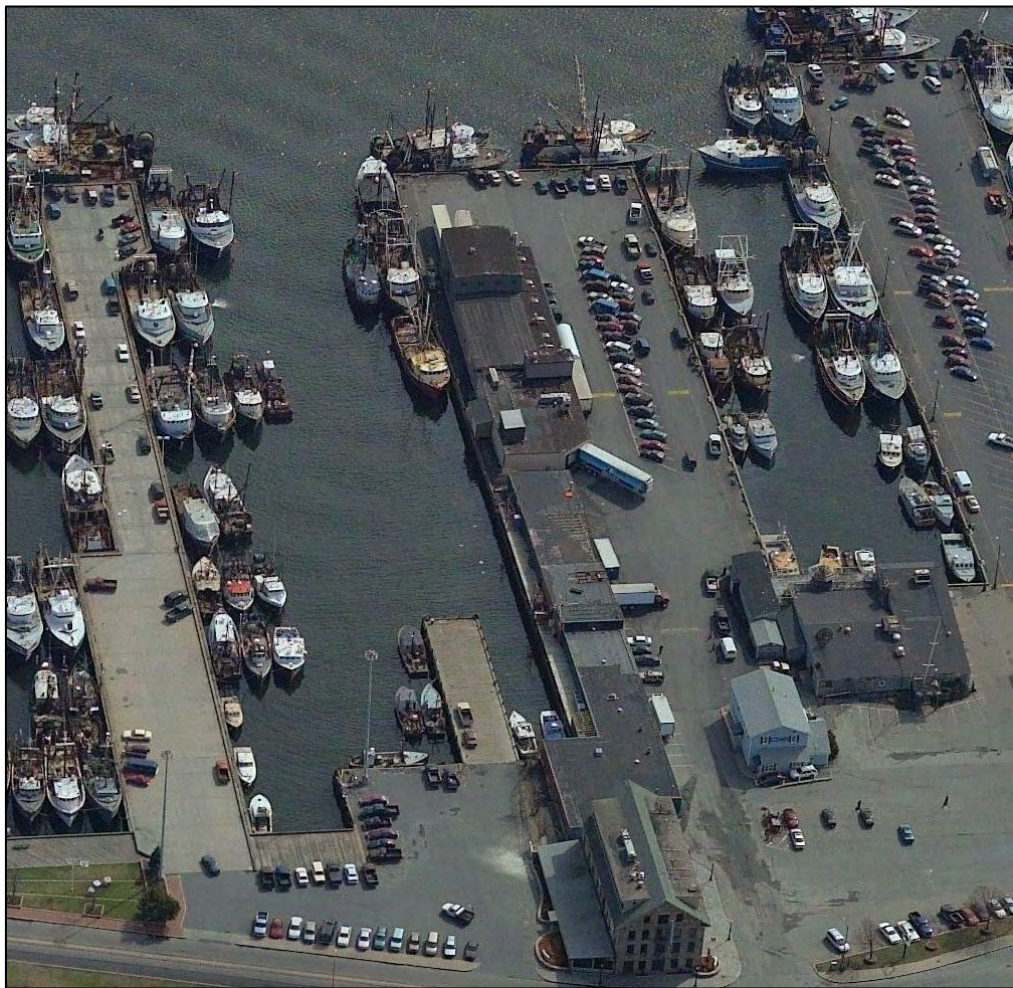


PARE PROJECT NO. 08216.00

**INSPECTION REPORT
HOMER'S WHARF
NEW BEDFORD WATERFRONT
FACILITIES INSPECTIONS
NEW BEDFORD, MASSACHUSETTS**



MARCH 2009

EXECUTIVE SUMMARY

Homer's Wharf is a filled pier structure retained by steel sheet piling, which was installed in 1974. The pier provides operational berthage for fishing vessels.

Pare Corporation and Childs Engineering Corporation conducted the inspection of the site on November 13, 2008. In general, Homer's Wharf was observed to be in **Fair to Good** condition, with minor deficiencies typically observed along the fender system and ladders. The steel sheet piling was observed to be in generally **Fair to Good** condition, with minimal section loss of the steel sheeting and wale fastening bolts.

High priority repairs include the repair of the fendering system and ladders, as well as address areas of subsidence. The opinion of probable cost for this work is in the order of \$138,000.

Lower priority repairs include the addition of a cathodic protection system, which will increase the remaining useful life of the facility. The opinion of probable cost for this work is in the order of \$343,000.

It is recommended that the facility be inspected at 3 to 5 year intervals to monitor deterioration of the facility components.



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SECTION 1 INTRODUCTION

1.1 – Background and Objectives

The New Bedford Harbor Development Commission (HDC) has retained Pare Corporation (PARE) and Childs Engineering Corporation (CEC) to perform an above and below water inspection, and to develop a report of existing conditions for Homer's Wharf in New Bedford, Massachusetts. Inspections were performed in accordance with the ASCE Manuals and Reports on Engineering Practice No. 101 – Underwater Investigations: Standard Practice Manual. The major objectives of the inspection report are to provide the HDC with an assessment of existing conditions at the facility, and to substantiate requests for funding for the maintenance and repair of the facility.

1.2 – Scope of Work

The scope of this investigation is to provide an inspection and evaluation of the present condition of the pier and appurtenant structures, and to provide information that will assist in both prioritizing repair needs and planning/conducting maintenance and operation.

The investigation is divided into three parts: 1) provide a description of the facility, including review of available reports, investigations, and data previously submitted to the owner pertaining to the wharf and appurtenant structures; 2) perform a visual inspection of the site above and below water; 3) prepare and submit a final report presenting the evaluation of the structure, including recommendations for remedial actions, and associated costs.

SECTION 2 DESCRIPTION OF SITE

2.1 - Site Location

Homer's Wharf is an approximate 1,310-foot long steel sheet pile bulkhead with solid fill. It is located south of Coal Pocket Pier and north of Leonard's Wharf along the New Bedford waterfront on Buzzard's Bay as shown in Figure 1 – Locus Plan.

2.2 - Facility Description

The site has been known as Homer's Wharf since approximately 1920. Prior to this time the wharf was referred to as Merrill's Wharf. The original structure was constructed in approximately 1847. It was an 826-foot long earth-filled stone wharf and was mainly used for the berthing of whaling vessels. Currently Homer's Wharf consists of a steel sheet pile bulkhead with solid fill and an asphalt deck providing dock space for modern fishing draggers and scallopers.

The steel sheetpile bulkhead is comprised of a PZ-38 section, installed in 1974 in accordance with the available drawings. The sheeting is provided with an interior steel wale and tie backs,



with the tie rods spaced at 6 feet on center. The outer 145 feet of the sheeting is provided with steel reinforcing plates along the sheeting flanges. The allowable loading has been provided as 500 pounds per square foot.

The steel sheetpile bulkhead is protected with a 6-inch by 8-inch timber chock bolted to the top of the wall with a 2-inch by 5-inch UHMW rub rail bolted to the waterside face. Rubber tire fenders are attached to the face of the sheetpile spaced 12 feet on center. A C15 x 40 steel channel cap sits on top of the wall. A pipe pile supported timber loading dock is supported along the top of the wall for approximately 234 feet. For the remaining 1,076 feet, an 8-inch by 12-inch timber curb is supported by 3-inch by 12-inch by 12-inch timber blocking spaced 36 inches on center on top of the cap channel. Docking cleats are spaced approximately 30 feet on center. The cleats are 32 inches long and bolted to a concrete pedestal measuring 54 inches long by 16 inches wide and 12 inches high. The wharf supports an asphalt deck primarily used for parking, with several building structures located on the north side of the pier. Inspection of the buildings is beyond the scope of this inspection.

According to available plans, the most recent repairs to the structure were completed in 1998. These repairs included removal of the original timber fender system, installation of current rubber tire fenders, installation of fender pile clusters at the corners of the wharf, replacement of the steel sheet pile cap channel, replacement of the timber curb, patching of holes in the sheetpile wall, and various repairs to the bituminous deck surface.

Existing drawings pertaining to the facility were located in the HDC Office. Prior inspection reports have not been located at the time of this writing.

SECTION 3 EXISTING CONDITIONS

3.1 General

The topside and underwater inspections of Homer's Wharf were performed on November 13, 2008. For reference purposes, a baseline was established along the top of the bulkhead during the inspection. Station 0+00 was located at the northwest corner of the bulkhead at its intersection with the Coal Pocket Pier and extended to station 13+07 at the southern end of the bulkhead at its intersection with Leonard's Wharf. Observations were made in relation to their location along the baseline as appropriate and as noted herein.

The northern face of the bulkhead starts at Station 0+00 and ends at the corner at Station 5+91. At the time of the inspection, the north face was primarily clear of docked vessels. It appears that the north face is used mainly by commercial fishing vessels for loading and unloading onto the loading docks of the buildings. From the corner at Station 5+91 to the corner of the bulkhead at Station 11+88, vessels were docked against the bulkhead face.



3.2 Steel Sheet Piling

The steel sheet piling system at Homer's Wharf was observed to be in generally fair to good condition. The original coating on the steel was observed to be generally intact below Mean Low Water (MLW), with the majority of the coating missing above the MLW mark. The bolted connection to the internal wale was observed to be in typically fair to good condition, with typical 10% loss of section observed.

Steel reinforcing plates measuring approximately 1" thick were observed on the sheeting from the mudline up to Mean Low Water. Typically these plates were observed to be in good condition.

During the underwater inspection, typical corrosion by-product build up of about a 1/4-inch was observed on the sheetpile. Minor pitting between 1/16 and 1/8inch was also noted, indicating active corrosion. Cathodic potential readings taken during the inspection also indicate active corrosion. The steel in the splash zone is heavily corroded and there is typically no coating remaining above Mean Low Water.

During the inspection of the sheetpile, ultrasonic thickness (UT) and cathodic potential (CP) reading were taken. The readings were taken at the mudline, Mean Low Water, and approximately halfway between the two. Conditions at this facility were found to be similar to adjacent facilities such as Fisherman's Wharf, Steamship Pier, and Leonard's Wharf which all indicated potential readings between .3 and .5 volts. The following table illustrates the results.

Table 3.1 – Underwater Readings

STATION	ELEVATION	UT Inner Flange	UT Web	UT Outer Flange	CP
0+00	Mud	0.465	no reading	0.485	0.304
	Mid				
	MLW	0.485	0.365	0.485	
2+00	Mud	0.455	0.240	0.365	0.286
	Mid	0.435	0.300	0.455	0.274
	MLW	0.455	0.230	0.325	0.276
4+00	Mud	0.455	0.305	0.450	0.392
	Mid	0.460	0.330	0.460	
	MLW	0.445	0.300	0.440	
6+00	Mud	0.530	0.390		0.410
	Mid	0.505	0.370	0.525	0.393
	MLW	0.535	0.350	0.505	0.399
8+00	Mud	0.490	0.335	0.975	0.419
	Mid	0.505	0.345	0.525	0.368
	MLW	0.475	0.355	0.495	0.401
10+00	Mud	0.490	0.305	0.470	0.388
	Mid	0.460	0.320	0.460	0.393
	MLW	0.515	0.355	0.530	0.379
12+00	Mud				
	Mid				
	MLW	0.495	0.320	0.435	0.352



3.3 Fender System

From Station 0+00 to Station 5+91, the timber wale and UHMW rub rails were observed to be in overall good condition. From Station 2+55 to Station 3+20, minor damage was observed along the timber wale and UHMW rub rail. The wale was observed to be displaced at Station 3+00, and only held on by the UHMW from Station 3+10 to Station 3+18. The timber wale and UHMW rub rail were observed to be in good condition from Station 3+00 to Station 5+13 with no major deficiencies noted. The timber wale was observed to be damaged and broken, with the UHMW rub rail missing from the face from Station 5+13 to Station 5+45 and from Station 5+86 to Station 5+91 at the corner of the bulkhead. The rubber tire fenders were observed to be in overall good condition.

From Station 5+91 to the end of the new fender system at Station 11+70, the timber wale and UHMW rub rails were observed to be in overall fair condition. The rubber tire fenders were observed to be in overall good condition. Typical deficiencies include loose or missing UHMW rub rail and significant damage to the wale in several areas, as shown in Photograph No. 9, 11, and 14 in Appendix A: Photographs. Specific locations of damaged wales, loose rub rails, and missing rub rails are listed in Appendix E – Field Notes.

The older fender system protects the steel sheetpile bulkhead from Station 11+70 to Station 13+07. It is comprised of 12-inch diameter timber fender piles at approximately 10 feet on center with 12 inches by 12 inches top and bottom timber wales. The fender piles in this fender system are in overall fair condition with some signs of rot and wearing on faces. The top and bottom wales were observed to be in overall poor condition. They were predominantly hollow due to rot as shown in Photo No. 16 in Appendix A: Photographs. Fire damage was observed on the piles and the wales from Station 12+57 to Station 12+80 (Photo 19). A timber gangway was attached to the bulkhead with rope at Station 12+37. The gangway led to 2 floating docks and was observed to be in poor condition.

3.4 Bituminous Pavement

Several areas of local subsidence were observed behind the bulkhead. From Station 2+32 to Station 2+40, a 16-inch wide by 5-inch deep area of subsidence was observed (Photo 5). It appeared as if a hole has been cut through the top of the sheetpile wall at this location for unknown reasons, allowing draining water to remove fill material. At Station 2+95, a 12-inch long by 12-inch wide by 3-inch deep area of subsidence was observed. At Station 7+57, a 48-inch long by 12-inch wide by 1.5-inch deep area of subsidence was observed behind the bulkhead. A 24-inch long by 8-inch wide by 1.5-inch deep area of subsidence was observed at Station 12+12. From Station 11+88 to Station 13+07, a series of small areas of subsidence were observed at approximately 2 feet on center, as shown in Photo No. 17 in Appendix A: Photographs.



3.5 Appurtenances

Galvanized steel ladders are located around the bulkhead to provide access to and from the deck to the water below. Overall the ladders were observed to be in fair condition. Some of the ladders are in good condition above mean high water, while others have been damaged during impact with vessels causing damage to the rungs and buckling of members. All of the ladders are corroded below mean high water rendering them useless during times of low water. Life rings were observed along the bulkhead at several locations, attached with a 4" x 4" post notched into the timber curb.

4.0 – Structural Condition Assessment

4.1 General

Based on the observations obtained from the site inspections, the following provides our assessment of the various structures and components. Existing structural condition determinations were based on visual and tactile observations only, and were limited to accessible and visible portions of the structures.

4.2 Condition Assessment

Based upon the visual inspection of topside and underwater structures along with the observed thickness readings, Homer's Wharf is in generally **fair to good** condition. Areas of concern include typical damages limited to the timber wale, missing or loose UHMW rub rails, damaged access ladders, and locations of subsidence along the deck. Corrosion along the flanges of the steel sheetpile bulkhead sections was minimal, with greater loss of section in the web areas. The following table represents the thickness readings and estimated remaining section steel sheetpile.

Table 3.2 – Remaining Steel Sheetpile Thickness

Nominal Flange Thickness = 0.500"		Nominal Web Thickness = 0.375"			
Inner Flange	Percent Remaining	Web	Percent Remaining	Outer Flange	Percent Remaining
0.465	93.0	0.365	97.3	0.485	97.0
0.485	97.0	0.240	64.0	0.485	97.0
0.455	91.0	0.300	80.0	0.365	73.0
0.435	87.0	0.230	61.3	0.455	91.0
0.455	91.0	0.305	81.3	0.325	65.0
0.455	91.0	0.330	88.0	0.450	90.0
0.460	92.0	0.300	80.0	0.460	92.0
0.445	89.0	0.390	104.0	0.440	88.0
0.530	106.0	0.370	98.7	0.525	105.0
0.505	101.0	0.350	93.3	0.505	101.0
0.535	107.0	0.335	89.3	--	--
0.490	98.0	0.345	92.0	0.525	105.0
0.505	101.0	0.355	94.7	0.495	99.0



0.475	95.0	0.305	81.3	0.470	94.0
0.490	98.0	0.320	85.3	0.460	92.0
0.460	92.0	0.355	94.7	0.530	106.0
0.515	103.0	0.320	85.3	0.435	97.0
0.495	99.0				

Typical UT readings on both the web and flanges displayed reduced thicknesses at mean low water. The readings on the flanges were typically higher and near the nominal thickness, showing minimal corrosion and section loss. Thickness readings on the web indicated average section loss of 13.5% with a maximum reading of 38.7% loss. Average section loss on the flanges was 2.6% with a maximum reading of 35.0% section loss on the outer flange at Station 2+00 at mean low water.

The section losses observed are such that they do not warrant a reduction in the original allowable loading of 500 pounds per square foot. Further deterioration and loss of section may require reinforcement or rehabilitation to achieve the allowable loading. The installation of cathodic protection can inhibit this loss of section due to corrosion, extending the life of the structure.

SECTION 5 RECOMMENDATIONS AND OPINION OF PROBABLE COST

5.1 – Recommendations - General

Based on conditions observed during the inspections, and the corresponding assessments of the existing structures, the following recommendations are provided for the repair and rehabilitation of these structures.

Opinions of probable cost were generated based upon current industry unit prices for similar work. Breakdowns of cost are provided in the Appendix. The cost opinions provided are for construction only and do not include allowances for engineering, permitting, or construction administration. A 20 percent contingency has been included with these costs. The opinions shown herein are based on a limited investigation and are provided for general information only. This should not be considered an engineer's estimate, as final design has not been performed, and actual construction costs may be somewhat less or considerably more than indicated, due to fluctuations in the market.

The following repairs and remedial measures should be implemented to maintain the integrity of the structure. If deferred these maintenance items could develop into larger deficiencies that are more costly to address.

5.2 – High Priority

The following items are considered to have a High Priority, as they affect the usability and safety of the structure:



Remove and replace damaged and worn timber wale. Failure to repair damaged areas may lead to additional damage to the fender system and structural damage to the pier. The opinion of probable construction cost for this work is approximately \$63,000.

Replace the corroded and damaged access ladders. By nature, the ladders are subject to damage from vessels and require frequent maintenance. Due to the highly corrosive nature of seawater, it is recommended that the existing steel ladders be replaced with treated timber ladders. The opinion of probable construction cost for this work is approximately \$30,000.

Repair areas of subsidence along the wharf. Repairs are to include patching of the steel sheetpile bulkhead (where applicable) to minimize future subsidence, and backfilling and regrading of existing subsidence. The opinion of probable construction cost for this work is approximately \$45,000.

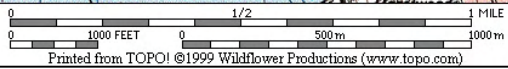
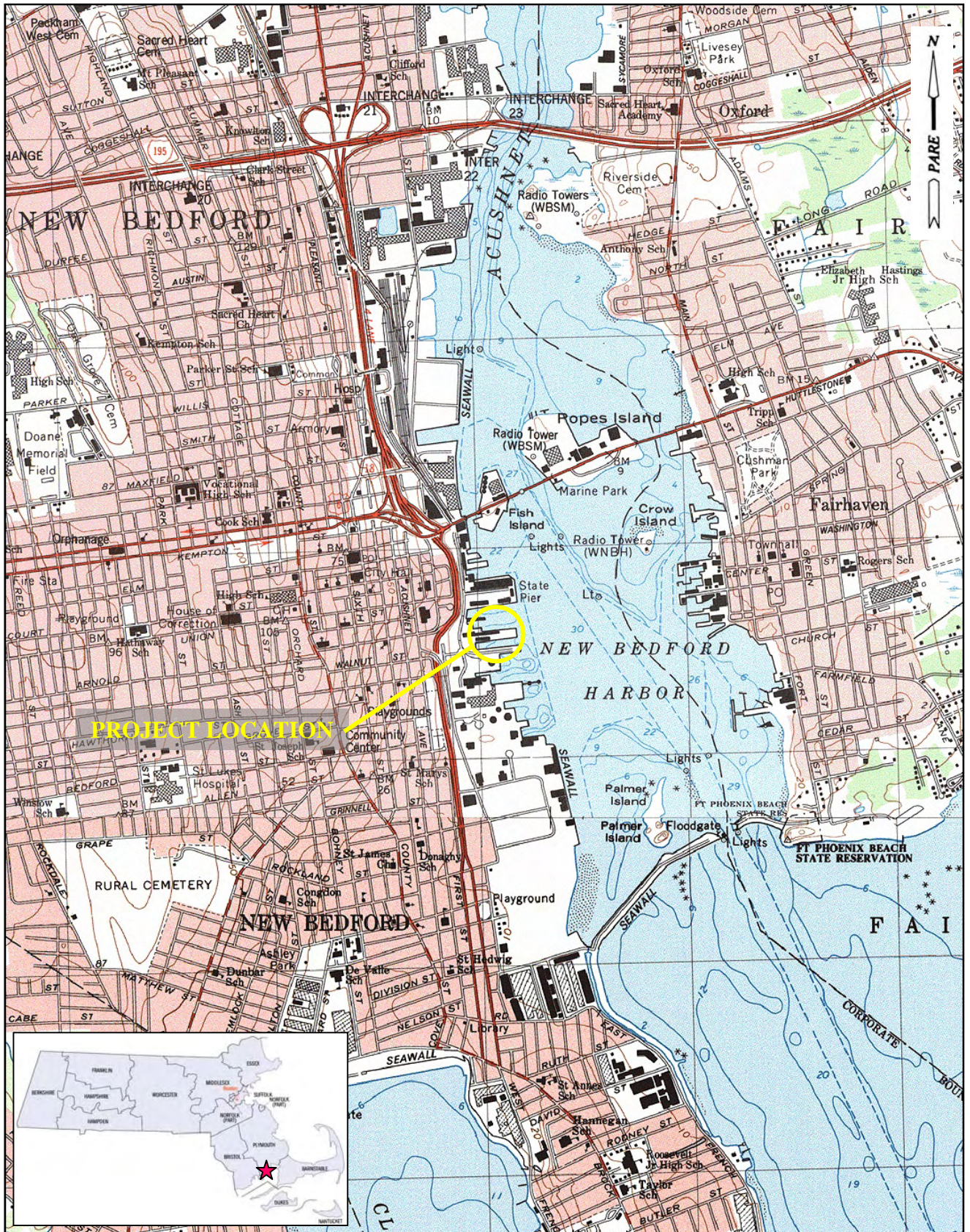
5.3 – Lower Priority

The following items are considered to have a Lower Priority, as they presently do not affect the usability and safety of the structure, but will need to be addressed in approximately 5 to 10 years.

Install cathodic protection along the length of the steel sheetpile bulkhead. Sacrificial zinc or aluminum anodes minimize corrosion of the steel sheet piling and wale fastening bolts, and will extend the useful life of the sheeting. The opinion of probable construction cost for this work is approximately \$343,000.



Figures
Homer's Wharf
New Bedford, Massachusetts

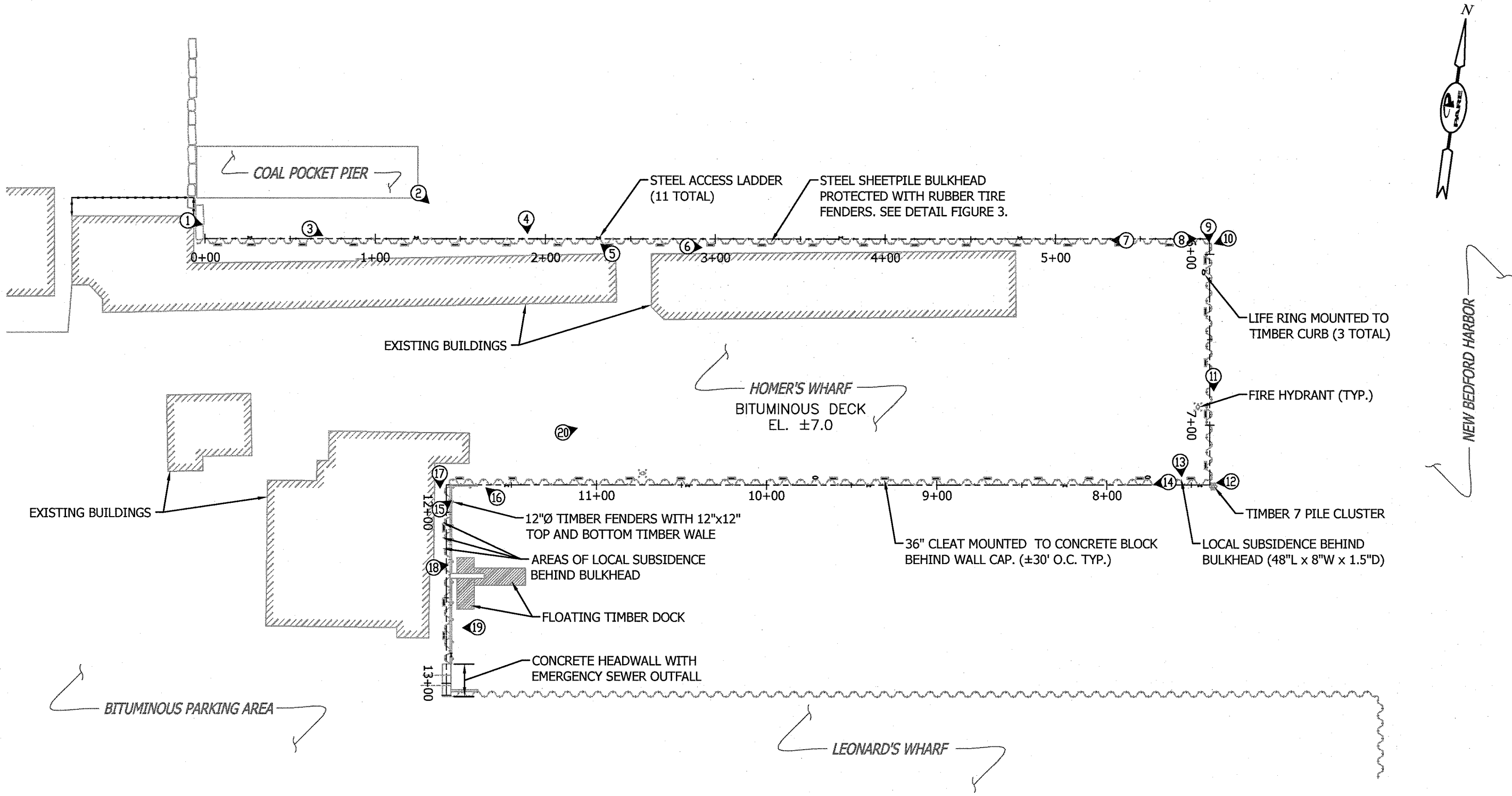


HOMER'S WHARF
 NEW BEDFORD, MASSACHUSETTS
 NEW BEDFORD HARBOR DEVELOPMENT COMMISSION
 NEW BEDFORD WATERFRONT FACILITY INSPECTIONS
 NOVEMBER 2008

FIGURE 1
LOCUS PLAN

SCALE ADJUSTMENT GUIDE
 1" = 30'
 BAR IS TWO INCHES ON ORIGINAL DRAWING.

NEW BEDFORD WATERFRONT FACILITIES INSPECTIONS
HOMER'S WHARF
 NEW BEDFORD HARBOR DEVELOPMENT COMMISSION
 NEW BEDFORD, MASSACHUSETTS



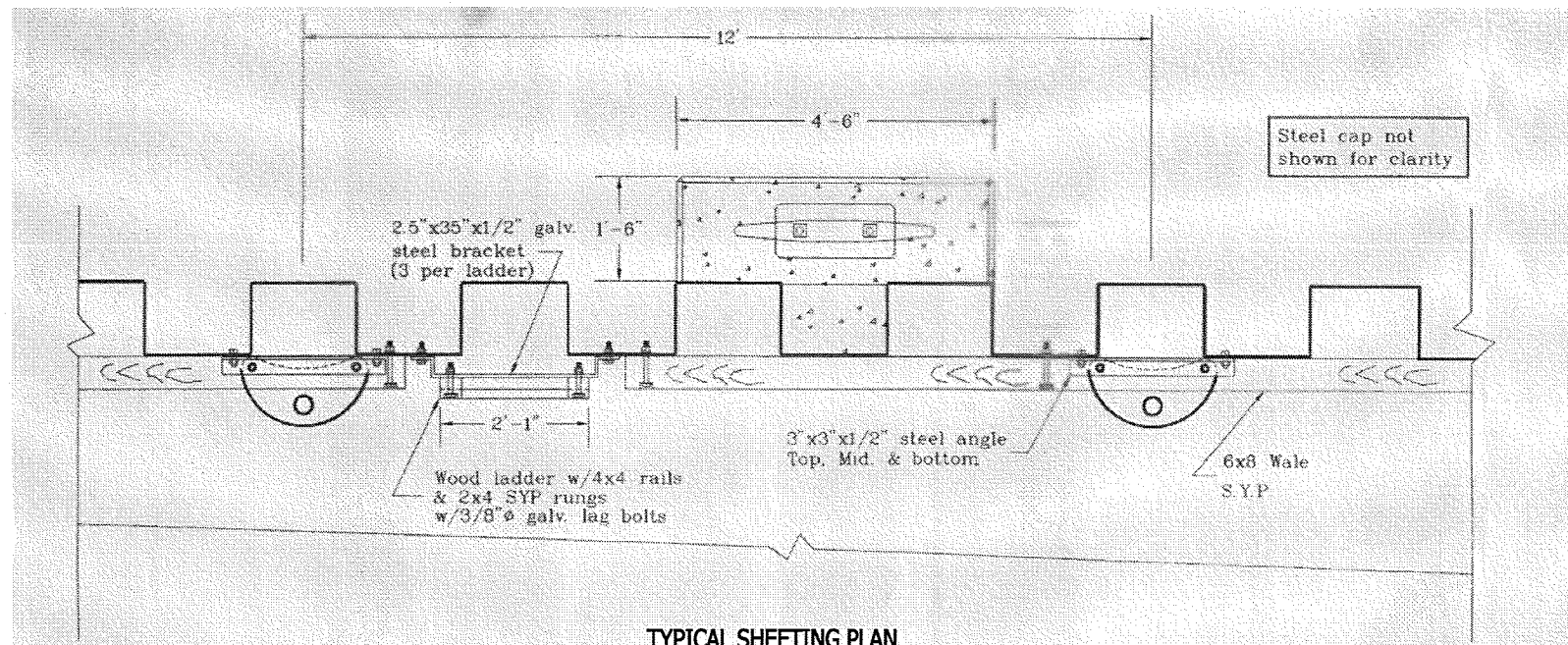
EXISTING SITE PLAN
 SCALE: 1"=30'

- NOTES:**
- CONDITIONS INSPECTION PERFORMED BY PARE PERSONEL ON NOVEMBER 17, 2008.
 - UNDERWATER CONDITION INSPECTION PERFORMED BY CHILDS ENGINEERING CORP. ON NOVEMBER 17, 2008.
 - SITE PLAN BASED UPON DRAWING ENTITLED "CONSTRUCTION OF STEAMSHIP PIER AND COAL POCKET PIER—EXISTING CONDITIONS PLAN" BY TIBBETTS ENGINEERING CORP. DATED NOV. 1977, AND CONDITIONS OBSERVED DURING THE INSPECTION.

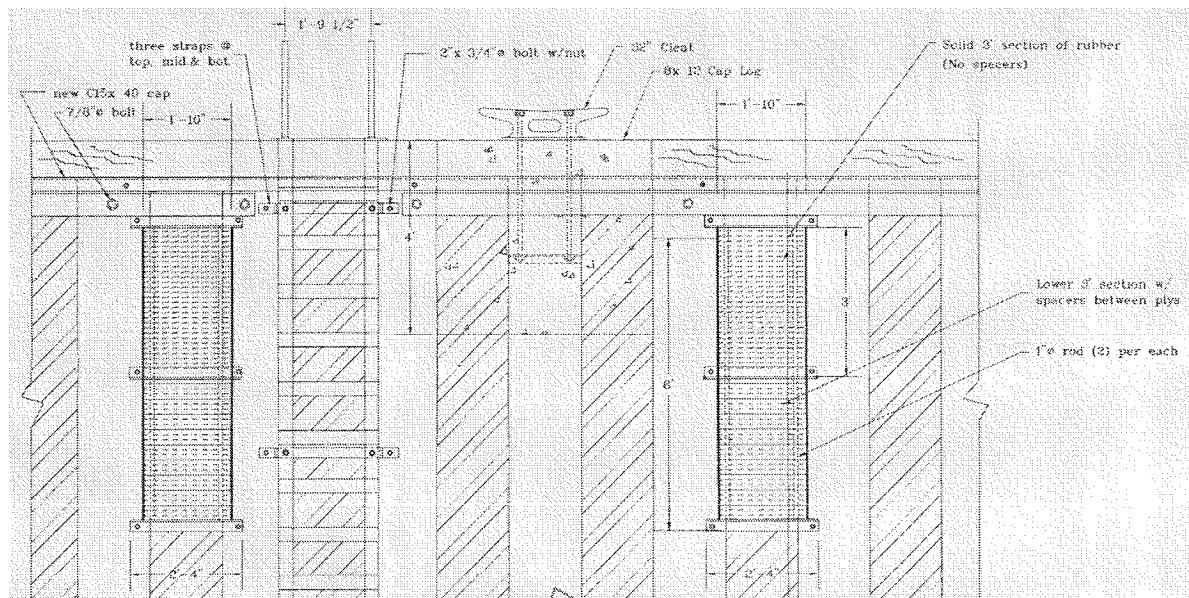
- LEGEND:**
- APPROXIMATE PHOTO LOCATION AND DIRECTION
 - 2+00 BASELINE/STATION
 - CLEAT
 - LADDER
 - LIFE RING

REVISIONS:	
PROJECT NO.:	08216.00
DATE:	NOVEMBER 2008
SCALE:	AS NOTED
DESIGNED BY:	-
CHECKED BY:	-
DRAWN BY:	RMM
APPROVED BY:	KWH
DRAWING TITLE:	
EXISTING SITE PLAN	
FIGURE NO.:	
2	
SHEET NO.	1 OF 1

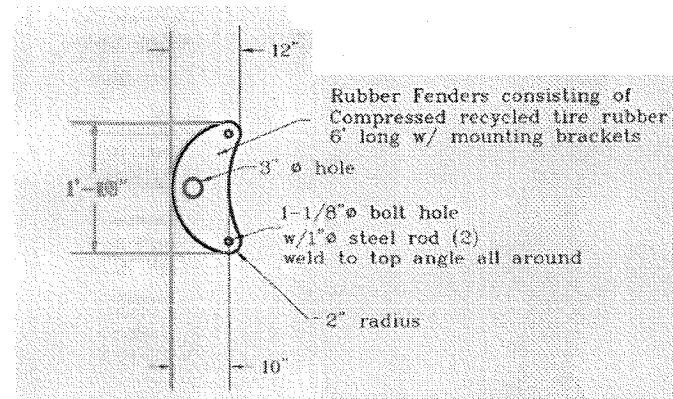
HALF SIZED



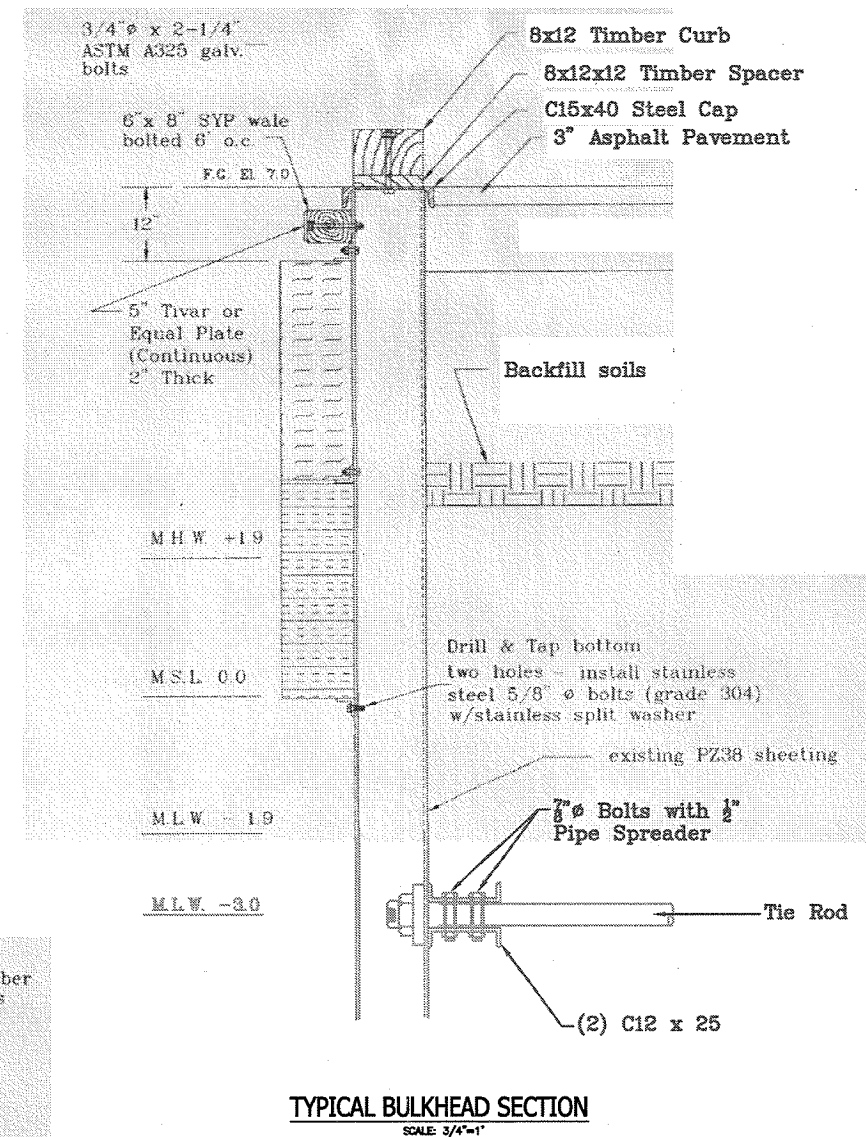
TYPICAL SHEETING PLAN
SCALE 3/4"=1'



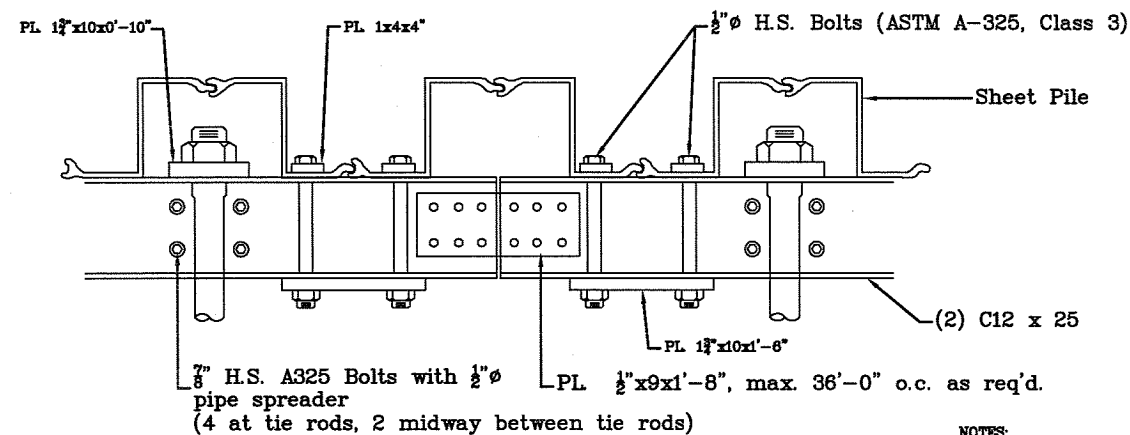
TYPICAL SHEETING AND FENDER ELEVATION
SCALE 1"=2'



TYPICAL FENDER DETAIL
SCALE 3/4"=1'

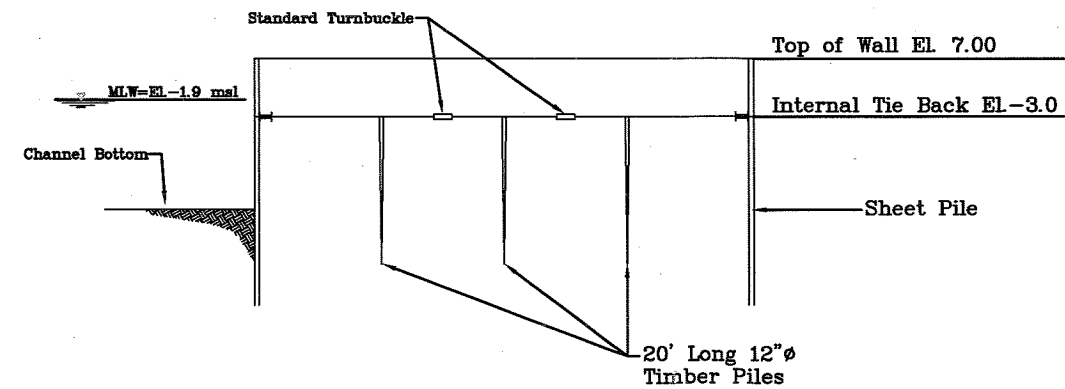


TYPICAL BULKHEAD SECTION
SCALE 3/4"=1'



INTERNAL WALE CONNECTION PLAN
SCALE 1"=1'

- NOTES:**
1. All Tie Rods are 7/8", upset to 4" at ends.
 2. All Tie Rods and Plates in wale connections to be ASTM designation A-572, Grade 50.



PIER SECTION
SCALE 1"=20'

HALF SIZED

SCALE ADJUSTMENT GUIDE
BAR IS TWO INCHES ON ORIGINAL DRAWING.

NEW BEDFORD WATERFRONT FACILITIES INSPECTIONS
HOMER'S WHARF
NEW BEDFORD HARBOR DEVELOPMENT COMMISSION
NEW BEDFORD, MASSACHUSETTS

REVISIONS:	
PROJECT NO.:	08216.00
DATE:	NOVEMBER 2008
SCALE:	AS NOTED
DESIGNED BY:	-
CHECKED BY:	-
DRAWN BY:	RMM
APPROVED BY:	KWH
DRAWING TITLE:	EXISTING SECTION AND DETAILS
FIGURE NO.:	3
SHEET NO.:	1 OF 1

Appendix A
Photographs
Homer's Wharf
New Bedford, Massachusetts

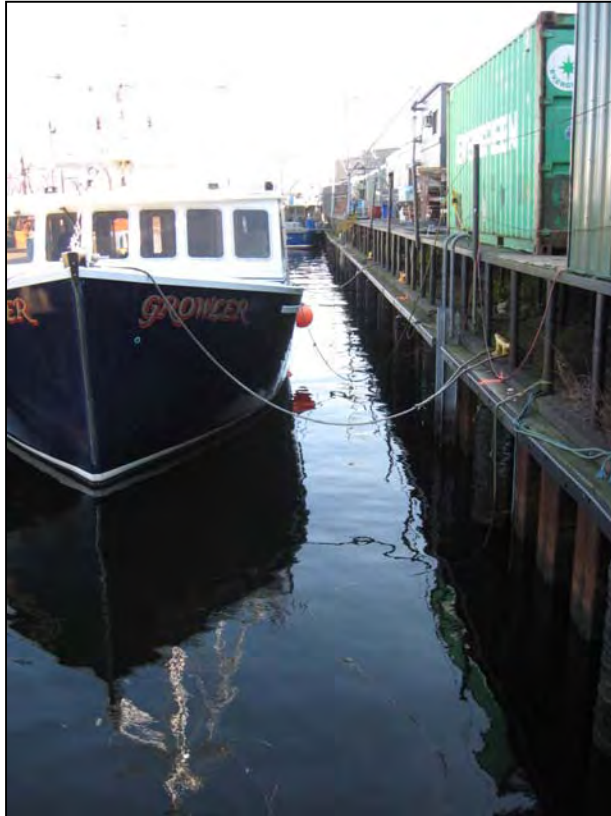


Photo No. 1: Overview of Homer's Wharf from Station 0+00 looking east.



Photo No. 2: Overview of the sheetpile bulkhead and rubber tire fender system from Station 1+50 to Station 2+00.





Photo No. 3: Typical rubber tire fender with steel brackets along the steel sheetpile bulkhead.



Photo No. 4: Typical condition of the sheetpile bulkhead.



Photo No. 5: Subsidence behind the sheetpile bulkhead at Station 2+35 to Station 2+40.



Photo No. 6: Bituminous deck with timber curb looking east.



Photo No. 7: Timber wale with missing UHMW rub rail. Note the damage to the wale.



Photo No. 8: Fire damage on the timber curb at the corner of the bulkhead at Station 5+91.



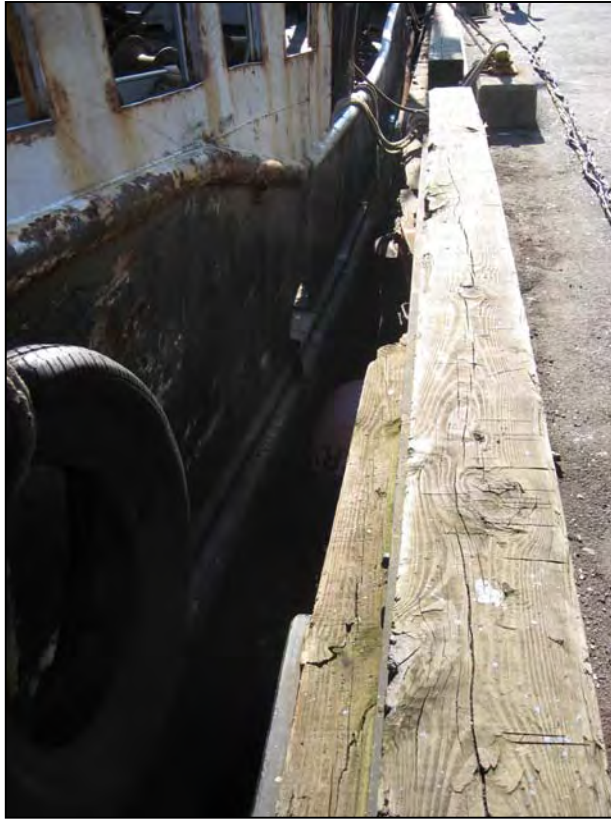


Photo No. 9: Docked vessel against the timber wale from Station 5+91 looking south.



Photo No. 10: Hole in steel sheet pile bulkhead at Station 5+93.

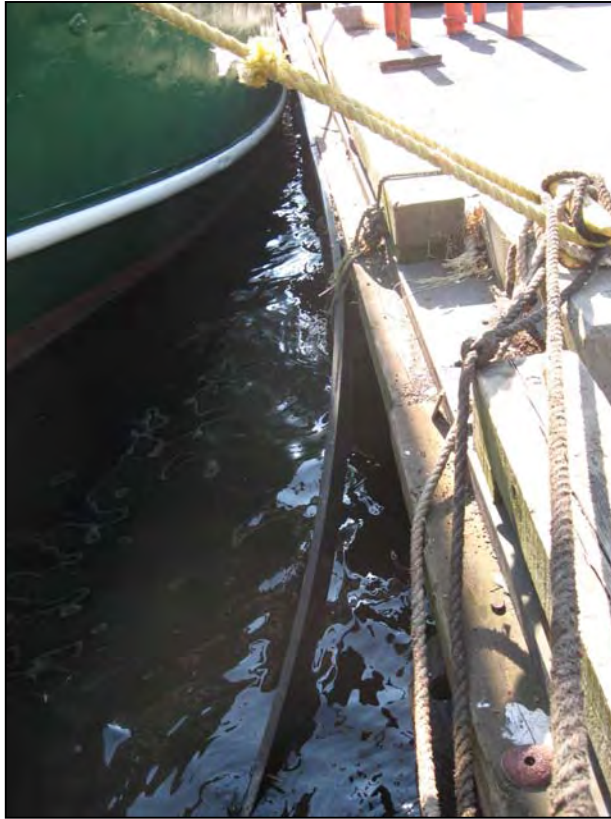


Photo No. 11: Loose UHMW rub rail near Station 6+90.



Photo No. 12: Overview of the timber curb and bituminous deck from Station 7+50 looking west.





Photo No. 13: Subsidence behind the sheetpile bulkhead at Station 7+57.



Photo No. 14: Typical loose UHMW rubber rail near Station 7+75.





Photo No. 15: Old timber fender system starting at Station 11+70.



Photo No. 16: End of rotted top wale of the old timber fender system.

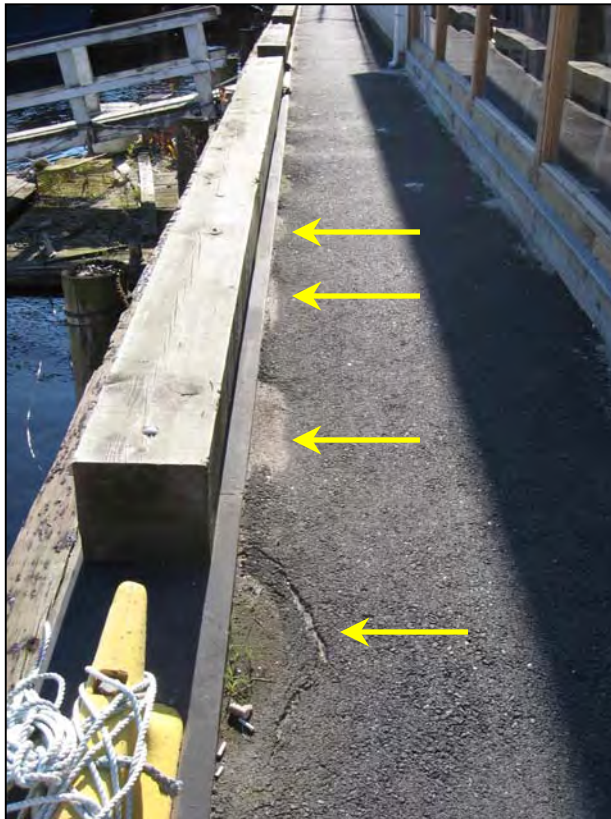


Photo No. 17: Timber curb and bituminous deck. Note several small areas of subsidence.

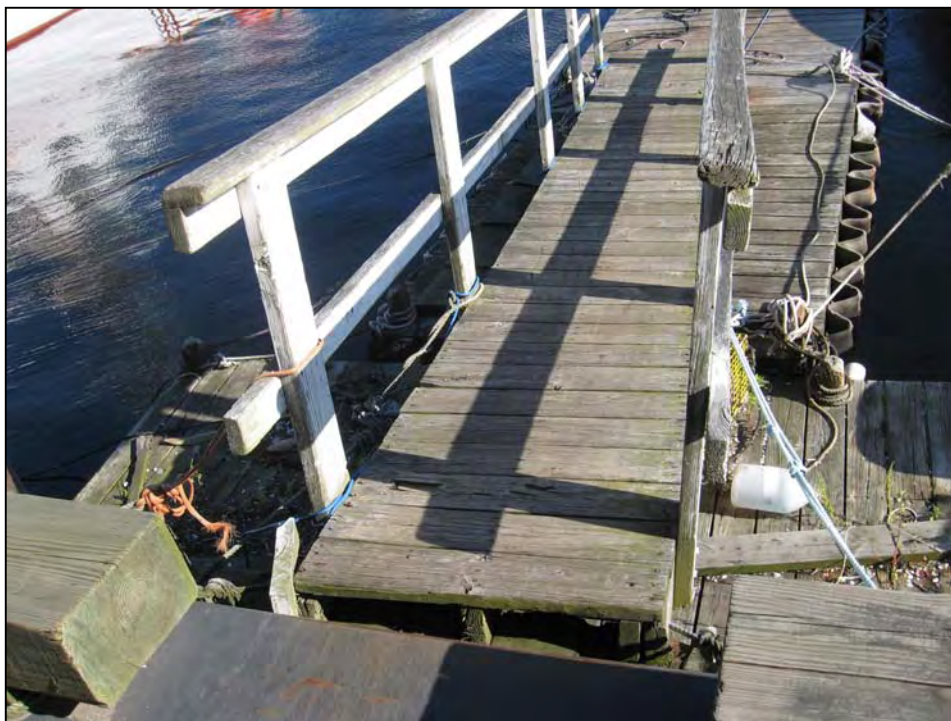


Photo No. 18: Timber gangway at Station 12+37.

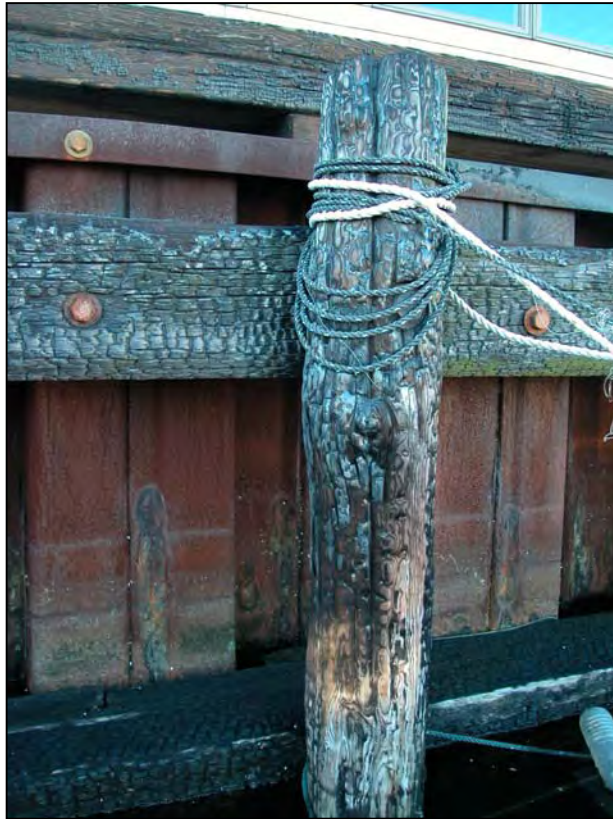


Photo No. 19: Typical fire damage on the timber fender system at Station 12+57 to Station 12+80.



Photo No. 20: Overview of the bituminous deck and parking area.





Photo No. 21: Typical steel face plate mounted to steel sheetpile. (Photo by Childs Engineering Corp.)

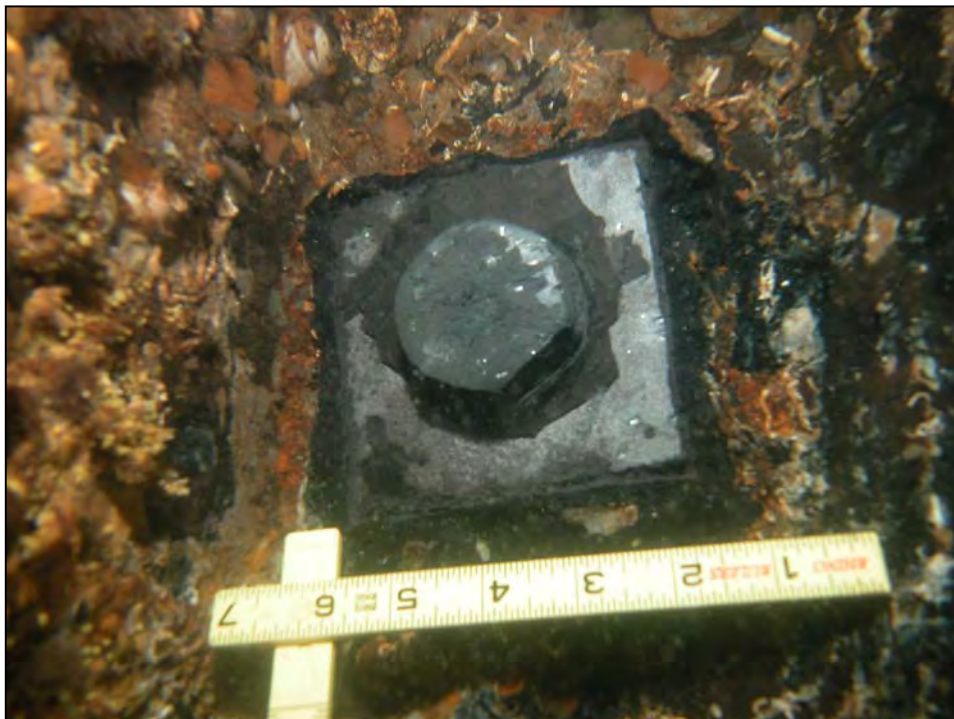


Photo No. 22: Typical underwater hardware. (Photo by Childs Engineering Corp.)



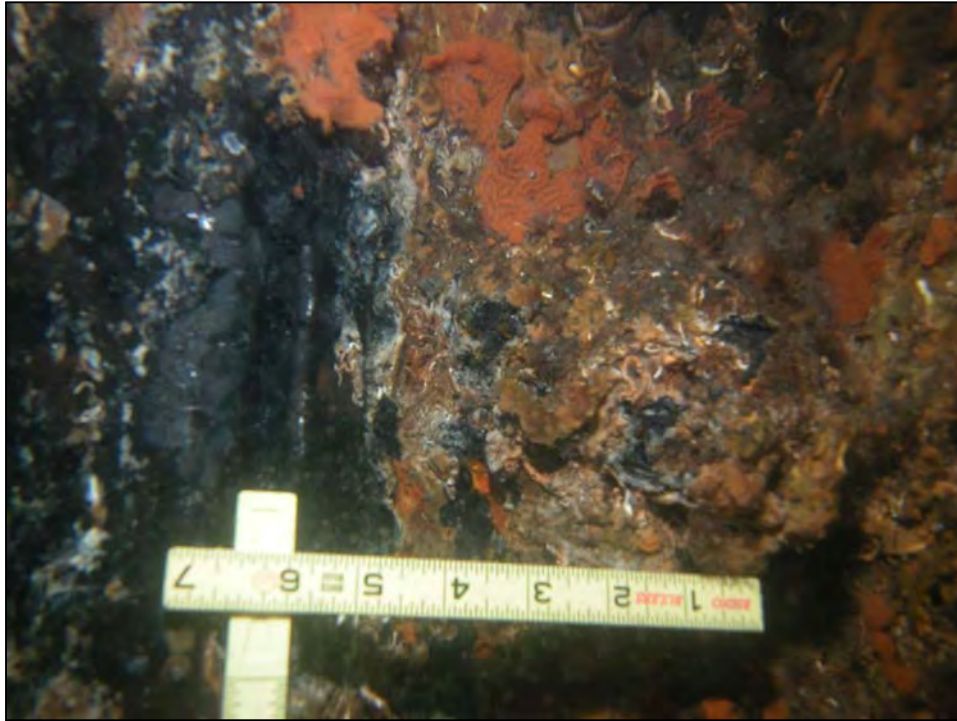


Photo No. 23: Typical underwater bolt connected to internal wale. (Photo by Childs Engineering Corp.)

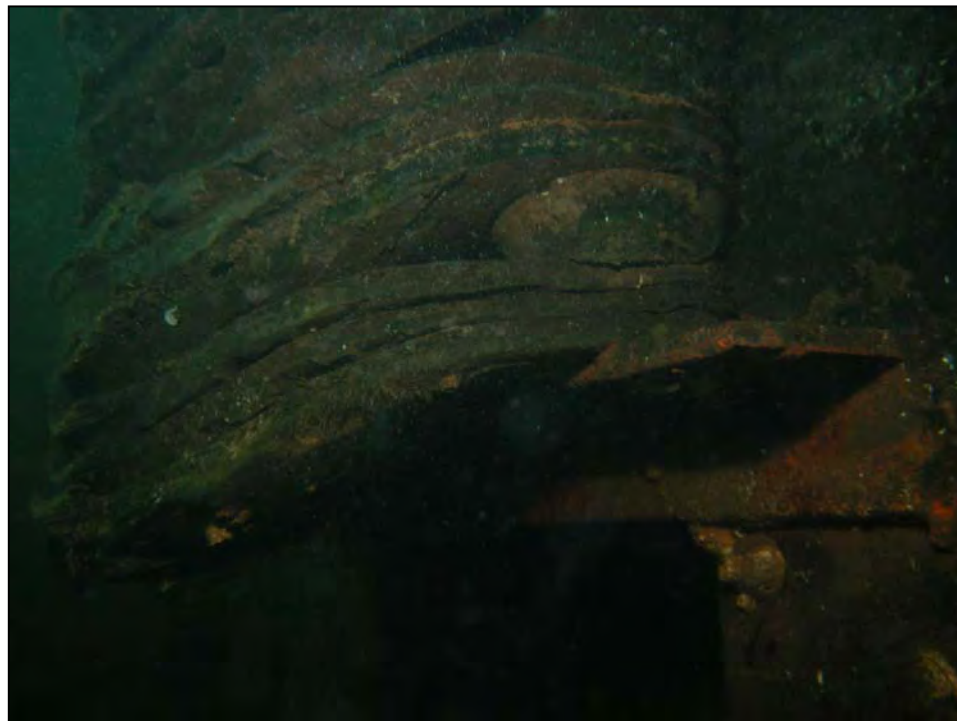


Photo No. 24: Typical underwater fender and connection. (Photo by Childs Engineering Corp.)



Appendix B
Key Personnel
Homer's Wharf
New Bedford, Massachusetts

KEY PERSONNEL

The following personnel were involved with this project including but not limited to the topside and underwater inspections and the preparation of this report:

<i>Name</i>	<i>Employer</i>	<i>Responsibilities</i>
<i>Karl Hammond, P.E.</i>	<i>PARE Corporation</i>	<i>Project Manager, Lead Engineer</i>
<i>Ernest O. Rabideau, Jr., P.E.</i>	<i>PARE Corporation</i>	<i>Project Reviewer</i>
<i>Matt Bellisle, P.E.</i>	<i>PARE Corporation</i>	<i>Principal in Charge</i>
<i>Craig Sams, P.E.</i>	<i>Childs Engineering Corporation</i>	<i>Principal in Charge</i>
<i>Robert Garrity, P.E.</i>	<i>Childs Engineering Corporation</i>	<i>Project Engineer for Underwater Inspections</i>
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<i>Phil Iantosca</i>	<i>Childs Engineering Corporation</i>	<i>Underwater Inspection Team</i>
<i>Nicholas B. Sarata</i>	<i>Childs Engineering Corporation</i>	<i>Underwater Inspection Team</i>
<i>Ryan McCoy</i>	<i>PARE Corporation</i>	<i>Topside Inspection</i>
<i>Briscoe B. Lang</i>	<i>PARE Corporation</i>	<i>Permitting Services</i>



Appendix C
Backup Data for Cost Estimates
Homer's Wharf
New Bedford, Massachusetts

HOMER'S WHARF
OPINION OF PROBABLE CONSTRUCTION COST
February, 2009

WHARF REHABILITATION				
	QTY	UNIT	UNIT PRICE	TOTAL

High Priority Repairs

1. Mobilization/Demobilization	1	LS	\$ 25,000.00	\$ 25,000.00
2. Demolition and Removal	1	LS	\$ 25,000.00	\$ 25,000.00
3. Replace Timber Wale	4	MBF	\$ 6,500.00	\$ 22,750.00
4. Replace Access Ladders	11	EACH	\$ 2,000.00	\$ 22,000.00
5. Repair Areas of Subsidence	1	LS	\$ 20,000.00	\$ 20,000.00

	Subtotal	\$	114,750.00
	Contingency 20%	\$	22,950.00
	Total	\$	137,700.00

Low Priority Repairs

1. Mobilization/Demobilization	1	LS	\$ 30,000.00	\$ 30,000.00
3. Install Cathodic Protection	21,325	LB	\$ 12.00	\$ 255,900.00

	Subtotal	\$	285,900.00
	Contingency 20%	\$	57,180.00
	Total	\$	343,080.00



Appendix D
References
Homer's Wharf
New Bedford, Massachusetts

REFERENCES

The following references were utilized during the preparation of this report and the development of the recommendations presented herein:

1. *“About the Port – Key Locations”*, *New Bedford Harbor Development Commission*, <http://www.newbedford-ma.gov/PortofNewBedford/AboutPort/KeyLocations.html>
2. *“Maritime History of Massachusetts – Merrill’s Wharf Historic District”*, National Park Service, <http://www.nps.gov/history/NR/travel/maritime/mer.htm>.
3. *Construction Drawings “Proposed Repairs and Improvements to Wharves and Piers in New Bedford and Fairhaven, MA”*, *Tibbetts Engineering Corp.*, January 23, 1998 (Revised March 20, 1998).
4. *Construction Drawings “South Terminal Urban Renewal Project”*, *Goodkind and O’Dea, Inc.*, March 1974.
5. *ASCE Underwater Investigations: Standard Practice Manual (2001)*.



Appendix E
Field Notes
Homer's Wharf
New Bedford, Massachusetts

①

New Bedford Waterfront

Facilities Inspection

Nov. 19, 03

40° F

Client: BEECHY

Homer's Wharf

* Fender system: 6' x 10' timber bolted

to top of SSP wall w/ 2" x 5"

UHMW RUB RAIL ATTACHED w/ 1" BOLTS

@ 17.5" O.C. TABS

* RUBBER FENDERS MADE OF SCRAP TILES

ATTACHED TO SSP @ 12' O.C.

* 15" x 4" x 1/2" CAP CHANNEL w/ 3 1/2"

STEEL PIPE COLUMNS @ 32" O.C. SUPPORTING

LOADING DECK

STA 0+06 - CLEAT (32" LONG)

STA 0+27 - CLEAT (32" LONG)

STA 0+33.5 - GALV UNDER (18" CLEAR -

FAIR TO PLYR - CORRODED BELOW MHW)

STA 0+57.5 - CLEAT

STA 0+84.5 - CLEAT

STA 1+14.5 - CLEAT

STA 1+15 - GALV (ADDED) (18" CLEAR -

48" HAND RAIL - F-P - CORROSION)

②

WATER DEPTH TO TOP OF	TIMBER
10'	0+00
13	0+50
17	1+00
21	1+50
23	2+00
27	2+50
28	3+00
27	3+50
27	4+00
26	4+50
26	5+00
27	5+50
23	6+00
26	6+50
26	7+00
23	7+50
26	8+00
25	8+50
23	9+00
21	9+50
24	10+00
23	10+50
22	11+00

③

STA 1143 - CLEAT
 STA 1175 - CLEAT
 STA 2111.5 - CLEAT (30")
 STA 2135.5 - GAUV LADDER (18" CLEAR w/
 28" HAND RAIS - FP - OBSTRUCTION AND
 BACKLING)
 STA 2139 - CLEAT (40")
 STA 2133.5 - END PIPE COLUMN SURROUND
 LOADING DECK / START 8" X 12" TIMBER
 CURB w/ 3" X 2" BLOCKING
 STA 2155 - MINOR FIRE DAMPING
 WITHIN RUB RAIL
 STA 2170 - CLEAT (32")
 STA 3110 - CLEAT / MINOR CLEARANCE
 EDGE OF CONCRETE PILE (SOMO CURB)
 SLOTTED LOADING DOCK
 STA 3115 - LOOSE CHECK → HEAD W/
 RAIL BEYOND RUB RAIL
 STA 3123.5 - END OF LOADING DOCK
 STA 3132.5 - CLEAT (32") BUILT UP
 TO CONCRETE BLOCK (54" X 16" X 12")
 * ALL PREVIOUS ON TOP OF CHANNEL
 ALL REMAINING ON CONCR. BLOCK.

④

14	12100	→ TOP OF CURB
17.5	12190	→ "
10.5	13100	→ "

⑤

STA 3+62.5 - CLEAR

STA 3+73 - GALV LADDER (18" CLEAR)
w/26" HANDRAILS - G-F w/
SOME CORROSION BELOW MAIN

STA 3+92.5 - CLEAR

STA 4+23.5 - CLEAR

STA 4+55.5 - CLEAR

STA 4+72.5 - GALV LADDER (18" CLEAR)
w/26" HANDRAILS - F.P. w/ BULKHEAD
SIDE CHAIRS AND CORROSION

STA 4+86 - CLEAR

STA 5+17.5 - CLEAR

STA 5+13 - 5+45 - DAMAGED CLEAR

STA 5+23 - 5+42 - MISSING UHMW FORMAL
* RUBBER (IMBALS OF)

STA 5+44 - CLEAR

STA 5+80.5 - CLEAR

STA 5+85.5 - GALV LADDER (18" CLEAR)
w/24" HANDRAILS - G-F - CORROSION

STA 5+86 - 5+91 - DAMAGED (HOLES) MISSING
UHMW RUBBER

STA 5+91 - CORNER OF WALL

⑥

INSPECTION NOTES

- STA 10100 - STA 2+30 - AND OBSERVED
SUBSIDENCE BEHIND SSP (POSSIBLY
OBSCURED BY VEGETATION)

- STA 2+32 - STA 2+40 - 16" W X 5" D
SUBSIDENCE

* HOLE CUT IN SSP

- STA 2+95 - 12" X 12" X 3" SUBSIDENCE

- STA 6+90 - FIRE MOUNT 5' FROM TOP
OF WALL - PROTECTED BY 4 BOLLARDS
42" HIGH, 42" O.C. EN

- STA 7+57 - 48" L X 12" W X 1.5" D
SUBSIDENCE BEHIND SSP

- STA 10+80 - FIRE MOUNT 5' FROM
TOP OF WALL - UNPROTECTED

- STA 12+12 - 24" L X 8" W X 1.5" D SUBSIDENCE

STA 11 198 - FENDER PILE w/ SOME ROT
AND MINIMAL WEAR

STA 12112 - CLEAR / FENDER PILE

STA 12120 - FENDER PILE w/ SIG ROT

STA 12133 - FENDER PILE w/ SOME ROT
AND WEAR

STA 12137 - TIMBER GANGWAY (20' L)
POOR CONDITION - 36" CLEAR

ATTACHED TO BULKHEAD w/ ROPS

STA 12145 - FENDER PILE - FAIR (WORN)

STA 12151 - CLEAR

STA 12157 - FENDER PILE POOR (ROT
AND FIRE DAMAGE)

STA 12157 - 12180 - FIRE DAMAGE TO
TOP AND BOTTOM WALK

STA 12167 - FENDER PILE w/ ROT
AND FIRE DAMAGE (POOR)

STA 12180 - FENDER PILE w/ SOME
FIRE DAMAGE AND WEAR (F-P)

STA 12182 - CLEAR

STA 12188 - GALV LADDER (5" CLEAR + GOOD)

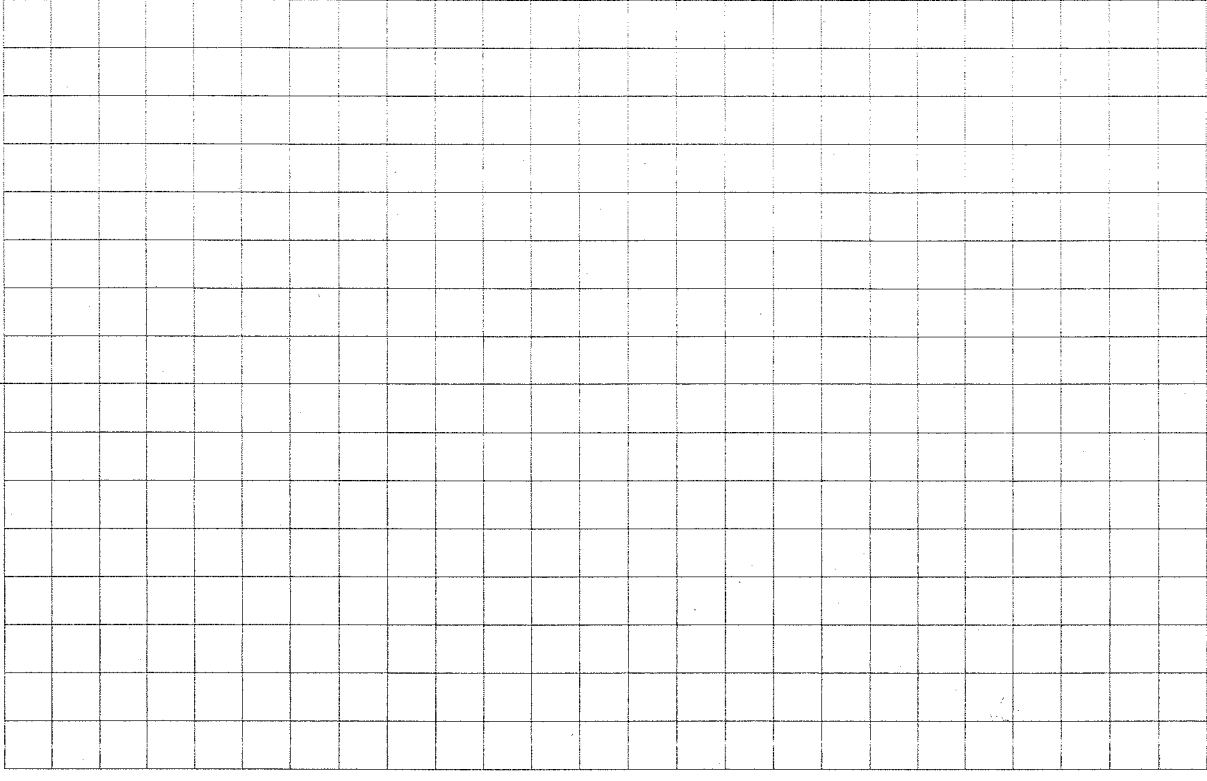
STA 12190 - FENDER PILE (F-P - ROT / WEAR)

STA 12+90-12+93- RUTTED / ENDS OF
SSR + TIMBER FENDERS

STA 12+93-13+07- 30" THICK CONC.
BULKHEAD WALL

STA 12+93-12+95- SPALL CONC
CORNER CONC. WALL

STA 13+07- CORNER OF WALL





CHILDS ENGINEERING CORPORATION

Waterfront and Structural Engineering

BOX 333, MEDFIELD, MA 02052

JOB Homer Pier

SHEET NO. 2 OF 6

CALCULATED BY PDI DATE _____

CHECKED BY _____ DATE _____

SCALE _____

- Homer Pier - (11/17/00 Pier was called Leonard Pier)
Bob Co Diver in -> 10:00 out: 11:30 (SSA)

Beet traffic big problem, talked to harbor master about controlling
Beet coming and going

visibility = 6'

Station 4100

Safety ladder -> Bottom (junk-some type)

tie back bolts in good condition approx +2'

Station 4100 D-meters

2' to 1/2 Black by-product on sheet at MLW + 2' matters O.K.

MLW

outside flange	web	inside flange
.440	.300	.445

Mid

outside	web	inside
.460	.330	.460

Dot 1386

outside	web	inside
---------	-----	--------

ML

.450	.305	.455
------	------	------

(1/2 of Black by product)

Dot Ready 1392

at Sta 4130 -

Sheet deformed out of shape from Mid to ML

Bar welded to sheet starting at MLW and running down to ML

Bars are Heavy I-beams

Bars are 1" thick

345-342 photos of Bar at Sta 4168



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JOB Harbor Dike

SHEET NO. 2 OF 6

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

at Sta 4+77 tie back Bolts are now located Below Mean Low Water

346 - 349 photo of tie-back Bolts & knuckles at MLW

LI at Sta 5+00

MHW existing 98% intact
outer flange
.500

Below MHW steel Bars
at Mid - 90% coating intact > steel look smooth & full section at
ML - 90% coating intact ML & mid Elevations

Typical light marine growth

First corner at station 5+91

Station 6+00

Steel 98 coating

ML Reading with Steel Bar (.98) Pot Reading 410
- web = .390
inside .530

Mid Outside web inside Flange Pot Reading -> 393
.525 .370 .505

from MLW & No coating steel is still smooth



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JOB Homer Pier
SHEET NO. 2 OF 3
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

Station 6+00 continued

MHW outside Web inside
.505 .350 .535 pot Reading .399

Steel 02 coating. From MHW + with surface rust only

Station 6:10 - 7+00 coating looks 100% ok

Station 6+80

MHW 100% coated above MHW coating 50% intact
mid 100% coated sheets
ML 100% coated sheets

LI

Station 7+00 coating is intact on plate which terminates at mid

MHW → coating 100% intact
mid → coating 100% intact
ML → coating 100% intact

above MHW coating is ~~in~~ 50% intact

Inspection of corner dolphin piles station 7+38

second wrap + loose & broken-up ship is in contact with
stainless steel wire rope wrapping the piles

all piles in cluster are in good condition

Diver out 11:30 AM 11/18/02



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JOB Homer Pier

SHEET NO. 4 OF 4

CALCULATED BY PDI DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Second Diver on 11/18/08 Diver in 1:30 pm - out at 3:00

working up from Station 7+38

Station 8+00

MH →

containing 100% intact + 2" Plate containing 80% on plate with 1/8" pot Deep and 1/4"

MH → outside

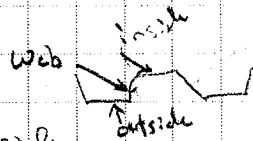
→ 1975

Reading plate only

web .335

inside string 490

Pot Reading .419



MID →

outside .525

web .345

inside .505

Pot Reading .368

No open steel

containing ~~100%~~ 100% intact

MHW →

containing ~~90%~~ 90% intact
outside .495

web .355

inside .475

Pot Reading .401

Station 8+10 - 10+10

knuckle start casting on

~~plate~~

outside finger of knuckle



at the MH

→ concrete work
modification

Station 9+00 LTH

~~MHW~~

MHW → 3/8" thick connection by-product with putting 1/4" D x 1/4"

steel just stud to get waves in it

MID → same as MH with 1/8" potting x 1/4"



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JOB Howe Pier

SHEET NO. 5 OF 5

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Station 10+15
Coating at MLW is Blistering off

continued -

Station 9+00
LI at MLW: steel generally $\frac{1}{8}$ " pitted with $\frac{1}{4}$ " by-product
coating 0.02 intact

Station 10+15 coating at and above MLW is Blistering off sheathing

Station 10+00

MLW	outside	web	inside	Pot Reading
Readings	.530	.355	.515	.379

condition of steel: no coating, steel is flat and smooth -

mid	outside	web	inside	Pot Reading
Readings	.460	.320	.460	.393

$\frac{1}{4}$ " by-product with waves in steel

ML	outside	web	inside	Pot Reading
Reading	.470	.305	.490	.388

condition of steel $\frac{1}{4}$ " by-product on surface of steel

Station 11+00
MLW $\frac{1}{4}$ " corrosion by product steel is corroding

mid $\frac{1}{8}$ " by-product steel smooth

MLW - No coating with $\frac{1}{8}$ " corrosion by product



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JOB Harbor Pier

SHEET NO. 6 OF 6

CALCULATED BY PDI DATE _____

CHECKED BY _____ DATE _____

SCALE _____

at Station 11+88

Station 12+00

mhw is 4' Below mhw at this Station

mhw	outside	web	inside	Pol Reinforcing
Rebar	.365			.352

condition of steel heavy piling $\frac{1}{8}$ " D x $\frac{1}{4}$ " ϕ No coating

mhw	outside	web	inside	Pol Reinforcing
	.435	.320	.475	.352

timber fender resting down at mudline
12" at top and 8" at mudline

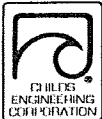
Station 12+50 - 12+60

Fender pile with float tied off to ~~have~~ have 1" loss due to abrasion

Organ by ~~product~~ on steel bulkhead (Typ.)

A

13+02 - 1260 Fender pile o.k. no defect noted



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JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Homer's Pier
~~Reinforced Pier~~

POI

Sheetpile Sta 0+00

.435 out fl
.365 web @ MLW
.485 in fl

.465
- moneading @ ML .304 pot. reading
.465

1+00 LIII Steel good

40% coating intact @ ML
Brown primer 90% intact

Primer - 90% intact M.S.
Coat 100% intact steel smooth

Steel Pitted $\frac{1}{8}$ " d x $\frac{1}{4}$ " ϕ MLW
Primer - 15% intact
Coating same

2+00 LIII out fl 365
web 240
in fl 455

ML Pot lead .256 steel smooth
coating 105% intact
100% primer intact

out fl 455"
web 300"
in fl 435"

Mid Pot Lead .274 steel smooth
coating 105% intact
100%

out fl 325"
web 250"
in fl 455"

Pot Lead MLW .276 steel out fl pitted
5% coating intact
& primer



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JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Hollows Bar

Sta 3+00 LII

MLW: key pitted $\frac{1}{4}'' \times \frac{1}{8}''$ deep
Coating 20% intact
Primer 20% intact

mid: steel smooth, small pitting
Primer & Coating 40% intact

Coating
ML: Primer 60% intact
steel smooth