CITY OF OREGON CITY
CITY COMMISSION WORK SESSION AGENDA

Hanlon Commission Chambers, Libke Public Safety Facility, 1234 Linn Ave, Oregon City
Wednesday, December 3, 2025 at 6:00 PM

Typically there are no public comments at work sessions, but written comments are accepted by:

- *Email recorderteam@orcity.org (deadline to submit written testimony via email is 3:00 PM on the day of the meeting)*
- *Mail to City of Oregon City, Attn: City Recorder, P.O. Box 3040, Oregon City, OR 97045*
- *You may also attend this meeting by watching the livestream on the City's YouTube Channel: https://www.youtube.com/user/CityofOregonCity*

1. CONVENE MEETING AND ROLL CALL

2. GENERAL BUSINESS

a. Review of Jon Storm Dock Structural Assessment

3. ADJOURNMENT

ADA NOTICE

The location is ADA accessible. Hearing devices may be requested from the City Recorder prior to the meeting. Individuals requiring other assistance must make their request known 48 hours preceding the meeting by contacting the City Recorder's Office at 503-657-0891.

Agenda Posted at City Hall, Pioneer Community Center, Library, City Website.

Video Streaming & Broadcasts: The meeting is streamed live on the Oregon City's website and available on demand following the meeting. The meeting can be viewed on Willamette Falls Television channel 28 for Oregon City area residents as a rebroadcast. Please contact WFMC at 503-650-0275 for a programming schedule.

625 Center Street
Oregon City, OR
97045
503-657-0891

CITY OF OREGON CITY

Staff Report

To:	City Commission	**Agenda Date:**	December 3, 2025
From:	Scott Archer, Parks and Recreation Director Thomas Kissinger, Assistant Parks and Recreation Director		

SUBJECT:
Review of Jon Storm Dock Structural Assessment

STAFF RECOMMENDATION:
Staff are providing a review of the available options at Jon Storm Dock for feedback from City Commission.

EXECUTIVE SUMMARY:
Parks and Recreation Staff contracted with KPFF Consulting Engineers to perform an evaluation of the structural capacity of the Jon Storm Dock facility and provide recommendations for repairs and upgrade of the facility. The attached report provides the details of this evaluation, including a range of options that could be considered to support larger commercial vessels using the Jon Storm Dock. Four evaluations were conducted as part of the study: 1) an evaluation of the dock's capacity in its current condition to support the original design vessel (60 ft. long, 40 ton vessel). 2) a high-level analysis of the dock's capacity in its current condition to support the Portland Spirit (150 ft. long, 360 ton vessel) in a stop and go scenario. 3) a high-level analysis of the dock's capacity in its current condition to support the Portland Spirit in a prolonged stay scenario. 4) evaluate the capacity of the dock in its current condition to support the Crystal Dolphin (84 ft. long, 91 ton vessel).

The report includes recommended repairs to the dock to maintain its existing functionality, as well as possible upgrades for each scenario listed above. A visual inspection of both surface and sub-surface conditions was performed as part of the report's scope of work. Repairs and upgrades were also documented in conceptual level designs, based on the existing as-builts for the dock facility. An engineer's opinion of probable cost was requested for both repairs and upgrades to provide the Commission with cost information for each scenario.

Staff will present the report and potential scenarios for feedback.

BACKGROUND:
The City Commission has expressed interest in pursuing more commercial usage at Jon Storm Dock than is currently available. The dock was originally designed and permitted for 60 feet of commercial usage, with the remaining docking area to be used for recreational

purposes. The original design vessel for the commercial portion of the dock was a 60 foot long, 40 ton vessel. At the December 18th, 2024 City Commission Meeting, the Commission directed staff to begin the process of modifying the usage of Jon Storm to pursue the ability for commercial vessels to utilize the dock for tourism-related activities. Staff met with Oregon State Marine Board (OSMB), who advised that a specific proposal would need to be submitted from the City outlining the proposed changes. OSMB staff also advised that a structural analysis would be required to support this proposal to ensure the dock is able to physically support the proposed changes. The attached structural assessment report outlines a variety of options for consideration by City Commission.

OPTIONS:

1. Provide direction for staff to move forward with one of the proposed scenarios as written.
2. Provide direction for staff to move forward with one of the proposed scenarios with Amendments.
3. Deny moving forward with any of the proposed scenarios and provide further direction.

JON STORM DOCK

STRUCTURAL ASSESSMENT

SEPTEMBER 30, 2025

KPFF PROJECT NO. 10022400409

SUBMITTED TO:
CITY OF OREGON CITY
13895 FIR ST.
OREGON CITY, OR, 97045

SUBMITTED BY:
KPFF CONSULTING ENGINEERS
111 SW FIFTH AVENUE, SUITE 2600
PORTLAND, OR 97204

9/30/2025
REGISTERED PROFESSIONAL ENGINEER
88442PE
OREGON
JAN 14, 2014
ROBERT H. RILEY
EXPIRES: 12/31/2026

PROJECT SCOPE

KPFF has prepared this report to provide the City of Oregon City with an evaluation of the structural capacity of the Jon Storm Dock facility and recommendations for repair and upgrade of the facility. The facility was originally designed for a 60 ft long, 40 ton vessel. The following evaluations were conducted:

1. Evaluate the capacity of the dock in its current condition to support the original design vessel, based on the documents provided by the City and a site inspection performed by KPFF. Provide recommendations for repair.
2. Conduct a high-level analysis of the facility in its current condition to support the Portland Spirit (150 ft long, 360 ton vessel), assuming the vessel only moors at the dock for a short period of time (Stop/Go). Provide recommendations for upgrades. The Stop/Go assumes Standard Type II mooring and maximum wind speed of 50 knots per UFC 4-159-03 Moorings.
3. Conduct a high-level analysis of the facility in its current condition to support the Portland Spirit (150 ft long, 360 ton vessel), assuming the vessel has a prolonged stay. Provide recommendations for upgrades. For a prolonged stay of the vessel, the design wind speed from ASCE 7-16 is used and it is equivalent to 72 knots for the mooring analysis.
4. Evaluate the capacity of the dock in its current condition to support the Crystal Dolphin (84 ft long, and 91 ton vessel)

PART 1 – CURRENT CONDITION OF FACILITY

The berthing and mooring structure of the Jon Storm Dock consists of a 320 ft long by 10 ft wide concrete float, supported by 7 steel pipe guide piles and an 80ft long by 10 ft wide 125-degree angled access float supported by 3 guide piles.

KPFF inspected the dock on July 22, 2025 to assess the current condition of the facility. The steel pipe piles, concrete floats, and timber walers were classified as Minor condition with minor damage or deteriorations. We recommend the following to account for the current condition assessment:

- Use the minimum measured pile thickness for pile evaluation
- No strength reduction on the concrete floats
- No strength reduction on the timber walers, assuming that any missing through rods will be replaced or damaged sections will be repaired.

The detailed current condition assessment statement of structural members and photographs from the site can be found in the site observation report, see Appendix A.

PART 2 – STRUCTURAL EVALUATIONS

We reviewed the existing facility documents provided by the City, including the following documents:

- Dock Design Drawings by Bellingham Marine dated Aug 4, 2004
- Dock Drawings for Transient Tie-Up Construction Project, dated June 10, 2004
- Geotechnical Report by EVREN Northwest Inc. dated July 15, 2024 (the Geotech Report)
- Structural Calculations by KPFF and Flow Solutions dated Sep. 7, 2004 (the 2004 KPFF Calculations)
- Columbia and Willamette Cruise Ships List by Oregon State Marine Board (OSMB Vessel List)

The Geotech Report was referenced for site and pile elevations and soil parameters, see Tables 1-3 below. Our structural evaluation conservatively used the minimum pile wall thickness, 0.435 in, measured on site to check the piles. A soil-structural interaction program, LPile, was used to conduct the analysis.

Table 1 - Site Elevations (NGVD)

100 yr Flood Elevation	45	ft
OLW	2.35	ft
OHW	27.65	ft
Ground Elevation	-10	ft
Soil Boring Limit	-60	ft
100-year Current Speed	10	ft/sec

Table 2 - Pile Info (NGVD)

Pile Embedment	30	ft
Pile Length	89	ft
Pile Top Elevation	49	ft
Pile Tip Elevation	-40	ft
Pile Diameter, D	24	in
Pile Wall Thickness	0.50	in
CL Pile to Pile	48	ft

Table 3 - Soil Parameters for LPile Input

Depth -ft	Gamma -lb/f3	Phi	C -kp/f2	K -lb/i3	e50 or Dr %	Nspt
0	120	30	0.5	313.1	0.87	10
50	120	30	0.5	313.1	0.87	10

Capacity of Facility to Support Original Design Vessel

We reviewed the 2004 KPFF Calculations and summarized the load cases and demand capacity ratios (DCR) in Table 4 below. Load case 3 created the highest DCR for the piles and we re-ran that condition using the minimum measured pile thickness of 0.435 in. The updated DCR for the piles is 85% based on the adjusted pile thickness. It is our opinion that the facility in its current condition has sufficient capacity to support the original design vessel.

Table 4 - Original Structural Calculation Summary

Load Case	Water level	Force source	Force direction	Vessel type	Structural element	Mode of failure	DCR
1	---	Wake wave	Downstream	---	Walers of main dock	Flex bending of 3 1/8" GL	83%
2	---	Berthing	Perp to main	40 Ton	Waler bolts of main dock	Tension	16%
3	100 yr	Current	Parallel to main	---	Pile	Bending at mudline	93%
4	100 yr	Wind on vessel	Perp to main	(8) 40 ton	Pile	Bending at mudline	24%
5	---	Current + wind	Perp to walkway	---	Walers of walkway dock	Tension	60%
6	OHW	Berthing	Perp to main	40 Ton	Pile	Bending at mudline	4%
7	---	Berthing	Perp to main	40 Ton	Walers of main dock	Tension	3%

Capacity of Facility to Support New Vessel

1) Portland Spirit Stop/Go

We understand the new vessel is 150 ft long and 360 tons. The Portland Spirit river cruise vessel from the OSMB Vessel List matches the length and tonnage and we used that as our design vessel. The following assumptions were made in our evaluation:

- The vessel will berth on the river side of the dock to ensure enough clearance for the vessel draft.
- The facility is only used to load and unload passengers. In case of storms, the vessel will leave the facility to shelter away from the dock.
- The vessel is assumed to operate all year round and ordinary low water (OLW) and ordinary high water (OHW) were used as the design water levels.

KPFF calculated berthing energy for the new vessel per PIANC Fender Guidelines 2024. Guide pile energy absorption capacities were evaluated at OHW and OLW. The results show the piles in their current conditions are capable of absorbing the berthing energy when the vessel berths at OHW, but not at OLW, as shown in Table 5. The results also show a very large deflection when the vessel berths at OHW. Therefore, we recommend installing new high-efficient fenders to prevent the float

and piles from being damaged by berthing. We recommend installing (6) Standard Sea Guard 2ft x 6ft fenders at the locations shown on Sheet 1 in Appendix B.

Table 5 - Vessel Berthing Energy and Pile Energy Capacity

	Vessel Berthing Energy	Pile Strain Energy Capacity	Energy DCR	Pile Head Deflection
	k-ft	k-ft		in
OLW	10.39	9.47	110%	6.7
OHW		14.83	70%	21.4

We used current velocities of 5ft/s at OHW, which is the same as the original facility design assumption. To provide enough mooring capacity, we recommend installing (6) 10-ton cleats as shown on Sheet 1 in Appendix B. We also recommend replacing the timber waler on each side of the floats with a steel waler.

The piles and walers were evaluated using Allowable Stress Design (ASD) methodology for the load combinations listed in Table 6. LPile was utilized to analyze the shear, moment and deflection of the piles for each load combination. The pile and waler calculations are summarized below in Table 7.

Table 6 – Load Combinations

Load Case	Water level	Force source	Force direction	Vessel type	Structural element	Mode of failure
1	OLW	2.5 ft/s current on float + Berthing	perp to main	360 Ton	Pile	bending at mudline
2	OHW	5 ft/s current on float + Berthing	perp to main	360 Ton	Pile	bending at mudline
3	OHW	Mooring (wind on vessel + current on vessel)	wind perp to main	360 Ton	4 piles sharing load	bending at mudline
4	OHW	Mooring (wind on vessel + current on vessel)	wind parallel to main	360 Ton	7 piles sharing load	bending at mudline
5	---	Berthing	perp to main	360 Ton	walers of main dock	tension, compression, shear
6	---	Mooring (wind on vessel)	wind perp to main	360 Ton	walers of main dock	tension, compression, shear

Table 7 – Pile and Waler Check Summary

Load Case	1	2	3	4	5	6
Water Level	OLW	OHW	OHW	OHW	-	-
Load Comb	1.0C+1.0Be	1.0C+1.0Be	1.0M	1.0M	1.0Be	1.0M
DCR	26%	70%	57%	23%	50%*	55%*
Max. Pile Deflection(in)	0.81	9.11	7.28	2.62	-	-

*W8x31 walers are assumed.

2) PORTLAND SPIRIT PROLONGED STAY

As mentioned in the Project Scope, the mooring design wind speed increases from 50 knots to 72 knots to account for storm events. This increased wind speed would result in doubling the mooring

load from the vessel to the dock, as forces due to wind are based on the square of the velocity. We recommend installing additional guide piles and upland bollards in addition to the new walers, cleats and fenders recommended in the previous section. The upgrade concept is shown on Sheets 2 and 3 in Appendix B. Sheet 2 shows installing internal guide piles with replacement of the float segment. Sheet 3 shows an alternative installing external guide piles and it doesn't require replacement of the float segments. However, it restricts the shoreside berthing face.

3) Capacity of Facility to Support the Crystal Dolphin

Berthing of the Crystal Dolphin and mooring of the Crystal Dolphin assuming the Stop/Go condition were analyzed. The analysis assumes there is no upgrade of the dock and only piles absorb berthing energy. Table 8 shows the vessel berthing energy and the pile strain energy capacity under the equivalent applied shear force. The results show that the pile can absorb berthing energy at OHW and OLW without fender upgrades.

Table 8 - Vessel Berthing Energy and Pile Energy Capacity

	Vessel Berthing Energy	Pile Strain Energy Capacity	Energy DCR	Equivalent Shear Applied	Pile Head Deflection
	k-ft	k-ft		kips	in
OLW	2.15	2.15	100%	24.5	2.9
OHW		2.17	99%	7.8	7.6

The mooring analysis assumes no upgrade on mooring fixtures and the vessel ties up to the bullrail. The load combinations in Table 6 are used to evaluate the piles, walers, and bullrails. Table 9 and Table 10 below show the pile and walers have enough capacity for the load combinations shown in Table 6.

Table 9 – Pile Check Summary

Load Case	1	2	3	4
Water Level	OLW	OHW	OHW	OHW
Load Comb	1.0C+1.0Be	1.0C+1.0Be	1.0M	1.0M
Moment DCR	74%	61%	37%	7%
Max. Pile Deflection(in)	2.87	7.8	3.4	0.7

Table 10 – Waler and Bullrail Check Summary

Load Case	5	6
Load Comb	1.0C+1.0Be	1.0M
Waler Tension or Compression D/C	22%	6%
Bullrail Moment and Shear D/C	-	82%
Waler Connection Check	-	54%

It is our opinion that the facility in its current condition has sufficient capacity to support the Crystal Dolphin vessel in the Stop/Go case. In order to support the Crystal Dolphin vessel for a prolonged stay, we recommend installing new walers, cleats and fenders.

PART 3 – RECOMMENDED REPAIRS/UPGRADES

Based on the condition assessment, KPFF evaluated the dock system and recommends the following:

Repairs to support the original design vessel:

- Replace missing through rods on the timber walers, damaged or detached walers and damaged bullrails.

Upgrades to support the Portland Spirit Stop/Go:

- Install (6) Standard Sea Guard 2ft x 6ft fenders along the mooring floats at locations as shown on sketch in Appendix B.
- Install (6) 10-ton cleat bollards along the mooring floats at locations as shown on sketch in Appendix B.
- Remove the timber walers and install steel walers on both sides of the dock.

Additional upgrades to support the Portland Spirit prolonged stay:

- Install (6) internal guide piles with replacement of the corresponding float segment, or install (6) external guide piles with restriction of using the shoreside berthing face
- Install (2) upland pile supported bollards

PART 4 – ESTIMATE OF PROBABLE REPAIRS AND RETROFIT COSTS

KPFF estimated a Rough-Order-of-Magnitude cost (ROM) of the following options:

- Repairs only: $20,000
- Repairs and Upgrades to Accommodate Portland Spirit Stop/Go: $470,000
- Repairs and Upgrades to Accommodate Portland Spirit Prolonged Stay: $1,145,000
- Repairs and Upgrades to Accommodate Portland Spirit Prolonged Stay-Alternative: $770,000

Details for the conceptual cost estimate for the repairs and upgrades can be found in Appendix C.

KPFF appreciates this opportunity to work with you. Please don't hesitate to contact us with any questions.

PART 5 – LIMITATIONS

Observations and investigation of the structure were limited to areas observable by reasonable visual investigation. The conditions described in this summary report are strictly based on visual and non-destructive testing assessments.

Observations, analysis, conclusions, and recommendations contained within this report reflect our engineering judgement. Concealed problems within the construction of the dock may exist that cannot be revealed through visual observation, limited non-destructive testing, and photos alone. Therefore, KPFF can in no way warrant or guarantee the condition of the existing construction of the dock, or its future structural performance.

Appendix A - Inspection Report

FIELD REPORT

1601 5th Ave, Suite 1300
Seattle, WA 98101
(206) 382-0600 I Fax (206) 382-0660

Team:	**KPFF –Anthony Eble, P.E.** **Ashley Rosales** **George Tzortzis**	Date: Job No.	**22 July 2025** **2400409**
Project:	**John Storm Dock Inspection**	Weather:	**Partly Cloudy, 85 degrees**
Location:	**John Storm Park – Oregon City, Oregon**		
Time:	**3:30 PM**		

Purpose of Inspection: The Department of Parks and Recreation of Oregon City has requested that KPFF divers assess the current condition of the existing dock; concrete floating docks and steel pipe piles to determine the current state of the system. The inspection findings are presented here to help KPFF engineers determine the capacity of the dock system.

Inspection Methodology: KPFF Divers and crew were on site Tuesday, July 22, 2025 to inspect steel pipe piles and concrete floating docks also noting any deficiencies observed to the system. Steel piles were inspected using Level I, Level II and Level III inspection methods while the concrete floating dock sections were inspected using Level I and Level II methods. Level II inspection methods consist of cleaning the pile in three areas to determine the state of the pile beneath marine growth. Level III inspection methods consist of measuring the remaining section thickness beneath the marine growth in the areas that were cleaned.

Divers and crew accessed the site by entering the water from the concrete floating docks. The piles and concrete float sections were visually inspected for damage via SCUBA utilizing underwater inspection techniques. Divers visually inspected each pile from the water surface elevation to the mudline, noting the depth at every other pile. The concrete floating docks were inspected below the water surface elevation while the utility lines were observed above and below the water surface elevation. Above the water surface elevation; steel piles, concrete floats, timber members and the gangway were assessed with similar inspection methods as underwater elements.

Observations: The steel pipe piles and concrete floating docks were observed to be in Minor condition at the time of inspection. Typical pile size for the floating dock sections was measured to be 76 in. in circumference, typical conditions observed include hard and soft

marine growth from the water surface elevation to the mudline with up to ¼ in. rust nodules and pitting up to 1/8 in. deep, piles are uncoated and no cathodic protection was observed. Cleaning areas of the piles below the water surface elevation, at mid water and the mudline determined the steel beneath the rust nodules and marine growth to have pitting up to 1/8 in. deep. Ultrasonic Thickness Measurements (UTMs) were taken at piles 10, 6 and 2. UTMs of the piles determined the remaining thickness to be 0.495 above water, 0.445 at the water surface elevation, 0.445 at mid water, and 0.435 at the mudline at Pile 10 (worst case). A typical concrete float section measures 12 ft long by 9 ft 10 in wide with a depth of 38 in., one concrete section, located where the ramp lands on the dock, had a depth of 49 in. with a freeboard of 15 in. The concrete floating docks underwater were observed with light marine growth from the water surface elevation to the bottom of the dock sections. A timber bull rail exists along the perimeter of the concrete floating dock sections atop of a timber fender system that ties the concrete float sections together.

Specific Defects: A number of missing tie rods were observed in the timber fender system with one concrete float section, between piles 8 and 9, observed to move up to ¼ in. height when weighted down. The timber fender system, which consists of two 3 x 12 members and a 2 x 12 with a rub rail attached to the top, was observed to be damaged or hanging off the dock sections at piles 3, 5, 6 and 7. The bull rail was damaged at piles 2 and 4. The utilities for the dock were observed to be leaking at the connection beneath the ramp at the time of this inspection. See photos for visual representations. See attached drawing for specific locations of defects observed.

Recommendations: Replace missing tie rods in the timber fender system and replace the damaged/hanging members. Repair the damaged bull rail at damaged sections.

Figure 1: Overview of the John Storm Dock.

Figure 2: Missing bolts observed in fender system.

Figure 3: Detached timber section along fender system.

Figure 4: Broken timber fender section.

Figure 5: Leaking utilities, located beneath ramp.

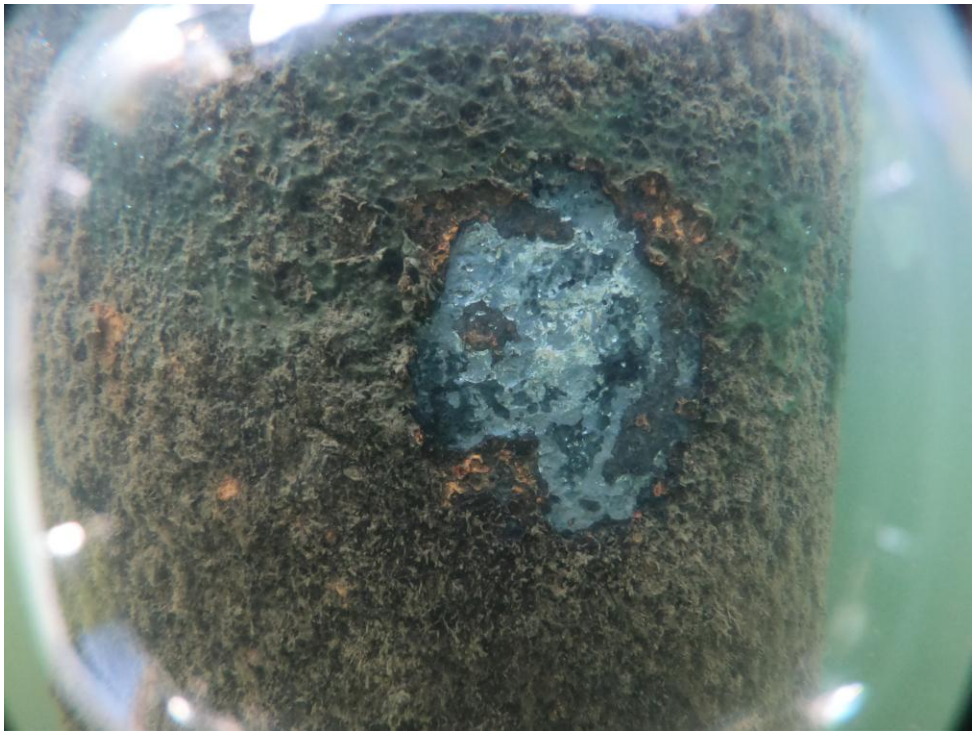


Figure 6: Typical cleaned section of steel pile at water surface elevation.

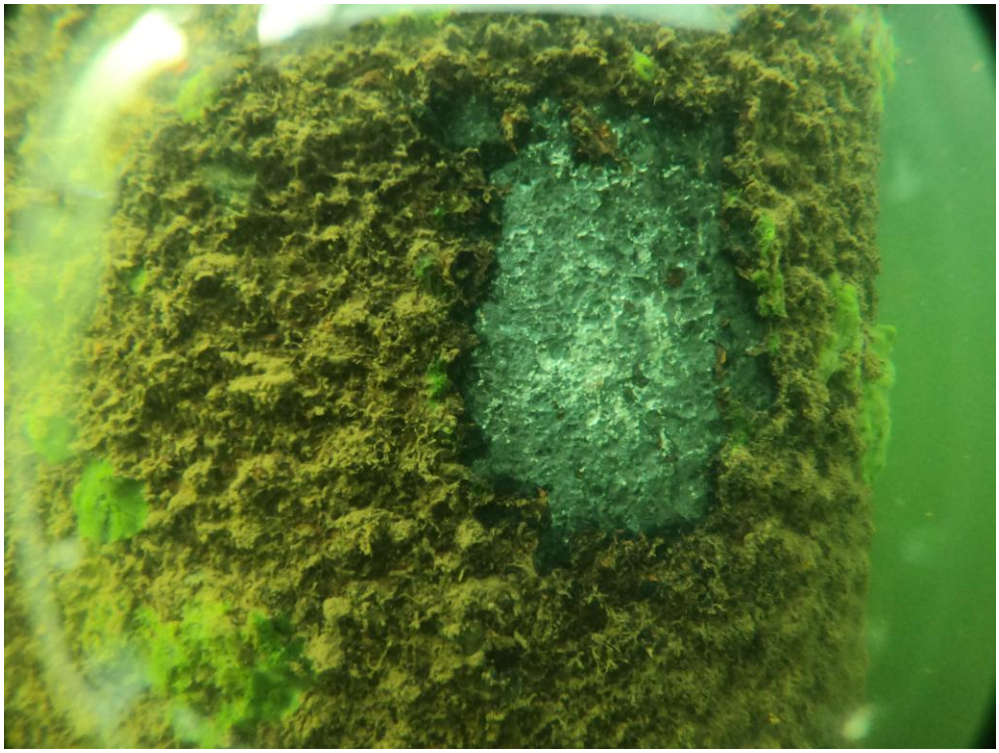


Figure 7: Typical cleaned section of steel pile at mid water.

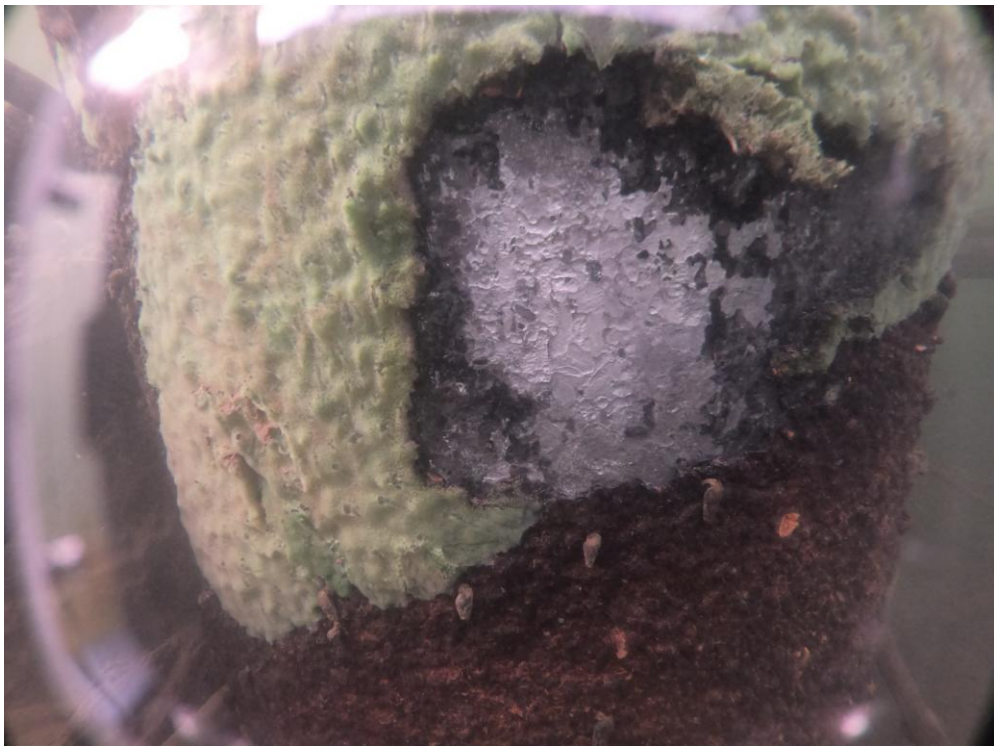


Figure 8: Typical cleaned section of steel pile at mudline.

Figure 9: Typical condition of concrete float sections below water.

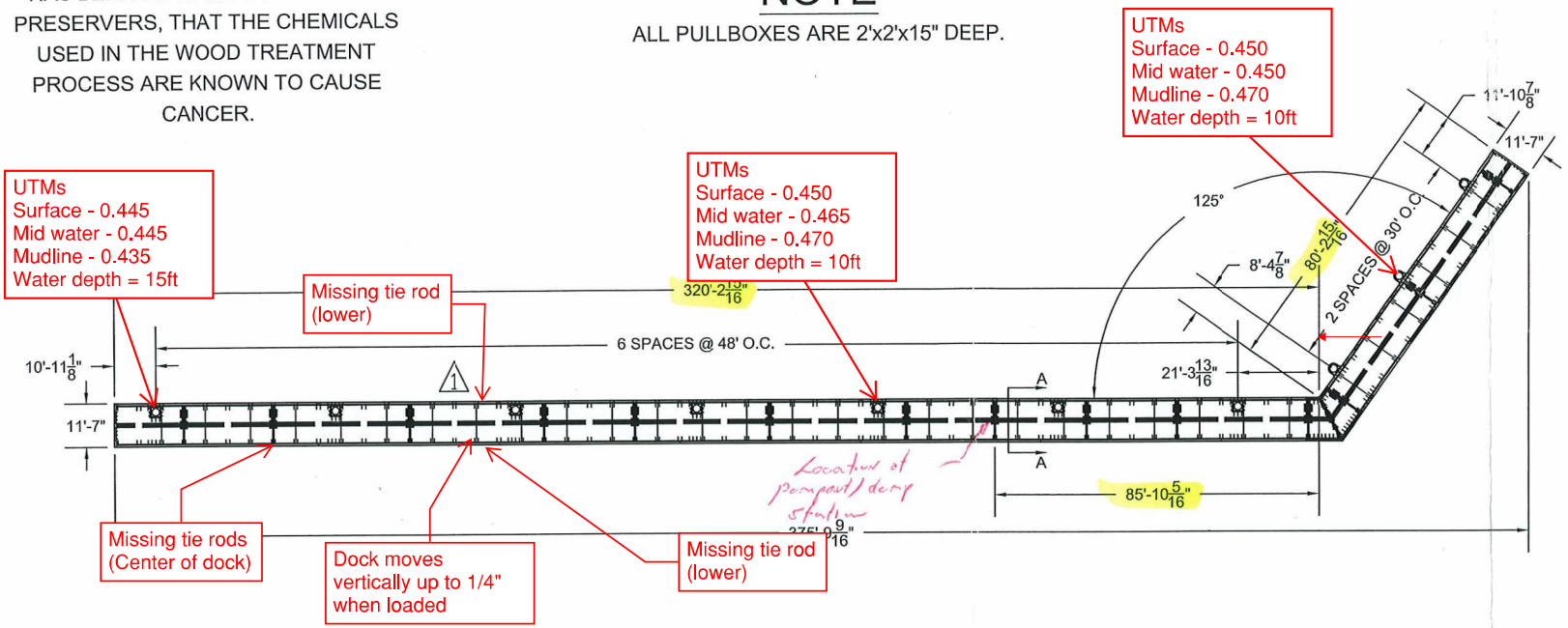
Figure 10: Missing tie rod at float section 9 from North end of dock.

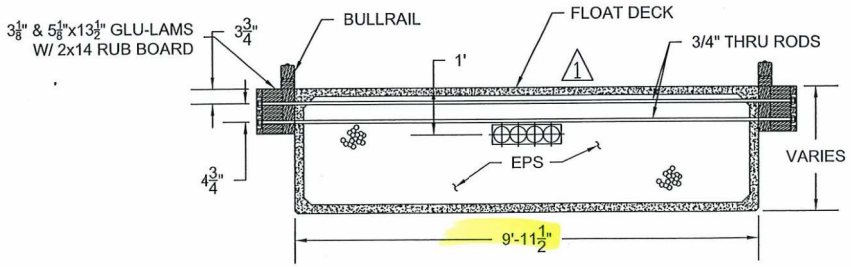
WARNING

BELLINGHAM MARINE
HAS BEEN NOTIFIED BY ITS WOOD PRESERVERS, THAT THE CHEMICALS USED IN THE WOOD TREATMENT PROCESS ARE KNOWN TO CAUSE CANCER.

NOTE

ALL PULLBOXES ARE 2'x2'x15" DEEP.





VIEW AA

CAUTION

FLOAT SYSTEMS ARE UNSTABLE WHEN PLACED IN WATER PRIOR TO ASSEMBLY IN THEIR FINAL INTENDED CONFIGURATION. MODULES OR SUBASSEMBLIES SHOULD BE HANDLED WITH CARE DURING INSTALLATION AND SHOULD NEVER BE STOOD OR WALKED UPON PRIOR TO FINISHED ASSEMBLY.

Bellingham MARINE
Innovative harbor and waterfront solutions

UNIFLOAT®
precision engineered flotation systems

JOHN STORM PARK
OREGON CITY, OR

DIMESIONAL LAYOUT

JOB NO.04-1408

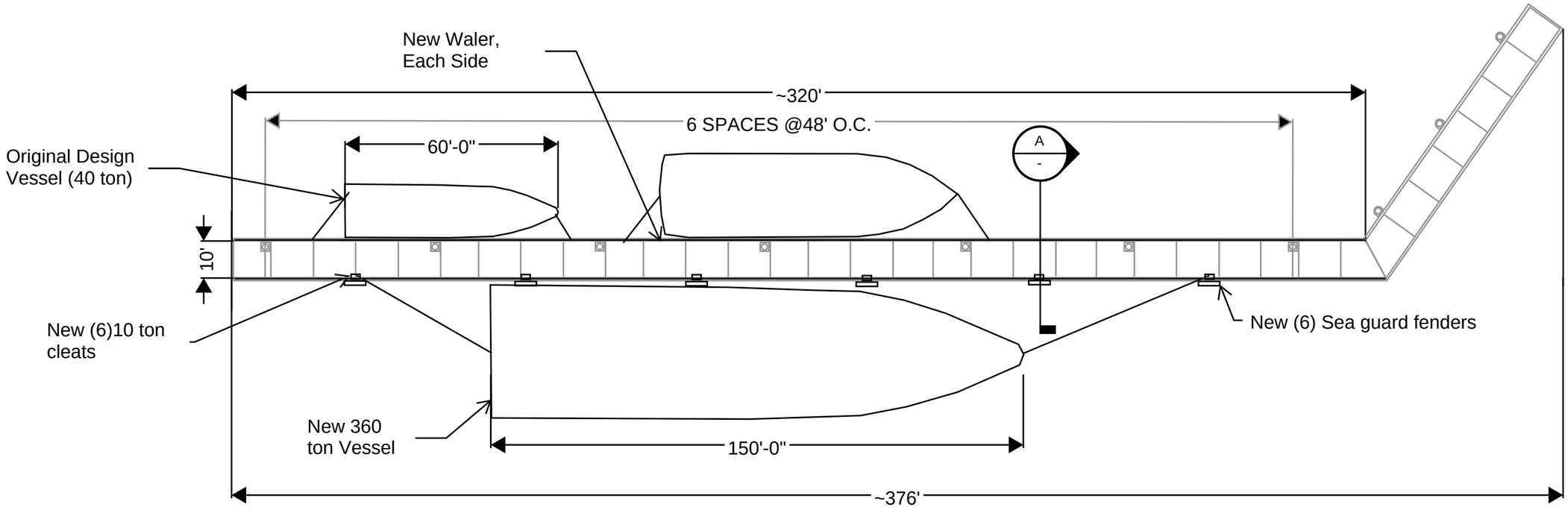
Checked By: Date:
GM ☐
OPER. ☐

Revisions:
⚠ ADDED TUBE & BOXES JJG 8-31-04

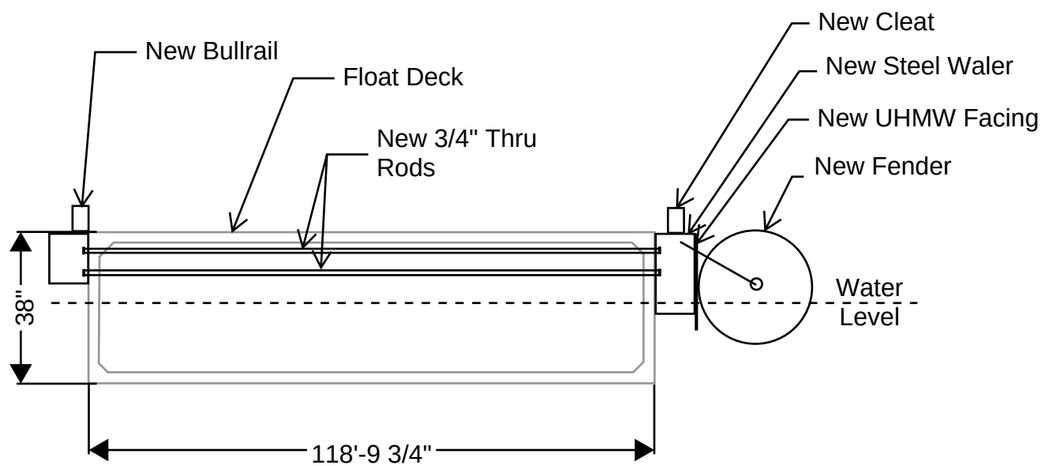
Drawn by: J.J.G
Scale: NTS
Date: 8-4-04

Sheet: 1 Of 14
File Name OREGON CITY.DWG

Appendix B -
Dock Upgrade Concept Sketch



Plan View

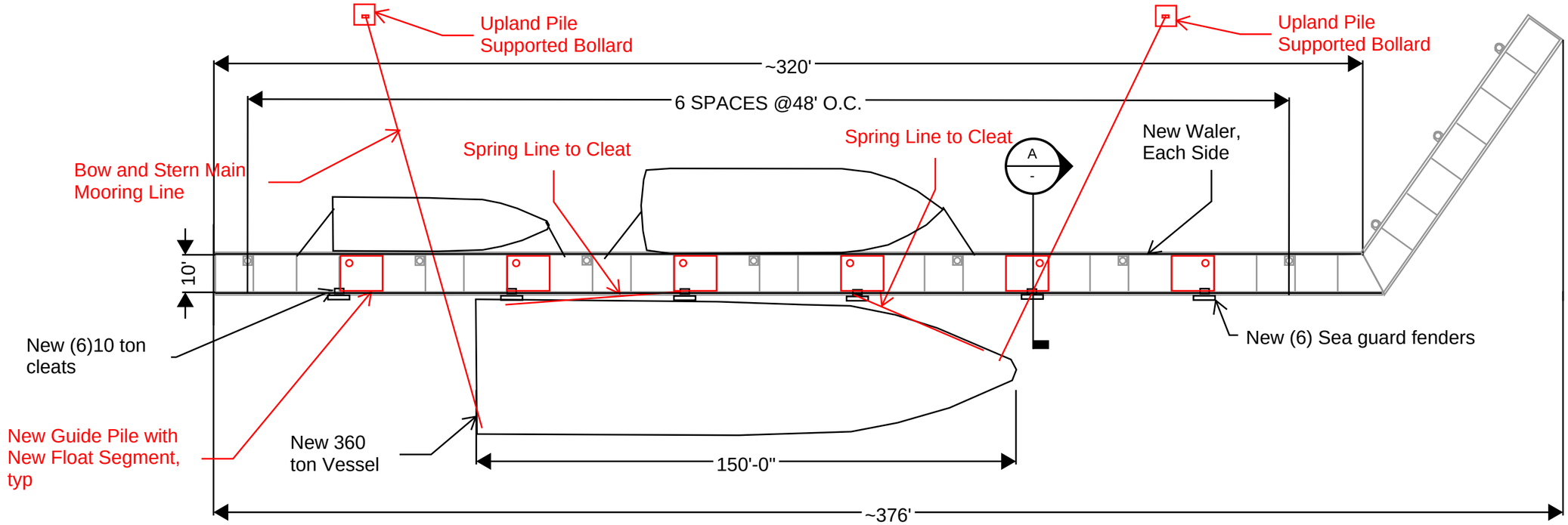


SECTION A

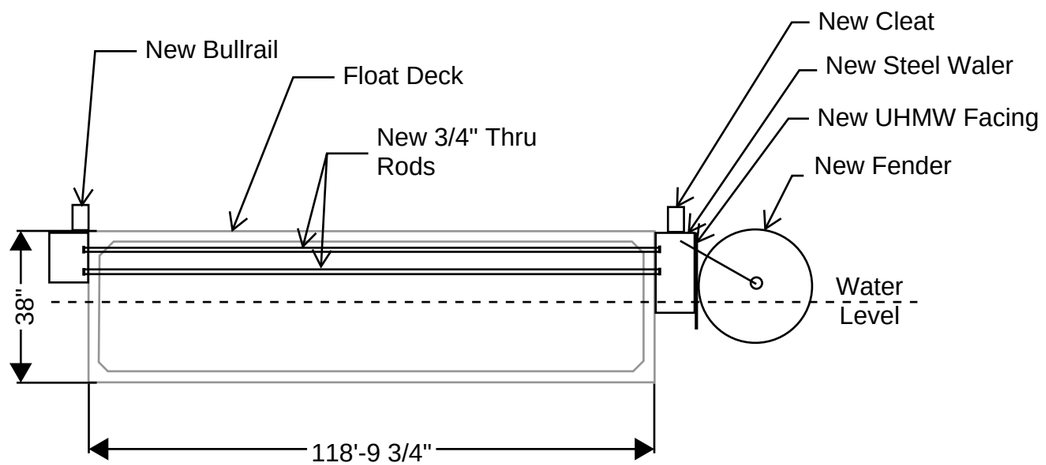
kpff
1601 5th Avenue, Suite 1300
Seattle, Washington 98101
(206) 382-0600 Fax (206) 382-0500

JON STORM DOCK
UPGRADE CONCEPT
PORTLAND SPIRIT STOP/GO MOORING

DATE: 2025-08-18	SCALE:
DRAWN BY: CH	SHT 1 OF 1



Plan View



SECTION A

Elements shown in red are the additional upgrades required to moor Portland Spirit in storm events.

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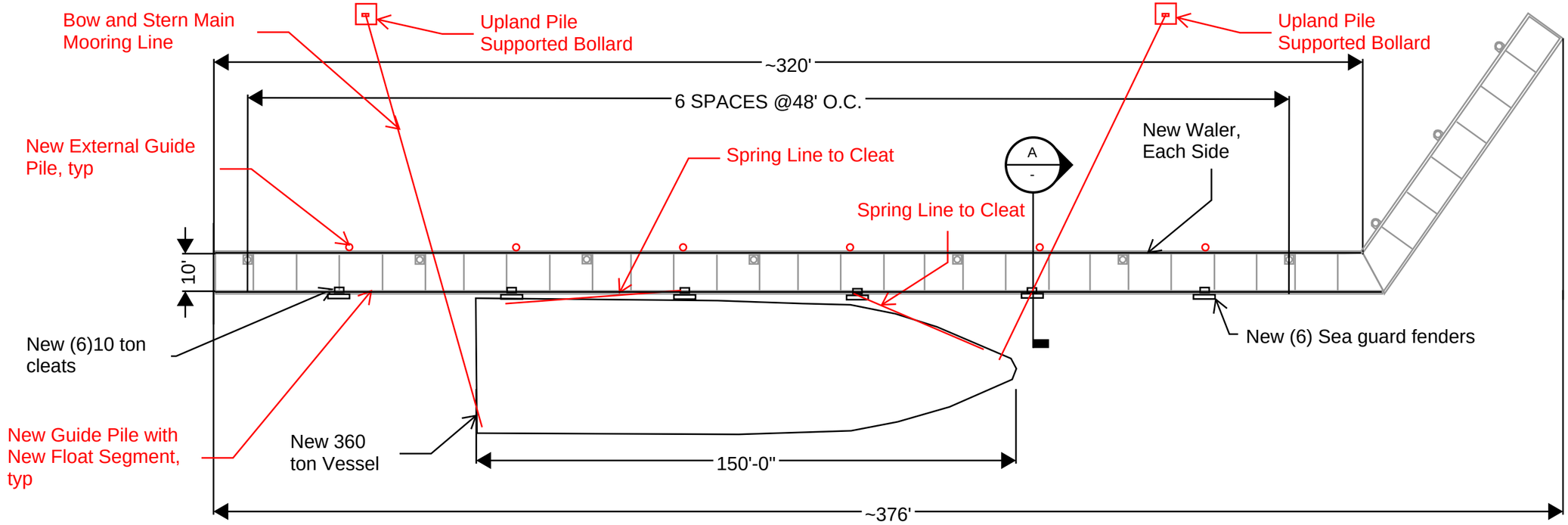
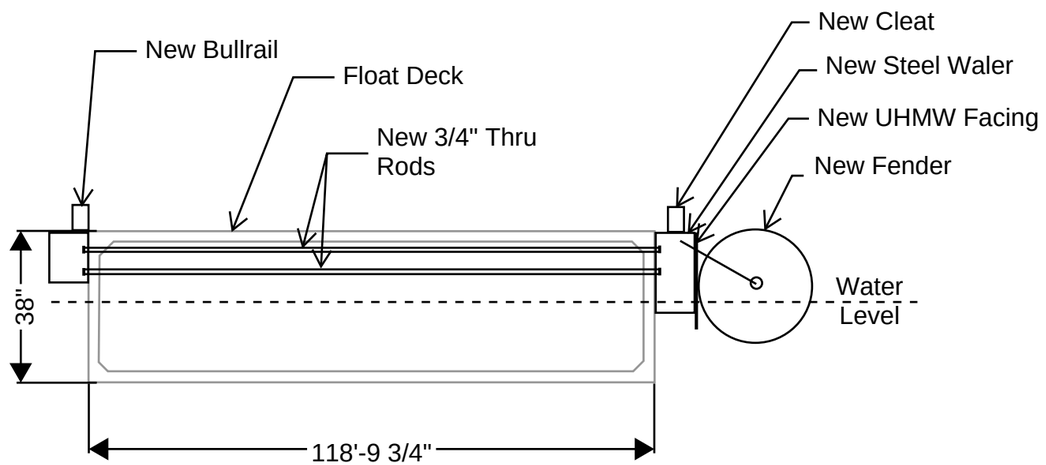
Seattle, Washington 98101
(206) 382-0600 Fax (206) 382-0500

JON STORM DOCK
UPGRADE CONCEPTS
PORTLAND SPIRIT STORM MOORING

DATE: 2025-09-30	SCALE:
DRAWN BY: CH	SHT 2 OF 3



Plan View



SECTION A

Elements shown in red are the additional upgrades required to moor Portland Spirit in storm events.

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JON STORM DOCK
UPGRADE CONCEPTS
PORTLAND SPIRIT STORM MOORING-ALT

DATE: 2025-09-30	SCALE:
DRAWN BY: CH	SHT 3 OF 3

Appendix C - ROM Costs

Jon Storm Dock Evaluation

Engineer's Opinion of Probable Cost - Dock Repairs

September 30, 2025

	Item	Quantity	Unit	Unit Cost	Amount
Mobilization, Demobilization & Project Administration					
1	Mobilization, Demobilization & Project Administration	1	LS	$5,000	$5,000
	Subtotal - Mobilization, Demobilization & Project Administration				**$5,000**
Float Repairs					
2	Bolts and Thru Rod Replacement, Assume 3	1	LS	$1,500	$1,500
3	Timber Waler Replacement, Assume 90 Feet	1	LS	$7,000	$7,000
4	Timber Bullrail Replacement, Assume 25 Feet	1	LS	$500	$500
	Subtotal - Float Repairs				**$9,000**
	Subtotal Construction Cost				**$14,000**
	Construction Contingency 30%				**$4,200**
	Total Engineer's Opinion of Probable Bid Price (2025$)				**$20,000**

Notes:

1 All amounts are rounded.

2 Contingency is intended to account for the concept level of the design

Jon Storm Dock Evaluation

Engineer's Opinion of Probable Cost - Dock Repairs and Upgrade for Portland Spirit Stop/Go

September 30, 2025

	Item	Quantity	Unit	Unit Cost	Amount
Mobilization, Demobilization & Project Administration					
1	Mobilization, Demobilization & Project Administration	1	LS	$32,746	$32,800
	Subtotal - Mobilization, Demobilization & Project Administration				**$32,800**
Float Repairs					
2	Bolts and Thru Rod Replacement, Assume 3	1	LS	$700	$700
3	Timber Waler Replacement, Assume 90 Feet	1	LS	$6,000	$6,000
4	Timber Bullrail Replacement, Assume 25 Feet	1	LS	$500	$500
	Subtotal - Float Repairs				**$7,200**
Float Upgrades					
5	Demolish Existing Timber Walers and Bullrails	1	LS	$6,400	$6,400
6	(208) Bolts and Thru Rod Replacement	208	EA	$131	$27,320
7	(6) Standard Sea Guard 2ft x 6ft Fenders	6	EA	$6,367	$38,200
8	(6) 10-ton cleats	1	LS	$9,210	$9,210
9	(2) 320' Timber Bullrails	1	LS	$4,200	$4,200
10	(2) 320' Walers, W8x31 Assumed	19840	LB	$10	$198,400
11	UHMW Facing	1	LS	$36,522	$36,530
	Subtotal - Float Upgrades				**$320,260**
	Subtotal Construction Cost				**$361,000**
	Construction Contingency 30%				**$108,300**
	Total Engineer's Opinion of Probable Bid Price (2025$)				**$470,000**

Notes:

1 All amounts are rounded.

2 Contingency is intended to account for the concept level of the design

Jon Storm Dock Evaluation

Engineer's Opinion of Probable Cost - Dock Repairs and Upgrade for Portland Spirit Prolonged Stay

September 30, 2025

	Item	Quantity	Unit	Unit Cost	Amount
Mobilization, Demobilization & Project Administration					
1	Mobilization, Demobilization & Project Administration	1	LS	$79,900	$79,900
	Subtotal - Mobilization, Demobilization & Project Administration				**$79,900**
Float Repairs					
2	Bolts and Thru Rod Replacement, Assume 3	1	LS	$700	$700
3	Timber Waler Replacement, Assume 90 Feet	1	LS	$6,000	$6,000
4	Timber Bullrail Replacement, Assume 25 Feet	1	LS	$500	$500
	Subtotal - Float Repairs				**$7,200**
Float Upgrades					
5	Demolish Existing Timber Walers and Bullrails	1	LS	$6,400	$6,400
6	(208) Bolts and Thru Rod Replacement	208	EA	$131	$27,320
7	(6) Standard Sea Guard 2ft x 6ft Fenders	6	EA	$6,367	$38,200
8	(6) 10-ton cleats	1	LS	$9,210	$9,210
9	(2) 320' Timber Bullrails	1	LS	$4,200	$4,200
10	(2) 320' Walers, W8x31 Assumed	19840	LB	$10	$198,400
11	UHMW Facing	1	LS	$36,522	$36,530
	Subtotal - Float Upgrades				**$320,260**
Float Additional Upgrades					
12	Furnish (6) 24" Guide Piles	41	TON	$2,700	$111,910
13	Install (6) 24" Guide Piles	6	EA	$7,000	$42,000
14	Furnish and install (6) floats	6	EA	$45,000	$270,000
15	Install (2) Upland Bollards	2	EA	$23,815	$47,630
	Subtotal - Float Upgrades				**$471,540**
	Subtotal Construction Cost				**$879,000**
	Construction Contingency 30%				**$263,700**
	Total Engineer's Opinion of Probable Bid Price (2025$)				**$1,145,000**

Notes:

1 All amounts are rounded.

2 Contingency is intended to account for the concept level of the design

Jon Storm Dock Evaluation

Engineer's Opinion of Probable Cost - Dock Repairs and Upgrade for Portland Spirit Prolonged Stay-Alternative

September 30, 2025

	Item	Quantity	Unit	Unit Cost	Amount
Mobilization, Demobilization & Project Administration					
1	Mobilization, Demobilization & Project Administration	1	LS	$53,500	$53,500
	Subtotal - Mobilization, Demobilization & Project Administration				**$53,500**
Float Repairs					
2	Bolts and Thru Rod Replacement, Assume 3	1	LS	$700	$700
3	Timber Waler Replacement, Assume 90 Feet	1	LS	$6,000	$6,000
4	Timber Bullrail Replacement, Assume 25 Feet	1	LS	$500	$500
	Subtotal - Float Repairs				**$7,200**
Float Upgrades					
5	Demolish Existing Timber Walers and Bullrails	1	LS	$6,400	$6,400
6	(208) Bolts and Thru Rod Replacement	208	EA	$131	$27,320
7	(6) Standard Sea Guard 2ft x 6ft Fenders	6	EA	$6,367	$38,200
8	(6) 10-ton cleats	1	LS	$9,210	$9,210
9	(2) 320' Timber Bullrails	1	LS	$4,200	$4,200
10	(2) 320' Walers, W8x31 Assumed	19840	LB	$10	$198,400
11	UHMW Facing	1	LS	$36,522	$36,530
	Subtotal - Float Upgrades				**$320,260**
Float Additional Upgrades					
12	Furnish (6) 24" Guide Piles	41	TON	$2,700	$111,910
13	Install (6) 24" Guide Piles	6	EA	$7,000	$42,000
14	Furnish and install (6) pile hoops	6	EA	$1,000	$6,000
15	Install (2) Upland Bollards	2	EA	$23,815	$47,630
	Subtotal - Float Upgrades				**$207,540**
	Subtotal Construction Cost				**$589,000**
	Construction Contingency 30%				**$176,700**
	Total Engineer's Opinion of Probable Bid Price (2025$)				**$770,000**

Notes:

1 All amounts are rounded.

2 Contingency is intended to account for the concept level of the design