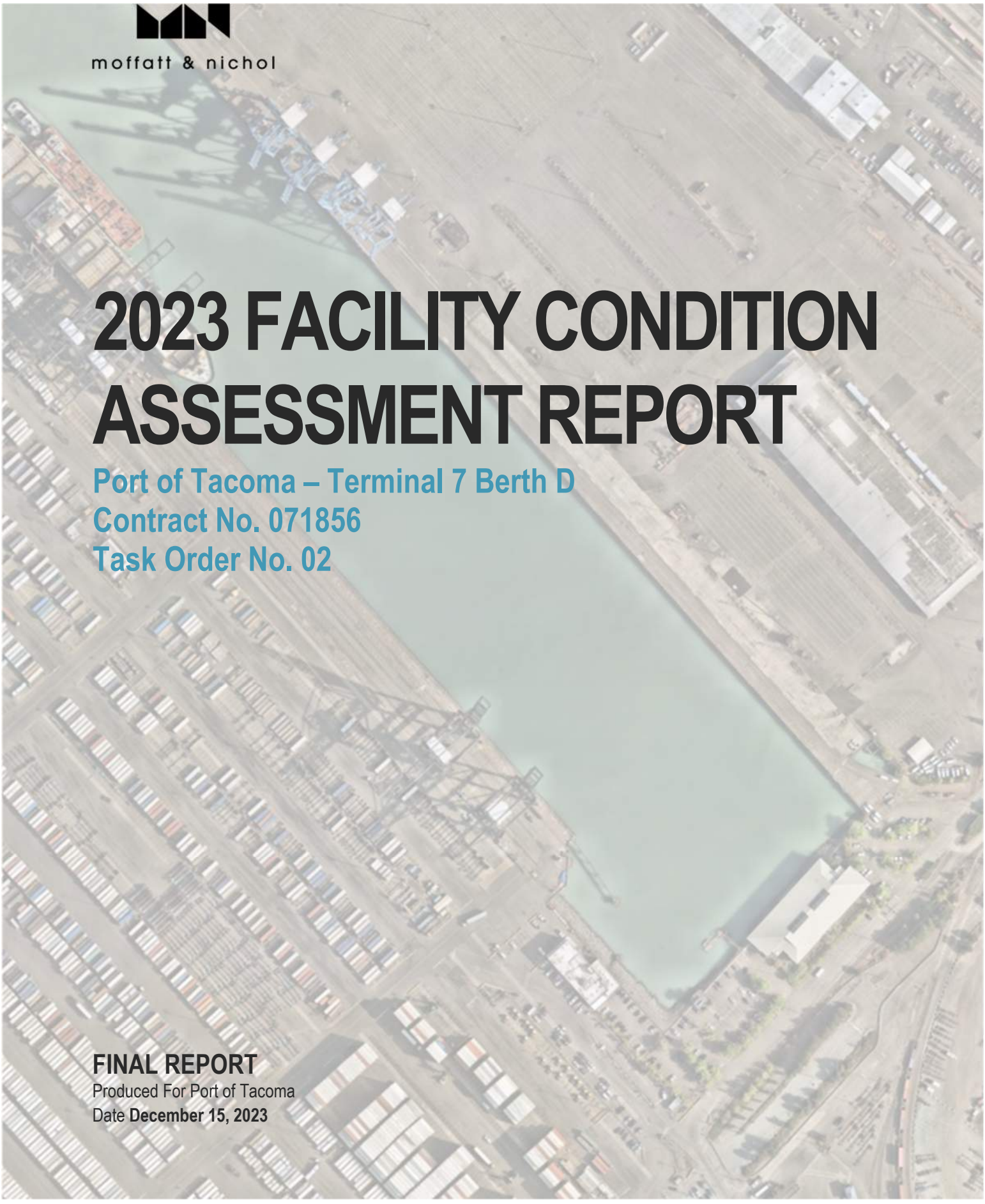
moffatt & nichol

2023 FACILITY CONDITION ASSESSMENT REPORT

Port of Tacoma – Terminal 7 Berth D
Contract No. 071856
Task Order No. 02



FINAL REPORT

Produced For Port of Tacoma

Date **December 15, 2023**

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1. Executive Summary

In accordance with Professional Services Agreement 071856, Task Order 2, dated 20 July 2023, Moffatt & Nichol (M&N) is pleased to present this facility condition assessment report for Terminal 7 (T-7) Berth D at the Port of Tacoma.

The purpose of this report is to present the current overall condition assessment rating of the marine terminal, provide a summary of observations and findings resulting from the facility condition assessment, and provide concept level repair recommendations with construction cost estimates for assets that were found to be deficient for their intended use.

T-7 Berth D is in **Fair** condition. In general, the primary structural elements that comprise the berth are sound, with minor to moderate damage observed in localized areas. Typical photographs are provided in Appendix A. The observed defects have not progressed in severity since the previous assessment effort, and therefore the priority to perform immediate repairs is low.

Changes in inspection intervals are not recommended at this time. Inspection intervals and future inspection years for various assets at T-7 Berth D are provided in Table 1 below. For a complete listing of above-deck, below-deck/above-water, and underwater assets that were included in the 2023 assessment effort, see Appendix B.

Table 1: Terminal 7 Berth D Inspection Interval Recommendations

Element	Previous Inspection Interval (years)	Proposed Inspection Interval (years)	Next Inspection Year
Piles	4	4	2027
Pile Caps, Deck Panels, & Bollard Anchorage	4	4	2027
Bulkhead and Sheet Pile Wall	6	6	2025
Mooring Hardware, Bullrail, and Appurtenances	4	4	2027
Fender System	4	4	2027

2. Introduction

Moffatt & Nichol (M&N) was retained by the Port of Tacoma under Professional Service Agreement (PSA) No. 071856, Task Order No. 02 to perform a Facility Condition Assessment (FCA) of Terminal 7 (T-7) Berth D at the Port of Tacoma. The purpose of the FCA is to identify the current overall condition assessment rating of the wharf, provide a summary of the observations and findings from the FCA effort, and provide concept level repair recommendations and cost estimates for assets that were found to be deficient for their intended use.

M&N obtained the information necessary to complete the FCA by performing the following tasks:

- Reviewing existing as-built record documents and previous inspection reports.
- Performing a general condition assessment of the above-deck appurtenances of the terminal structures.
- Performing a limited condition assessment of the below-deck/above-water portions of the concrete framing elements.
- Performing a cursory visual condition assessment of the below-deck/above-water portions of the concrete framing elements.
- Performing a limited underwater inspection of the concrete piles.

3. Description of Structure

Terminal 7 Berth D is one of four berths that comprise the Terminal 7 facility. Berth D is approximately 905-feet in length and functions as a container handling wharf. An aerial view of T-7 is provided in Figure 1. Note that assessment of Berths A, B, & C are provided in a separate 2023 Facility Condition Assessment Report (FCAR).

Figure 1: Terminal 7 (Source Nearmap dated 8/13/2023)

The wharf is constructed with precast/prestressed concrete deck panels spanning between cast-in-place concrete pile caps AND supported by precast/prestressed concrete piles, shown below in Photo 1. The deck panels have an asphalt overlay and ballasted the full width of the wharf.

Photo 1: Typical Below-Deck Framing

The timber fender system is comprised of timber fender piles supporting the steel wale and faced with ultra-high molecular-weight polyethylene (UHMW-PE), as shown in Photo 2. Stay chains are located at regular intervals and prevent outward movement of the wale.

Photo 2: Typical Fender System

The mooring system consists of drop-in style pipe bollards regularly spaced along the berth face. The typical mooring hardware is shown in Photo 3.

Photo 3: Typical Mooring Hardware

4. Facility Condition Assessment Approach

M&N performed a general condition assessment of the above-deck appurtenances; a limited condition assessment of 25-percent of the below-deck/above-water portions of structural elements and 25-percent of the underwater portions of the piles. A cursory visual assessment of the remaining 75-percent of the below-deck/above-water framing elements was completed by performing a float-by. The limited assessment allowed the general condition of the terminal to be assessed while avoiding the substantial effort and cost of performing a detailed condition assessment of all structural elements. A list of the assets and locations that were included in the limited condition assessment is provided in Appendix B. Above-deck, below-deck/above-water, and underwater assessments were performed generally in accordance with the American Society of Civil Engineers (ASCE) Manuals and Reports on Engineering Practice No. 130, "Waterfront Facilities Inspection and Assessment" (ASCE 130).

4.1. Inspection Limitations

Information represented in this report only reflects the observations noted from this inspection. Observations did not involve disassembly of components to expose possible non-readily visible deterioration. Also, the observations and findings have inherent limitations due to the nature of the common types of timber deterioration of the fender piles, including fungal decay and marine borer damage. Some timber piles may be more deteriorated than could be observed. Therefore, the conditions reported in this report should be regarded as a reasonable best-case condition. Treated-timber piles typically decay from the interior and, as a result, piles that otherwise appear to be in good condition on the outside may have significant interior decay. Such damage and deterioration is difficult to detect without extensive field drilling or other sophisticated nondestructive and destructive testing methods. The inspection methodology conducted only detects the areas with advanced section loss or rot near the surface. This condition assessment excludes the utility systems and electrical systems.

5. Facility Condition Assessment Methodology

The facility condition assessment was performed generally in accordance with ASCE 130, as noted herein, and included both visual observation and hands-on assessment of structural elements. Elements assessed as part of the condition assessment effort were assigned an element-level damage rating reported as minor, moderate, major, or severe. See Appendix C for defined ratings. Following completion of the field work, element-level damage ratings in combination with visual observations were used to assign an overall facility condition assessment rating. In accordance with Table 2-14 of ASCE 130, a summary of the facility condition assessment ratings is provided in Table 2.

Table 2: ASCE 130 Condition Assessment Ratings

Rating	Description
Good	No visible damage or only minor damage noted.
Satisfactory	Limited minor to moderate defects or deterioration observed.
Fair	All primary structural elements are sound but minor to moderate defects or deterioration observed.
Poor	Advanced deterioration or overstressing observed on widespread portions of the structure.
Serious	Advanced deterioration, overstressing, or breakage may have significantly affected the load-bearing capacity of primary structural components.
Critical	Very advanced deterioration, overstressing, or breakage has resulted in localized failure(s) of primary structural components.

5.1. Above-Deck Condition Assessment

The above-deck assessment evaluated the condition of the deck surface, bullrail, and mooring fittings. The assessment was performed by visually observing the condition of the components while walking along the wharf.

5.2. Below-Deck/Above-Water Condition Assessment

The limited, below-deck/above-water assessment evaluated approximately 25-percent of the structural framing elements: pile caps, deck panels, and exposed portions of piles. Structural elements were inspected visually and by sounding with a hammer. A cursory visual assessment of the remaining 75-percent of framing elements was completed by performing a float-by.

5.3. Underwater Condition Assessment

The limited underwater assessment inspected approximately 25-percent of the structural piles and fender piles. For this effort, dive operations were performed using surface-supplied air from a dive boat. The dive team consisted of a 3-person crew: diver, tender, and dive supervisor/rack operator.

All piles included in this work were visually inspected in accordance with ASCE 130. This level of inspection is essentially a “swim-by” over the entire length of the pile above the mudline and typically does not involve any cleaning of the piles. The diver relies primarily on visual and/or tactile observations (depending on water clarity) to make condition assessments. A Level II inspection was performed on approximately 10-percent of the inspected piles. As well as a visual inspection, this level involves removing the marine growth in a 12-inch-tall band around the pile at three elevations (mudline, +0.0 mean lower low water, and midway between). Additional discussion of the underwater inspection procedures is included in Appendix D.

6. Condition Assessment Findings

Condition assessment ratings for above-deck, below-deck/above-water, and underwater assets are described in the following sections. Ratings have been assigned based on field observations and element level damage ratings for individual elements. Damage ratings for elements that were included in the in-depth assessment are provided in Appendix E.

6.1. Above-Deck Assessment

6.1.1. Deck Overlay

The asphalt concrete pavement (ACP) is in **satisfactory** condition. Minor to moderate cracking, rutting, and divots were observed at multiple locations throughout the berth, as shown in Photo 4. Minor ponding was observed at Bent 1 through Bent 3 between piles P1 and U1, shown in Photo 5. Moderate cracking and potholing was noted along the interface of Berths C and D, as shown in Photo 6.

6.1.2. Rail

The crane rail is in **good** condition. The alignment of the rail was visually straight with no visible elevation variances.

6.1.3. Bullrail

The timber bullrail is in **poor** condition. Checks, splits, and gouges were observed at several locations along the berth face, the northern edge of the berth, and along both sides of the trestle. Newer bullrails were observed from Bent 1 to 9. Minor to moderate decay, and rotten timber is prevalent on the bullrails between Bents 10 through 39 and the northern edge of the berth, see Photo 7. The bullrail between Bent 25 and 26 is only secured by one bolt, see Photo 8.

6.1.4. Mooring Hardware

The overall condition of the mooring system is **fair**. Eighteen drop-in style pipe bollards are present at Berth D; sixteen along the berth face and two along the western face of the trestle. Minor damage including gouges, rust, and dents were observed at all pipe bollards (see Photo 9). Fourteen bollard foundations were observed to have minor to moderate damage consisting of cracked and spalled concrete, as shown in Photo 10. Three bollards were removed at Bents 1.5, 3.5, and 15.5. The remaining bollard foundation at Bent 46 has severe cracked and spalled concrete with exposed corroding rebar.

6.1.5. Utility Vaults

The utility vaults are in **fair** condition. Along the berth face, vertically hung rubber mats are used to protect the vaults from debris and salt spray. A majority of the rubber mats are cracked and/or tied off, exposing the vault components.

6.1.6. Fender System

The fender system is in f**air** condition. Minor to moderate corrosion was observed along the full length of the steel wale. At two locations the rubber fenders are sagging and not aligned with the wale, see Photo 11. The wale has bent flanges from mechanical impact at Bent 5.5 and 6.5. UHMW-PE facing along the steel wale is missing bolts at several locations. UHMW-PE facing is missing on five piles between Bent 40 and 43. One stay chain at Bent 39 connecting the steel wale to the concrete wharf is completely broken off. Severe damage was observed at two locations (Bent 7 and Bent 35.8).

6.1.7. Ladders

The ladders are in **poor** condition. 50-percent of the ladders have severe damage and are not useable. At bents 21 and 25, ladders are bent and/or missing critical components for use, see Photo 12. The remaining ladders have minor surface corrosion.

6.1.8. Life Rings

The life rings are in **satisfactory** condition. Life rings are hung from the bullrail at all locations.

6.2. Below-Deck/Above-Water Assessment

6.2.1. Concrete Deck Panels

The concrete deck panels are in **satisfactory** condition. Minor cracks and/or spalls were observed at limited locations throughout the berth, shown in Photo 13.

6.2.2. Concrete Pile Caps

Concrete pile caps are in **fair** condition. Spalls and delaminated concrete were observed at several locations, primarily along the pile cap soffits, shown in Photo 14. Longitudinal cracks with rust staining along the lower edge of pile caps are present at multiple locations throughout the berth, as shown in Photo 15.

6.2.3. Bulkhead

The bulkhead is in **satisfactory** condition. Minor erosion of the slope armoring is present at multiple locations throughout the berth. Erosion of the armoring has exposed the pile cap soffit at several locations.

6.3. Underwater Assessment

6.3.1. Concrete Piles

In general, concrete piles are in **fair** condition. The majority (93-percent) of the 240 piles inspected underwater have no noticeable defects or deterioration. Minor damage including hairline horizontal tension cracks with spalling of up to 1/2-inch deep was observed at 12 locations (5-percent). Moderate damage including horizontal tension cracks up to 1/32-inch wide and spalling up to 1-inch deep was observed at two piles (less than 1-percent). Major damage including spalling greater than 1-inch deep and horizontal tension cracks was observed at three piles (approximately 1-percent, see Photo 16). Severe damage consisting of softening of the concrete surface and rounding of the concrete edges was observed at one pile (Pile 26:A, see Photo 17), representing less than 1-percent of the total piles inspected.

6.3.2. Timber Fender Piles

In general, timber fender piles are in **satisfactory** condition. Minor marine borer and mechanical damage was observed at multiple locations.

7. Overall Facility Condition Assessment Rating

An overall Condition Assessment Rating (CAR) was assigned to the wharf as well as each identified asset. The CARs are based on the findings of the field observations which has been tabulated and provided in Appendix E. The condition assessment scale includes the following six categories: Good, Satisfactory, Fair, Poor, Serious, and Critical. Descriptions of the six CARs are provided in Section 5.

The overall facility condition assessment rating for T-7 Berth D is provided in Table 3. The overall rating was determined by considering the following:

- Total number of observed damages
- Severity of observed damages
- Distribution of observed damages
- Sensitivity of affected elements
- Location of damages
- Serviceability

Overall, Berth D is rated as “Fair”. All primary structural elements are sound, but minor to moderate defects and deterioration are observed. Localized areas of moderate to severe deterioration are present, but do not significantly reduce the structural capacity. Repairs are recommended but the priority of the recommended repairs is generally low unless otherwise noted.

Table 3: Berth D Overall Facility CAR

Asset Identification	CAR
Above-Deck Assets	
Deck Overlay	Satisfactory
Rail	Good
Bullrail	Poor
Mooring System	Fair
Utility Vaults	Fair
Fender System	Fair
Ladders	Poor
Life Rings	Satisfactory
Below-Deck/Above-Water Assets	
Concrete Deck Panels	Satisfactory
Concrete Pile Caps	Fair
Bulkhead	Satisfactory
Underwater Assets	
Concrete Piles	Fair
Timber Fender Piles	Satisfactory
Overall CAR	**Fair**

8. Recommendations

8.1. Repair Recommendations

Repair recommendations for structural and non-structural assets are provided below. Recommendations are based on observations from the 2023 facility condition assessment effort.

- Repair bollard footings with major/severe spalling and cracking
- Install bolts at UHMW-PE/chock connections
- Install missing UHMW-PE rub strips on fender timber piles
- Replace ladders that have severe damage
- Replace decayed portions of the timber bullrail
- Repair concrete piles with major/severe damage
- Replace timber fender piles with severe damage
- Repair pavement overlay at transition from Berth C to Berth D

8.2. Inspection Cycle Recommendations

In its current condition, modifications to the existing inspection cycle are not recommended. For reference, the document titled "FINAL Structural Assessment and Pier Inspection Program," (Program) dated 18 July 2017 provides a framework for performing above-deck, below-deck, and underwater inspections for wharf, pier, and waterfront assets. Depending on the level of observed damage/deterioration, assets were assigned an inspection frequency of two, four, or six years. Assets with a two-year inspection cycle are those with moderate to advanced deterioration throughout the structure (rated as poor or fair). Assets on a four-year inspection cycle are those with limited moderate defects or localized areas of moderate to advanced deterioration (rated as fair or satisfactory). Assets with a six-year inspection cycle represent components with limited visible damage or minor to moderate defects without signs of overstressing (rated as satisfactory or good).

Table 4: Terminal 7 Berth D Inspection Interval Recommendations

Element	Previous Inspection Interval (years)	Proposed Inspection Interval (years)	Next Inspection Year
Piles	4	4	2027
Pile Caps, Deck Panels, & Bollard Anchorage	4	4	2027
Bulkhead and Sheet Pile Wall	6	6	2025
Mooring Hardware, Bullrail, and Appurtenances	4	4	2027
Fender System	4	4	2027

9. Repair Costs

A rough order of magnitude (ROM) construction cost for the recommended repairs has been developed and is provided in Table 5 below. The ROM construction cost includes labor, materials, equipment, mobilization, contractor overhead and profit, Washington State tax (10.3-percent), and a 30-percent contingency. The total project cost does not include engineer design services, environmental permitting, or construction administration.

Table 5. Terminal 7 Berth D Repair Costs

Repair Description	Quantity	Unit Cost	Extended Cost
Repair Bollard Footings	1 LS	$3,000	$3,000
Install bolts at UHMW-PE/chock connections	50 EA	$60	$3,000
Install missing UHMW-PE facing on fender timber piles	5 EA	$1,200	$6,000
Replace Ladders	2 EA	$10,000	$20,000
Replace Bullrail	560 LF	$320	$180,000
Repair Concrete Piles	4 EA	$20,000	$80,000
Replace Timber Piles	2 EA	$8,000	$16,000
Repair pavement overlay at transition from Berth C to Berth D	600 SF	$10,000	$10,000
Total			**$318,000**

The observations and findings used to develop the ROM construction costs have inherent limitations as discussed earlier in this report under Section 4.1. Inspection Limitations. Therefore, the quantities used in this ROM construction cost are approximate; actual conditions may vary due to the limited scope of the inspection.

Appendix A. Photographs

Photo 4: Asphalt Overlay with Map Cracking

Photo 5: Deck Ponding from Bent 1 to 3

Photo 6: Berth C to Berth D Transition Asphalt Overlay with Cracks and Potholes

Photo 7: Typical Moderate Bullrail Decay

Photo 8: Bullrail Missing Hardware, Not Secure

Photo 9: Typical Mooring Bollard

Photo 10: Typical Minor Spalling with Cracks at Mooring Hardware Foundation

Photo 11: Wale Corrosion and Misalignment

Photo 12: Typical Ladder with Impact Damage and Surface Corrosion

Photo 13: Typical Minor Deck Panel Spalling and Corrosion Staining

Photo 14: Typical Pile Cap Spalling with Exposed Rebar

Photo 15: Typical Pile Cap with Corrosion Cracks

Photo 16: Pile 26:G, Major Tension Crack with Spalling

Photo 17: Pile 26:A, Severe Spalling with Section Loss

Appendix B. In-Depth Asset Assessment List

In-Depth Asset Assessment List

Terminal 7 Berth D

Concrete Pile Bents:	7, 8, 12, 14, 15, 24, 26, 27, 35, 44, 45, 46, 50, 52, 53, 54
Concrete Pile Cap Bents:	7, 8, 12, 14, 15, 24, 26, 27, 35, 44, 45, 46, 50, 52, 53, 54
Deck Panels:	7, 8, 12, 14, 15, 24, 26, 27, 35, 44, 45, 46, 50, 52, 53, 54
Mooring Hardware:	All bollards and bollard foundations
Fender System:	
Above-Water:	Full Length
Under-Water:	Pile Bents 6, 7, 8, 12, 14, 23, 24, 26, 33, 34, 35
Bulkhead:	Full Length

Appendix C. Element Level Damage Rating System

Table C-1: Element Level Damage Rating System

Component Rating	Description
Not Inspected (NI)	Component was inaccessible or not included in the scope.
No Damage (ND)	Component had a sound material surface.
Minor (MN)	**Timber:** Checks, splits, and gouges less than 0.5 inches wide; evidence of marine borers or fungal decay **Steel:** Less than 50% of perimeter or circumference affected by corrosion at any elevation or cross-section; loss of thickness up to 15% of nominal thickness at any location. **Reinforced Concrete:** Mechanical abrasion or impact spalls up to 1 inch in depth; general cracks up to 1/16-inch wide; occasional corrosion stain or small pop-out corrosion spall.
Moderate (MD)	**Timber:** Checks and splits greater than 0.5 inches wide; diameter loss up to 15%; cross-section area loss up to 25%; corroded hardware; evidence of marine borers or fungal decay with loss of section. **Steel:** Greater than 50% of surface at any elevation/cross-section affected by corrosion; 15% to 30% loss of nominal thickness at any location. **Reinforced Concrete:** Structural cracks up to 1/16-inch wide; corrosion cracks up to 1/4-inch wide; chemical deterioration; random cracks up to 1/16-inch wide; soft concrete and rounding corners up to 1-inch deep.
Major (MJ)	**Timber:** Checks and splits through full depth of cross-section; diameter loss 15% to 30%; cross-section loss 25% to 50%; heavily corroded hardware; displacement and misalignments at connections. **Steel:** Partial loss of flange edges or visible reduction of wall thickness; 30% to 50% loss of nominal thickness, any location. **Reinforced Concrete:** Structural cracks 1/16-inch to 1/4-inch wide and partial breakage (spalls); corrosion cracks greater than 1/4-inch wide and open or closed corrosion spalls; multiple cracking and disintegration of surface due to chemical deterioration; mechanical abrasion or impact spalls exposing the reinforcing.
Severe (SV)	**Timber:** Diameter loss greater than 30%; cross-section area loss greater than 50%; loss of connections and/or fully non-bearing; partial or complete breakage. **Steel:** Structural bends or buckling, breakage and displacement at supports, loose or lost connections; greater than 50% loss of nominal thickness, any location. **Reinforced Concrete:** Structural cracks greater than 1/4-inch wide; complete breakage; loss of bearing and displacement at connections; complete loss of concrete cover due to corrosion of reinforcing steel and greater than 30% diameter loss for any main bar; exposed steel due to chemical deterioration; cross section loss greater than 30% of any component for any reason.

Reference: American Society of Civil Engineers (ASCE) Manuals and Reports on Engineering Practice No. 130, *"Waterfront Facilities Inspection and Assessment"* (ASCE 130) Section 2.5, Table 2-4, Table 2-5, and Table 2-6.

Appendix D. Underwater Inspection Procedures

Underwater Inspection Procedures

Reference: American Society of Civil Engineers (ASCE) Manuals and Reports on Engineering Practice No. 130, *"Waterfront Facilities Inspection and Assessment"* (ASCE 130)

To efficiently communicate the results of this inspection to reviewers of this report, it is necessary that common terminology and methodology be established. The following are definitions of standard levels of effort for typical underwater inspections as defined by ASCE 130. The scope of work for inspections breaks down the total inspection effort into these levels and specifies the amount of work required in each level. The procedures prescribed for most inspections are commonly a combination of at least two of these levels of examination. The terms Level I and Level II, etc., are referred to frequently in the scope of work and in each inspection report. Their definitions are as follows.

Level I – General Examination

This level of effort is essentially a "swim-by" overview, which does not involve cleaning of structural elements and can, therefore, be conducted much more rapidly than the other levels of examination. The Level I examination should confirm as-built structural plans and detect obvious major damage or deterioration due to overstress (vessel impact, ice), severe corrosion, extensive biological growth and/or attack, etc.

The underwater inspector relies primarily on visual and/or tactile observations (depending on water clarity) to make condition assessments. These observations are normally made over the total exterior surface area of the underwater structure whether it is a quay wall, bulkhead, seawall, pile, or floating structure.

Visual documentation (using underwater television and/or photography) may be included with the quantity and quality adequate for documentation of the findings that will be representative of the facility condition.

Level II – Detailed Examination

This level of effort is directed toward detecting and identifying damaged/deteriorated areas that may be hidden by biofouling organisms or surface deterioration. At this level, a limited amount of measurements may be made. This data should be sufficient to permit estimates of the facility load capacity to be made. Level II examinations will often require cleaning of structural elements. Since cleaning is time consuming, it is generally restricted to areas that are critical or that may be representative of the entire structure itself. The amount and thoroughness of cleaning to be performed is governed by what is necessary to discern the general condition of the overall facility. Simple instruments, such as calipers, measuring scales, chipping hammers, scrapers, and ice picks, are commonly used to take physical measurements. However, a small percentage of more accurate measurements may also be taken with more sophisticated instruments for several reasons. These will validate large numbers of simple measurements and, in some hard-to measure areas, will actually be easier and faster to obtain. Where the visual scrutiny, cleaning, and/or simple measurements reveal extensive deterioration, a small sampling of detailed measurements will enable gross estimates to be made of the structure's integrity. For example, on extensively corroded steel H-piles, a small percentage should receive ultrasonic thickness measurements to determine typical cross section profiles. The cross sections determined by these spot checks would be used to determine individual H-pile load capability that would then be extrapolated to obtain an estimate of overall facility load capability.

Visual documentation (using underwater television and/or photography) should be included with the quantity and quality adequate to be representative of the range of facility damage/deterioration.

Level III – Highly Detailed Examination

This level of effort will often require the use of nondestructive testing (NDT) techniques but may also require the use of partially destructive techniques, such as sample coring through concrete and wood structures, physical material sampling, or in-situ surface hardness testing. The purpose of this type of evaluation is to detect hidden or interior damage, loss in cross-sectional area, and material homogeneity. A Level III examination will usually require prior cleaning. The use of NDT techniques is generally limited to key structural areas, areas that may be suspect, or to structural members that may be representative of the underwater structure.

Visual documentation (using underwater television and/or photography) and a sampling of physical measurements should be included with quantity and quality adequate for documentation of the findings that will be representative of the facility condition.

Appendix E. Tabulated Field Data

LOCATION:	TACOMA, WA	INSPECTION RECORD - TIMBER PILE			
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/13/2023 - 10/14/2023	ABOVE WATER	X
M&N JOB NO:	230763-01	RECORDERS:	M. PERRY / A. PATTERSON	UNDERWATER	X
JOB NAME:	POT FCA 2023	INSPECTORS:	M. PERRY / A. PATTERSON / W. WISE	PILE TYPE:	BEARING & FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II / III	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE			BORER	CHECK	SHAKE	GOUGE	SPLIT	SECT LOSS (%)	DIMENSIONS (IN)									
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE							HGT	WIDTH	PENETR	ND	MN	MD	MJ	SV		
4	FP	MD												X		72"	1/2"	-			X				699
6.5	FP	ND	8.8	-59															X						
7	FP	SV			X		10			X					50								X		691-94
7	FP		8.8	-58	X		-15														X			TORN WRAP	
7.5	FP	ND	10	-59															X						
8.1	FP	ND	10	-58															X						
12.2	FP	ND		-55															X						
12.8	FP	ND		-55															X						
14.2	FP	ND		-52															X						
14.8	FP	ND		-52															X						
23.8	FP	ND		-50															X						
24.2	FP	ND		-51			-7			X								1			X			ABRASION	
26.1	FP	MN		-49			-9		W	X								1		X				ABRASION	
26.7	FP	MN		-49			-14		W	X								1		X				ABRASION	
33.2	FP	ND		-48															X						
33.8	FP	ND		-49															X						
34.2	FP	ND		-49															X						

LOCATION:	TACOMA, WA	**INSPECTION RECORD - TIMBER PILE**			moffatt & nichol
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING & FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II / III	OBSERVATION OF DEFECT / DAMAGE										DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE			BORER	CHECK	SHAKE	GOUGE	SPLIT	SECT LOSS (%)	DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE							HGT	WIDTH	PENETR	ND	MN	MD	MJ	SV		
34.8	FP	ND	2.1	-48															X						
35.2	FP	ND		-47															X						
35.8	FP	SV		-48			-3			X													X	BROKEN	
43.2	FP	ND		-55															X						
43.8	FP	ND		-55															X						
45.2	FP	ND		-53															X						
45.8	FP	ND		-53															X						

LOCATION:	TACOMA, WA	INSPECTION RECORD - CONCRETE PILE			
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/13/2023 - 10/14/2023	ABOVE WATER	X
M&N JOB NO:	230763-01	RECORDERS:	M. PERRY / A. PATTERSON	UNDERWATER	X
JOB NAME:	POT FCA 2023	INSPECTORS:	M. PERRY / A. PATTERSON / W. WISE	PILE TYPE:	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE							# EXPOSED		DIMENSIONS (IN)									
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE(1)	CORNER	CRACK (2)	SPALL (3)	CHEM (4)	STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
8	A	MD	9.9	56			50		FC		X						1/32"				X				
8	A			55			50		E			X				5"	6"	1"			X				
8	B	ND		55			51												X					RUST STAIN FROM LIFTING LOOP	
8	C	ND	9.9	53															X						
8	D	ND		51															X						
8	E	ND		49															X						
8	F	ND		47															X						
8	G	ND		46															X						
8	H	ND		44															X						
8	J	ND		43															X						
8	K	ND		40															X						
8	L	ND	9.7	38		II													X						
8	M	ND		36															X						
8	N	ND	9.6	33															X						
8	P	ND		30															X						
8	Q	ND		27															X						
8	R	ND		22															X						
7.9	S	ND		20															X						
7.9	V	ND		13															X						
7.5	V	ND	9.4	13															X						

LOCATION:	TACOMA, WA	**INSPECTION RECORD - CONCRETE PILE**			moffatt & nichol
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)									
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
7.5	S	ND		20															X						
7	V	ND		13															X						
7	S	ND		20															X						
7	R	ND	9.4	22															X						
7	Q	ND		26															X						
7	P	ND		29															X						
7	N	ND	9.2	33															X						
7	M	ND	9.2	35															X						
7	L	ND	9.1	38															X						
7	K	ND	9.1	41		II													X						
7	J	ND	9	43															X						
7	H	ND		44															X						
7	G	ND		46															X						
7	F	ND	9	47															X						
7	E	ND	8.9	49															X						
7	D	ND		51															X						
7	C	ND	8.9	53															X						
7	B	ND	8.8	55															X						
7	A	ND	8.8	56															X						
46	A	ND	6.2	50															X						

LOCATION:	TACOMA, WA	**INSPECTION RECORD - CONCRETE PILE**			moffatt & nichol
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
46	B	ND		48															X						
46	C	ND		47															X						
46	D	ND		45															X						
46	E	MN		43			ML		W		H						HL			X				TENSION CRACK, INTO MUD	
46	E						29		FULL		H					2"	18"	1/2"						HL TENSION CRACK, SMALL SPALLS ON WEST	
46	F	ND		40															X						
46	G	MN	6.5	39		II	37		FULL		H						HL			X				TENSION CRACK, MAINLY WEST	
46	H	ND		38															X						
46	J	ND		36															X						
46	K	ND		34															X						
46	L	ND		31															X						
46	M	ND		29															X						
46	N	ND		27															X						
46	P	ND		23															X						
46	Q	ND		21															X						
46	R	ND		17															X						
46	S	ND		14															X						
46	T	ND		11															X						
46	U	ND		9															X						
46	V	ND		6															X						

LOCATION:	TACOMA, WA	**INSPECTION RECORD - CONCRETE PILE**			moffatt & nichol
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
46	W	ND		2															X						
45	W	ND		3															X						
45	V	ND		6															X						
45	U	ND		9															X						
45	T	ND		11															X						
45	S	ND		15															X						
45	R	ND		17															X						
45	Q	ND		22															X						
45	P	ND		26															X						
45	N	ND		28															X						
45	M	ND		31															X						
45	L	MN		33			32		SE		H	X				1"	6"	1/2"		X				HL TENSION CRACK W SPALLS	
45	L						28		FULL		H									X				HL TENSION CRACK	
45	L						20		N		H									X				HL TENSION CRACK	
45	K	ND		36															X						
45	J	ND		38															X						
45	H	ND		40															X						
45	G	ND		41		II													X						
45	F	ND		43															X						
45	E	ND		44															X						

LOCATION:	TACOMA, WA	**INSPECTION RECORD - CONCRETE PILE**			moffatt & nichol
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
45	D	ND		46															X						
45	C	ND	8	48		II													X						
45	B	ND		51															X						
45	A	ND		52															X						
44	A	ND		53															X						
44	B	ND		51															X						
44	C	MN		50			45		FULL		H	X				3"	18"	1/2"		X				HL TENSION CRACK W SPALLS MAINLY WEST	
44	D	ND		48															X						
44	E	ND		46		II													X						
44	F	ND		45															X						
44	G	ND		44															X						
44	H	ND		43															X						
44	J	ND		41															X						
44	K	ND		39															X						
44	L	ND		37															X						
44	M	ND		35															X						
44	N	ND		32															X						
27	A	ND		45															X						
27	B	ND		44															X						
27	C	ND		42															X						

LOCATION:	TACOMA, WA	**INSPECTION RECORD - CONCRETE PILE**			moffatt & nichol
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
27	D	ND		40															X						
27	E	ND	2.1	38		II													X						
27	F	ND		37															X						
27	G	MJ		36			27		ALL		H	X				4"	8"	1.5"				X		MAINLY S & SW	84-88
27	H	ND		34															X						
27	J	ND		33															X						
27	K	ND		30															X						
27	L	ND		28															X						
27	M	ND		27															X						
27	N	ND		24															X						
27	P	ND		21															X						
27	Q	ND		19															X						
27	R	ND		15															X						
27.2	S	ND		13															X						
26.8	S	ND		13															X						
27.2	T	MN		6		II	-3		E			X						1/2"		X				LL SPALLS	
26.8	T	MN		6			-3		E			X						1/2"		X				LL SPALLS	
26.3	T	MN		6			-3		E			X						1/2"		X				LL SPALLS	
25.9	T	MN		6			-3		E			X						1/2"		X				LL SPALLS	
25.5	T	MN		6			-3		E			X						1/2"		X				LL SPALLS	

LOCATION:	TACOMA, WA	INSPECTION RECORD - CONCRETE PILE			
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/13/2023 - 10/14/2023	ABOVE WATER	X
M&N JOB NO:	230763-01	RECORDERS:	M. PERRY / A. PATTERSON	UNDERWATER	X
JOB NAME:	POT FCA 2023	INSPECTORS:	M. PERRY / A. PATTERSON / W. WISE	PILE TYPE:	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
26.3	S	MN		14			-3		NE			X						1/2"		X				LL SPALLS	
25.9	S	ND		14															X						
25.5	S	MN		14			-3		NE			X						1/2"		X				LL SPALLS	
26	R	ND		15		II													X						
26	Q	ND		18															X						
26	P	ND		21															X						
26	N	ND		23															X						
26	M	ND		26															X						
26	L	MD		28			-24		E, SE, S		H						HL			X				TENSION CRACK	
26	L						-17		SW, S, SE		H						HL			X				TENSION CRACK	
26	K	ND		31															X						
26	J	ND		34															X						
26	H	ND		35															X						
26	G	MJ		37			-30		ALL		H	X				1"	1"	1"				X		1/16" TENSION CRACK W SPALLS, MAINLY SE	89-90
26	F	ND		38															X						
26	E	ND		40															X						
26	D	ND		41															X						
26	C	ND		43															X						
26	B	MD		45			-31		ALL		H	X				1"	1"	1/2"			X			TENSION CRACK, SPALL NE ONLY	
26	A	SV	3.1	47		II																	X	PILE ROUND ABOVE -7, BUILDUP? 18" DIA	

LOCATION:	TACOMA, WA	**INSPECTION RECORD - CONCRETE PILE**			moffatt & nichol
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
26	A						-7		SW, W							20"	15"	3"						CORROSION, EXP STEEL	77-83
24	A	ND		48															X						
24	B	ND		47															X						
24	C	ND		46															X						
24	D	ND		43															X						
24	E	ND		41															X						
24	F	ND		40															X						
24	G	ND		38															X						
24	H	MJ	3.9	37		II	-25		ALL		H	X				2"	4"	1/2"				X		SPALLS NW	
24	J	ND		36															X						
24	K	ND		34															X						
24	L	ND		31															X						
24	N	ND		26		II													X						
24	M	ND		29															X						
24	P	ND		24															X						
24	Q	ND		20															X						
24	R	ND		17															X						
15	A	ND		51															X						
15	B	ND		50															X						
15	C	ND		49															X						

LOCATION:	TACOMA, WA	INSPECTION RECORD - CONCRETE PILE			
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/13/2023 - 10/14/2023	ABOVE WATER	X
M&N JOB NO:	230763-01	RECORDERS:	M. PERRY / A. PATTERSON	UNDERWATER	X
JOB NAME:	POT FCA 2023	INSPECTORS:	M. PERRY / A. PATTERSON / W. WISE	PILE TYPE:	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)									
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
15	D	ND		45															X						
15	E	ND		43		II													X						
15	F	ND		42															X						
15	G	ND		41															X						
15	H	ND		40															X						
15	J	ND		38															X						
15	K	ND		36															X						
15	L	ND		34															X						
15	M	ND		32															X						
15	P	ND		26															X						
15	N	ND		28															X						
15	Q	ND		22															X						
15	R	ND		19															X						
15	S	ND		16															X						
15	T	ND	6.7	14		II													X						
15	U	ND		10															X						
14.8	V	ND		4															X						
14.5	V	ND		3															X						
14.2	V	ND		4															X						
14	V	ND		3															X						

LOCATION:	TACOMA, WA	**INSPECTION RECORD - CONCRETE PILE**			moffatt & nichol
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)									
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
14.5	U	ND		11															X						
14	U	ND		11															X						
14	T	ND		15															X						
14	S	ND		17		II													X						
14	R	ND		20															X						
14	Q	ND		24															X						
14	P	ND		27															X						
14	N	ND		30															X						
14	M	ND		33															X						
14	L	ND		35															X						
14	K	ND		37		II													X						
14	J	ND		39															X						
14	H	ND		41															X						
14	G	ND		42															X						
14	F	ND		44															X						
14	E	ND		45															X						
14	D	ND		47															X						
14	C	ND		49		II													X						
14	B	ND		52															X						
14	A	ND		53															X						

LOCATION:	TACOMA, WA	INSPECTION RECORD - CONCRETE PILE			
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/13/2023 - 10/14/2023	ABOVE WATER	X
M&N JOB NO:	230763-01	RECORDERS:	M. PERRY / A. PATTERSON	UNDERWATER	X
JOB NAME:	POT FCA 2023	INSPECTORS:	M. PERRY / A. PATTERSON / W. WISE	PILE TYPE:	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
12	A	ND		53															X						
12	B	ND		52															X						
12	C	ND		51															X						
12	D	ND		49															X						
12	E	ND		47															X						
12	F	ND		45															X						
12	G	ND	8.6	44		II													X						
35	A	ND		45															X						
35	B	ND		43															X						
35	C	ND		41		II													X						
35	D	ND		39															X						
35	E	ND		37															X						
35	F	ND		36															X						
35	G	ND		34															X						
35	H	ND		33															X						
35	J	ND		31															X						
35	K	ND		29															X						
35	L	ND		27															X						
35	N	ND		23		II													X						
35	M	ND		25															X						

LOCATION:	TACOMA, WA	INSPECTION RECORD - CONCRETE PILE			
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/13/2023 - 10/14/2023	ABOVE WATER	X
M&N JOB NO:	230763-01	RECORDERS:	M. PERRY / A. PATTERSON	UNDERWATER	X
JOB NAME:	POT FCA 2023	INSPECTORS:	M. PERRY / A. PATTERSON / W. WISE	PILE TYPE:	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)									
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
35	P	ND		21															X						
35	Q	ND		18															X						
35	R	ND		14															X						
35	S	ND		12															X						
35	T	ND		10															X						
35	U	ND		6															X						
35	V	ND		0															X						
35.2	V	ND		-4															X						
34.8	V	ND		-4															X						
34.5	U	ND		-5															X						
52	A	ND		-32															X						
52	B	ND	2.7	-28		II													X						
52	C	ND		-24															X						
52	D	ND		-21															X						
53	A	ND		-28															X						
53	B	ND		-25															X						
53	C	ND		-22															X						
53	D	ND		-18															X						
54	A	ND		-23															X						
54	B	ND		-21															X						

LOCATION:	TACOMA, WA	**INSPECTION RECORD - CONCRETE PILE**			
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/13/2023 - 10/14/2023	**ABOVE WATER**	X
M&N JOB NO:	230763-01	**RECORDERS:**	M. PERRY / A. PATTERSON	**UNDERWATER**	X
JOB NAME:	POT FCA 2023	**INSPECTORS:**	M. PERRY / A. PATTERSON / W. WISE	**PILE TYPE:**	BEARING AND FENDER

PILE LOCATION (PILE ID)		PILE RATING	TIDE OR TIME	ML GAUGE	WRAPPED	INSP. LVL: II	OBSERVATION OF DEFECT / DAMAGE											DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
							LOCATION ON PILE				CRACK (2)	SPALL (3)	CHEM (4)	# EXPOSED		DIMENSIONS (IN)								
BENT NO.	PILE NO.						DEPTH (TOP)	DEPTH (BOT)	SIDE[1]	CORNER				STIRRUP	STRAND / BAR	HGT	WIDTH	DEPTH	ND	MN	MD	MJ	SV		
54	C	ND		-17															X						
54	D	ND		-14															X						
50	A	ND		-40															X						
50	B	ND		-33															X						
50	C	ND		-28															X						
50	D	ND		-25		II	-4		E										X					LL EXP, NO PATCH, NO SPALL	

LOCATION:	TACOMA, WA	INSPECTION RECORD - STRUCTURAL COMPONENTS			
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/5/2023, 11/6/2023	ABOVE WATER	X
M&N JOB NO:	230763	RECORDERS:	T. MAI / A. MUTTAR	UNDERWATER	
JOB NAME:	POT FCA 2023	INSPECTORS:	C. DONOHOE		

COMPONENT ID	MATERIAL	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
		LOCATION			SPALL	CRACK	CORR	COAT LOSS %	SEC. LOSS %	SHAKE/ SPLIT GOUGE/	DIMENSIONS (IN)			ND	MN	MD	MJ	SV		
		(BENT, STA, ETC.)									HGT	WIDTH / LENGTH	DEPTH							
ABOVE DECK																				
PAVEMENT	CONCRETE	BENT	1-3	-											X				PONDING	143
PAVEMENT	CONCRETE	BENT	12-13	-	X										X					163-166
PAVEMENT	CONCRETE	BENT	9	-		X										X				190
PAVEMENT	CONCRETE	BENT	9.5	-											X				GAP BETWEEN SLABS	191
PAVEMENT	CONCRETE	BENT	1	-	X	X									X					192-194
PAVEMENT	CONCRETE	BETWEEN BERTH C&D													X				SLOPED	197
BULLRAIL	WOOD	BENT	1-9	A						X					X				TYPICAL CHECKING	156
BULLRAIL	WOOD	BENT	9.5	A						X						X			CHECKING	159
BULLRAIL	WOOD	BENT	11	A						X						X			CHECKING	161-162
BULLRAIL	WOOD	BENT	25-26	A													X		SLANTED. SECURED BY ONE BOLT	170
BULLRAIL	WOOD	BENT	30.5	A					X	X		36"				X			CHECKING AND DEGRADING	171
BULLRAIL	WOOD	BENT	46	A					X						X					183
BOLLARD	STEEL	BENT	1.5	A															BOLLARD REMOVED	147
BOLLARD	STEEL	BENT	3.5	A															BOLLARD REMOVED	149
BOLLARD FOOTING	CONCRETE	BENT	6.5	A		X						8"				X				154-155
BOLLARD FOOTING	CONCRETE	BENT	15.5	A															BOLLARD REMOVED	

LOCATION:	TACOMA, WA	INSPECTION RECORD - STRUCTURAL COMPONENTS			
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/5/2023, 11/6/2023	ABOVE WATER	X
M&N JOB NO:	230763	RECORDERS:	T. MAI / A. MUTTAR	UNDERWATER	
JOB NAME:	POT FCA 2023	INSPECTORS:	C. DONOHOE		

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COMPONENT ID	MATERIAL	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
		LOCATION			SPALL	CRACK	CORR	COAT LOSS %	SEC. LOSS %	SHAKE/ GOUGE/SPLIT	DIMENSIONS (IN)			ND	MN	MD	MJ	SV		
		(BENT, STA, ETC.)									HGT	WIDTH / LENGTH	DEPTH							
BOLLARD FOOTING	CONCRETE	BENT	18.5	A											X				MISSING THROUGH ROD	167-168
BOLLARD FOOTING	CONCRETE	BENT	24.5	A	X						6"	6"	4"			X				169
BOLLARD FOOTING	CONCRETE	BENT	39.5	A		X									X					175
BOLLARD FOOTING	CONCRETE	BENT	46	A	X												X			176-177
WALE	STEEL	BENT	8	A			X								X				CHAIN AND PAD EYE	157-158
WALE	STEEL	BENT	39	A											X				BROKEN CHAIN	174
WALE	STEEL	BENT	8-May	A											X				DONUT FENDER MISALIGN. WARPED FLANGE	151-153
WALE	STEEL	TYPICAL					X								X				CORROSION. NO COATING	144-145
BELOW DECK																				
PILE CAP	CONCRETE	BENT	47	D		X									X					199-200
MARGINAL BEAM	CONCRETE	BENT	47-48	A	X						4"	4"	1/2"			X				202
PILE CAP	CONCRETE	-	-	-											X				TYPICAL	660
PILE CAP	CONCRETE	BENT	4.5	A	X										X					150
PILE CAP	CONCRETE	BENT	56	C											X				SMALL DIAMETER AT TOP OF PILE AND CAP SOFFIT	646
PILE CAP	CONCRETE	BENT	57	D	X						6"	12"	6"		X					647
SOFFIT	CONCRETE	BENT	55.5	-	X												X		2 EXPOSED REBAR	648-649

LOCATION:	TACOMA, WA	INSPECTION RECORD - STRUCTURAL COMPONENTS		ABOVE WATER	X
STRUCTURE ID:	TERMINAL 7 - BERTH D	DATE:	10/5/2023, 11/6/2023		
M&N JOB NO:	230763	RECORDERS:	T. MAI / A. MUTTAR	UNDERWATER	
JOB NAME:	POT FCA 2023	INSPECTORS:	C. DONOHOE		

COMPONENT ID	MATERIAL	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
		LOCATION			SPALL	CRACK	CORR	COAT LOSS %	SEC. LOSS %	SHAKE/ GOUGE/SPLIT	DIMENSIONS (IN)			ND	MN	MD	MJ	SV		
		(BENT, STA, ETC.)									HGT	WIDTH / LENGTH	DEPTH							
SOFFIT	CONCRETE	BENT	55.6	-	X						6"	12"	2"		X				NEAR PANEL JOINT	650
PILE CAP	CONCRETE	BENT	55	-															PILE NOT CENTERED UNDER PILE CAP	653-654
SOFFIT	CONCRETE	BENT	53.5	-	X						6"	6"	1.5"		X				CENTER PANEL NEAR JOINT	655-657
SOFFIT	CONCRETE	BENT	53.5	-	X						2"	6"	2"		X					658
SOFFIT	CONCRETE	BENT	47.5	-	X						4"	3"	1/2"		X					210
SOFFIT	CONCRETE	BENT	46.5	-	X						-	6"	-			X			EXPOSED REBAR	213
SOFFIT	CONCRETE	BENT	46.5	-	X						6"	4"	-			X			NO VISIBLE REBAR EXPOSED	212
SOFFIT	CONCRETE	BENT	46.5	-	X						-	14"	-			X			EXPOSED REBAR	211
SOFFIT	CONCRETE	BENT	44	J-K	X						-	14"	-			X			HONEYCOMBING	215
PILE CAP	CONCRETE	-	-	-		X					-	1/4"	-		X				TYPICAL	661
PILE CAP	CONCRETE	BENT	44	N-P		X					12"	3"	1"			X				217
PILE CAP	CONCRETE	BENT	44	R-S	X						14"	2"	-		X					218
PILE CAP	CONCRETE	BENT	43	A	X						12"	6"	24"					X	EXPOSED REBAR	219
PILE CAP	CONCRETE	BENT	36.5	A-B	X						4"	6"	-					X	EXPOSED REBAR	223
SOFFIT	CONCRETE	BENT	30.5	C	X						3"	4"	-		X					223
PILE CAP	CONCRETE	BENT	19	C-D	X						8"	6"	4"					X	EXPOSED REBAR	683-684
SOFFIT	CONCRETE	BENT	16	K-L	X						12"	6"	1"			X			NO VISIBLE REBAR EXPOSED	687-689

LOCATION:	TACOMA, WA	**INSPECTION RECORD - STRUCTURAL COMPONENTS**			
STRUCTURE ID:	TERMINAL 7 - BERTH D	**DATE:**	10/5/2023, 11/6/2023	**ABOVE WATER**	X
M&N JOB NO:	230763	**RECORDERS:**	T. MAI / A. MUTTAR	**UNDERWATER**	
JOB NAME:	POT FCA 2023	**INSPECTORS:**	C. DONOHOE		

COMPONENT ID	MATERIAL	OBSERVATION OF DEFECT / DAMAGE												DEFECT / DAMAGE RATING					COMMENTS	PHOTO NO.
		LOCATION			SPALL	CRACK	CORR	COAT LOSS %	SEC. LOSS %	SHAKE/ GOUGE/SPLIT	DIMENSIONS (IN)			ND	MN	MD	MJ	SV		
		(BENT, STA, ETC.)									HGT	WIDTH / LENGTH	DEPTH							
LADDER	CONCRETE	BENT	24.5	A			X									X			BENT	698
LADDER	CONCRETE	BENT	21.5	A			X									X			SHORT LADDER	697

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