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Freshwater Overwater Structure New/Replacement

The purpose of this document is to provide guidance and assistance when reviewing and permitting [hydraulic project applications](#) for new and replacement freshwater overwater structures (including docks, piers, ramps, floats, watercraft lifts, and buoys). The guidance provides the biologist with basic information to process an application.

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1. Application Receipt

Applications or pre-applications are submitted to [Aquatic Protection Permitting System](#) (APPS). The application and plans are reviewed in Olympia for statutory completeness under [RCW77.55.021](#). Once the application is Accepted, the Habitat Biologist reviews and processes the application within APPS. There are many training [videos](#) and [self-help](#) documents for this process located on SharePoint.

2. Office Review

Purpose

The office review allows the biologist to become familiar with the project details, location, and determine if the project was designed to meet WAC. The biologist must be knowledgeable on [RCW 77.55](#), [WAC 220-660](#), and [WAC 220-660-140](#) since the RCW and WAC are where the agency's authority comes from. The biologist should also be very familiar with the [Overwater Structures and Non-Structural Piling White Paper](#) and the [White Paper - Over-Water Structures: Freshwater Issues](#). Presence of fish life, including the species present, strongly influences proper project design. During the review, the biologist may consult literature, local reference materials, fish use data, and local experts to determine if the application is


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appropriately designed or if additional information is needed. The biologist should be timely in requesting additional information.

Tools and Resources

Data for reviewing hydraulic projects comes from a variety of sources and may come from government agencies (local County GIS), Non-Governmental Organizations (Wild Fish Conservancy Maps), as well as private sources of information. Most of this data is available either through WDFW's GIS database or through various internet websites. Other data may be in the form of hardcopy records acquired over time or from coworkers in the agency. All of this information is useful in preparing, but ultimately nothing replaces getting out on the ground for projects. Below is a list of commonly used resources:

- WDFW Publications – [Aquatic Habitat Guidelines](#)
- WDFW Spawning/Shellfish Maps – site context and developing appropriate work windows for protecting sites with documented lake spawning sockeye, stream spawning salmonids, and/or protecting shellfish beds.
 - Consultation may be necessary with WDFW's district fish biologist to confirm spawn timing, locations of documented sites, and/or recent changes in fish populations, distributions, and/or habitat use.
- [WDFW PHS on the web](#) - known locations of priority habitats and species (PHS). PHS may identify other species of importance such as shellfish beds (where barge grounding should be limited) or bald eagle/great blue heron rookeries for which we may request the voluntary application of timing windows (as the HPA can only protect for fish life unless we comment during the State Environmental Policy Act [SEPA] review).
 - The Statewide Washington Integrated Fish Distribution (GIS - Swifdee) layer can identify fish species that are known to be present at the project location.
- [WDFW SalmonScape](#) - stream specific fish and habitat data.
- ArcView - WDFW possesses various GIS data sets that include DNR water typing, fish passage barrier inventories, culvert inventories, fish distribution, LIDAR topography, etc. WDFW has created an ArcView project file that allows a biologist to view most if not all of our GIS data. If you are not set up to use this system, work with your supervisor to do so.
- [Department of Ecology](#) - maintains a variety of data including:
 - [The Water Quality Assessment and Clean Water Act 303\(d\) list](#)
 - [Coastal Atlas](#) - detailed shoreline imagery.
- [Department of Natural Resources](#) - There are many data layers on the DNR website that you can download and use on ArcGIS. These include fish passage barriers, water typing layers, forest roads, soil types, and many more.

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- [Forest Practice Application Mapping Tool \(DNR Stream Typing Map\)](#) - information on streams and stream reaches, including whether there is documented fish use.
- County Assessor's parcel search - most if not all counties in the state maintain a GIS database of parcel information in their county. County permit information, past violations, county planner assigned to project, parcel data (i.e. King County i-Map, Snohomish County Online Property Information, etc.) are sometimes available.
- Google Maps, Google Earth, and Bing Maps (provides birds eye view) - site context, local characteristics, neighboring properties, potential equipment access (barge vs upland), estimation of Ordinary High Water Line (OHWL), upland vegetation, and vicinity of upland structures.
 - <https://www.google.com/maps/>
 - <https://www.google.com/earth/>
 - <http://www.bing.com/mapspreview>


3. Missing Information

Biologists may require more information at this time or after the site visit in order to evaluate the project. Examples include: a bathymetry survey (to justify proposed pile diameter, pier length, etc.), specifications of proposed materials (i.e. percent open space for grated decking, type of wood used, etc.), detailed planting plan, and/or enhancement plan to mitigate for new impacts. The biologist should be timely in requesting additional information. Any needed additional information should be requested within 10 days after receiving the complete application. If information needed to issue a permit is not provided, the agency may deny the application or the applicant may put it on hold before the end of the 45-day processing period. If these situations occur, you should be working closely with your supervisor to avoid conflicts.

4. Site Visit

Purpose

Site reviews typically occur as a pre-application review or the review of an active application in APPS. During a pre-application meeting, the objective of the biologist is to assist the landowner or agent. This typically occurs in the form of helping them determine appropriate design options and project scope. The biologist should also discuss mitigation and what might be required depending on the impacts of the final project proposal. This is a great time to let the applicant know what will need to be included in their application for it to be considered complete and for you to issue a permit. After a pre-application review, in most cases, another field visit is not necessary. Additional assistance can be found on WDFW's website [here](#).

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When processing a formal application, the purpose of the site review is to verify structural measurements, appropriateness of the project proposal, determine project impacts, and appropriate mitigation. The biologist may find the design is inappropriate for the protection of fish life and must provide suggestions for modifying the plans or suggesting an entirely different design.

Safety Highlights

Vehicles must be parked in a safe place to not create a hazard for WDFW staff or the public. Site reviews often involve working around deep and/or flowing water which may present a drowning hazard; therefore, a PFD may be necessary to maintain a safe working environment. Be sure to check in/out with a co-worker or supervisor if going to a site visit on your own.

Field Equipment and Tools


In addition to the basic safety equipment, staff should also bring the tools and equipment listed below. Conditions on site will dictate which equipment is used during the field visit.

- Business card or other agency ID
- Copy of application and plans
- iPad or other mobile device
- Camera
- GPS
- Tape measure
- Field notebook
- Knee or Hip boots
- Rain gear and/or other appropriate field clothing
- Personal Floatation Device (PFD)
- Disinfection supplies

Verifying application information on site

Once on site, the biologist should offer the applicant or agent time to explain their design proposal and what they wish to accomplish. This initial conversation may yield useful information that may later facilitate discussion if there are problems identified in the design proposal.

- Verify information gleaned from the office review.
- Identify if the existing site conditions are accurate as portrayed in the project plans.

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- It may be necessary to measure the length/width/height of the existing structure.
- Do the existing conditions meet current WAC or can an existing structure be updated to meet current standards for protection of fish?
 - Updating the structure may not be necessary, but may be perceived as an enhancement or mitigation option.
- Document with photos and enter in APPS inspection log and/or project file.

Identify Project Impacts and Mitigation Opportunities


- Identify impacts to aquatic habitat (including spawning, rearing, and migratory habitat).
- Perhaps certain site characteristics dictate the design or can be avoided to better mitigate project impacts.
 - Identify vegetation to be impacted upland and along the shoreline.
 - Identify non-native or mature native plants, what species, age class, how many?
 - Are there measures in place to control aquatic invasive species? If so, are they permitted by an individual HPA or permissible under the [Aquatic Plants and Fish pamphlet HPA](#) (July 2015)?
- Identify access and work zone impacts (barge grounding, excavator tracks).
- Identify if any other mitigation and/or enhancement opportunities are on site (i.e. modification and/or removal of overwater cover [i.e. unpermitted floats], addition of shoreline plantings, removal of derelict materials [i.e. pilings, mooring buoys, concrete, trash], reduction/modification of shoreline lighting, gravel nourishment in urbanized lakes, etc.).

Site visit wrap up

- Before leaving the site clarify with the applicant the next steps in the process and be sure they understand what additional information or tasks they are responsible for.
- Discuss HPA processing timelines with the applicant so they understand the implications. Let them know if you are short on time and waiting on them for additional information and potential remedies such as placing the project on hold.

5. Mitigation Determination

Always keep in mind mitigation is based on existing conditions and must be adequate to ensure no net loss of habitat function due to the impacts of the project. The mitigation document was in development at the time of this guidance, please check with your supervisor for the most up to date mitigation document.

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Discuss mitigation measures onsite with applicant/agent if obvious during the site visit or after the site visit if additional information or time is needed to evaluate the project. Be sure to keep the applicant/agent engaged in your review process and be sure they are aware if compensatory mitigation may be needed to mitigate unavoidable impacts. Guidance may include both agency and regional documents including [State of Washington Alternative Mitigation Policy Guidance For Aquatic Permitting Requirements from the Departments of Ecology and Fish and Wildlife; Mitigation for better projects.](#)


- [Region 4 – Fresh Water Residential Pier Guidance for Lakes](#) can be consulted when determining appropriate mitigation for project impacts. Always keep in mind mitigation is based on existing conditions and must be adequate to ensure no net loss of habitat function.

Imposing Minimization Requirements

- Confirm that the project plans include best management practices (BMPs) to minimize impacts of construction.
- Determine if additional measures are needed to protect the resource and include necessary provisions accordingly.
- BMPs may require additional project plans from the applicant/agent depending on the complexity of the project.
- Some BMPs can be provisioned using standard provisions provided in [WAC 220-660-140](#) and/or input into APPS.
- Determine the Appropriate In-Water Work Windows – key to minimizing impacts to fish resources identified at the site during both office and field review of the project.
- This includes taking into consideration fish presence and life history stage, expected impact of construction activities, and best management practices proposed by the applicant. Consulting with your local WDFW district fish biologist may be necessary to determine approximate timing for egg incubation, fry emergence, and critical shallow water juvenile rearing periods.
- Refer to [WAC 220-660-110](#) and local/regional guidelines for allowable in-water work periods (i.e. *Chinook, Steelhead and Bull Trout Work Windows for the Lake Washington System*). Reference [TIMES WHEN SPAWNING OR INCUBATING SALMONIDS ARE LEAST LIKELY TO BE WITHIN WASHINGTON STATE FRESHWATERS](#) when determining the appropriate work window.


Requiring Compensatory Mitigation

- All new impacts must be fully mitigated. Refer to WDFW’s Mitigation policy for sequencing ([POL- M5002](#)).
- Determine a prioritization sequence and list of options that could work for your watershed. See the example below used in WRIA 8.

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Mitigation (In order of WDFW preference)

- Work with applicant/agent to decrease the size of the structure, remove skirting, and/or add or increase the grated portion of the pier or dock (particularly the near shore portion).
- Remove derelict pilings, piers, docks, and/or floats.
- Shoreline softening: removal of hard shorelines (rock, rip rap, and/or concrete bulkheads or bank protection) and replacement with beach coves, sloped shorelines that include native plantings, and large wood to stabilize and protect slopes.
- Partial planting plan (two trees and three shrubs).
 - Mitigation plantings should be installed within 10 feet of the OHWL to provide positive benefits to fish life (leaf litter and shade).
 - Plantings should be installed during fall or spring dormant period (can be done outside of the approved in-water work window).
 - Example: two trees (defined as woody vegetation with the potential to achieve heights of 40 feet or greater; e.g., Douglas fir, western red cedar, western hemlock, black cottonwood, red alder, paper birch, quaking aspen, Pacific willow, Pacific dogwood, Oregon white oak, red oak, grand fir) and three shrubs (defined as woody vegetation with the potential to achieve heights of 4 feet or greater; e.g., Sitka willow, Scouler willow, red-osier dogwood, black twinberry, Pacific ninebark, cascara, salmonberry, red elderberry, Douglas' spiraea, ocean spray, vine maple, snowberry, Indian plum).
 - Exceptions/credits include:
 - Three shrubs can be substituted for one tree (e.g. some municipalities have height restrictions, view ordinances, etc.).
 - Can consider existing on site vegetation towards mitigation, but typically this cannot comprise all of the mitigation.
- Gravel nourishment (typically applies to urbanized lakes only).
 - Must be placed during the approved in-water work window.
 - Typically require 25 cubic yards per 50 linear feet of shoreline; however, U.S. Army Corps of Engineers has a threshold at 25 cubic yards, so this may be a reasonable amount to benefit fish life but not push them into additional permitting.
 - In and within 100 yards of a documented sockeye spawning area, we recommend a 2-inch minus mix (100% less than 2 inches, 85% less than 1 inch, and greater than 40% between 0.25 and 0.75 inch).
 - Outside of sockeye spawning areas, we recommend a 1-inch minus mix (100% less than 1 inch, 85% less than 0.5 inch, and 40% less than 0.25 inch).

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- Remove trash, debris, etc. (e.g. 5, 10, or 15 cubic yards with photo documentation, during the approved in-water work window).
-

6. Rules of Thumb

Once you have drafted the permit in APPS, it is okay to share a draft and supporting documents with the applicant for review, if there is time.

Residential and Public Recreational Dock, Pier, Ramp and Float Design

New and repair/replacement pier, dock, ramp, and float designs may or may not be required to incorporate functional grating depending on site specific fish use WAC only requires grating if the structure has the potential to introduce shading impacts to juvenile salmonid migration, feeding, and rearing areas. These impacts are not an issue in put and take lakes with no anadromy or lakes without ambush predators. Reference local/regional guidance and WAC to maintain project/regional consistency.


Pile Design

[WAC 220-660-140](#) states that "steel piling used to construct residential docks should not exceed six inches in diameter." Yet it is also states "use the smallest diameter and number of pilings required to construct a safe structure." An engineer's justification may be needed to write a defensible permit.

Lakeshore Enhancement

Large woody material should only be placed in areas and water depths to benefit targeted species and avoid providing habitat for predatory fish species. Anchors are often necessary to maintain functional habitat and avoid boating/navigation hazards.

Beach nourishment may be necessary due to impacted/disturbed shoreline processes caused by bank protection or upland land uses. The appropriate specification is site specific, but it may be useful to development some standard specifications to recommend as a starting point. For example, in Lake Washington and Lake Sammamish it is recommended that a 2-inch minus mix be installed in sockeye spawning areas (100% less than 2 inches, 85% less than 1 inch, and greater than 40% between 0.25 and 0.75 inch) and outside of sockeye spawning areas, it is recommended to use a 1-inch minus mix (100% less than 1 inch, 85% less than 0.5 inch, and 40% less than 0.25 inch).

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Compliance Inspections

When time and workload allow, it is strongly recommended that a post-construction compliance inspection is scheduled with the applicant and/or agent. The purpose of this inspection is to ensure the project was constructed according to the permit conditions required for the protection of fish-life. Large, complex, or high risk projects should be prioritized for inspection. Additionally, any project that implements novel, nonstandard construction techniques or structures should be inspected. This compliance inspection should be done preferably when the contractor is still on site so as to correct any issues and be recorded in APPS or other permitting databases in a timely fashion.

7. Relevant WACS

[WAC 220-660-080](#) - Mitigation requirements for hydraulic projects

[WAC 220-660-110](#) - Authorized work times in freshwater areas

[WAC 220-660-120](#) - Common freshwater construction provisions

[WAC 220-660-140](#) - Residential and public recreational docks, piers, ramps, floats, watercraft lifts, and buoys in freshwater areas

8. Example Plans

Plans for overwater structures have their own set of challenges. Ultimately the written plan in APPS and the information on any drawings needs to support a project that meets our standards for the protection of fish life. See Attachment 1 for Example Plans.

9. References

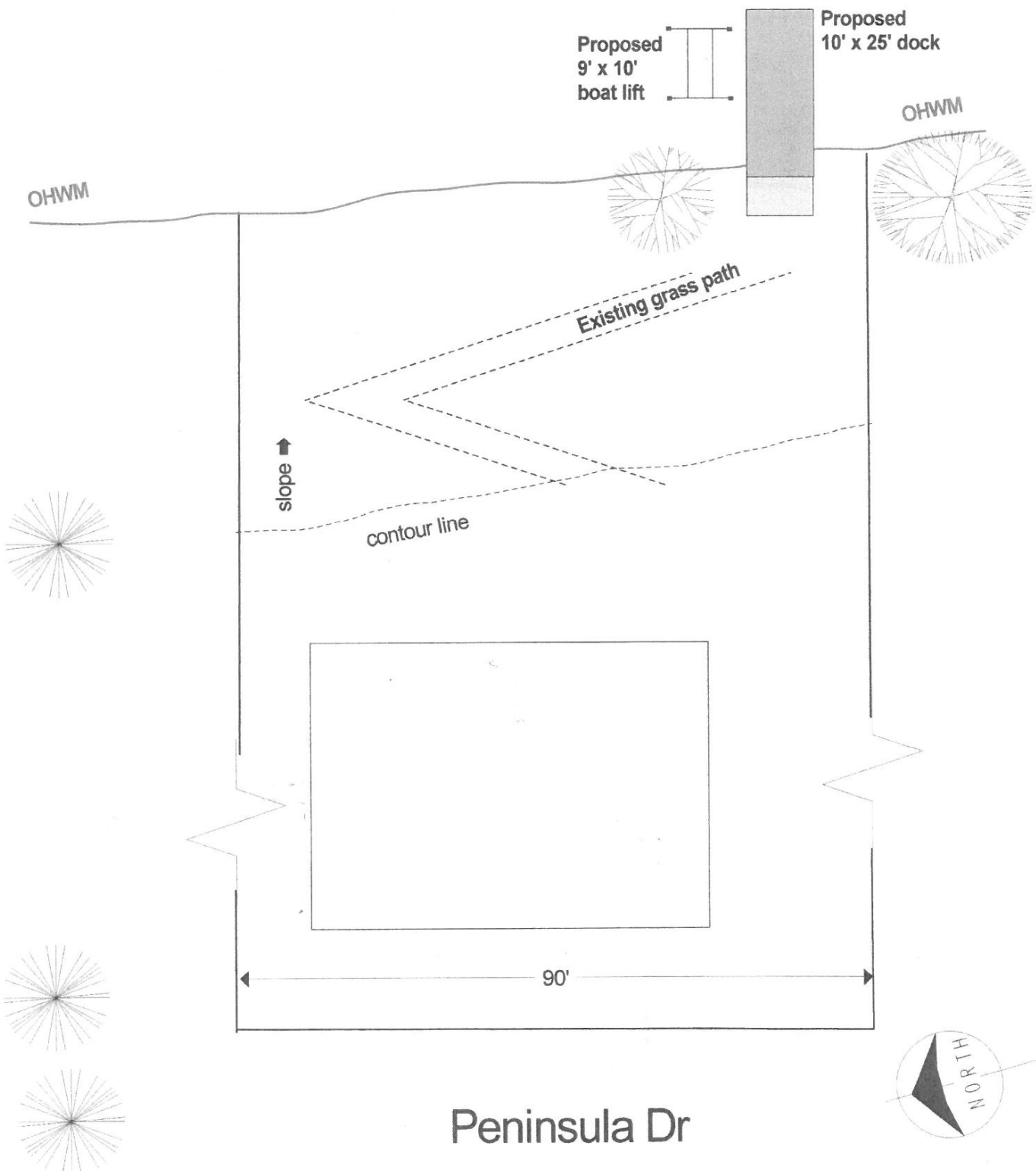
Carrasquero, J. 2001. Over-Water Structures: Freshwater Issues. Prepared for Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation by Herrera Environmental Consultants, Seattle, Washington. April 2001

Jones and Stokes. 2006. Overwater Structures and Non Structural Piling (White Paper). Prepared by Jones and Stokes Associates, in association with Anchor Environmental, L.L.C., and R2 Consultants for the Washington Department of Fish and Wildlife, Olympia, Washington

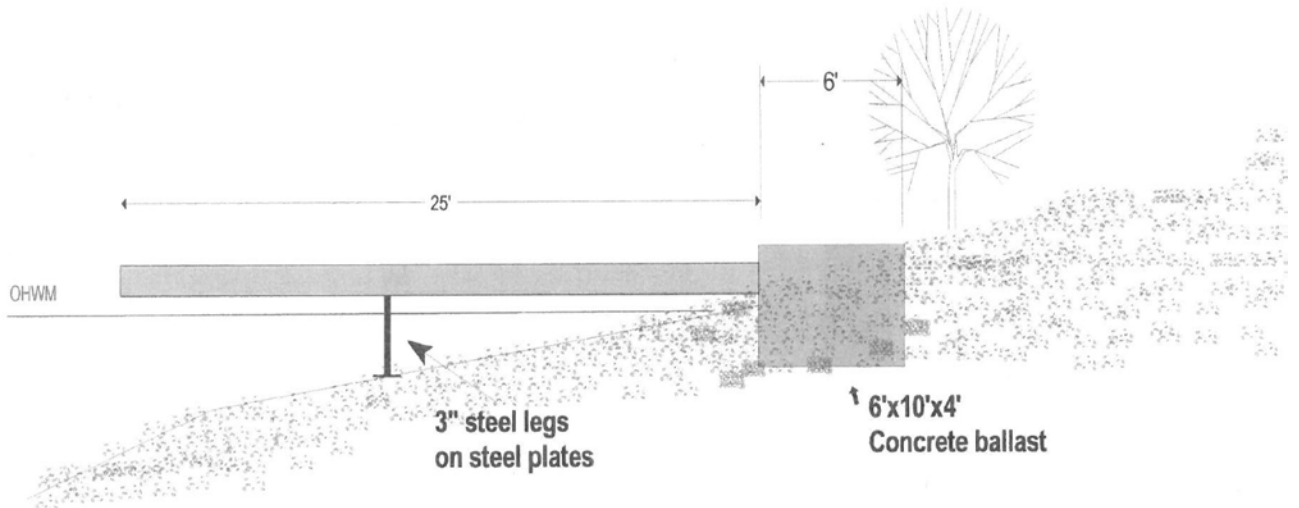
Poston, T. 2001. Treated Wood Issues Associated with Overwater Structures in Marine and Freshwater Environments White Paper. Olympia, Washington: Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation

Attachment 1

Example Plans



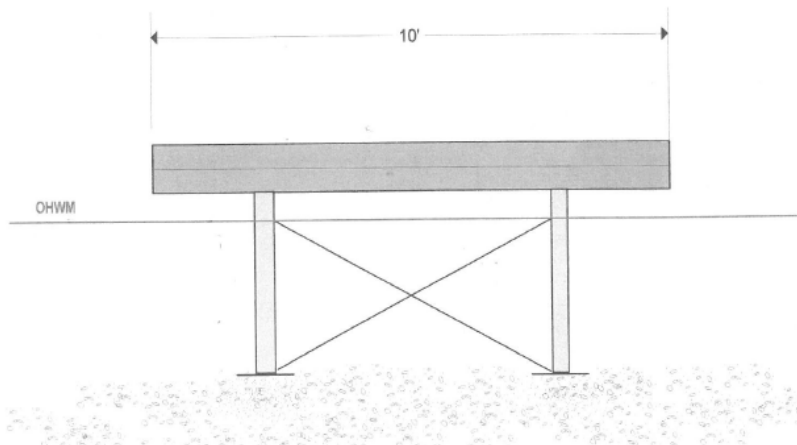
Example plan view from a small overwater structure project.



Example Profile View of a small overwater structure.

End View (looking landward)

1/2" = 1' approx



Example Cross Section View of a small overwater structure.

PROJECT INFORMATION

OWNER:
MARK SELLAND
JAMES THORP

DRAWINGS BY:
ECCO DESIGN INC.
203 N 36TH ST SUITE 201
SEATTLE, WA 98103
206-706-3937

SITE ADDRESS:
4017 & 4023 WILLIAMS AVE N
RENTON, WA 98056

PARCEL NUMBER:
(4017) 0518500460 & (4023) 0518500450

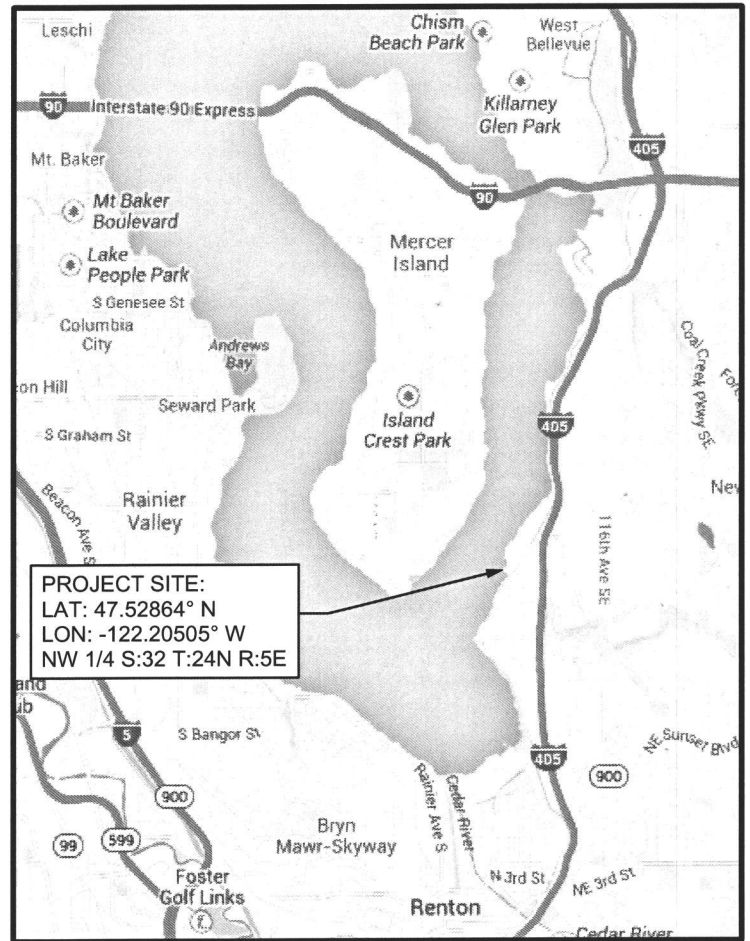
BODY OF WATER:
LAKE WASHINGTON

LEGAL DESCRIPTION:
(0518500460) BARBEE MILL TGW UND INT IN TRS
A,B,C,D,E,F,G, H,I,K,L,M,N,O & P

(0518500450) BARBEE MILL TGW UND INT IN TRS
A,B,C,D,E,F,G, H,I,K,L,M,N,O & P

PROJECT DESCRIPTION:
CONSTRUCT NEW PIER (400 SQUARE FEET) AND
INSTALL TWO NEW BOAT LIFTS. PLANT NATIVE
VEGETATION ALONG THE SHORELINE.

VICINITY MAP



PURPOSE: Boat Moorage

DATUM: C.O.E. Locks Datum
Est. 1919

ADJACENT PROPERTY OWNERS:

1. Charles & Elaine Wu
2. Peng Jiang

NAME: Mark Selland &
James Thorp

REFERENCE #:

SITE LOCATION ADDRESS:
4017 & 4023 Williams Ave. N
Renton, WA 98056

PROPOSED: Pier & Boat Lifts

IN: Lake Washington

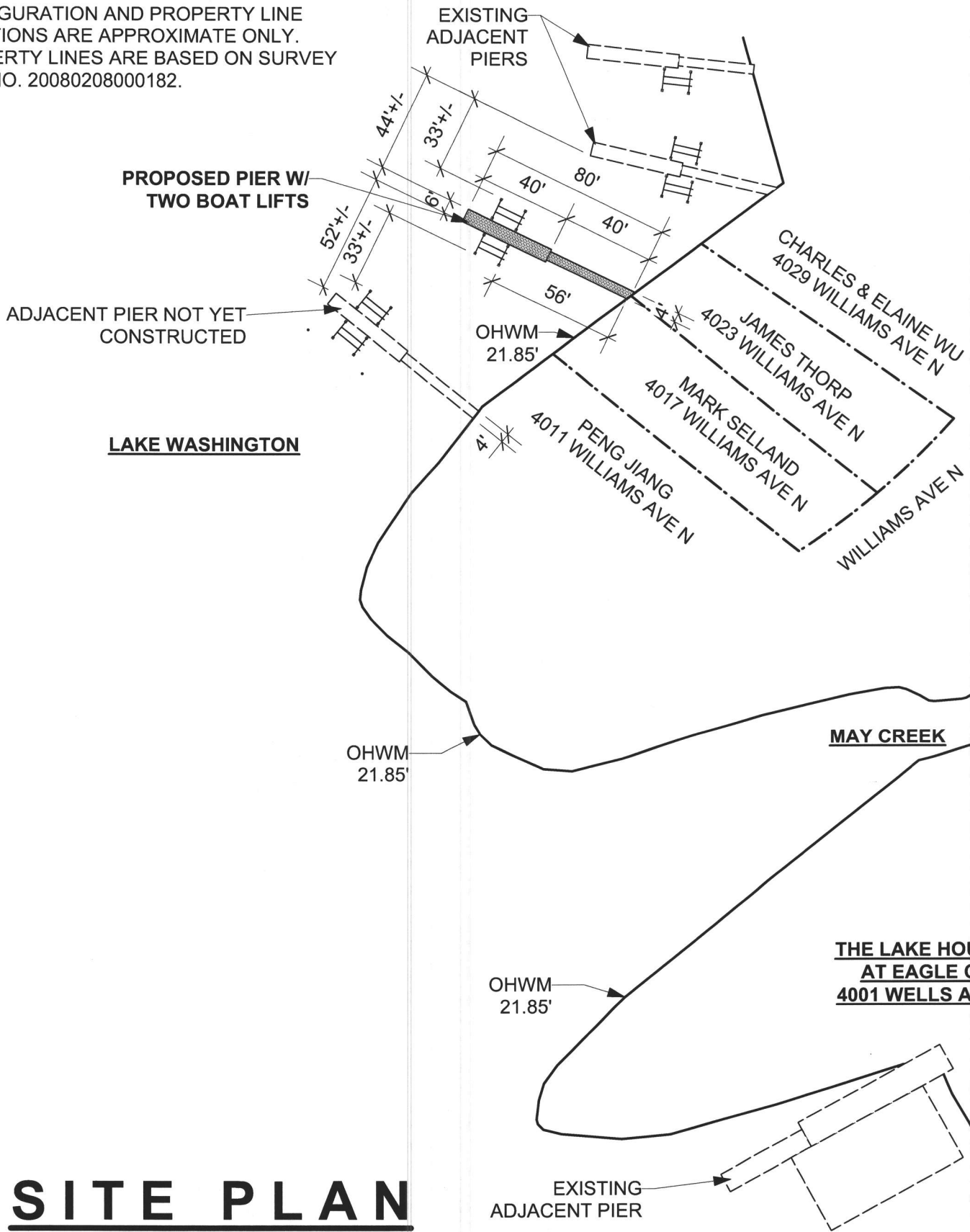
AT: Renton

COUNTY: King **STATE:** WA

SHEET 1 of 7

DATE: September 16, 2015

PLEASE NOTE THAT THE SHORELINE CONFIGURATION AND PROPERTY LINE LOCATIONS ARE APPROXIMATE ONLY. PROPERTY LINES ARE BASED ON SURVEY REC. NO. 20080208000182.



LAKE WASHINGTON

MAY CREEK

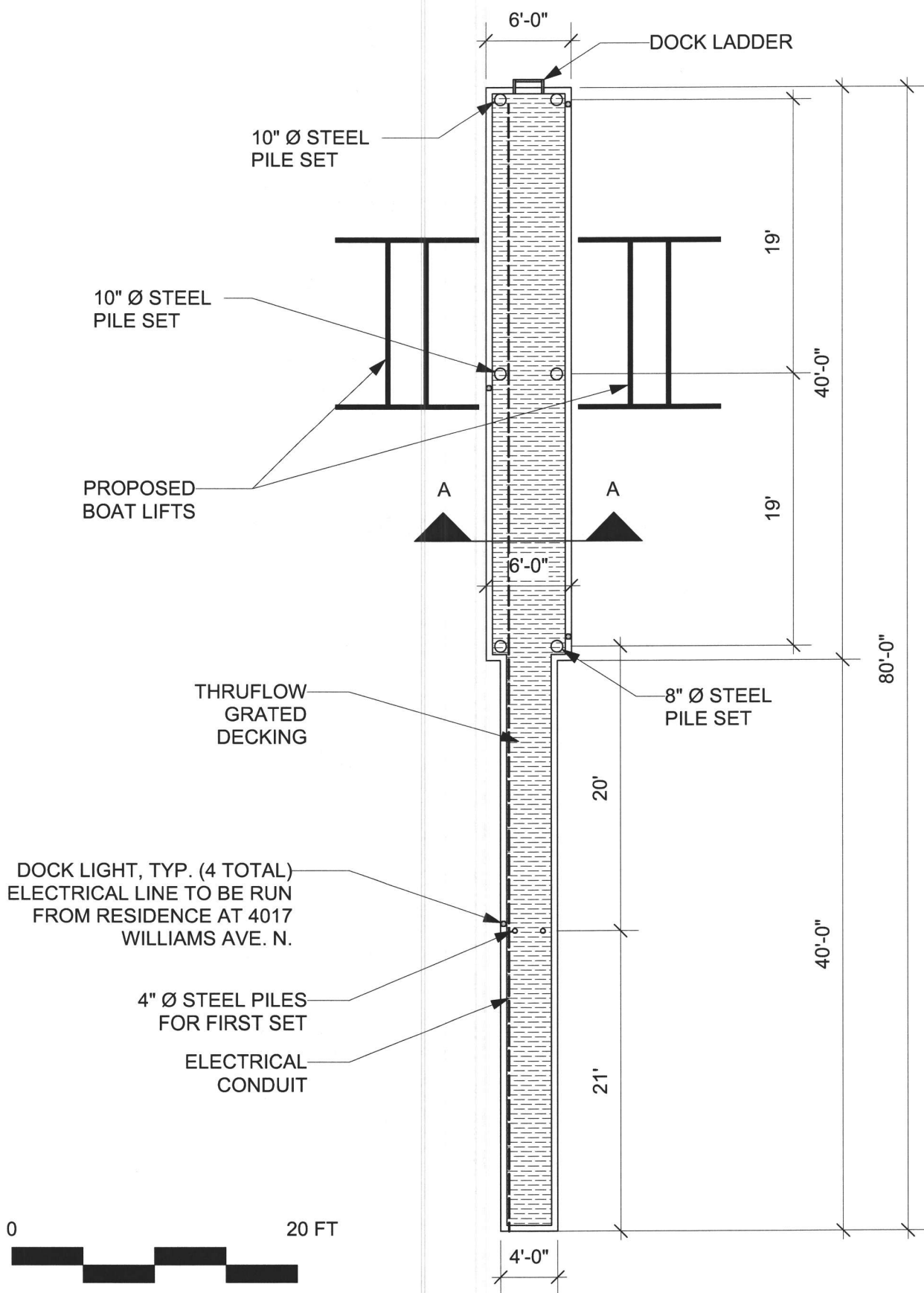
**THE LAKE HOUSES
AT EAGLE CO
4001 WELLS AVE N**

SITE PLAN

SCALE 1" = 60'-0"



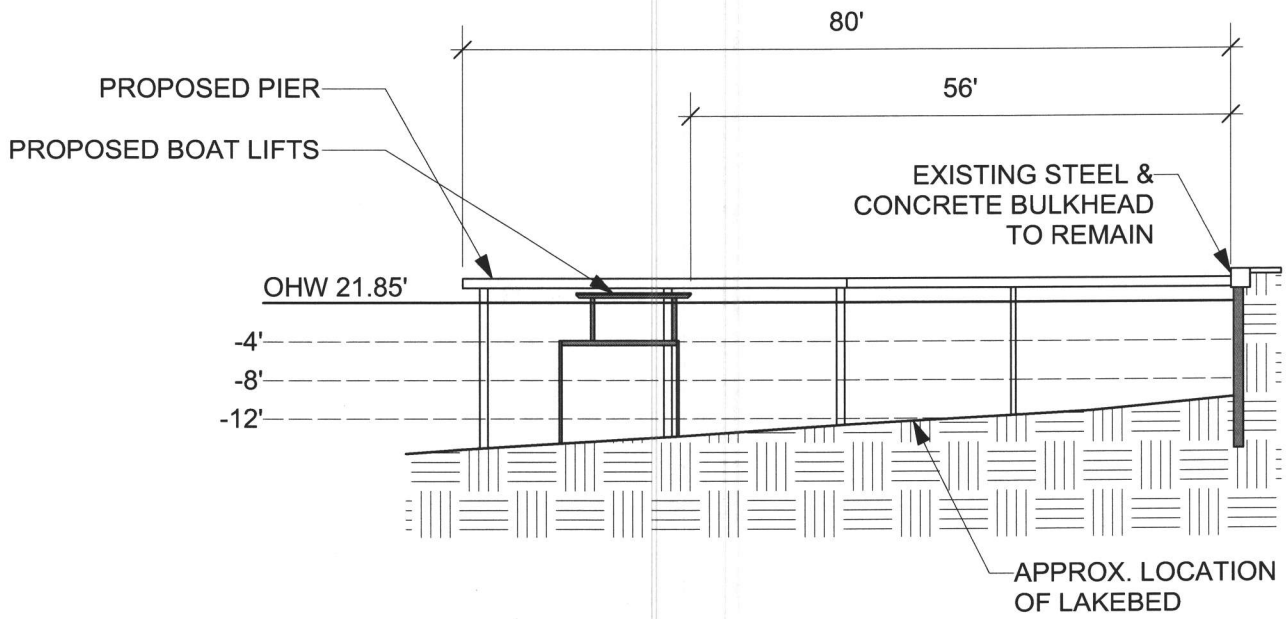
Reference:
Applicant: Mark Selland & James Thorp
Proposed: Pier & Boat Lifts
At: Renton, WA



PLAN VIEW

SCALE 1" = 10'-0"

Reference:
 Applicant: Mark Selland &
 James Thorp
 Proposed: Pier & Boat Lifts
 At: Renton, WA

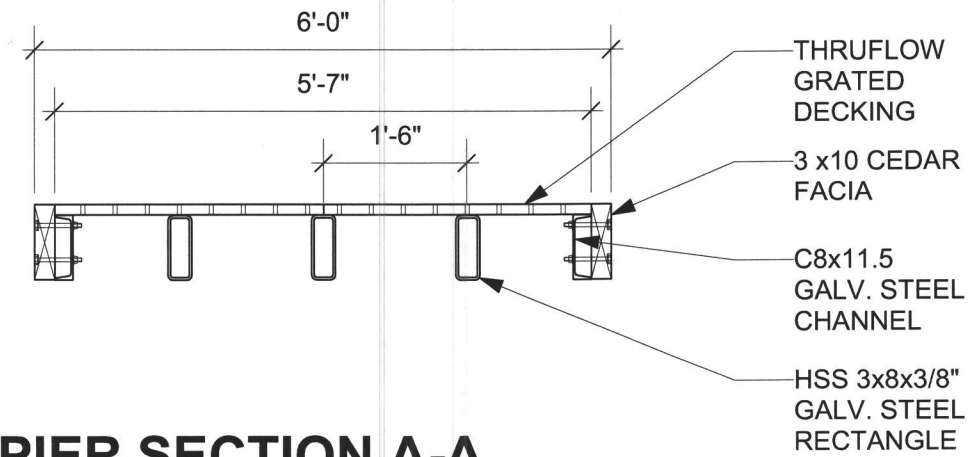


ELEVATION VIEW

SCALE 1" = 20'-0"



Reference:
Applicant: Mark Selland & James Thorp
Proposed: Pier & Boat Lifts
At: Renton, WA



PIER SECTION A-A

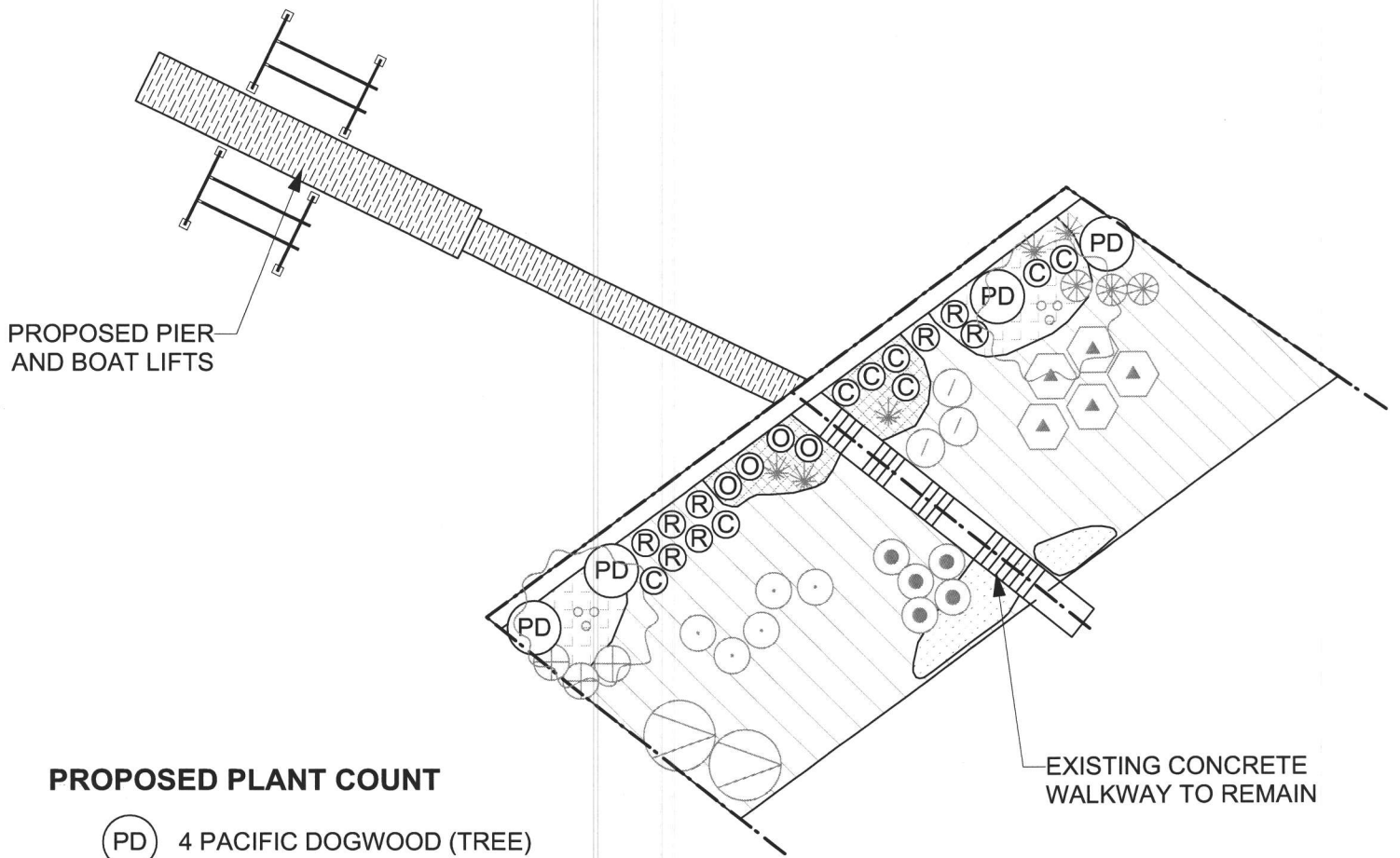
SCALE 1/2" = 1'-0"

Reference:

Applicant: Mark Selland &
James Thorp

Proposed: Pier & Boat Lifts

At: Renton, WA



PROPOSED PIER AND BOAT LIFTS

EXISTING CONCRETE WALKWAY TO REMAIN

PROPOSED PLANT COUNT

- Ⓟ 4 PACIFIC DOGWOOD (TREE)
- Ⓡ 8 NOOTKA ROSE (SHRUB)
- Ⓒ 8 RED-FLOWERING CURRANT (SHRUB)
- Ⓞ 4 TALL OREGON GRAPE (SHRUB)

NOTE: EXISTING PLANTINGS ARE SHOWN IN GRAY

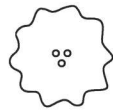


PLANTING PLAN

SCALE 1" = 20'-0"

Reference:
Applicant: Mark Selland & James Thorp
Proposed: Pier & Boat Lifts
At: Renton, WA

EXISTING PLANT LEGEND



AMELANCHIER ALNIFOLIA / SERVICEBERRY



CORNUS STOLONIFERA / RED TWIG DOGWOOD



MAHONIA AQUIFOLIUM / TALL OREGON GRAPE



MAHONIA NERVOSA / LOW OREGON GRAPE



RIBES SANGUINEUM / RED FLOWERING CURRANT



ROSA NUTKANA / NOOTKA ROSE



SYPHORICARPOS ALBUS / BALD-HIP ROSE



VACCINIUM OVATUM / EVERGREEN HUCKLEBERRY



HELICTOTRICHON SEMPERVIRENS / BLUE OAT GRASS



ALLIUM CERNUUM / NODDING ONION



ARCTOSTAPHYLOS UVA-URSI / KINNIKINNIK



FRAGARIA CHILOENSIS / BEACH STRAWBERRY



GAULTHERIA SHALLON / SALAL

Reference:

Applicant: Mark Selland &
James Thorp

Proposed: Pier & Boat Lifts

At: Renton, WA