISTING PLANTS TABLE

PLAN VIEW

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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"  $\phi$  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
VF	VERIFY IN FIELD
WABO	WASHINGTON ASSOCIATION OF BUILDING OFFICIALS
WF	WIDE FLANGE
W/	WITH



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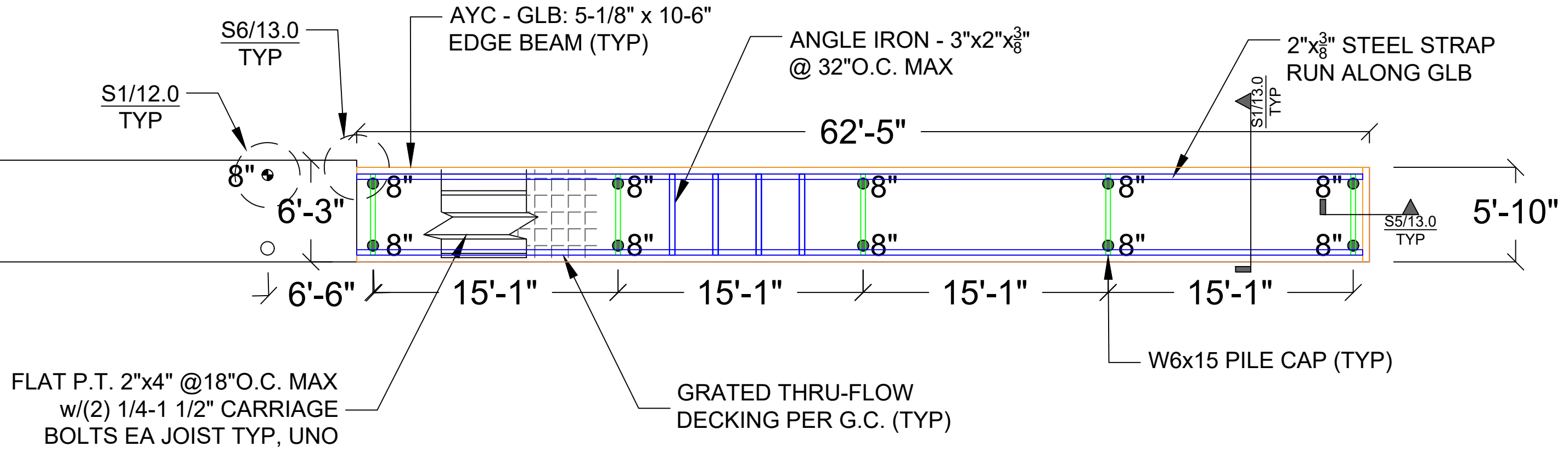
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 PAGE 10 OF 14

# FRAMING PLAN



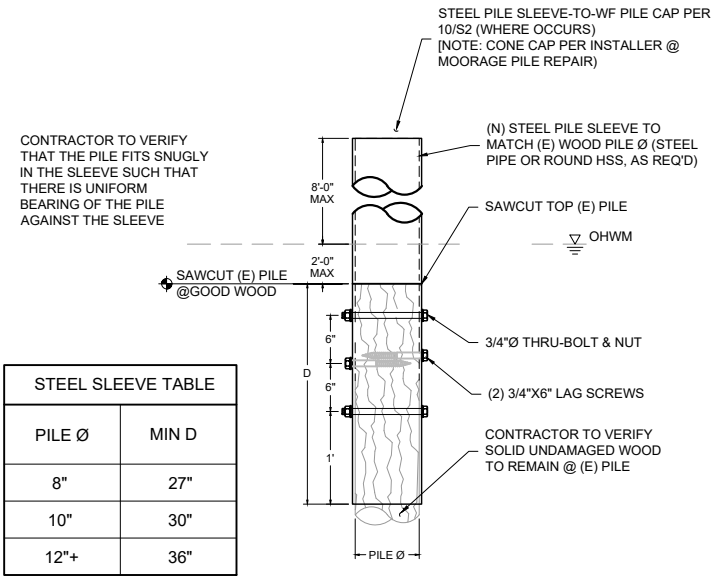
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# DETAILS - REPAIR



STEEL SLEEVE TABLE	
PILE Ø	MIN D
8"	27"
10"	30"
12"+	36"

**S1** SLEEVE PILE REPAIR - TYP  
SCALE: 1/2" = 1'

**S2** DETAIL NOT IN USE

**S3** DETAIL NOT IN USE

**S4** DETAIL NOT IN USE

**S5** DETAIL NOT IN USE



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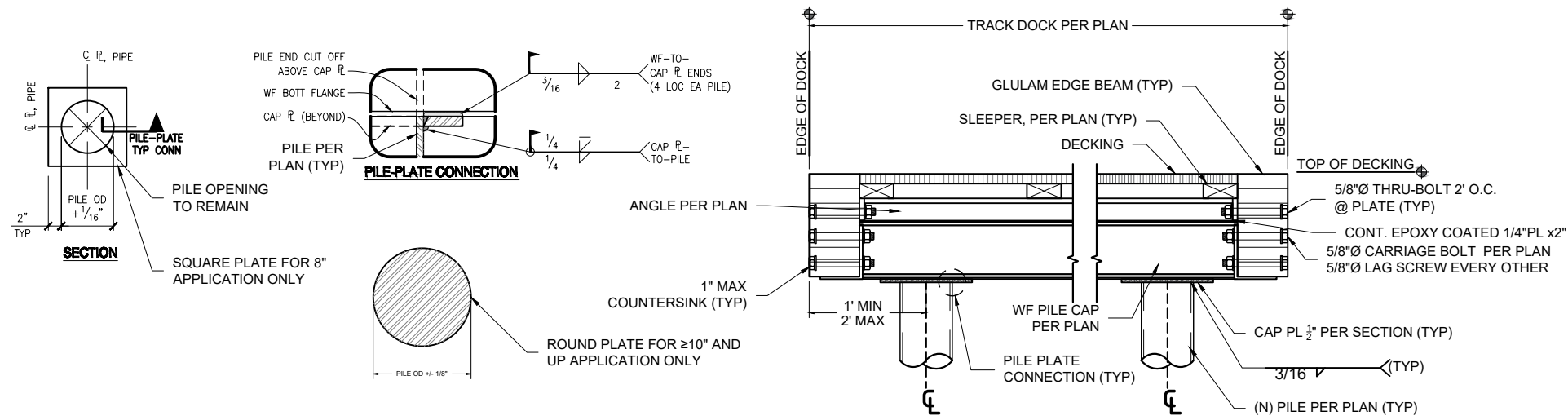
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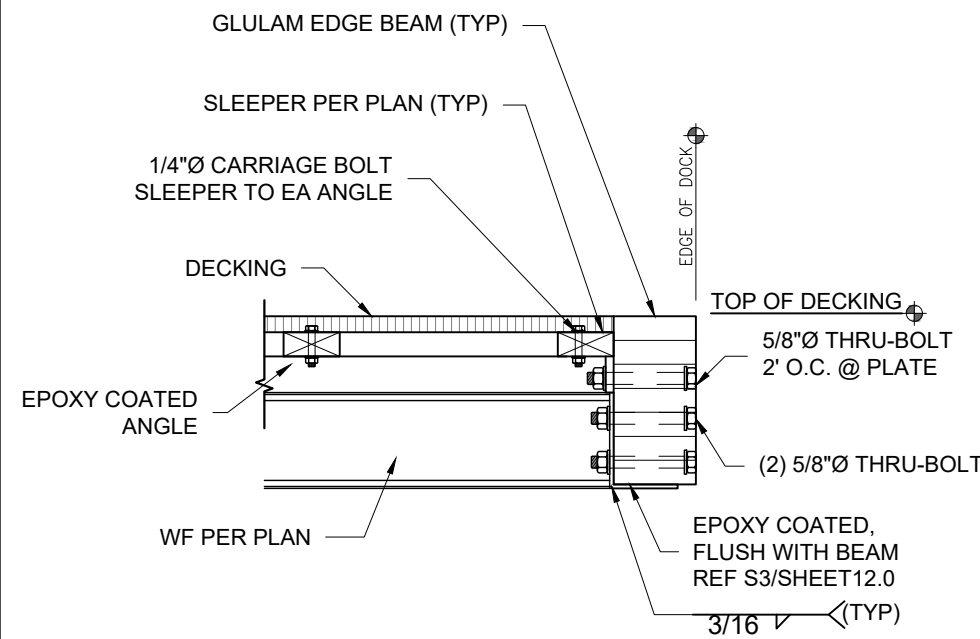


# DETAILS - TRACK

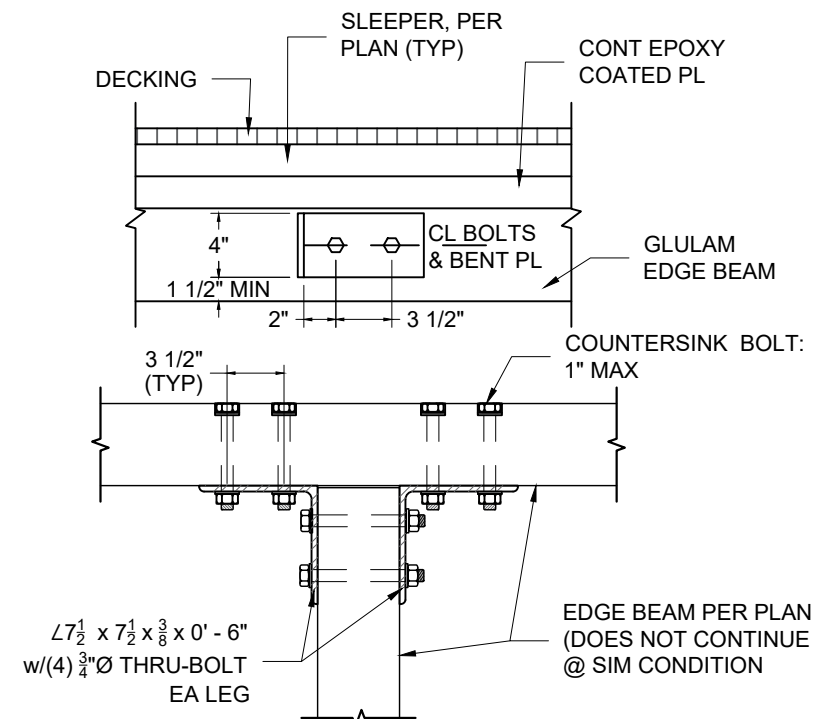


**S1** DOCK SECTION w/PILES - TYP  
SCALE: 1" = 1'

**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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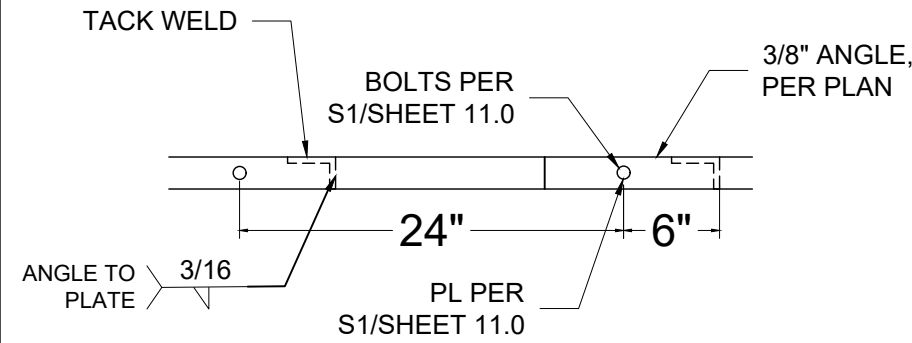
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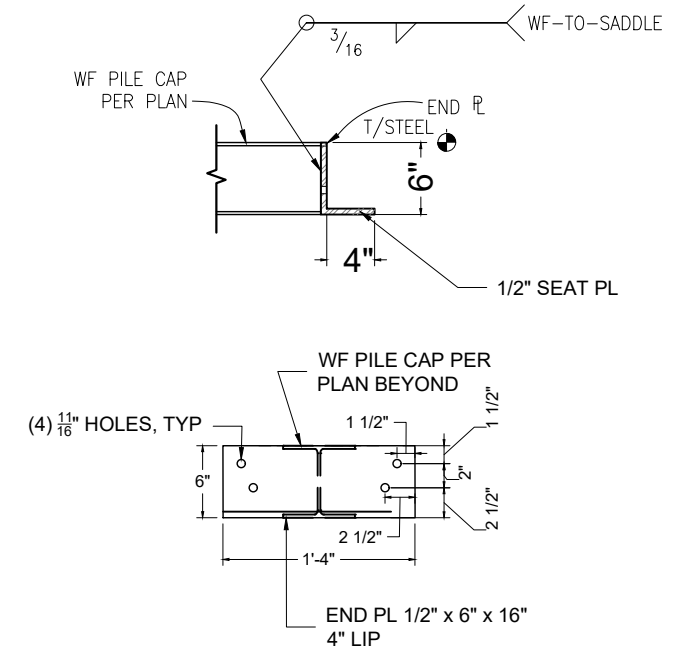
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# DETAILS - TRACK

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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## **Appendix B: Site Photographs**

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Photo 1 - Existing conditions looking waterward.



Photo 2 - Existing conditions looking landward.





Photo 3 - Existing shoreline conditions at the site looking west.



Photo 4 - Existing conditions at the site looking west.





Photo 5 - Shoreline conditions west of the site.



Photo 6 - Shoreline conditions east of the site.