NOAA PIER FIRE DAMAGE

STRUCTURAL ASSESSMENT

AUGUST 11, 2025

INTRODUCTION

On May 30, 2025, a small pleasure craft caught fire and came to rest against the west end of the NOAA wharf while ablaze, resulting in fire damage to the structure. At the Port of Newport's request, KPFF was scoped to visually evaluate and perform nondestructive testing to assess the structural condition of the wharf and to provide recommendations. Due to fire damage to the corrosion protection system, KPFF engaged Norton Corrosion to assess and provide recommendations regarding this system.

The NOAA Wharf is located along the south shore of Yaquina Bay at 2002 SE Marine Science Drive, Newport, Oregon (see Figure 1). The existing pier is 35 ft. wide by 1300 ft. long, 33-span wharf. This Warf consists of precast prestressed concrete planks and precast concrete beams with concrete topping the spanning between precast concrete bents, supported by steel piles. The bents are typically 40 ft. on-center. The dock is connected to shore by two wharf approaches, with one located approximately mid-span of the wharf and the second located towards the east end of the wharf (see Figure 2). The wharf was constructed in 2011.

The fendering system of the wharf consists of camels in front of steel pipe fender piles at 10 ft. on-center. The top of the fender piles are supported by a glulam timber wale and compressible fenders (see Figure 3).

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Figure 1: NOAA Wharf – Aerial View (from Google Earth)

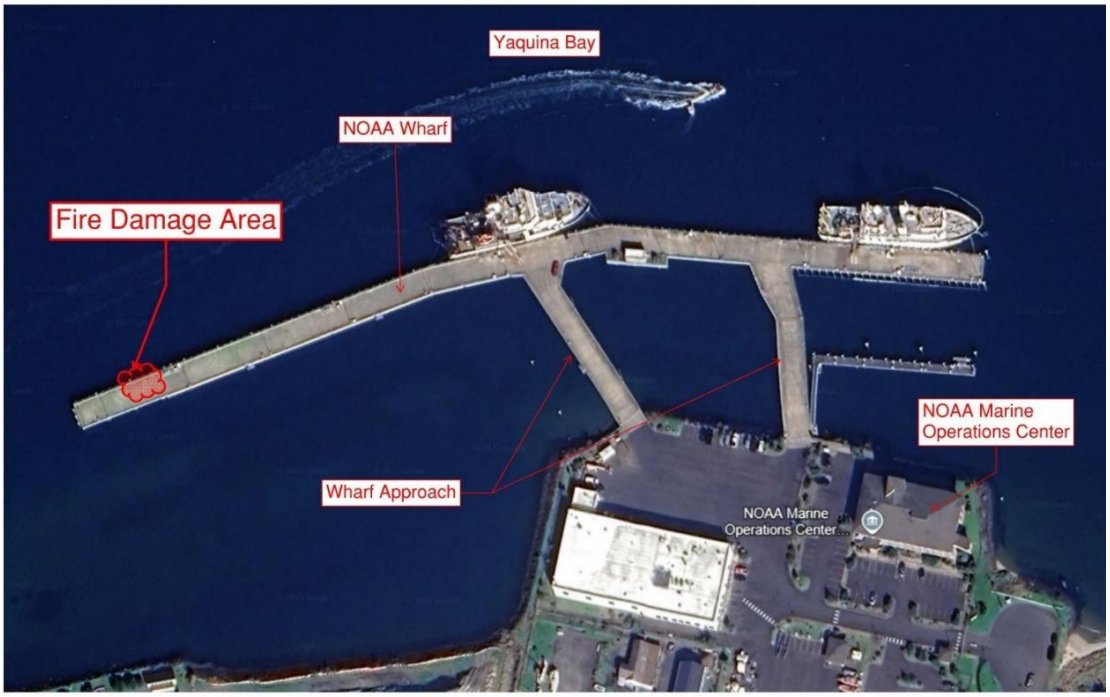

Figure 2: NOAA Wharf – Fire Damage Location Aerial View (from Google Earth)

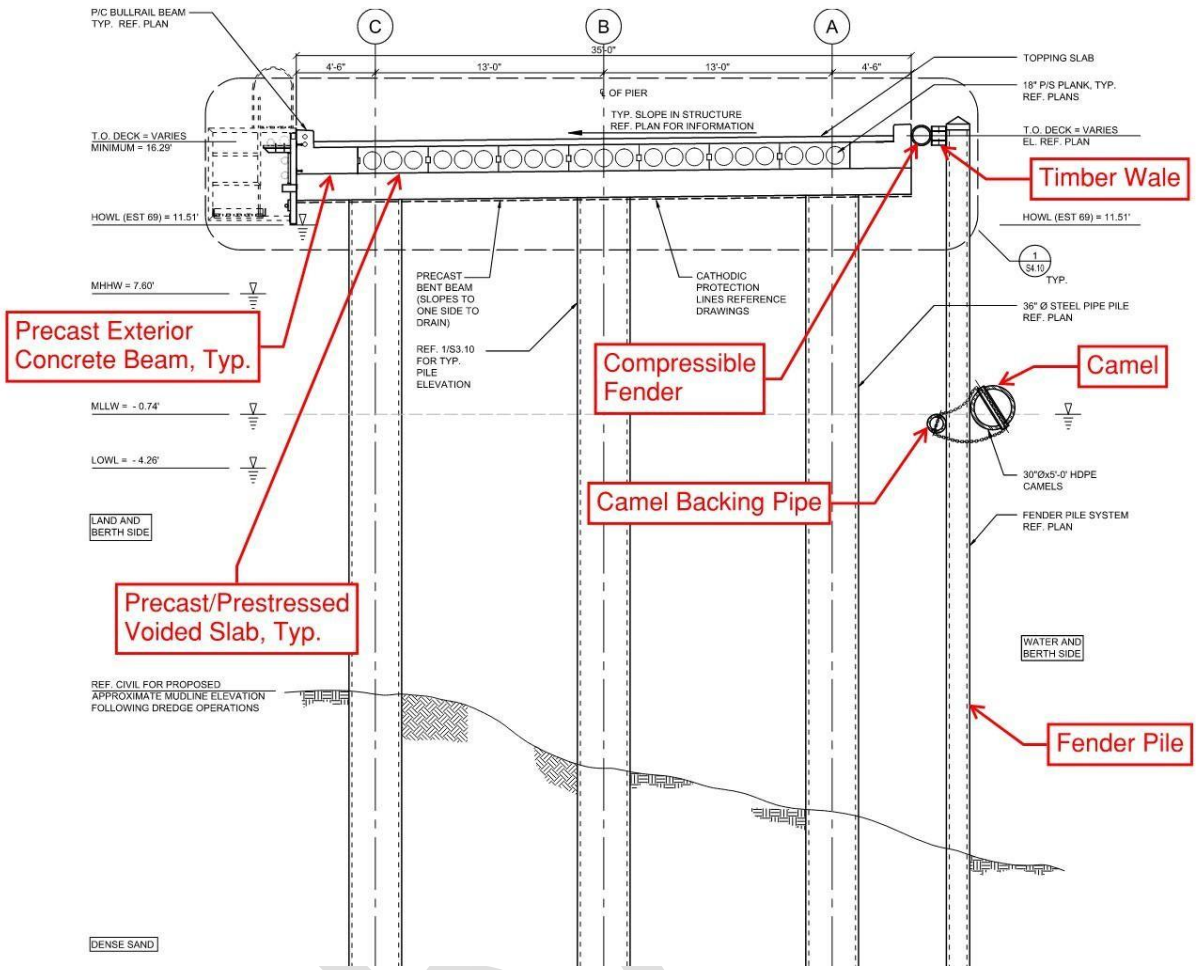

Figure 3: Typical Wharf Section

Existing Documentation

"NOAA Marine Operation Center – Pacific In Water Construction," by KPFF, dated August 24, 2011.

Site Visit

On June 20, 2025, KPFF performed a site visit to visually observe the fire damage to the wharf. KPFF was provided water access by the Port of Newport via boat piloted by Port staff. The review of the damaged area was also performed from the top surface of the wharf.

Non-destructive investigation included visual observation and ultrasonic testing (UT) of the steel piles. UT was performed on the fender piles at locations with significant fire damage.

Fire damage appears to be limited to the third dock span from the west end (see Figures 2, 4 and 5).

Observational findings are listed below.

Figure 4: Overall Fire Damage Water Side View

Figure 5: Overall Fire Damage Land Side View

OBSERVATIONS

CAMEL

The camels consist of 5 ft. diameter by 30 ft. long HDPE pipe chained at each end around a fender pile and also to a 12-inch diameter by 20 ft. long HDPE backing pipe interconnecting the ends of the camel sections. Fire damage appears to be limited to a single camel section and one backing pipe (see Figures 6, 7 and 16).

It is anticipated that the galvanized chains and associated hardware were exposed to elevated temperatures for an unknown duration during the fire. Based on the American Galvanizers Association guidelines for galvanized steel, a reduction in corrosion protection at temperatures above 390° Fahrenheit can occur. Thus, there may be long-term durability issues with these components, particularly in a marine environment. These durability issues may contribute to shortening the remaining lifespan of these elements, as compared to components not exposed to fire.

Figure 6: Fire Damaged Camel

Figure 7: Fire Damaged Backing Pipe

FENDER PILES

The fender piles consist of epoxy coated 16-inch diameter by 5/8-inch wall steel pipe piles at 10 ft. on center. The pile caps appeared to have been placed on all the fender piles, however, many of these pile caps seem to have been removed.

The fire damage appears to be limited to three fender piles. UT performed on these piles did not indicate section loss. The piles appear to be straight, with no observed deformations and are acceptable for continued use. However, significant areas of the epoxy coating on these piles appear to have been burnt off in the fire. (see Figures 6, 8, and 16).

Figure 8: Fire Damaged Fender Piles

GLULAM TIMBER WALE

The timber wale between the top of the fender piles and the compressible fenders consists of 10 ¾ x 13 ½ glulam timber with preservative treatment. The wale sections are approximately 40 ft. long with joints typically occurring at grid lines.

Fire damage appears to be limited to one section of glulam timber wale occurring between grids 3 to 4. Significant charring occurs over an approximately 10 ft. length of the section, with minor charring occurring over an additional 10 ft. length (see Figure 9, 10 and 16).

It is anticipated that the galvanized steel connections and hardware between the top of fender piles to the wale were exposed to elevated temperatures for an unknown duration during the fire. Based on the American Galvanizers Association guidelines for galvanized steel, a reduction in corrosion protection at temperatures above 390° Fahrenheit can occur. Thus, there may be long-term durability issues of these components, particularly in a marine environment. These durability issues may result in the shortening of their remaining life, as compared to components not exposed to fire.

Figure 9: Glulam Timber Wale Fire Damage

Figure 10: Glulam Timber Wale Char

COMPRESSIBLE FENDERS

Compressible fenders between the glulam timber wale and concrete wharf face consist of 12-inch outside diameter with 6-inch inside diameter, by 5 ft. long at 10 ft. on-center, centered between fender piles, with Energy Absorption (E)= 1.7 kip-ft./ft and Reaction Force (R)= 8.8 kip/ft at 50% compression. The compressible fenders are attached to the face of the concrete wharf with galvanized steel plates and anchors.

Fire damage appears to be limited to four compressible fenders (see Figure 11 and 16).

It is anticipated that the galvanized steel connections and anchors connecting the fenders to the face of the wharf were exposed to elevated temperatures for an unknown duration during the fire. Based on the American Galvanizers Association guidelines for galvanized steel, a reduction in corrosion protection at temperatures above 390° Fahrenheit can occur. Thus, there may be long-term durability issues with these components, particularly in a marine environment. These durability issues may result in shortening these components' remaining lifespan, as compared to components not exposed to fire.

Figure 11: Compressible Fender Damage

WHARF DECK

The wharf deck consists of exterior 3’-6” wide precast exterior concrete beams and seven 4 ft. wide precast/prestressed voided slabs placed between the exterior beams. The beams and voided slabs span 40 ft. between pile bents. Significant shallow concrete spalling occurs on the north face and underside of the waterside exterior concrete beam, and on the adjacent first two voided slabs. Minor shallow concrete spalling occurs on the underside of the third voided slab in from the water side of the wharf (see Figures 12 through 16).

Based on the observed concrete spalling, it appears these members have been affected by high temperatures. The areas of shallow spalls appear to contain fractured coarse aggregate and coarse aggregate casts where the whole aggregate has popped out. This type of damage is typically seen with differential thermal expansion and contraction. In addition to this observed damage, we would anticipate surface micro-cracking and dehydration of the cement paste. These concrete spalls, and expected associated micro-cracking and dehydration, are anticipated to reduce the durability of concrete, particularly in a marine environment. The concrete will be more susceptible to chloride ingress, with an increased potential for corrosion of the embedded steel reinforcement.

Repairs to the beams would be overhead repairs, which are difficult to do well. This, coupled with the high-risk exposure of a marine environment, means repair of these members are not anticipated to be highly successful, possibly resulting in a greatly reduced design lifespan of the beams.

Figure 12: Overall View of Concrete Damage (Looking North)

Figure 13: View of Underdeck Spalling

Figure 14: Typical Concrete Spalling

Figure 15: Exterior Beam Face Spalling

Corrosion Protection System

The existing corrosion protection system consists of an impressed current system. See Appendix A for an assessment summary of the corrosion protection system provided by Norton Corrosion.

Recommendations

Overall, fire damage appears to be limited to a single bay between pile bents (see Figure 16). To repair the fire damage to the wharf, we recommend drawings and specifications be developed for the following recommended repairs:

- Replace fire damaged camel section and associated galvanized steel chains and hardware.
- Replace fire damaged backing pipe and associated galvanized steel chains and hardware.
- Clean and recoat fire damaged fender piles with epoxy coating.
- Replace fire damaged glulam timber wale section and associated galvanized steel connections and hardware.
- Replace fire damaged compressible fenders and associated galvanized steel connections and anchors.
- Remove and replace fire damaged exterior concrete beam and precast/prestressed voided slabs.
- Repair corrosion protection system as recommended by Norton Corrosion (see Appendix A).

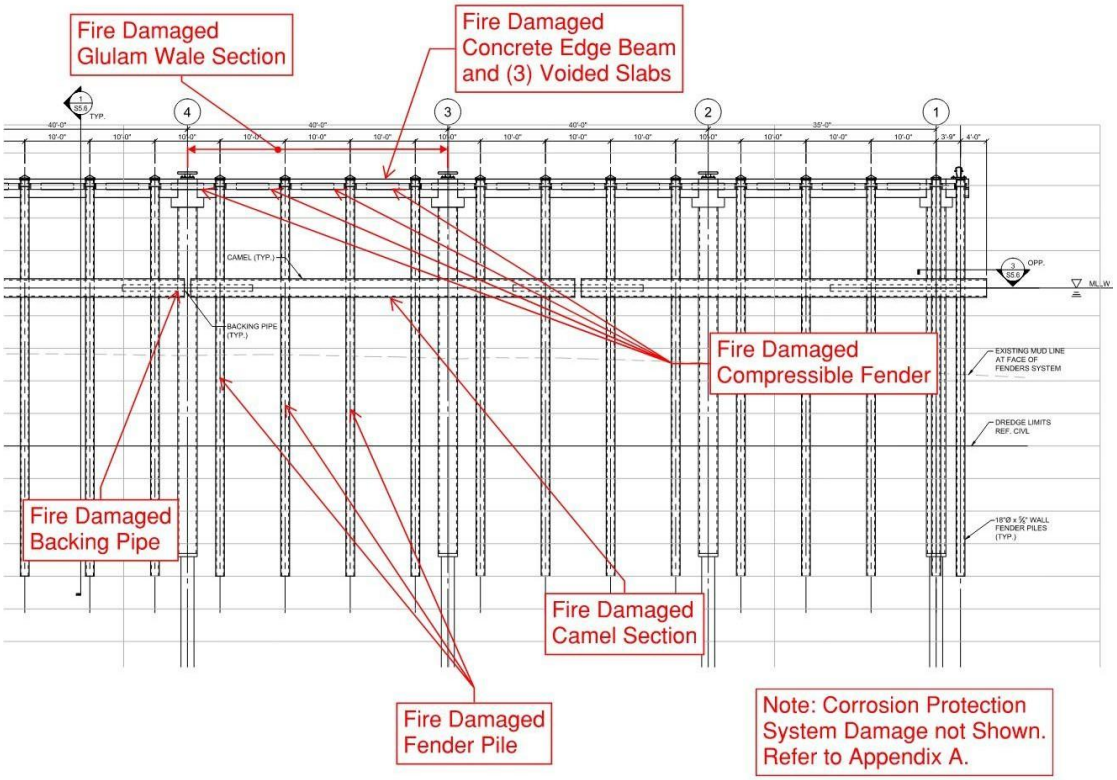

Figure 16: Fire Damage Summary

LIMITATIONS

Observations and investigation of the structure was limited to areas observable by reasonable visual investigation, and by limited accessibility via boat. The conditions described in this summary report are strictly based on visual and non-destructive testing assessments. A preliminary structural gravity and lateral load analysis of the wharf structure was not performed.

Observations, analysis, conclusions, and recommendations contained within this report reflect our engineering judgement. Concealed problems within the construction of the wharf 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 wharf, or its future structural performance.

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Appendix A

CATHODIC PROTECTION SYSTEM ASSESSMENT BY NORTON CORROSION

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NORTON CORROSION LIMITED

8820 222nd Street SE, Woodinville, WA 98077
Phone (425) 483-1616
E-mail : sales@nortoncorrosion.com
www.nortoncorrosion.com

August 12, 2025

KPFF Portland Structural
Attn: Tommi Rutherford
Tommi.Rutherford@kpff.com

Subject: **BOAT FIRE DAMAGE**
CATHODIC PROTECTION SYSTEM EVALUATION
NOAA HOMEPORT STEEL SUPPORT PILES
PORT OF NEWPORT, OREGON

Dear Ms. Rutherford:

On July 11, 2025, Norton Corrosion Limited (NCL) completed an inspection of the cathodic protection (CP) system at the NOAA Homeport Dock. The CP system is designed to protect the submerged portions of the dock's steel piles from external corrosion. The inspection was performed to determine if the system had been damaged and/or experienced a change in operation due to the fire damage from the recent boat fire experienced at the dock. Written authorization to complete the inspection was issued June 19, 2025, per KPFF Job #: 10022500333.

Work Performed

During this visit, NCL initially evaluated the area immediately adjacent to where the boat had burned. After that, the remainder of the system was inspected to confirm it was still operating as designed. The testing included a thorough inspection of the three rectifiers and junction boxes to ensure all components were set, calibrated, and functioning properly. In addition, structure-to-water potential measurements were recorded at accessible piles to assess the level of protection being received and verify electrical bonding of the piles. These measurements were obtained using a calibrated Fluke Model 28II multi-meter in conjunction with a saturated silver/silver chloride (Ag/AgCl) portable reference cell. Prior to testing, the accuracy of the portable reference cell was verified based on Test Method TM0113, "Evaluating the Accuracy of Field-Grade Reference Electrodes."

Criteria

AMPP's NACE International has established criteria that indicate, when used separately or in combination, whether adequate CP has been achieved. NCL has evaluated the CP systems based on the following criteria:

- Adequate CP is indicated by a potential difference of -0.733 volts or more negative between a steel structure and the Ag/AgCl reference cell used. This criterion requires all voltage drops, other than those across the structure-to-electrolyte boundary, to be considered for a valid interpretation of the potential data.
- Adequate protection is also indicated by a polarization shift of at least 100 millivolts. The polarization shift is equivalent to the difference between the native (depolarized) potential and the polarized potential.

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Results/Recommendations

The attached data sheets detail the results of this inspection and the attached site layout provides the location of the CP components. **The structure-to-electrolyte potentials indicate adequate protection in all areas tested.** Several issues were found from both the fire and in general. These are provided below.

Issues related to the vessel fire:

- The bond wire spanning between the bents and secured to the bottom of the deck at this location had melted insulation – see Picture 1 below and attached site layout drawing. The copper was still intact, so adequate continuity was being seen between the bents. However, with the copper exposed, it will experience corrosion, plus its strength is likely compromised, so this wire must be replaced.

Picture 1
Wire insulation melted

- The fender piles are not part of the CP system, so their corrosion protection is based solely on the coating system on the piles. The fire damaged the coating (see Picture 2), so it should be repaired/replaced. This could be done by completely removing the remaining coating above the water line and recoating the pile. Another option would be to use a pile wrap system. Pile wraps can be installed without having to clean the pile to bare metal.

Picture 2
Damaged coating on fender piles

Issues not related to the vessel fire:

- Anode 2A has no output. This was first documented during the 2023 inspection. No damage was found during a visual inspection of the accessible components. NCL believes the anode cable is likely damaged below the waterline. The anode at row 61 has no output and the anode wire and conduit below the dock are missing. It is unknown how this damage occurred. Adequate protection is still being achieved at all locations and currently no further action is required.
- The anode junction box at 32A is missing a hasp – see Picture 3. The box still closes and functions well, so it is not imperative to complete this repair soon, but it should be considered when time allows.

Picture 3
J-box with missing hasp

- The pile wrap on the pile at bent 28, row C suffered damage and is falling off – see Picture 4. This should be repaired.

Picture 4
Pile wrap falling off the pile at bent 28, row C

- The junction box at 29A has a damaged lid – see Pictures 5 and 6. The hole should be sealed. However, the box functions well, so it is not imperative to complete this repair soon, but it should be considered when time allows.

Picture 5
Damaged J-box

Picture 6
Damaged J-box

- The coating on several of the bond wire connections to the piles has worn away exposing the metal allowing it to corrode. Picture 7 shows an example of this issue. These wires are still connected and are providing adequate continuity so it is not imperative to recoat these immediately, but it should be considered when time allows.

Picture 7
Wire-to-pile connection exposed and corroding

- The weld connecting the bond bar to the pile at bent 29, row A is broken – see Picture 8. There still appears to be continuity to all the piles in this bent based on the potentials, but this should be re-welded and the weld coated when time allows.

Picture 8
Bond bar weld broken at pile

The majority of the LED bulbs, which indicate when an anode is nonfunctional, are not operating correctly. NCL recommends no longer maintaining the LED bulbs. The rectifiers operate at a low output voltage and many of the bulbs do not have sufficient voltage to illuminate properly. Instead, NCL recommends continuing the annual inspections and monitoring the rectifier output monthly. If values fall outside of the recommended range, contact our office for assistance. Rectifier log sheets have been included with this report for record keeping.

NCL appreciates the opportunity to be of service to the Port of Newport. Please do not hesitate to contact our office if you have any questions.

Sincerely,

Eric Shadle, PE
General Manager

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NORTON CORROSION LIMITED

VESSEL FIRE DAMAGE
NOAA MARINE PACIFIC OPERATION CENTER
NEWPORT, OR
CP SYSTEM DATA

NCL JOB NO. : E-24915
DATA SHEET: 1 OF 10
DATE: JULY 11, 2025
BY: E. SHADLE

RECTIFIER DATA

	Readings		
Description	West Loop	Center Loop	East Loop
Manufacturer:	Universal	Universal	Universal
Model:	ASAI	ASAI	ASAI
Serial:	104963	104964	104962
AC Voltage Rating (V AC)	230/**460**	230/**460**	230/**460**
AC Amperage Rating (A AC)	13/**6.5**	13/**6.5**	13/**6.5**
Phase	3	3	3
DC Voltage Rating (V DC)	18	18	18
DC Amperage Rating (A DC)	230	230	230
Panel Meters:			
Voltage (V DC)	4.5	3.6	3.0
Amperage (A DC)	30.0	15.0	10.0
Portable Meter:			
Primary Input (V AC)	476.6	478.4	476.3
Secondary Taps (V AC)	4.660	3.760	3.760
	4.680	3.730	3.750
	4.670	3.750	3.740
Tap Max	C4/F5	C4/F5	C4/F5
Tap Set (All 3)	C1/F5	C1/F4	C1/F4
DC Voltage (V DC)	4.540	3.420	3.110
Amperage (A DC)	31.20	15.60	15.00
Shunt Rating	300A/50mV	300A/50mV	300A/50mV
Shunt (mV DC)	5.20	2.60	2.50
Time:	09:05	09:00	09:07
Date:	July 11, 2025	July 11, 2025	July 11, 2025
Tide:	-0.5	-0.5	-0.5

Notes: Rectifiers located in electrical room on pier. AC breaker located in Panel 4P. Adjusted panel meters for accuracy. All rectifier fuses tested good.

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VESSEL FIRE DAMAGE
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NCL JOB NO. : E-24915
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BY: E. SHADLE

JUNCTION BOX DATA

Dock Section	Location	Description	Fuse Status ☑ Ok	Fuse Status ☑ Bad	7/11/2025 A DC	Notes
West Loop	Row 1B	Anode Junction	☑ Ok	☐ Bad	3.51	
	Row 2A	Anode Junction	☑ Ok	☐ Bad	0.00	No output since 2023, fuse and voltage good.
	Row 2C	Pull Box	No Fuse			
	Row 4C	Anode Junction	☑ Ok	☐ Bad	3.59	
	Row 5A	Anode Junction	☑ Ok	☐ Bad	3.47	
	Row 7C	Anode Junction	☑ Ok	☐ Bad	3.70	
	Row 8A	Anode Junction	☑ Ok	☐ Bad	3.50	
	Row 10C	Anode Junction	☑ Ok	☐ Bad	3.99	
	Row 11A	Anode Junction	☑ Ok	☐ Bad	3.97	New Jbox 2022
	Row 13C	Anode Junction	☑ Ok	☐ Bad	4.20	New Jbox 2022
Central Loop	Row 14A	Anode Junction	☑ Ok	☐ Bad	0.00	
	Row 16C	Right Anode Jct.	☑ Ok	☐ Bad	1.65	Orange Tape
	Row 16C	Left Anode Jct.	☑ Ok	☐ Bad	1.86	
	Row 20A	Anode Junction	☑ Ok	☐ Bad	1.70	
	Row 22A	Left Anode Jct.	☑ Ok	☐ Bad	1.71	
	Row 22A	Right Anode Jct.	☑ Ok	☐ Bad	1.85	
	Row 25C	Anode Junction	☑ Ok	☐ Bad	0.00	
Central Loop - West Approach	Row 45C	Anode Junction	☑ Ok	☐ Bad	1.26	
	Row 47A	Anode Junction	☑ Ok	☐ Bad	1.61	
	Row 48 (19C)	Right Anode	☑ Ok	☐ Bad	1.90	
	Row 48	Left Anode	☑ Ok	☐ Bad	1.87	

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VESSEL FIRE DAMAGE
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BY: E. SHADLE

Section	Location	Description	☑ Ok	☑ Bad	A DC	Notes
East Loop	Row 26A	Anode Junction	☑ Ok	☐ Bad	1.65	
	Row 26C	Anode Junction	☑ Ok	☐ Bad	1.72	Box labeled 25C
	Row 28B	Anode Junction	☑ Ok	☐ Bad	0.97	
	Row 29A	Anode Junction	☑ Ok	☐ Bad	1.63	Junction box has some minor damage
	Row 31C	Anode Junction	☑ Ok	☐ Bad	1.49	
	Row 32A	Anode Junction	☑ Ok	☐ Bad	1.50	Missing one hasp on JBox.
	Row 34B	Anode Junction	☑ Ok	☐ Bad	1.49	
	Row 38C	Anode Junction	☑ Ok	☐ Bad	1.53	
	Row 56	Anode Junction	☑ Ok	☐ Bad	1.41	Floating dock. New Jbox 2022.
	Row 61	Anode Junction	☑ Ok	☐ Bad	0.00	No output. Anode wire and conduit missing.
	Row 40 Left	Pull Box	No Fuse			
	Row 40 Right	Pull Box	No Fuse			
				Total :	**58.73**	

Notes: Recorded potentials at approximately +1.0 to +6.0 incoming high tide.
LED lights have insufficient voltage to illuminate properly and are no longer maintained.

NORTON CORROSION LIMITED

VESSEL FIRE DAMAGE
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NCL JOB NO. : E-24915
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BY: E. SHADLE

STRUCTURE-TO-WATER POTENTIAL DATA

Bent	Row	Additional Info	Potentials mV DC (Ref Ag/AgCl) Native	On	Notes
West Circuit					
1	A		-509	-970	Fender Pile A -661
	B	New Anode 2020	-509	-973	Fender Pile B -660
	Ladder	SS Ladder		-463	Not bonded
	C		-509	-966	
2	A	New Anode 2020	-509	-959	
	B		-509	-960	Fender Pile -648
	C		-509	-961	
3	A		-511	-965	
	B		-511	-969	Fender Pile -657
	C		-511	-968	
4	A		-497	-986	
	B		-497	-961	Fender -653. Pile coating was bubbled
	C	New Anode 2020	-497	-996	from fire damage.
5	A	New Anode 2020	-502	-1001	
	B		-502	-992	
	C		-502	-996	
6	A		-494	-987	
	B		-494	-987	
	C		-494	-987	
7	A		-489	-1012	
	B		-489	-1018	
	C	New Anode 2020	-489	-1012	
8	A	New Anode 2020	-488	-1012	
	B		-488	-1012	
	C		-488	-1018	
9	A		-489	-997	
	B		-489	-997	
	C		-489	-994	

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VESSEL FIRE DAMAGE
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Bent	Row	Additional Info	Potentials mV DC (Ref Ag/AgCl) Native	Potentials mV DC (Ref Ag/AgCl) On	Notes
10	A		-485	-1012	
	B		-485	-1018	
	C	New Anode 2020	-485	-1016	
11	A	New Anode 2020	-481	-1020	
	B		-481	-1027	
	C		-481	-1030	
12	A		-511	-990	
	B		-511	-991	
	C		-511	-990	
13	A		-519	-990	
	B		-519	-991	
	C	New Anode 2020	-519	-994	
14	A	New Anode 2020	-510	-974	
	B	Concrete Pile		NA	
	C	HDPE Wrapped Pile	-510	-976	

Center Circuit

15	A		-516	-976	
	B		-516	-981	
	C		-516	-980	
16	A		-520	-970	
	B		-520	-971	
	C	Anode	-520	-971	
17	A	Anode	-518	-963	
	B		-518	-963	
	C		-518	-963	
18	A		-521	-956	
	B		-521	-953	
	C		-521	-954	

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NCL JOB NO. : E-24915
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Bent	Row	Additional Info	Potentials mV DC (Ref Ag/AgCl) Native	On	Notes
19	A		-517	-950	
	B		-517	-952	
	C	Anode	-517	-951	
20	A	Anode	-520	-943	
	B		-520	-944	
	C		-520	-944	
21	A		-517	-929	
	B		-517	-930	
	C		-517	-929	
	D		-517	-928	
22	A		-520	-923	
	B		-520	-924	
	C	Anode	-520	-924	
	D		-520	-923	
23	A	Anode	-522	-922	
	B		-522	-924	
	C		-522	-924	
	D		-522	-923	
24	A		-526	-906	
	B		-526	-909	
	C		-526	-909	
25	A		-521	-908	
	B		-521	-908	
	C	Anode	-521	-907	

East Circuit

26	A	Anode	-521	-907	
	B		-521	-908	
	C		-521	-909	
27	A		-525	-905	
	B		-525	-905	
	C		-525	-907	

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DATA SHEET: 7 OF 10
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Bent	Row	Additional Info	Potentials mV DC (Ref Ag/AgCl) Native	On	
28	A	HDPE pile wrap	-526	-901	
	B	Anode	-526	-900	
	C	HDPE pile wrap	-526	-901	Pile wrap coming off
29	A	Anode	-530	-895	Broken weld on steel bonding bar
	B		-530	-893	
	C		-530	-891	
30	A		-537	-886	
	B		-537	-885	
	C		-537	-885	
31	A		-532	-884	
	B		-532	-883	
	C	Anode	-532	-883	
32	A	Anode	-532	-880	
	B		-532	-879	
	C		-532	-878	
33	A		-524	-873	
	B		-524	-874	
	C		-524	-870	
34	A		-520	-871	
	B	Anode	-520	-870	
	Ladder	SS Ladder			Ladder not bonded in
	C		-520	-869	
	A	Pivot Pile	-520	-870	
	C	Pivot Pile	-522	-870	

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NCL JOB NO. : E-24915
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BY: E. SHADLE

East Circuit - East Access

Bent	Row	Additional Info	Potentials mV DC (Ref Ag/AgCl) Native	On
35	A	Buried	N/A	-
	B	Buried	N/A	-
	C	Buried	N/A	-
36	A		-532	-881
	B		-532	-880
	C		-532	-880
37	A		-530	-881
	B		-530	-881
	C		-530	-883
38	A	Anode	-531	-885
	B		-531	-886
	C	Anode	-531	-887
39	A		-540	-884
	B		-540	-884
	C		-540	-882
40	A		-538	-884
	B		-538	-886
	C		-538	-887
	D		-538	-887
41	A	Anode	-524	-890
	B		-524	-891
	C		-524	-891

NORTON CORROSION LIMITED

VESSEL FIRE DAMAGE
NOAA MARINE PACIFIC OPERATION CENTER
NEWPORT, OR
CP SYSTEM DATA

NCL JOB NO. : E-24915
DATA SHEET: 9 OF 10
DATE: JULY 11, 2025
BY: E. SHADLE

Center Circuit - West Access

Bent	Row	Additional Info	Potentials mV DC (Ref Ag/AgCl) Native	Potentials mV DC (Ref Ag/AgCl) Off	Notes
42	A	Buried	N/A	-	
	B	Buried	N/A	-	
	C	Buried	N/A	-	
43	A		-534	N/A	
	B		-534	N/A	
	C		-534	N/A	
44	A		-532	-946	
	B		-532	-946	
	C		-532	-944	
45	A		-532	-967	
	B		-532	-965	
	C	Anode	-532	-967	
46	A		-534	-949	
	B		-534	-950	
	C		-534	-951	
47	A	Anode	-537	-956	
	B		-1138	-956	
	C		-1131	-954	
48	A	Anode	-528	-953	
	B		-528	-952	
	C		-528	-953	

East Circuit - Floating Pier Support

50	A		-530	-	Pile Not Submerged
51	A		-532	-	Pile Not Submerged

NORTON CORROSION LIMITED

VESSEL FIRE DAMAGE
NOAA MARINE PACIFIC OPERATION CENTER
NEWPORT, OR
CP SYSTEM DATA

NCL JOB NO. : E-24915
DATA SHEET: 10 OF 10
DATE: JULY 11, 2025
BY: E. SHADLE

Bent	Row	Additional Info	Potentials mV DC (Ref Ag/AgCl) Native	Potentials mV DC (Ref Ag/AgCl) Off	Notes
East Circuit - Start Floating Pier West Side					
52	A		-526	-874	
53	A		-522	-871	
54	A		-526	-867	
55	A		-532	-866	
56	A	Anode	-528	-867	
57	A		-529	-859	
58	A		-535	-851	
59	A		-530	-846	
60	A		-532	-842	
61	A	Anode	-537	-840	
62	A		-538	-838	
63	A		-539	-838	
64	A		-536	-840	
Pivot Pile HDPE Coated					
65	A	Pivot Pile	N/A	NR	HDPE Prevents Contacting Pile
66	A	Pivot Pile	N/A	NR	HDPE Prevents Contacting Pile
67	A	Pivot Pile	N/A	NR	HDPE Prevents Contacting Pile

Notes: Confirmed cell calibration 2.3 mV.
Potentials measured between +1 and +6 tide.
All potentials recorded using portable Ag/AgCl reference cell (-733 mV cirterion).

Norton Corrosion Limited, LLC

RECTIFIER LOG

OWNER: Port of Newport

STRUCTURE: West Loop Rectifier - NOAA Homeport Steel Support Piling

RECOMMENDED OUTPUT: 4.0 to 5.0 Volts 25 to 35 Amps

DATE	VOLTS	AMPS	COMMENTS
7/11/25	4.5	30	2025 NCL Inspection.

For assistance, please contact Norton Corrosion Limited at 1-800-426-3111, Preferably While at the Unit.

Norton Corrosion Limited, LLC

RECTIFIER LOG

OWNER: Port of Newport

STRUCTURE: Center Loop Rectifier - NOAA Homeport Steel Support Piling

RECOMMENDED OUTPUT: 3.0 to 4.0 Volts 10 to 20 Amps

DATE	VOLTS	AMPS	COMMENTS
7/11/25	3.6	15	2025 NCL Inspection.

For assistance, please contact Norton Corrosion Limited at 1-800-426-3111, Preferably While at the Unit.

Norton Corrosion Limited, LLC

RECTIFIER LOG

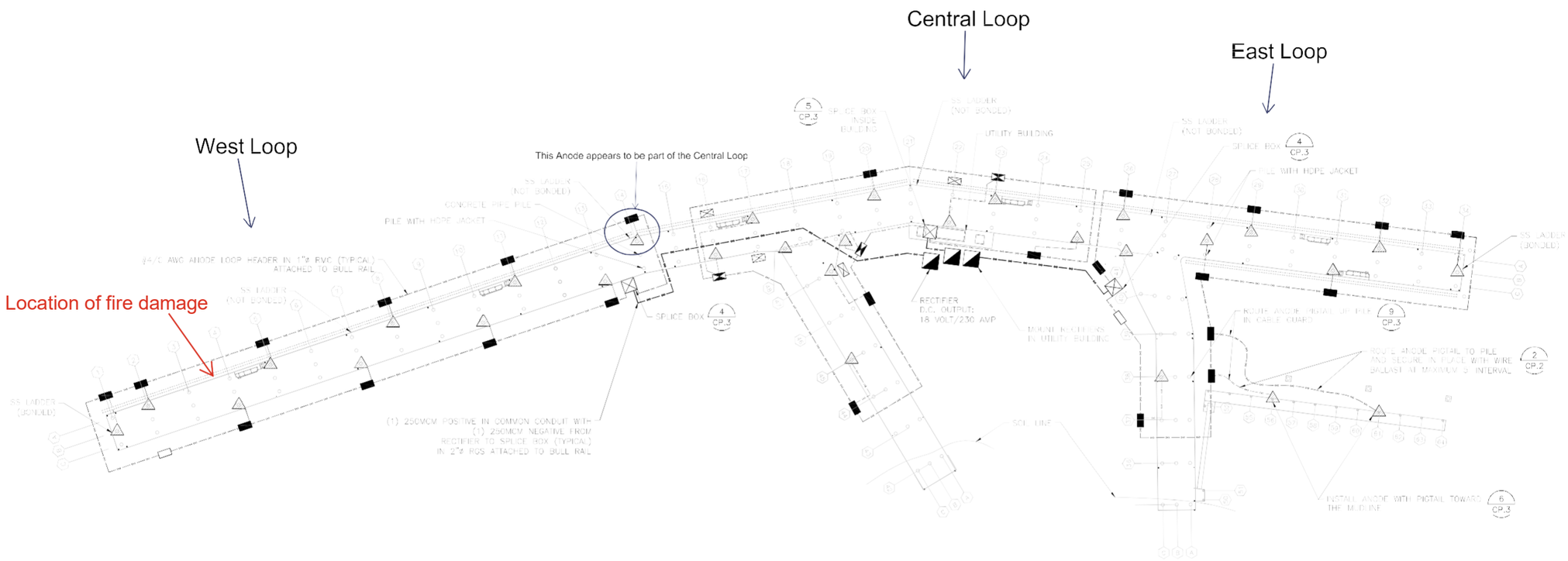
OWNER: Port of Newport

STRUCTURE: East Loop Rectifier - NOAA Homeport Steel Support Piling

RECOMMENDED OUTPUT: 2.5 to 3.5 Volts 8 to 18 Amps

DATE	VOLTS	AMPS	COMMENTS
7/11/25	3.0	10	2025 NCL Inspection.

For assistance, please contact Norton Corrosion Limited at 1-800-426-3111, Preferably While at the Unit.



OVERALL PLAN
SCALE: NONE

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RECORD DRAWING SET - AUGUST 19, 2011

RECORD DRAWINGS

THESE RECORD DOCUMENTS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE CONSULTANT HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY RESULT FROM ERRONEOUS INFORMATION PROVIDED BY OTHERS.

REVISION	DATE	DESCRIPTION	BY

Port of Newport

SCALE
AS NOTED

50 YEARS kpff Consulting Engineers
111 SW 5th Avenue, Suite 2500
Portland, Oregon 97204
O: (503) 227-3251 F: (503) 227-7980

JOB NO.	200644
DESIGNED BY	E.S.
DRAWN BY	RH
CHECKED BY	DD
PLOT DATE	August 19, 2011
REVISED BY	Dave Dickson
APPROVED BY	Dave Dickson
AS NOTED	Yes

PORT OF NEWPORT

NOAA
MARINE OPERATION CENTER - PACIFIC
IN WATER CONSTRUCTION

CATHODIC PROTECTION SYSTEM - LAYOUT

SHEET NO.
CP.1

SHEET OF XX
DRAWING NO. 200644