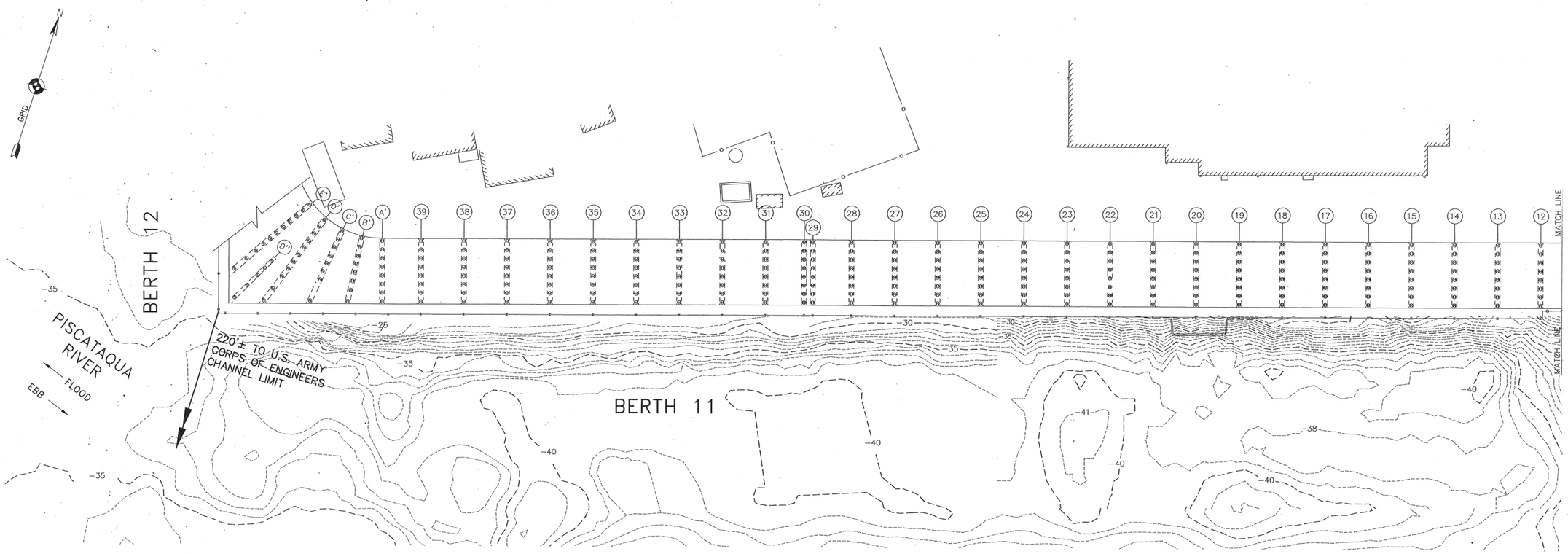
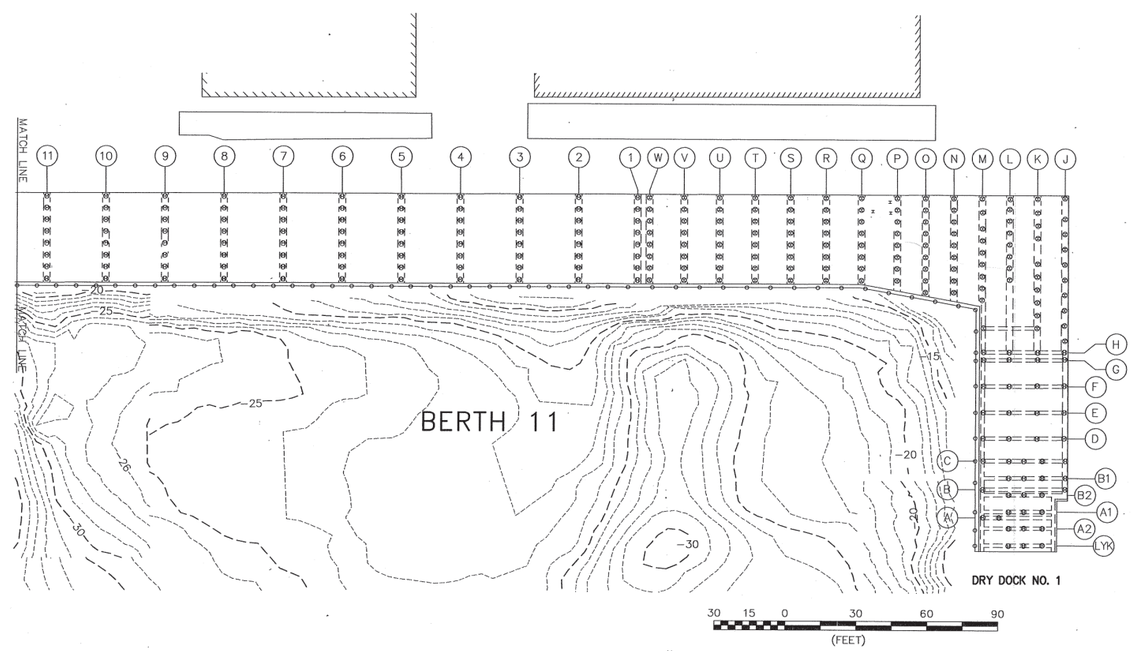


LEGEND:

- 1' HYDROGRAPHIC CONTOUR INTERVAL
- 5' HYDROGRAPHIC CONTOUR INTERVAL
- (42) EXISTING PILE BENT LOCATIONS
- EXISTING BUILDING
- EXISTING WHARF SUPPORT PILES IN CONCRETE JACKETS

NOTES:

1. HYDROGRAPHIC CONTOUR INFORMATION FROM "HYDROGRAPHIC CONTOURS, BERTHS 1, 11, 12, 13 & 14, BY APPLEDORE ENGINEERING, INC., REV. B DATED 9/97.
2. CONTOURS ARE IN FEET BASED ON M.L.L.W. DATUM (1960 – 1978 EPOCH).



ARCH.
MECH.
ELEC.
CIV. STR.
PRNGR.
DATE
SATISFACTORY TO
DATE
SATISFACTORY TO
DATE
HEAD, ENGINEERING DIVISION
APPROVED
NAVAL FACILITIES ENGINEER

REVISION	DATE	DESCRIPTION	BY
		REVISIONS	

Appledore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-8818 ...ae@m.unnew.com

DESIGN: OSST DRWN: NJS CHK: RRB SUPV: RHS
DESIGNED: RAYMOND H. SNOVER TITLE: Vice President DATE: 10/30/98

THE STATE OF NEW HAMPSHIRE ROBERT HAYMAN SNOVER No. 6380 PROFESSIONAL ENGINEER

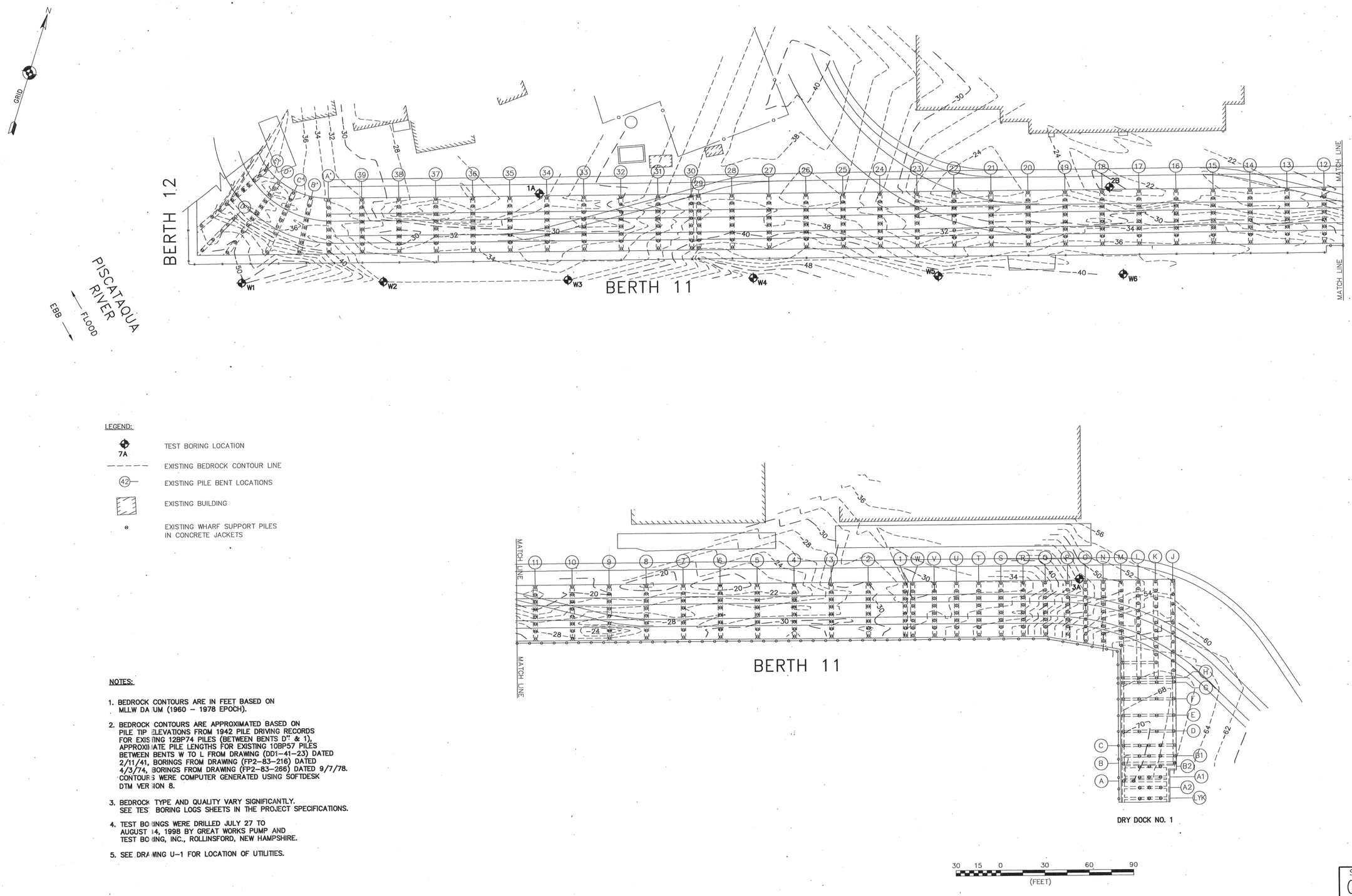
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

HYDROGRAPHIC PLAN

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196004
SHEET 5 OF 36
FW NO. FP2-98-376

AD(1243A)/FP2-376.DWG

UNCLASSIFIED



LEGEND:

- 7A — TEST BORING LOCATION
- EXISTING BEDROCK CONTOUR LINE
- (42) — EXISTING PILE BENT LOCATIONS
- EXISTING BUILDING
- EXISTING WHARF SUPPORT PILES IN CONCRETE JACKETS

NOTES:

1. BEDROCK CONTOURS ARE IN FEET BASED ON MLLW DATUM (1960 – 1978 EPOCH).
2. BEDROCK CONTOURS ARE APPROXIMATED BASED ON PILE TIP ELEVATIONS FROM 1942 PILE DRIVING RECORDS FOR EXISTING 12BP74 PILES (BETWEEN BENTS D' & 1), APPROXIMATE PILE LENGTHS FOR EXISTING 10BP57 PILES BETWEEN BENTS W TO L FROM DRAWING (DD1–41–23) DATED 2/11/41, BORINGS FROM DRAWING (FP2–83–216) DATED 4/3/74, BORINGS FROM DRAWING (FP2–83–266) DATED 9/7/78. CONTOURS WERE COMPUTER GENERATED USING SOFTDESK DTM VERSION 8.
3. BEDROCK TYPE AND QUALITY VARY SIGNIFICANTLY. SEE TEST BORING LOGS SHEETS IN THE PROJECT SPECIFICATIONS.
4. TEST BORINGS WERE DRILLED JULY 27 TO AUGUST 14, 1998 BY GREAT WORKS PUMP AND TEST BORING, INC., ROLLINSFORD, NEW HAMPSHIRE.
5. SEE DRAWING U–1 FOR LOCATION OF UTILITIES.

REVISIONS

REVISION	DATE	DESCRIPTION	BY

ARCH. CIV. STR.
MECH. PMWR.
ELEC.

SATISFACTORY TO ... DATE 11/5/98
SATISFACTORY TO ... DATE 11/27/98
FINAL INSPECTION BRANCH: APPROVED ... DATE 12/1/98

Appledore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
207/436-7100 www.appledoreengineering.com
DESIGN: DCM DRWN: NJE CHK: RRB SUPV: SMS
SUBMITTED BY: Robert N. Snyder Vice President 10/30/98
(SEAL) TITLE DATE
STATE OF NEW HAMPSHIRE ROBERT N. SNYDER No. 6330 PROFESSIONAL ENGINEER

NAVAL FACILITIES ENGINEERING COMMAND
DEPARTMENT OF THE NAVY
NAVAL SHIPYARD PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

SUBSURFACE PLAN

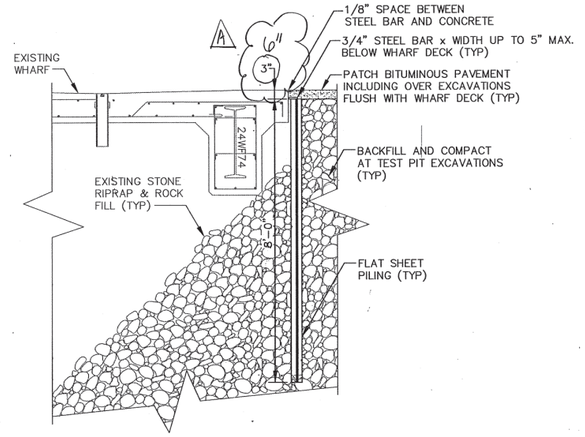
CODE I.D. NO.	80091
DRAWING SIZE:	D
CONST. CONT. NO.	N62472–98–C–6547
SPEC.	04–98–6547
NAVFAC DRAWING NO.	2196005
SHT C3	SHEET 6 OF 36
	PW NO. FP2–98–377

UNCLASSIFIED

AE(1243A)/FP2-377.DWG

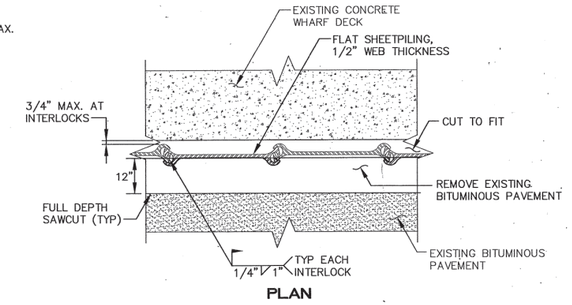
SHOTCRETE LOCATIONS

BENT LOCATION	DESCRIPTION OF VOID(S)	ESTIMATED QUANTITY OF SHOTCRETE (CF)
B TO B1	6'L x 16"H x 6"D, 10'L X 5"H X 1'D	8
B1 TO C	4'L X 6" H x 4"D, 6'L X 9" H X 1'D	5
C TO D	REMOVE TIMBER FORM END,	
	FILL VOID 7'L X 8"W X 1'D, 2'L X 4"H X 3"D	5
E TO F	1'H X 2.5'D x 3'L, 2'L X 2.5'D X 8"H, 2"H X 2.5'D X 2'H,	
	4'L X 2.5'D x 3"H, 4'L X 2'D X 6"H	24
F TO G	3'W X 2.4'H x 1.5'D – (2' DIA. PIPE TO BE CUT AT WALL,	
	AND FILLED), 4.5'L X 4"H 1.5'D, 7'L X 1.5'H X 1.3' D,	
	4'L X 2.5'H x 1.5'D – (2.8' X 1.5'), 8"L X 2'H X 1.5'D	40
G TO H	6'L X 1.5'H x 1.5'D	14
K TO L	25'W X 19"H X 3.5'D, 3'L X 8"H X 18"D	142
L TO M	25'W X 2'H x 4.5'D (BACK TO STEEL BULKHEAD)	225
N TO O	12"H X 2'D x 10'L UNDER MASS CONC.	20
O TO P	10'L x 1.5'D X 1'H UNDER MASS CONC.	15
3 TO 4	2'D X 18"H x L (VOID AT BENT 4 DUCT BANK) CIP CONC.	9
4 TO 5	VOID 2'D X .5'H X 3'L @ DUCT	9
9 TO 10	VOIDS TO 12' D @ MASS CONC.	21
11 TO 12	TOP SLOPE VOID BACK 4.5' UNDER CONC. FILL	56
14 TO 15	6"H X 3'D x 25'L UNDER CIP CONC. MASS	38
15 TO 16	17"H X 4'D x 25'L UNDER CIP CONC. MASS	142
16 TO 17	12"H X 3.5'D X 25'L UNDER MASS CONC.	88
20 TO 21	12" H X 4'W X8' D	12
23 TO 24	3'D X 10"H 5'L VOID UNDER MASS CONC.	13
30 TO 31	12"H X 6'L UNDER MASS CONC.	6



BULKHEAD DETAIL (TYP)

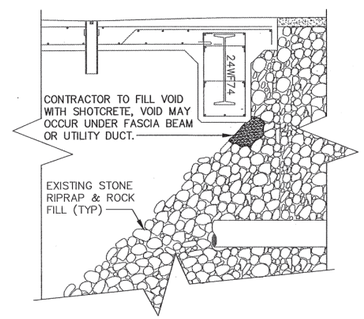
2 1 0 2 4 6 (FEET)



PLAN

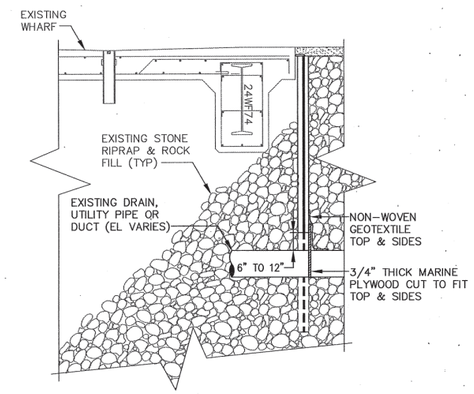
SHEETPILE DRIVING DETAIL (TYP)

1 1/2 0 1 2 3 (FEET)



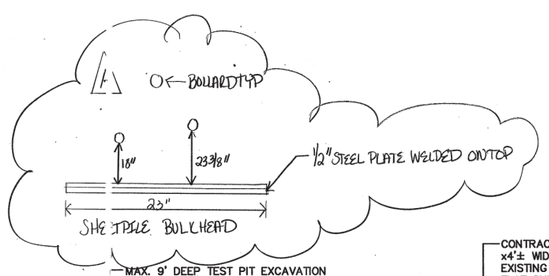
SHOTCRETE DETAIL

2 1 0 2 4 6 (FEET)

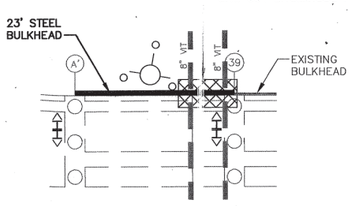


PENETRATION THROUGH BULKHEAD DETAIL

2 1 0 2 4 6 (FEET)

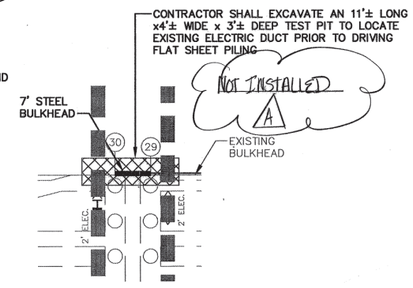


MAX. 9' DEEP TEST PIT EXCAVATION TO FIELD VERIFY LOCATION AND ELEVATION OF DRAIN AND UTILITIES, SAW CUT BITUMINOUS PAVEMENT AROUND



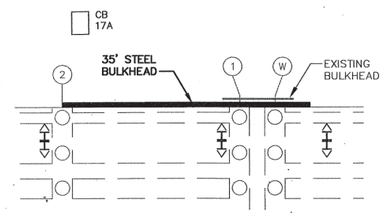
BULKHEAD PARTIAL PLAN

10 5 0 10 20 30 (FEET)



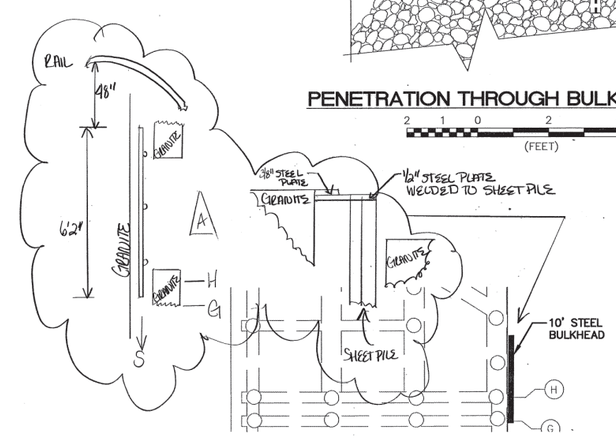
BULKHEAD PARTIAL PLAN

10 5 0 10 20 30 (FEET)



BULKHEAD PARTIAL PLAN

10 5 0 10 20 30 (FEET)



BULKHEAD PARTIAL PLAN

10 5 0 10 20 30 (FEET)

LEGEND:

- (66) EXISTING PILE BENT LOCATIONS
- STEEL BULKHEAD
- EXISTING STEEL BULKHEAD
- 8"VIT EXISTING UTILITY LINES

NOTES:

1. CONTRACTOR SHALL EXCAVATE TEST PITS (MAXIMUM 9' DEEP) AT BURIED DRAIN AND UTILITY CROSSINGS TO FIELD VERIFY DRAIN/UTILITY LOCATION AND ELEVATION. BULKHEAD SHEETS SHALL BE CAREFULLY INSTALLED AROUND DRAIN/UTILITY LINES MAINTAINING 6" MIN. TO 12" MAX. CLEAR ABOVE AND TO BOTH SIDES. A PIECE OF 3/4" THICK MARINE GRADE PLYWOOD SHALL BE CUT TO FIT OVER THE DRAIN/UTILITY PIPE OR DUCT AND LAP (12" MIN.) ONTO THE INSHORE FACE OF THE BULKHEAD. THE PLYWOOD SHALL BE COVERED WITH NON-WOVEN GEOTEXTILE (POLYPROPYLENE 4 OZ./SY MIN.) LAPPED ONTO THE DRAIN/UTILITY AND BULKHEAD A MINIMUM OF 12".
2. BACKFILL ALL EXCAVATIONS IN ACCORDANCE WITH SPECIFICATION SECTION 02221.

REVISIONS			
A	DRAWN REVISED PER ASBUILT		
REVISION	DATE	DESCRIPTION	BY

ARCH. CIV. STR. MECH. PRNGR. ELEC.
SATISFACTORY TO DATE 1/9/01
SATISFACTORY TO DATE 1/9/01
HEAD, ENGINEERING BRANCH DATE 1/9/01
APPROVED HEAD, FACILITIES DIVISION DATE 12/29/00

Applecore Engineering Inc.
800 Slade Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-8818 - ae@mv.ultranet.com
DESIGN: DJW DRWN: N.E. CHK: RRG SUPV: RMS
Vice President 10/30/98
TITLE DATE

THE STATE OF NEW HAMPSHIRE ROBERT M. SNOVER No. 5300 LICENSED PROFESSIONAL ENGINEER
(SEAL) 12/29/00

DEPARTMENT OF THE NAVY
NAVAL SHIPYARD PORTSMOUTH, N.H.
NAVAL FACILITIES ENGINEERING COMMAND

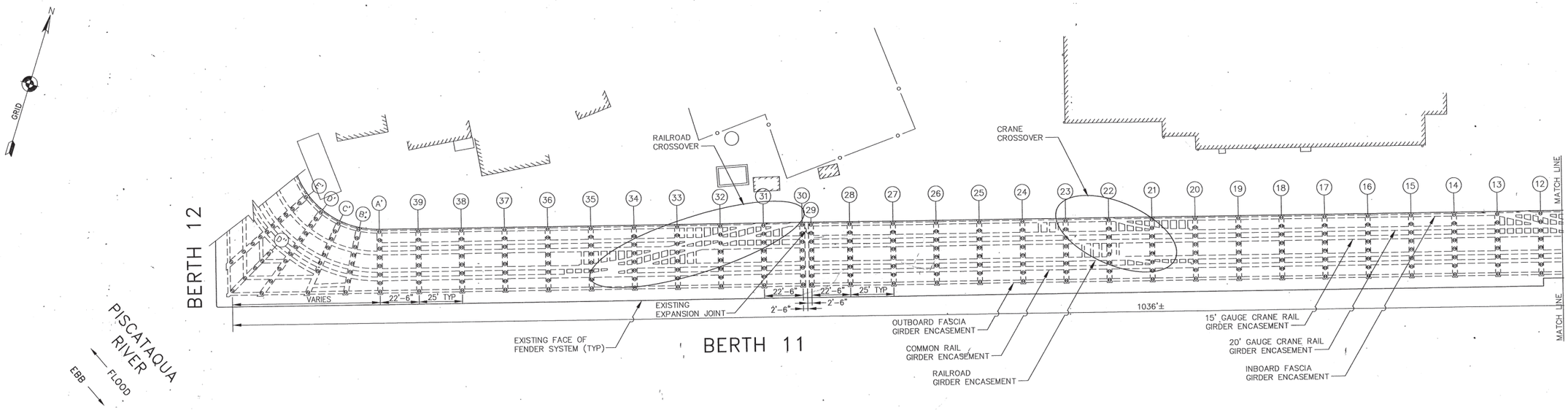
STRUCTURALLY REPAIR BERTH 11

BULKHEAD REPAIR PLANS AND DETAILS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196006
SHT C4
SHEET 7 OF 36
PW NO. FP2-98-378

UNCLASSIFIED

AE(1243a)/FP2-378.DWG



LEGEND:

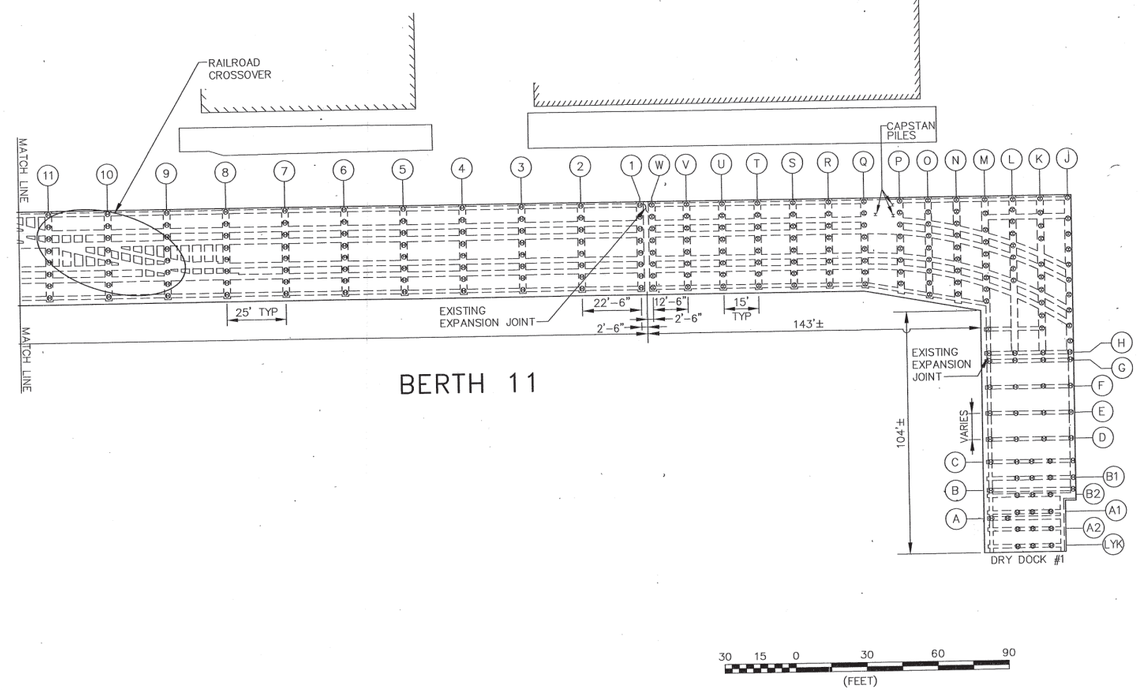
(42)— EXISTING PILE BENT LOCATIONS

EXISTING BUILDING

EXISTING WHARF SUPPORT PILES IN CONCRETE JACKETS

NOTES:

1. SEE SHEET S-2 FOR EXISTING FENDER SYSTEM ELEVATIONS.
2. SEE SHEET S-3 FOR EXISTING WHARF SECTIONS.
3. EXISTING FRAMING SHOWN IS BASED ON GOVERNMENT ARCHIVE DRAWINGS. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND FRAMING LAYOUT.



30 15 0 30 60 90
(FEET)

REVISIONS			
REVISION	DATE	DESCRIPTION	BY

ARCH. CIV. STR.
MECH. PNMR.
ELEC.

SATISFACTORY TO DATE 7/15/97
SATISFACTORY TO DATE 7/15/97
FIELD DIVISION/BRANCH DATE 7/15/97
APPROVED DATE 11/12/97

Appledore Engineering Inc.
800 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-8818
email@appledoreengineering.com
DESIGNED BY: Chrn. N.E. Chkd. RGS Supv. RJS
DRAWN BY: Robert N. Shaw
Vice President 10/30/98
TITLE DATE
(SIGNED)

STATE OF NEW HAMPSHIRE ROBERT NOVER SHAW No. 5030 PROFESSIONAL ENGINEER (SEAL)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD PORTSMOUTH, N.H.

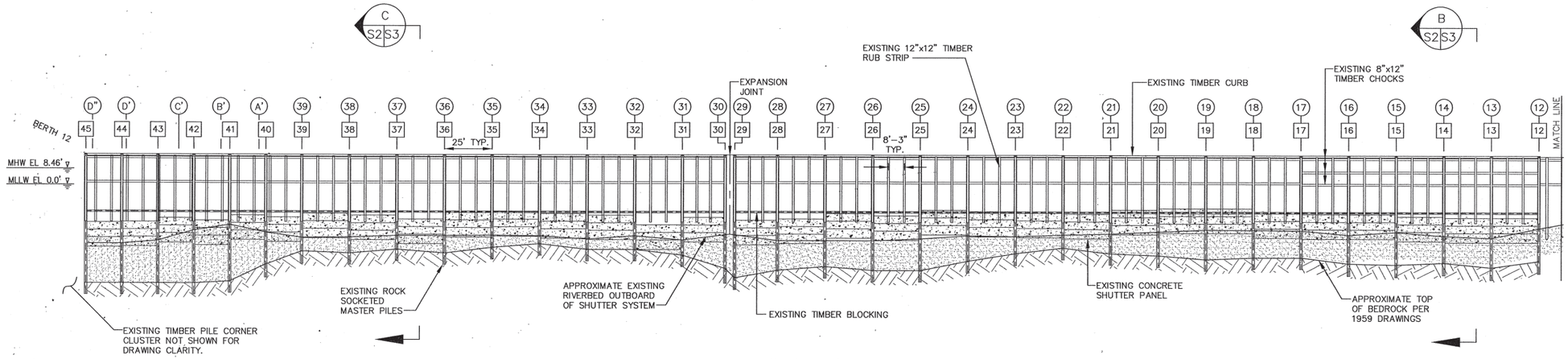
STRUCTURALLY REPAIR BERTH 11

EXISTING PILE AND FRAMING PLAN

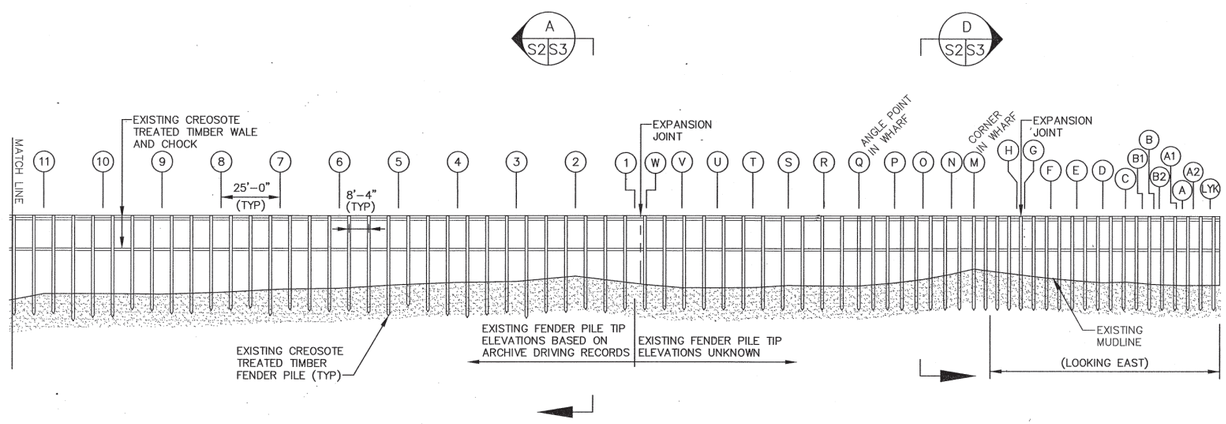
CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196007
SHT S1
SHEET 8 OF 36
PW NO. FP2-98-379

UNCLASSIFIED

AE(1243A)/FP2-379.DWG



BERTH 11 FENDER SYSTEM
(LOOKING NORTH)



BERTH 11 FENDER SYSTEM
(LOOKING NORTH)

NOTES:

1. DRAWING BASED ON PNSY PUBLIC WORKS ARCHIVE DRAWINGS, UTILITY PLATES, AND FIELD LOCATION.
2. ACTUAL TIMBER PILE TIP ELEVATIONS FROM BENT LYK TO BENT W ARE UNKNOWN.
3. THERE IS SUBSTANTIAL DEBRIS ON THE BOTTOM IN FRONT OF AND BEHIND THE CONCRETE SHUTTER PANELS. DEBRIS INCLUDES BUT IS NOT LIMITED TO: TIMBERS, ELECTRICAL CABLES, STAGING, BOULDERS AND MISCELLANEOUS METALS. THE CONTRACTOR SHALL REMOVE ALL DEBRIS IN WAY OF CONSTRUCTION.

LEGEND:

(15) PILE BENT DESIGNATION

[12] MASTER PILE DESIGNATION

30 15 0 30 60 90
(FEET)

REVISION	DATE	DESCRIPTION	BY

REVISIONS

ARCH. CIV. STR.
MECH. PNWR.
ELEC.
SATISFACTORY TO DATE 11/3/99
SATISFACTORY TO DATE 11/3/99
HEAD, ENGINEERING APPROVED DATE 11/4/99
DESIGN ENGINEER

Applecdore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-6818
ae@ae.u.ultranet.com

DESIGN: DCM DRWN: NJE CHK: RRB SUPV: RMS
SUPV. ENGINEER Robert M. Snover Vice President 10/30/98
(SIGNED) TITLE DATE

THE STATE OF NEW HAMPSHIRE ROBERT M. SNOVER No. 6330 Registered PROFESSIONAL ENGINEER
Robert M. Snover
(SEAL)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

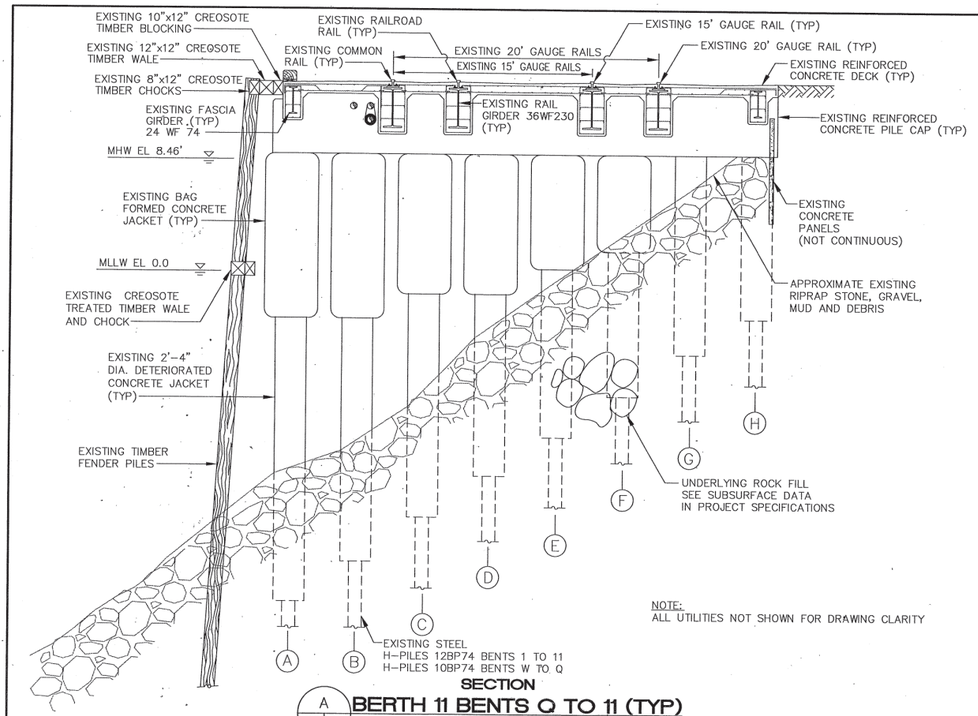
EXISTING FENDER SYSTEM ELEVATIONS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196008
SHEET 9 OF 36
PW NO. FP2-98-380

S2

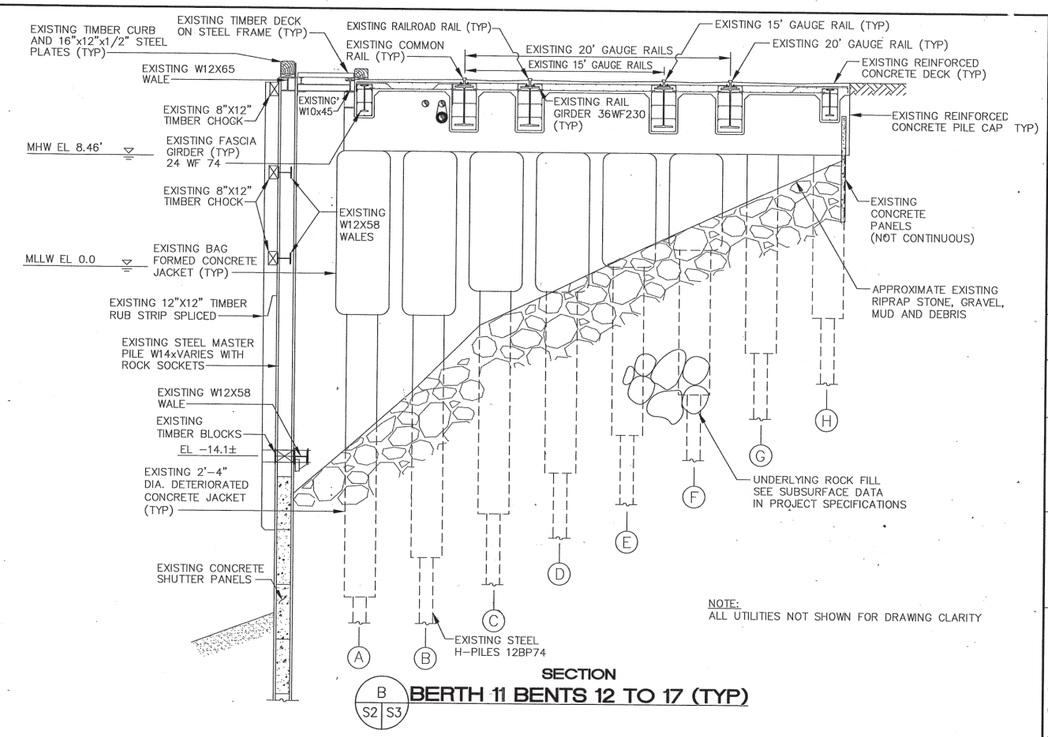
A0(1243A)/FP2-380.DWG

UNCLASSIFIED



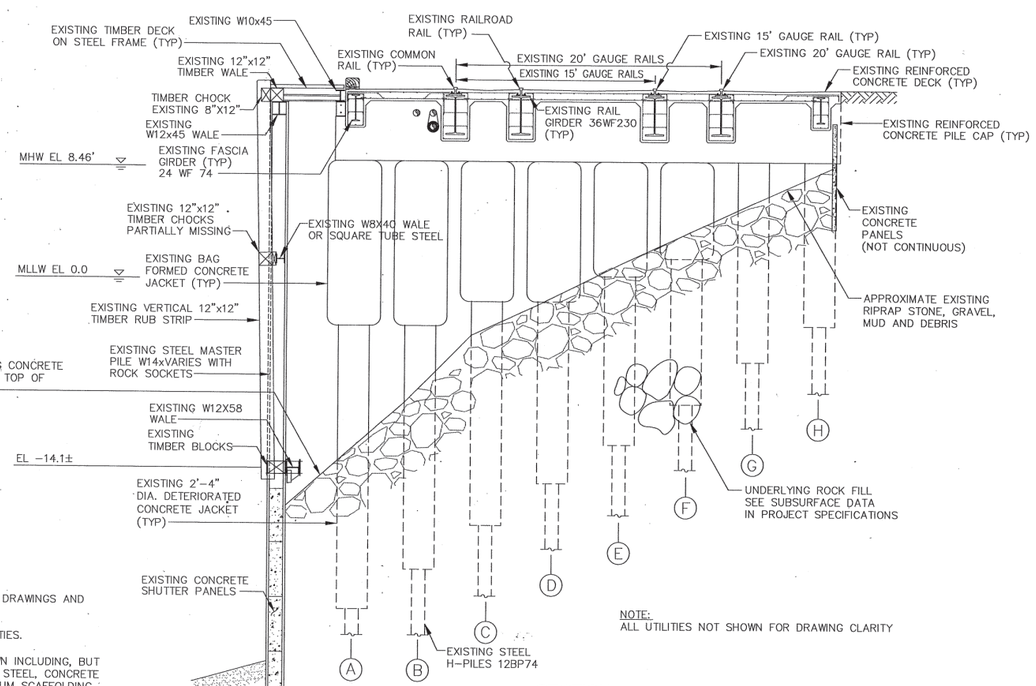
NOTE:
ALL UTILITIES NOT SHOWN FOR DRAWING CLARITY

SECTION
A / S2 S3 BERTH 11 BENTS Q TO 11 (TYP)



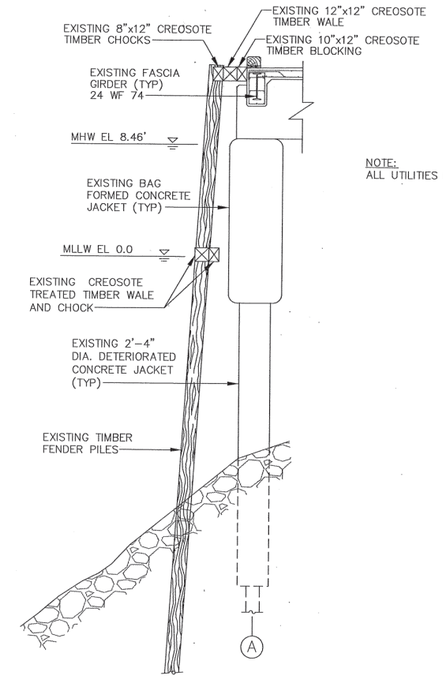
NOTE:
ALL UTILITIES NOT SHOWN FOR DRAWING CLARITY

SECTION
B / S2 S3 BERTH 11 BENTS 12 TO 17 (TYP)



NOTE:
ALL UTILITIES NOT SHOWN FOR DRAWING CLARITY

SECTION
C / S2 S3 BERTH 11 BENTS 18 TO D" (TYP)



NOTE:
ALL UTILITIES NOT SHOWN FOR DRAWING CLARITY

SECTION
D / S2 S3 BERTH 11 BENTS LYK TO P (TYP)

LEGEND:

(A) PILE DESIGNATION

NOTES:

1. SECTION BASED ON PNSY PUBLIC WORKS ARCHIVE DRAWINGS AND DIVING INSPECTION.
2. SEE SHEETS U1, U2 & U3 FOR LOCATION OF UTILITIES.
3. UNDER WHARF SLOPE CONTAINS DEBRIS NOT SHOWN INCLUDING, BUT NOT LIMITED TO, STEEL PIPE, REBAR, STRUCTURAL STEEL, CONCRETE RUBBLE, ELECTRICAL WIRING AND CONDUIT, ALUMINUM SCAFFOLDING, WIRE ROPE, BOULDERS AND CORD NETTING.
4. ALL TIMBER IS TYPICALLY CREOSOTE TREATED.

4 2 0 4 8 12
(FEET)

REVISION	DATE	DESCRIPTION	BY

REVISIONS

ARCH. CIV. STR.
MECH. PNMR.
ELEC.

SATISFACTORY TO DATE 11/3/99
SATISFACTORY TO DATE
HEAD, ENGINEERING DIV. DATE 11/3/99
APPROVED DATE 11/4/99
HEAD, FACILITIES ENGINEERING DIV.

Appledore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-8818 ae@ch.ultranet.com
DESIGN: DCM DRAN: NJE CHK: RRB SUPV: RWS
ESIGN: DCM DRAN: NJE
CHK: RRB SUPV: RWS
APPROVED: Vice President 10/29/98
TITLE DATE
LICENSED

THE STATE OF NEW HAMPSHIRE ROBERT M. SNOVER No. 6962 LICENSED PROFESSIONAL ENGINEER

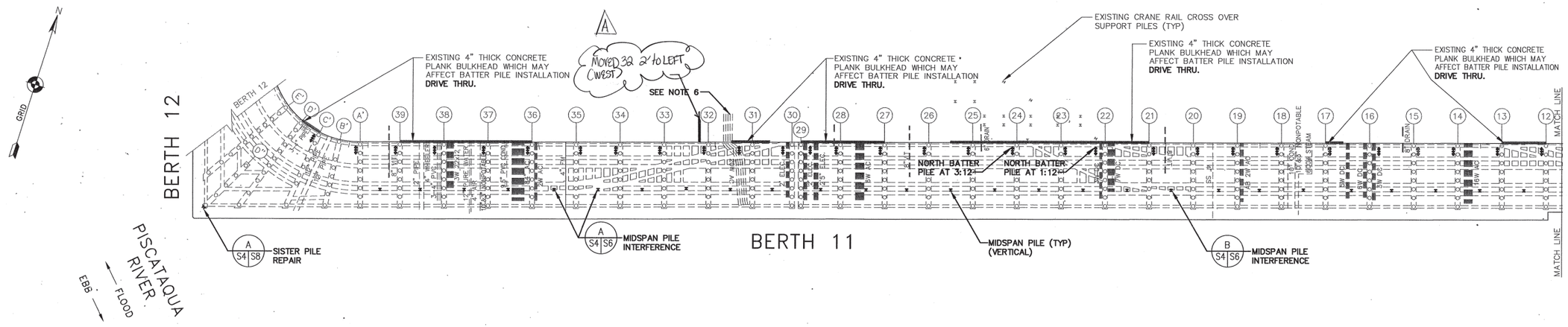
DEPARTMENT OF THE NAVY
NAVAL SHIPYARD PORTSMOUTH, N.H.
NAVAL FACILITIES ENGINEERING COMMAND
STRUCTURALLY REPAIR BERTH 11

TYPICAL WHARF SECTIONS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196009
SHEET 10 OF 36
PW NO. FP2-98-381
S3

AE(1243A)/FP2-381.DWG

UNCLASSIFIED



HP14X117 BATTER PILES

NORTH PILE							SOUTH PILE				
REFERENCE PILE BENT	DISTANCE FROM CENTERLINE OF REFERENCE PILE BENT *	EST. ROCK ELEVATION (BASED ON 1942 PILE DRIVING RECORDS)	ANTICIPATED PILE TIP ELEVATION	CUTOFF ELEVATION (REF.)	OFFCUT ALLOWANCE	TOTAL EST. PILE LENGTH (FOR BIDDING PURPOSES)	EST. ROCK ELEVATION (BASED ON 1942 PILE DRIVING RECORDS)	ANTICIPATED PILE TIP ELEVATION	CUTOFF ELEVATION (REF.)	OFFCUT ALLOWANCE	TOTAL EST. PILE LENGTH (FOR BIDDING PURPOSES)
R	7.5'	-42.0'	-44.0'	11.4'	12'	74'	-36.4'	-38.4'	11.4'	12'	68'
T	7.5'	-35.3'	-37.3'	11.4'	12'	67'	-34.0'	-36.0'	11.4'	12'	65'
V	7.5'	-32.6'	-34.6'	11.4'	12'	64'	-31.8'	-33.8'	11.4'	12'	63'
1	3.5'	-31.5'	-33.5'	11.4'	7'	57'	-30.9'	-32.9'	11.4'	7'	57'
2	3.5'	-31.8'	-33.8'	11.4'	7'	58'	-29.3'	-31.3'	11.4'	7'	55'
3	3.5'	-29.3'	-31.3'	11.4'	7'	55'	-29.2'	-31.2'	11.4'	7'	55'
4	5.3'	-25.0'	-27.0'	11.4'	7'	50'	-29.0'	-31.0'	11.4'	7'	55'
5	3.5'	-22.1'	-24.1'	11.4'	7'	47'	-28.2'	-30.2'	11.4'	7'	54'
6	3.5'	-23.4'	-25.4'	11.4'	7'	48'	-27.7'	-29.7'	11.4'	7'	53'
7	3.5'	-20.9'	-23.9'	11.4'	7'	47'	-26.0'	-29.0'	11.4'	7'	52'
8	3.5'	-23.6'	-26.6'	11.4'	7'	50'	-27.4'	-30.4'	11.4'	7'	54'
9	3.5'(E)	-21.8'	-24.8'	11.4'	7'	48'	-28.9'	-31.9'	11.4'	7'	56'
10	5.3'	-23.3'	-26.3'	11.4'	7'	49'	-25.7'	-28.7'	11.4'	7'	52'
11	3.5'	-23.4'	-26.4'	11.4'	7'	50'	-22.8'	-25.8'	11.4'	7'	49'
12	3.5'	-22.8'	-25.8'	11.4'	7'	49'	-30.3'	-33.3'	11.4'	7'	57'
13	3.5'	-22.2'	-25.2'	11.4'	7'	48'	-31.6'	-34.6'	11.4'	7'	59'
14	3.5'	-23.0'	-26.0'	11.4'	7'	49'	-30.5'	-33.5'	11.4'	7'	57'
15	3.5'(E)	-22.3'	-25.3'	11.4'	7'	48'	-35.6'	-38.6'	11.4'	7'	63'
16	5.3'(E)	-23.6'	-26.6'	11.4'	7'	50'	-34.5'	-37.5'	11.4'	7'	62'
17	3.5'(E)	-23.4'	-26.4'	11.4'	7'	50'	-33.6'	-36.6'	11.4'	7'	61'
18	3.5'	-20.5'	-22.5'	11.4'	7'	45'	-34.6'	-37.6'	11.4'	7'	62'
19	3.5'	-22.8'	-25.9'	11.4'	7'	49'	-32.7'	-34.8'	11.4'	7'	59'
20	3.5'(E)	-27.3'	-26.6'	11.4'	7'	50'	-30.5'	-33.5'	11.4'	7'	57'
21	3.5'(E)	-26.3'	-25.4'	11.4'	7'	48'	-32.7'	-35.7'	11.4'	7'	60'
22	5.3'	-25.0'	-25.7'	11.4'	7'	49'	-31.4'	-34.4'	11.4'	7'	58'
23	3.5'(E)	-27.5'	-28.9'	11.4'	7'	52'	-30.5'	-33.5'	11.4'	7'	57'
24	3.5'	-32.9'	-34.9'	11.4'	7'	59'	-34.7'	-37.7'	11.4'	7'	62'
25	3.5'	-36.8'	-38.8'	11.4'	7'	63'	-37.9'	-40.9'	11.4'	7'	65'
26	3.5'	-36.2'	-38.2'	11.4'	7'	63'	-41.9'	-43.9'	11.4'	7'	69'
27	3.5'	-37.7'	-39.7'	11.4'	7'	64'	-39.7'	-41.7'	11.4'	7'	66'
28	3.5'	-37.9'	-39.9'	11.4'	7'	64'	-40.8'	-42.8'	11.4'	7'	68'
29	5.3'(E)	-36.0'	-38.0'	11.4'	7'	62'	-39.2'	-41.2'	11.4'	7'	66'
30	5.3'	-35.8'	-37.8'	11.4'	7'	62'	-39.5'	-41.5'	11.4'	7'	66'
31	7.5'	-32.2'	-34.2'	11.4'	7'	58'	-36.0'	-37.7'	11.4'	7'	62'
32	3.5'	-30.4'	-32.4'	11.4'	7'	56'	-29.8'	-31.1'	11.4'	7'	55'
33	3.5'	-28.3'	-32.8'	11.4'	7'	57'	-29.6'	-30.8'	11.4'	7'	54'
34	3.5'	-25.7'	-33.4'	11.4'	7'	57'	-30.2'	-31.8'	11.4'	7'	55'
35	3.5'(E)	-25.4'	-32.5'	11.4'	7'	56'	-31.2'	-32.7'	11.4'	7'	56'
36	3.5'	-26.5'	-28.5'	11.4'	7'	52'	-31.5'	-33.1'	11.4'	7'	57'
37	3.5'	-26.6'	-28.6'	11.4'	7'	52'	-31.8'	-33.8'	11.4'	7'	58'
38	5.3'	-28.4'	-30.4'	11.4'	7'	54'	-29.1'	-31.4'	11.4'	7'	55'
39	3.5'	-30.9'	-32.9'	11.4'	7'	57'	-31.9'	-33.9'	11.4'	7'	58'
A'	3.5'	-33.2'	-35.2'	11.4'	7'	59'	-37.5'	-39.5'	11.4'	7'	64'
C'	3.5'	-36.6'	-38.6'	11.4'	7'	63'	-43.1'	-45.1'	11.4'	7'	70'

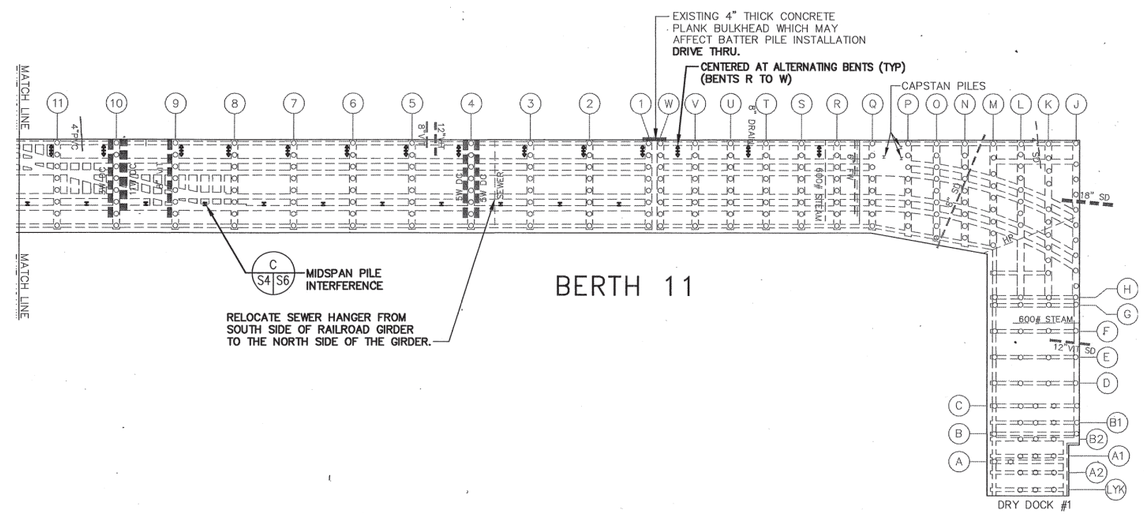
* DISTANCES ARE WEST OF REFERENCED PILE BENT UNLESS NOTED.

VERTICAL PILES

(W14x283 UNLESS OTHERWISE NOTED)

REFERENCE PILE BENT	DISTANCE WEST FROM CENTERLINE OF REF. PILE BENT	EST. ROCK ELEVATION (BASED ON 1942 PILE DRIVING RECORDS)	ANTICIPATED PILE TIP ELEVATION	CUTOFF ELEVATION (REF.)	OFFCUT ALLOWANCE	TOTAL EST. PILE LENGTH (FOR BIDDING PURPOSES)
1	12.5'	-29.9'	-31.9'	13.8'	5'	51'
2	12.5'	-30.1'	-32.1'	13.8'	5'	51'
3	12.5'	-30.5'	-32.5'	13.8'	5'	52'
4	12.5'	-30.0'	-32.0'	13.8'	5'	51'
5	12.5'	-28.3'	-30.3'	13.8'	5'	49'
6	12.5'	-28.1'	-30.1'	13.8'	5'	49'
7	12.5'	-28.8'	-31.8'	13.8'	5'	51'
8	12.5'	-29.0'	-32.0'	13.8'	5'	51'
9	12.5'	-28.6'	-31.6'	13.8'	5'	51'
10	12.5'	-27.2'	-30.2'	13.8'	5'	49'
11	12.5'	-28.7'	-31.7'	13.8'	5'	51'
12	12.5'	-32.0'	-35.0'	13.8'	5'	54'
13	12.5'	-32.1'	-35.1'	13.8'	5'	54'
14	12.5'	-33.3'	-36.3'	13.8'	5'	55'
15	12.5'	-35.0'	-38.0'	13.8'	5'	57'
16	10.25'	-34.1'	-37.1'	13.8'	5'	56'
17	12.5'	-34.2'	-37.2'	13.8'	5'	56'
18	12.5'	-34.0'	-37.0'	13.8'	5'	56'
19	10.5'	-32.0'	-35.0'	13.8'	5'	54'
20	12.5'	-32.0'	-35.0'	13.8'	5'	54'
21	12.5'	-32.4'	-35.4'	13.8'	5'	54'
22	12.5'	-30.9'	-33.9'	13.8'	5'	53'
23	12.5'	-32.4'	-35.4'	13.8'	5'	54'
24	12.5'	-36.0'	-39.0'	13.8'	5'	58'
25	12.5'	-38.6'	-41.6'	13.8'	5'	61'
26	12.5'	-39.4'	-41.4'	13.8'	5'	60'
27	10.5'	-39.5'	-41.5'	13.8'	5'	61'
28	11.25'	-39.3'	-41.3'	13.8'	5'	60'
30	11.25'	-37.7'	-39.7'	13.8'	5'	59'
31	12.5'	-33.5'	-35.5'	13.8'	5'	55'
32	12.5'	-30.6'	-32.6'	13.8'	5'	52'
33	12.5'	-30.6'	-32.6'	13.8'	5'	52'
34	12.5'	-31.6'	-33.6'	13.8'	5'	53'
35	12.5'	-32.1'	-34.1'	13.8'	5'	53'
36	13.5'	-32.0'	-34.0'	13.8'	5'	53'
37	13.5'	-29.9'	-31.9'	13.8'	5'	51'
38	13.5'	-29.9'	-31.9'	13.8'	5'	51'
39	11.25'	-34.5'	-36.5'	13.8'	5'	56'
D"	0'	-51.0'	-53.0'	12.0'	5'	72'

HP14x117



LEGEND:

- (42) EXISTING PILE BENT LOCATIONS
- ○ EXISTING WHARF SUPPORT PILES IN CONCRETE JACKETS
- EXISTING 4"± THICK CONCRETE PLANK BULKHEAD
- VERTICAL PILE
- PAIR OF BATTER HP14X117 PILES
- 6W AC — 6 WAY CONCRETE ELECTRICAL DUCT

NOTES:

1. DESIGN PILE CAPACITY
   - W14x283 VERTICAL PILES: 325 kips
   - HP14x117 VERTICAL PILES: 240 kips
   - HP14x117 BATTER PILES: 240 kips
2. ALL PILES SHALL BE ASTM A572-GRADE 50 (50ksi)
3. SEE SHEET C3 FOR SUBSURFACE TEST BORING LOCATIONS
4. MIDSPAN PILES ARE INTENDED TO BE EQUAL DISTANCES FROM PILE CAPS UNLESS UTILITY OR FRAMING CONFLICT
5. CONTRACTOR SHALL VERIFY LOCATION OF ANY UNDERDECK UTILITIES PRIOR TO CONCRETE DEMOLITION AND NOTIFY CONTRACTING OFFICER OF INTERFERENCES
6. CONTRACTOR SHALL SPREAD APART DRAPED ELECTRIC CABLES TO ALLOW INSTALLATION OF BATTER PILES AT BENT 31
7. CONCRETE WHARF DECK THICKNESS MAY BE APPROXIMATELY 2'-0"± AT RAIL CROSSOVERS (TYP).

30 15 0 30 60 90 (FEET)

REVISION	DATE	DESCRIPTION	BY
A	10/20/99	REVISED PER AS-BUILT	CMS

REVISIONS

ARCH. CIV. STR. MECH. PNMGR. ELEC.

SATISFACTORY TO DATE 11/1/99
SATISFACTORY TO DATE 12/1/99
HEAD ENGINEERING BRANCH 12/30/99
APPROVED DATE 12/30/99

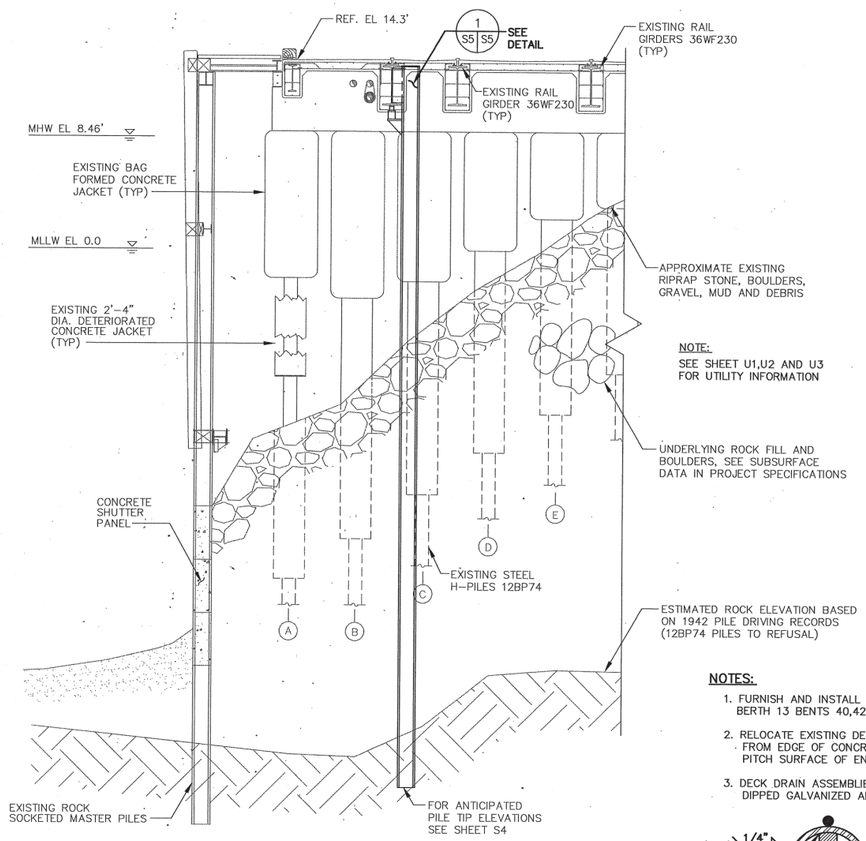
Appledore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
DESIGN: DCM DRWN: NJE CHK: RBB SUPV: RWS
SUBMITTED BY: Vice President 10/30/98

STATE OF NEW HAMPSHIRE — ROBERT W. SNYDER No. 5360 — REGISTERED PROFESSIONAL ENGINEER

NAVAL FACILITIES ENGINEERING COMMAND
PORTSMOUTH, N.H.
DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
STRUCTURALLY REPAIR BERTH 11
MIDSPAN AND BATTER PILE PLAN

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196010
SHEET 11 OF 36
PW NO. FP2-98-382

UNCLASSIFIED

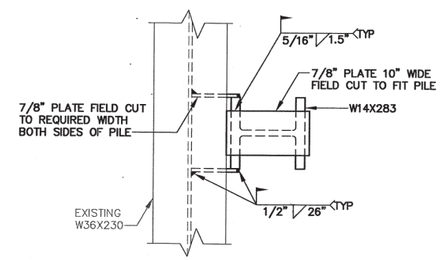


NOTE:
SEE SHEET U1,U2 AND U3 FOR UTILITY INFORMATION

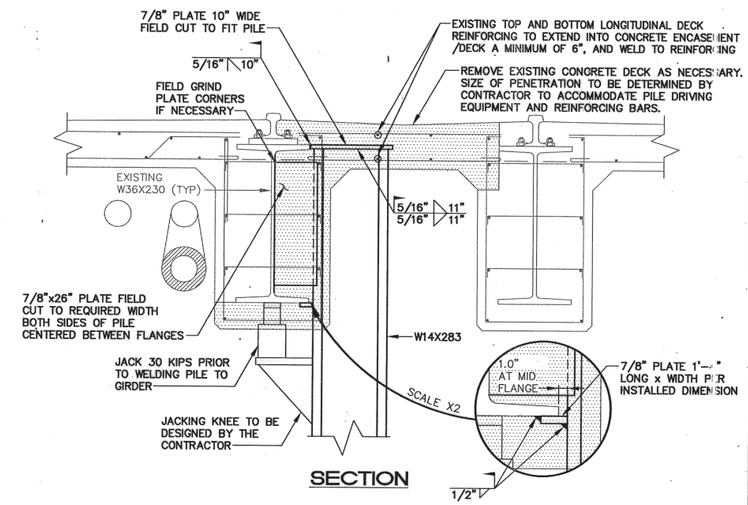
SECTION
MIDSPAN PILE INSTALLATION (TYP)

4 2 0 4 8 12
(FEET)

NOTE:
EXISTING CRANE RAIL NOT SHOWN FOR DRAWING CLARITY



PLAN

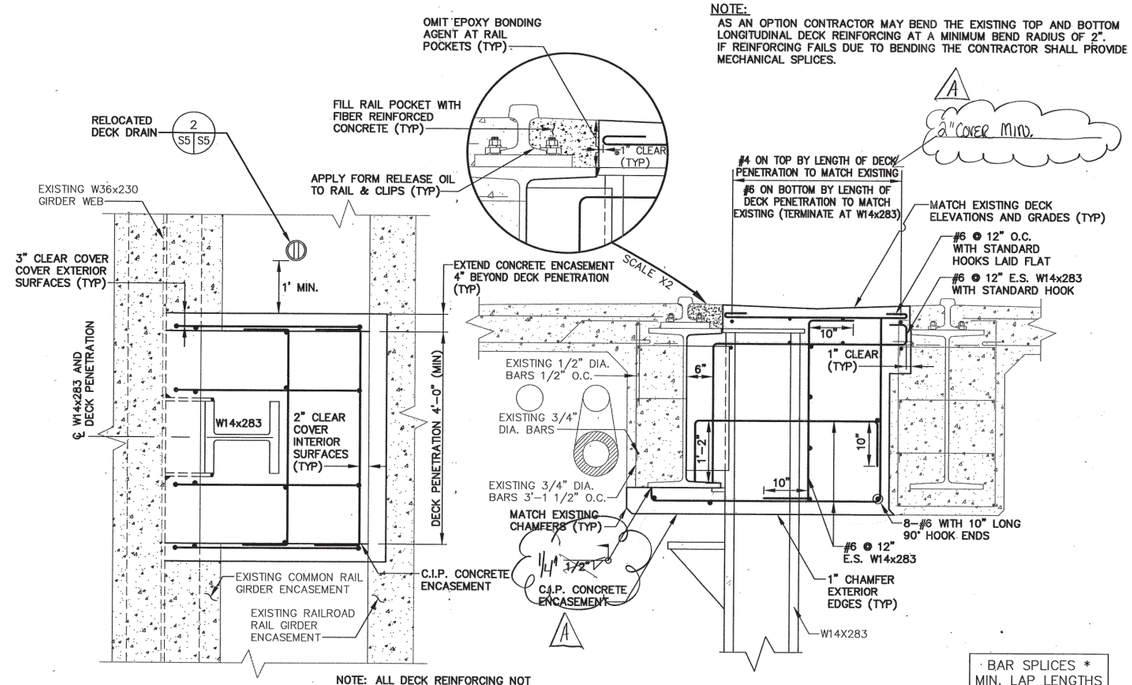


SECTION

1 S5 S5 MIDSPAN PILE INSTALLATION DETAILS (TYP)

1 1/2 0 1 2 3
(FEET)

NOTE:
AS AN OPTION CONTRACTOR MAY BEND THE EXISTING TOP AND BOTTOM LONGITUDINAL DECK REINFORCING AT A MINIMUM BEND RADIUS OF 2". IF REINFORCING FAILS DUE TO BENDING THE CONTRACTOR SHALL PROVIDE MECHANICAL SPLICES.



NOTE: ALL DECK REINFORCING NOT SHOWN FOR CLARITY.

PLAN

SECTION

BAR SPLICES * MIN. LAP LENGTHS
#6 BAR = 28"
#7 BAR = 33"

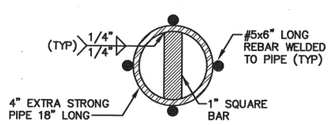
* UNLESS NOTED OTHERWISE

1 S5 S5 MIDSPAN PILE CONCRETE ENCASEMENT DETAILS (TYP)

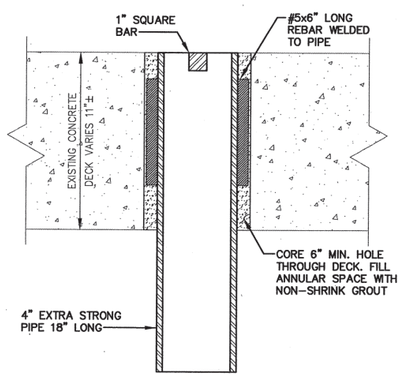
1 1/2 0 1 2 3
(FEET)

NOTES:

1. FURNISH AND INSTALL NEW DRAINS AT BERTH 13 BENTS 40,42,49,54,55 AND 58.
2. RELOCATE EXISTING DECK DRAINS 1' MIN. FROM EDGE OF CONCRETE ENCASEMENT. PITCH SURFACE OF ENCASEMENT TO DRAIN.
3. DECK DRAIN ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.



PLAN



SECTION

2 S5 S5 DECK DRAIN RELOCATION DETAIL

1' 9" 6" 3" 0 1'
(FEET)

NOTES:

1. EXISTING CONCRETE SURFACE IN CONTACT WITH CONCRETE ENCASEMENT/DECK SHALL BE CLEANED AND SCARIFIED BY PRESSURE WASHING. COAT THESE SURFACES WITH EPOXY BONDING AGENT JUST PRIOR TO PLACING CONCRETE ENCASEMENT/DECK.
2. THE JACKING KNEE SHALL BE WELDED TO THE PILE, COATED WITH COAL TAR EPOXY AND LEFT IN PLACE.
3. THE JACKING LOAD SHALL BE MAINTAINED UNTIL PILE TO GIRDER PLATES ARE FULLY CONNECTED.
4. CLEAN, PRIME COAT AND COAL TAR EPOXY COAT STEEL (EXISTING GIRDER, PILE, PLATES ETC.) AFTER WELDING AND PRIOR TO PLACING CONCRETE ENCASEMENT. DO NOT COAT REINFORCING BARS.
5. CONTRACTOR DEMOLITION METHOD SHALL NOT CAUSE DAMAGE TO EXISTING W36x230 GIRDER OR RAIL.
6. GIRDER STEEL INADVERTENTLY EXPOSED DURING CONCRETE DEMOLITION SHALL BE CLEANED AND COATED IN ACCORDANCE WITH NOTE 4.

REVISIONS				
A	12/00	REVISED PER AS BUILTS	CMS	
REVISION	DATE	DESCRIPTION	BY	

ARCH. CIV. STR.
MECH. PNMR.
ELEC.
SATISFACTORY TO: DATE 1/11/99
SATISFACTORY TO: DATE 1/21/99
HEAD, ENGINEERING BRANCH
HEAD, FACILITIES ENGINEERING DIVISION DATE 1/13/99

Appledore Engineering Inc.
800 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-6818 e-mail@appledoreinc.com
DESIGN: DOM DRWN: NJE CHK: RRB SUPV: RMS
Stephen M. Ayer Vice President 10/20/98
TITLE DATE

STATE OF NEW HAMPSHIRE ROBERT M. SAWYER No. 6390 PROFESSIONAL ENGINEER (SEAL)

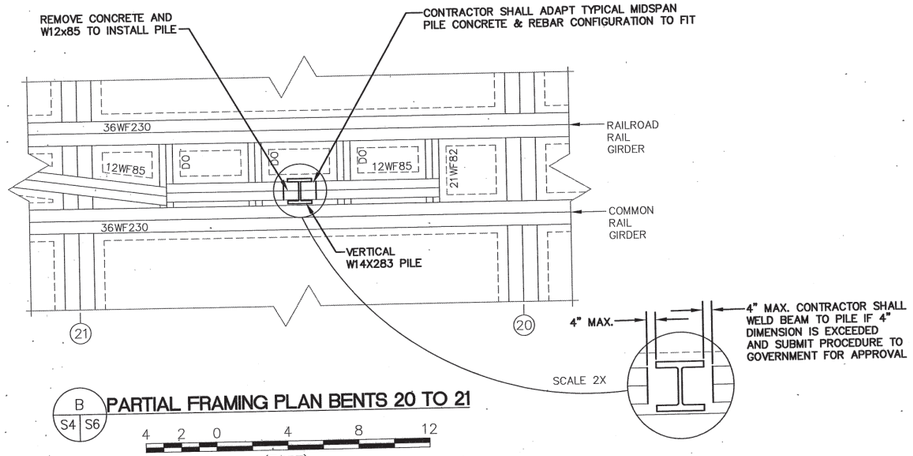
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

MIDSPAN PILE SECTION AND DETAILS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196011
SHEET 12 OF 36
S5
FPW NO. FP2-98-383

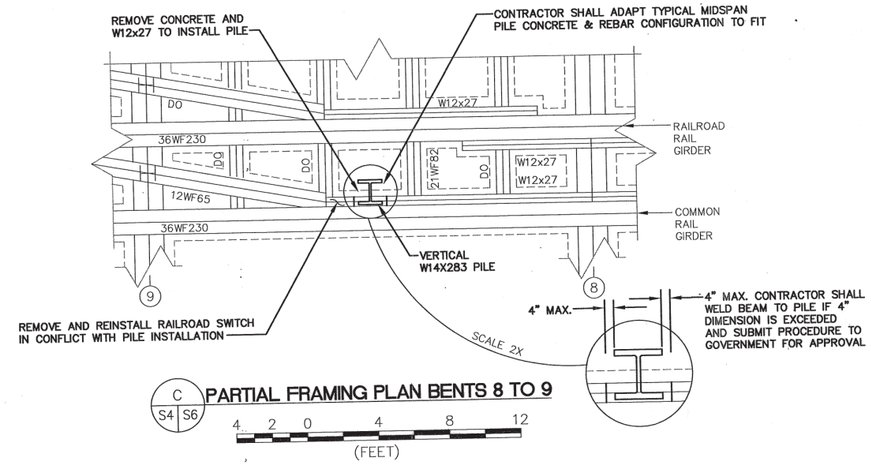
AE(124SA)FP2-383.DWG

UNCLASSIFIED



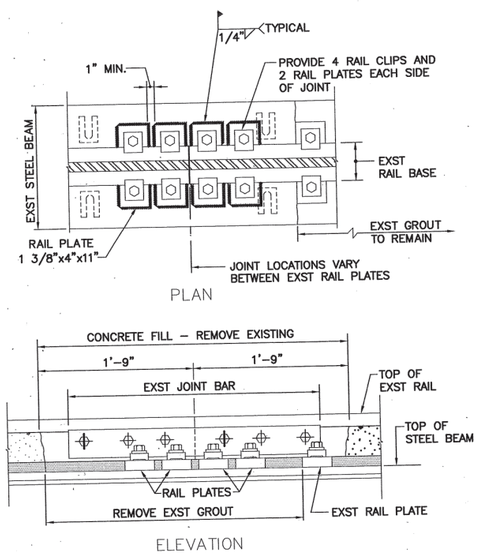
B S4 S6 **PARTIAL FRAMING PLAN BENTS 20 TO 21**

4 2 0 4 8 12
(FEET)



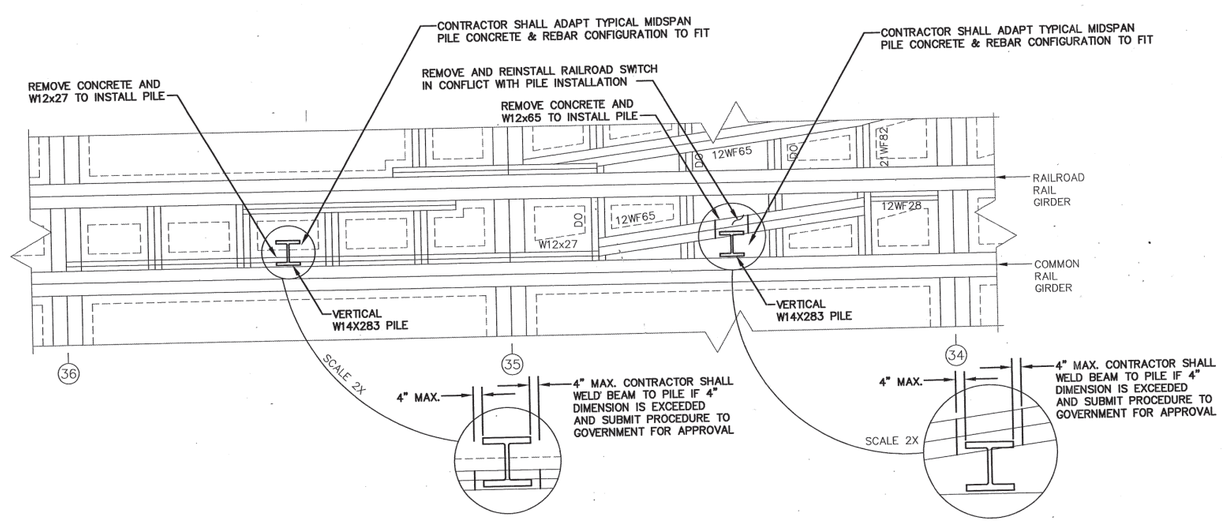
C S4 S6 **PARTIAL FRAMING PLAN BENTS 8 TO 9**

4 2 0 4 8 12
(FEET)



RAIL CLIP DETAIL

N.T.S.



A S4 S6 **PARTIAL FRAMING PLAN BENTS 34 TO 36**

4 2 0 4 8 12
(FEET)

NOTES:

1. UTILITIES NOT SHOWN FOR DRAWING CLARITY.
2. ALL RAILS/RAIL SWITCHES IN WAY OF MIDSPAN PILE INSTALLATION SHALL BE REMOVED/REINSTALLED TO THE NEAREST JOINT ON EACH SIDE OF THE PILE. REUSE ALL EXISTING APPURTENANCES EXCEPT PROVIDE NEW ASTM A325 JOINT BAR BOLTS.
3. PROVIDE ADDITIONAL SUPPORT AT JOINTS AS SHOWN ON RAIL CLIP DETAIL, THIS SHEET.

REVISION	DATE	DESCRIPTION	BY

REVISIONS

CIV. STR. / ARCH. / MECH. / ELEC. / PRNGR.

SATISFACTORY TO ... DATE 1/3/98
SATISFACTORY TO ... DATE 1/22/99
APPROVAL ... DATE 10/26/99

Appledore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 436-8818
ae@ch.ultranet.com
DSGN: RRB DRWN: NJE CHKD: DCM SUP'V: RNS
SEAL ENGINEERING SERVICES
APPROVAL Vice President 10/30/98
TITLE DATE
(SIGNED)

STATE OF NEW HAMPSHIRE ROBERT M. SNYDER No. 6380 PROFESSIONAL ENGINEER (SEAL)

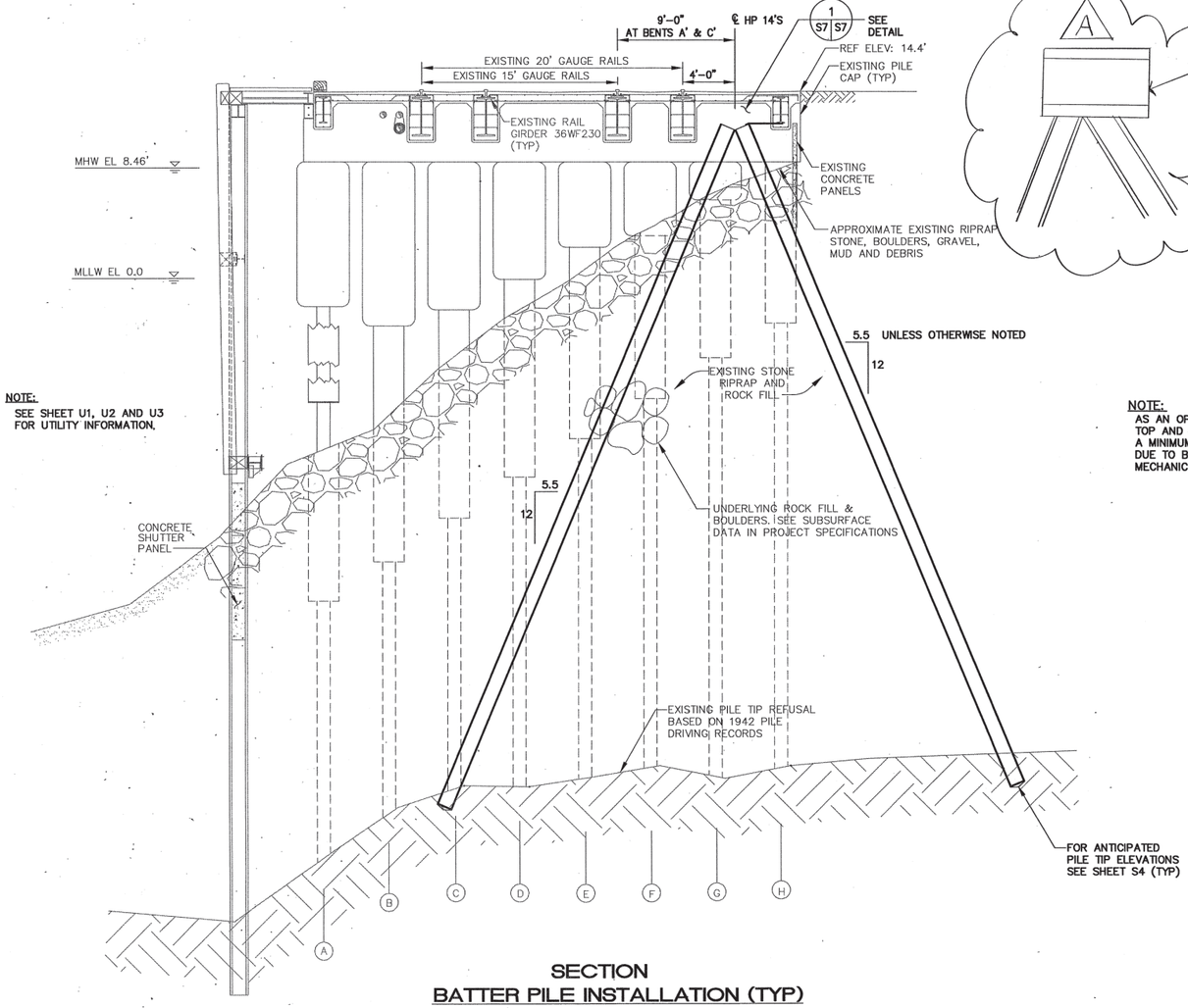
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

MIDSPAN PILE DETAILS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196012
SHT S6
SHEET 13 OF 36
P/W NO. FP2-98-384

UNCLASSIFIED

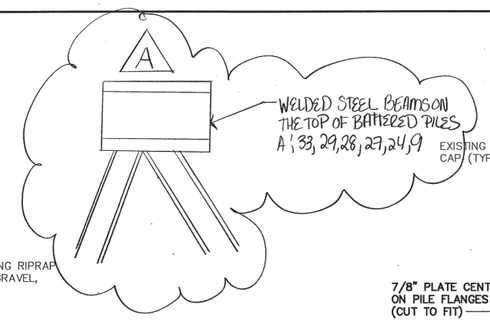
A2(243A)/FP2-384.DWG



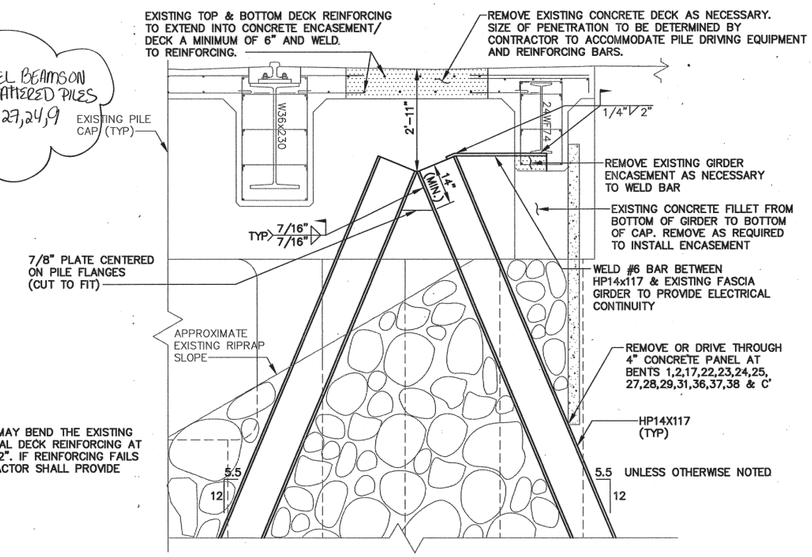
NOTE:
SEE SHEET U1, U2 AND U3 FOR UTILITY INFORMATION.

SECTION
BATTER PILE INSTALLATION (TYP)

4 2 0 4 8 12
(FEET)

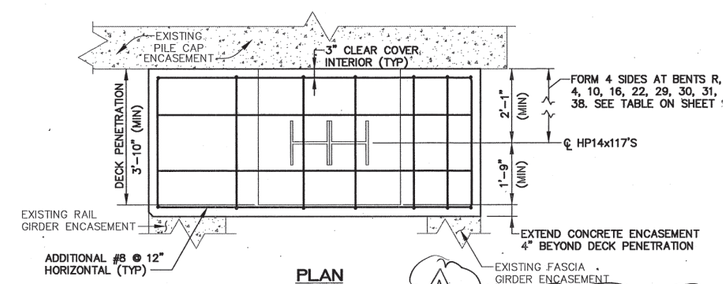


NOTE:
AS AN OPTION CONTRACTOR MAY BEND THE EXISTING TOP AND BOTTOM LONGITUDINAL DECK REINFORCING AT A MINIMUM BEND RADIUS OF 2". IF REINFORCING FAILS DUE TO BENDING THE CONTRACTOR SHALL PROVIDE MECHANICAL SPLICES.



1 S7 S7 **BATTER PILE INSTALLATION DETAIL (TYP)**

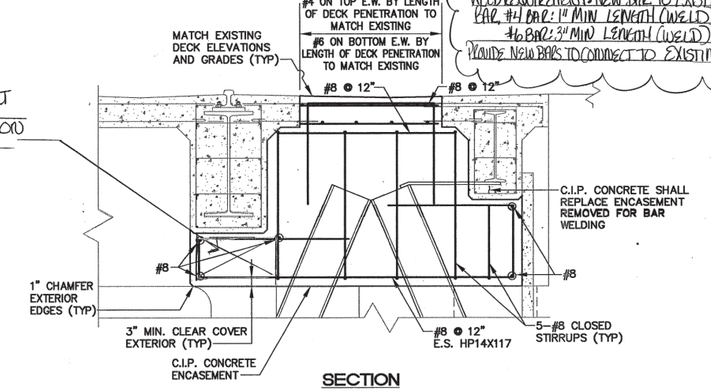
2 1 0 2 4 6
(FEET)



PLAN

A
WELD REQUIREMENTS: NEW BAR TO EXISTING BAR, #4 BAR: 1" MIN LENGTH (WELD)
#6 BAR: 3" MIN LENGTH (WELD)
PROVIDE NEW BARS TO CONNECT TO EXISTING

A
BECAUSE THERE IS NO RAIL SUPPORT BEAM AT A', ℄C' THIS SECTION HAS BEEN ELIMINATED ON A', ℄C' ONLY



SECTION
BATTER PILE CONCRETE ENCASEMENT DETAILS (TYP)

2 1 0 2 4 6
(FEET)

BAR SPLICES * MIN. LAP LENGTHS
#6 BAR = 28"
#7 BAR = 33"
#8 BAR = 37"

* UNLESS OTHERWISE NOTED

NOTES:

1. CONCRETE FORMWORK SHALL BE 80% SUPPORTED FROM HP14x117 PILES TO PRELOAD PILES.
2. EXISTING CONCRETE SURFACES IN CONTACT NEW CONCRETE ENCASEMENT/DECK SHALL BE CLEANED AND SCARIFIED BY PRESSURE WASHING. COAT THESE SURFACES WITH EPOXY BONDING AGENT JUST PRIOR TO CONCRETE ENCASEMENT/DECK (TYP).
3. CLEAN, PRIME COAT AND COAL TAR EPOXY COAT STEEL (EXISTING GIRDER, PILE, PLATES, ETC.) AFTER WELDING AND PRIOR TO PLACING CONCRETE ENCASEMENT. DO NOT COAT REINFORCING BARS.

REVISIONS				
REVISION	DATE	DESCRIPTION	BY	
1	10/5/98	REVISED PER ADDENDUM		

ARCH. CIV. STR. MECH. PRINCIP. ELEC.
SATISFACTORY TO HEAD, ENGINEERING DIV. DATE 11/5/98
SATISFACTORY TO SUPV. INS DATE
APPROVED HEAD, FACILITIES SUPPORT DIV. DATE 12/4/98

Appledore Engineering Inc.
300 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-8818
DESIGN: DJM DRWN: N.E. CHK: RRB SUPV: INS
ISSUED: Vice President 10/30/98
TITLE DATE

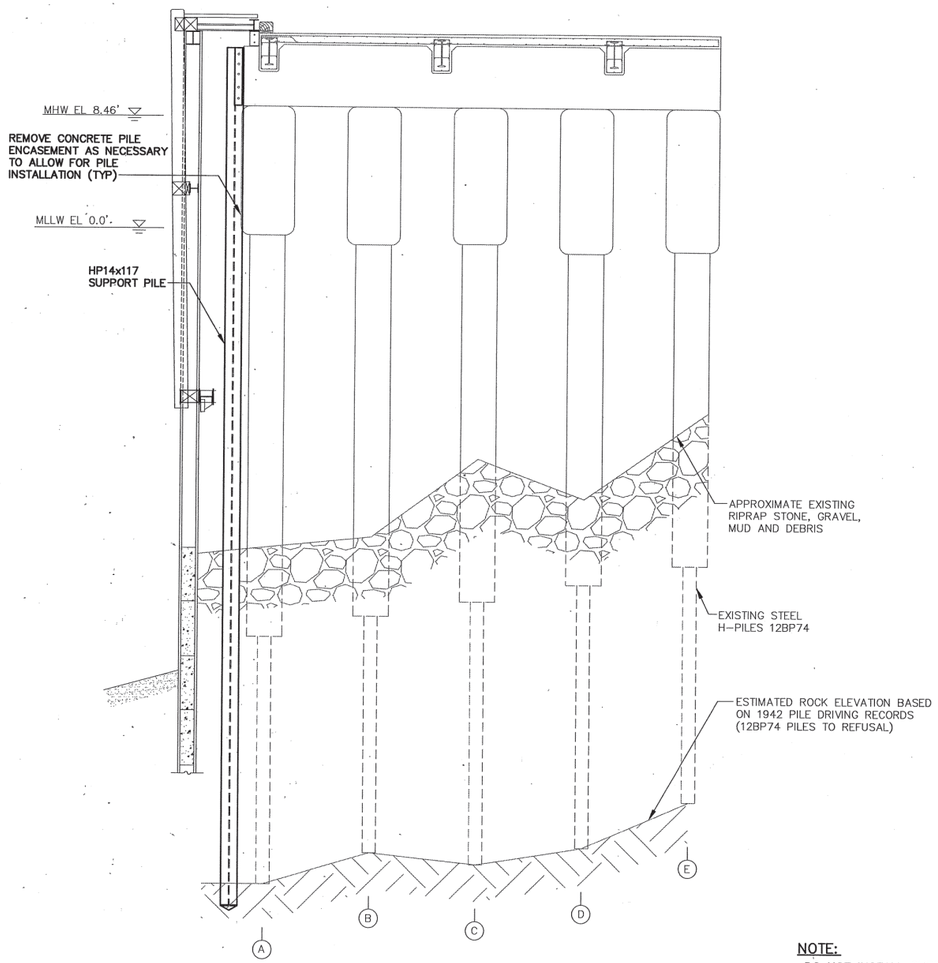
THE STATE OF NEW HAMPSHIRE ROBERT SNOVER No. 5300 LICENSED PROFESSIONAL ENGINEER (SEAL)

DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND
PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

BATTER PILE SECTIONS AND DETAILS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196013
SHT S7
SHEET 14 OF 36
PW NO. FP2-98-385

UNCLASSIFIED



SECTION
A / S4 S8 SUPPORT PILE BENT D"

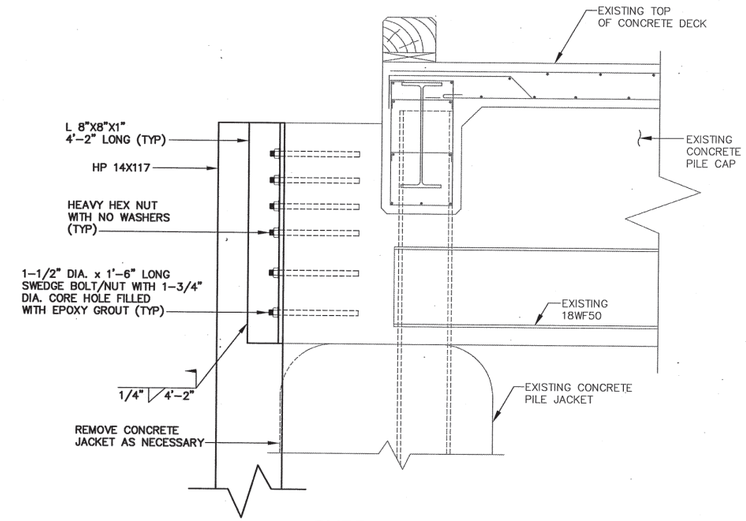
4 2 0 4 8 12
(FEET)

NOTE:

DO NOT INSTALL SUPPORT PILE AT BENT D" UNTIL NEW FENDER / SHUTTER SYSTEM HAS BEEN COMPLETELY INSTALLED.

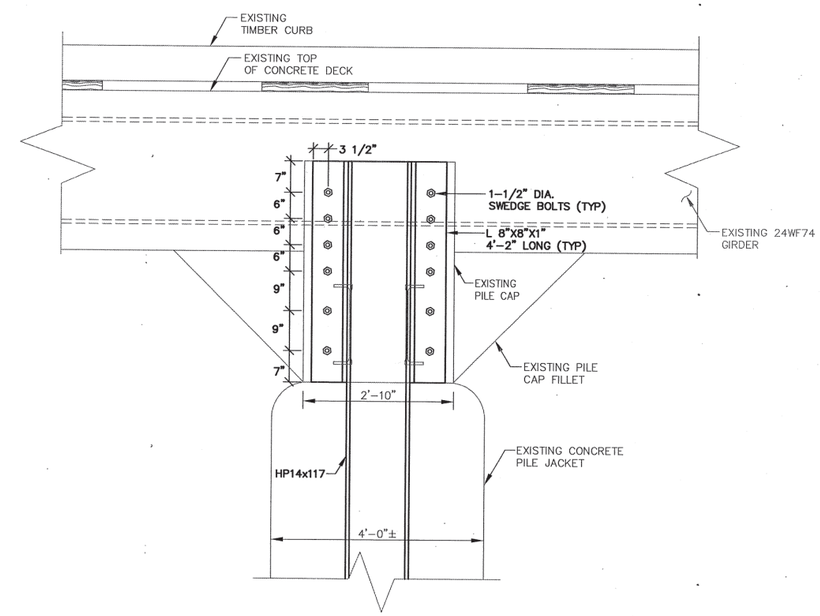
NOTES:

1. FENDER SYSTEM AND PILE CLUSTER NOT SHOWN FOR DRAWING CLARITY.
2. SEE SHEETS U1, U2 AND U3 FOR UTILITY INFORMATION.
3. SWEDGE BOLTS SHALL CONFORM TO ASTM A307 AND SHALL BE TORQUED TO 500 FT-LBS AFTER GROUT CURING.



SUPPORT PILE DETAIL

1 1/2 0 1 2 3
(FEET)



SUPPORT PILE DETAIL

1 1/2 0 1 2 3
(FEET)

REVISIONS			
REVISION	DATE	DESCRIPTION	BY

ARCH. CIV. STR.
MECH. PNMR.
ELEC.

SATISFACTORY TO: DATE 11/6/99
SATISFACTORY TO: DATE
HEAD, ENGINEERING DATE
APPROVED DATE 12/1/99
NPW FACILITIES ENG. CO. DATE 12/14/99

Applecore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-8818 ae@ph.ultranet.com
DESIGN: RRS DRWN: NJE CHK: DCM SUPV: RWS
Robert W. Snover Vice President 10/30/98
(SIGNED) TITLE DATE

THE STATE OF NEW HAMPSHIRE ROBERT W. SNOVER No. 5300 REGISTERED PROFESSIONAL ENGINEER (SEAL)

DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND
PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

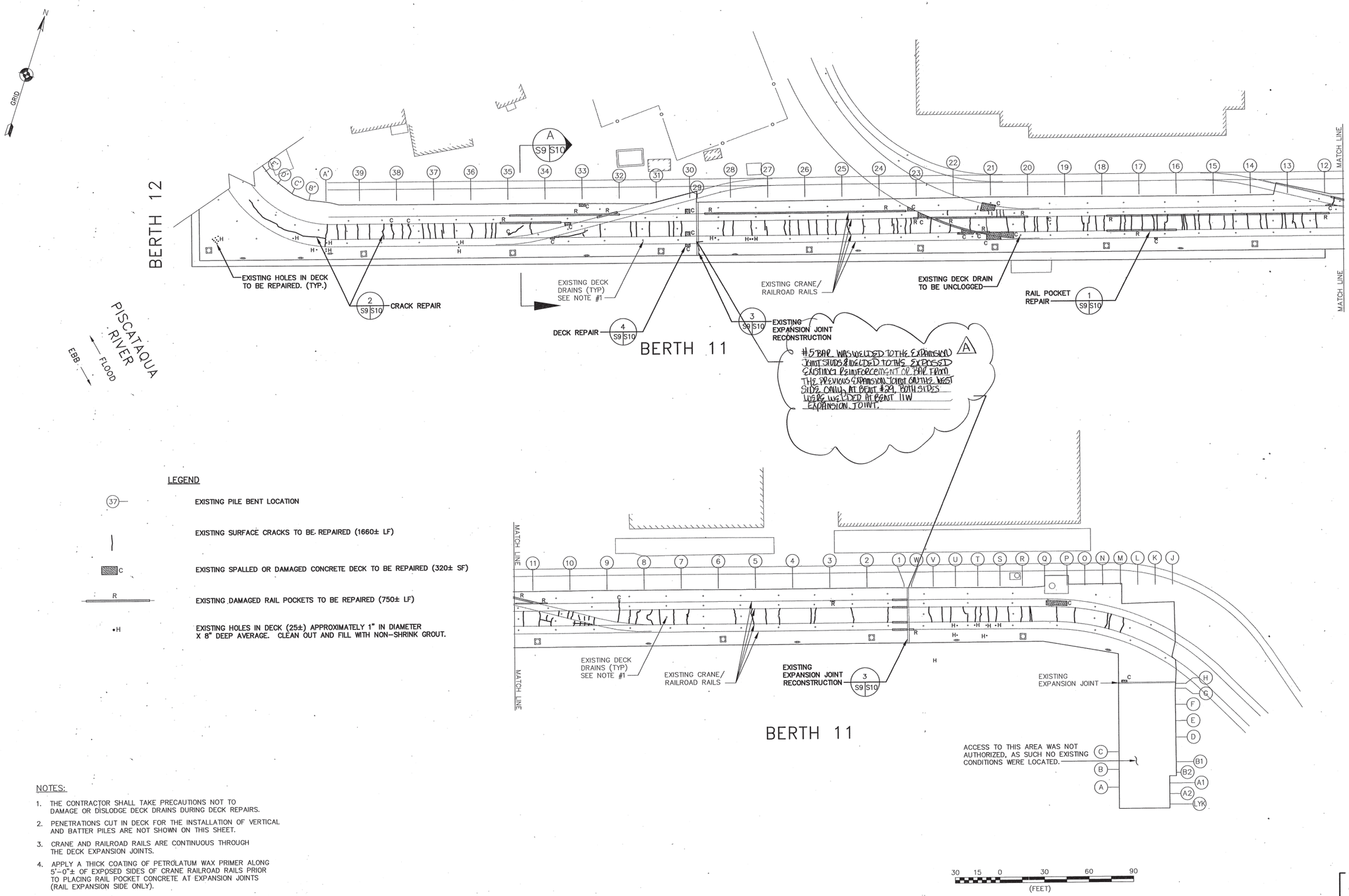
SUPPORT PILE SECTION AND DETAILS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-97-C-6589
SPEC. 04-97-6589
NAVFAC DRAWING NO. 2196014
SHEET 15 OF 36
PW NO. FP2-98-386

S8

AE(1243A)FP2-386.DWG

UNCLASSIFIED



LEGEND

(37)	EXISTING PILE BENT LOCATION
	EXISTING SURFACE CRACKS TO BE REPAIRED (1660± LF)
C	EXISTING SPALLED OR DAMAGED CONCRETE DECK TO BE REPAIRED (320± SF)
R	EXISTING DAMAGED RAIL POCKETS TO BE REPAIRED (750± LF)
•H	EXISTING HOLES IN DECK (25±) APPROXIMATELY 1" IN DIAMETER X 8" DEEP AVERAGE. CLEAN OUT AND FILL WITH NON-SHRINK GROUT.

NOTES:

1. THE CONTRACTOR SHALL TAKE PRECAUTIONS NOT TO DAMAGE OR DISLODGE DECK DRAINS DURING DECK REPAIRS.
2. PENETRATIONS CUT IN DECK FOR THE INSTALLATION OF VERTICAL AND BATTER PILES ARE NOT SHOWN ON THIS SHEET.
3. CRANE AND RAILROAD RAILS ARE CONTINUOUS THROUGH THE DECK EXPANSION JOINTS.
4. APPLY A THICK COATING OF PETROLATUM WAX PRIMER ALONG 5'-0"± OF EXPOSED SIDES OF CRANE RAILROAD RAILS PRIOR TO PLACING RAIL POCKET CONCRETE AT EXPANSION JOINTS (RAIL EXPANSION SIDE ONLY).

REVISIONS			
BY	DESCRIPTION	DATE	REVISION
CMS	REVISED PER AS-BUILTS	11/2/10	A

MECH. CH. STR.
MECH. PRINCIP.
ELEC.
SATISFACTORY TO DATE 7/15/97
SATISFACTORY TO DATE 1/12/98
HEAD, ENGINEERING
APPROVED DATE 12/30/98
HEAD, FACILITIES MAINTENANCE

Appledore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-8818 ae@ne.uttanet.com

LOGIN: RPOB DRWN: NJE CHK: ROB SUPV: RMS
ROBERT M. SNOVER Vice President 10/30/98
SIGNED TITLE DATE

THE STATE OF NEW HAMPSHIRE ROBERT M. SNOVER No. 6000 LICENSED PROFESSIONAL ENGINEER (SEAL)

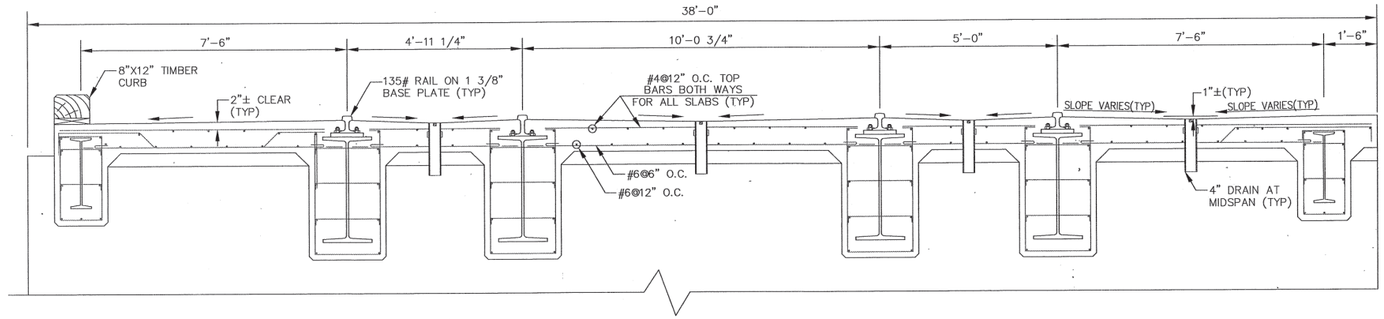
DEPARTMENT OF THE NAVY
NAVAL SHIPYARD PORTSMOUTH, N.H.
NAVAL FACILITIES ENGINEERING COMMAND

STRUCTURALLY REPAIR BERTH 11 DECK REPAIR PLAN

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196015
SHT S9
SHEET 16 OF 36
PW NO. FP2-98-387

UNCLASSIFIED

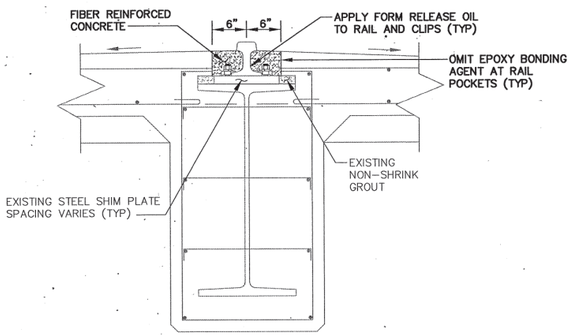
RE(1243A)/FP2-387.DWG



NOTE
FENDER SYSTEM IS OMITTED FOR DRAWING CLARITY

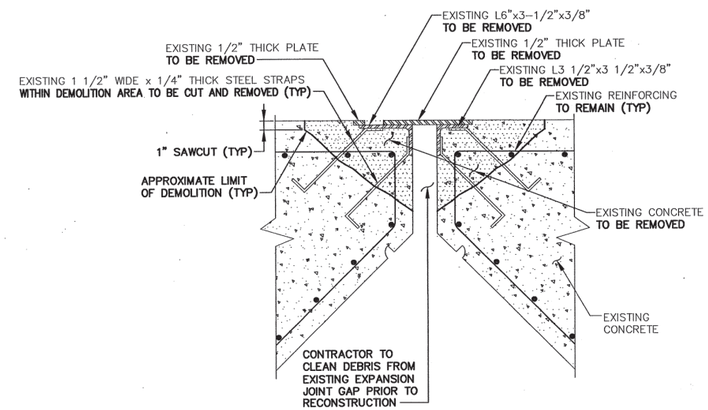
A / S9 S10 DECK SECTION (TYP)

2 1 0 2 4 6
(FEET)



1 / S9 S10 RAIL POCKET DETAIL (TYP)

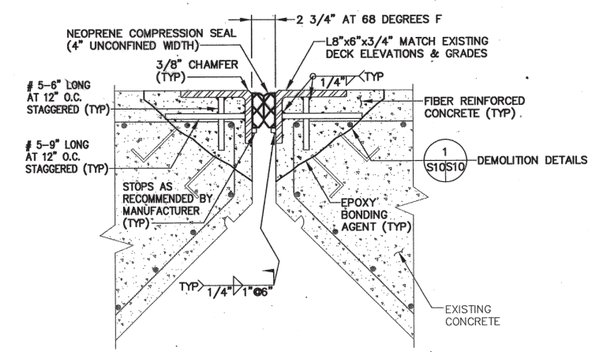
1 1/2 0 1 2 3
(FEET)



SECTION

1 / S9 S10 EXPANSION JOINT DEMOLITION

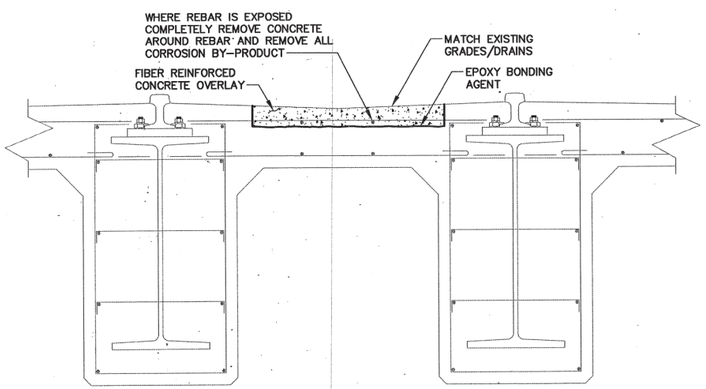
1/2 1/4 0 1 2
(FEET)



SECTION

3 / S9 S10 EXPANSION JOINT RECONSTRUCTION

1/2 1/4 0 1 2
(FEET)

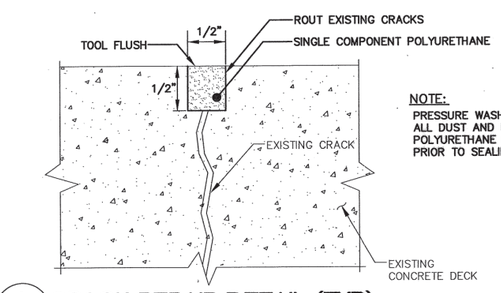


4 / S9 S10 DECK REPAIR DETAIL (TYP)

1 1/2 0 1 2 3
(FEET)

DECK REPAIR PROCEDURE:

1. REMOVE DETERIORATED CONCRETE TO A DEPTH OF 3" AT LOCATIONS SHOWN ON THE PLAN.
2. IF PARTIALLY EMBEDDED REINFORCING IS EXPOSED DURING DEMOLITION, CONTINUE CONCRETE DEMOLITION TO A DEPTH OF 1" BELOW REINFORCING BARS.
3. APPLY EPOXY BONDING AGENT TO HORIZONTAL AND VERTICAL SURFACES RECEIVING CONCRETE OVERLAY (EXCEPT AT RAIL POCKETS).
4. PLACE FIBER REINFORCED CONCRETE OVERLAY TO MATCH EXISTING GRADES AND TO DRAINS.
5. NEOPRENE COMPRESSION SEAL SHALL BUTT UP TO RAILS WITHOUT GAPS (TYP).
6. EXPANSION JOINT STEEL SHALL BE LEFT UNCOATED.



NOTE:
PRESSURE WASH ROUTED CRACKS TO REMOVE ALL DUST AND DEBRIS AND ALLOW TO DRY PER POLYURETHANE MANUFACTURERS RECOMMENDATIONS PRIOR TO SEALING (TYP).

2 / S9 S10 CRACK REPAIR DETAIL (TYP)

N.T.S.

REVISION	DATE	DESCRIPTION	BY

REVISIONS

ARCH. | CIV. STR. | MECH. | PRMGR. | ELEC.

SATISFACTORY TO: DATE 1/13/99
SATISFACTORY: HEAD, ENGINEERING DATE 1/21/99
APPROVED: HEAD, FACILITIES DESIGN DATE 1/26/99

Appledore Engineering Inc.
800 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-4816
ae@mv.ultranet.com

DESIGN: DCM | DRAWN: TJE | CHK: RRB | SUPV: RWS
SIGNED: Robert W. Snover (SIGNED) TITLE: Vice President 10/30/98 DATE

THE STATE OF NEW HAMPSHIRE ROBERT WALTER SNOVER No. 6303 PROFESSIONAL ENGINEER (SEAL)

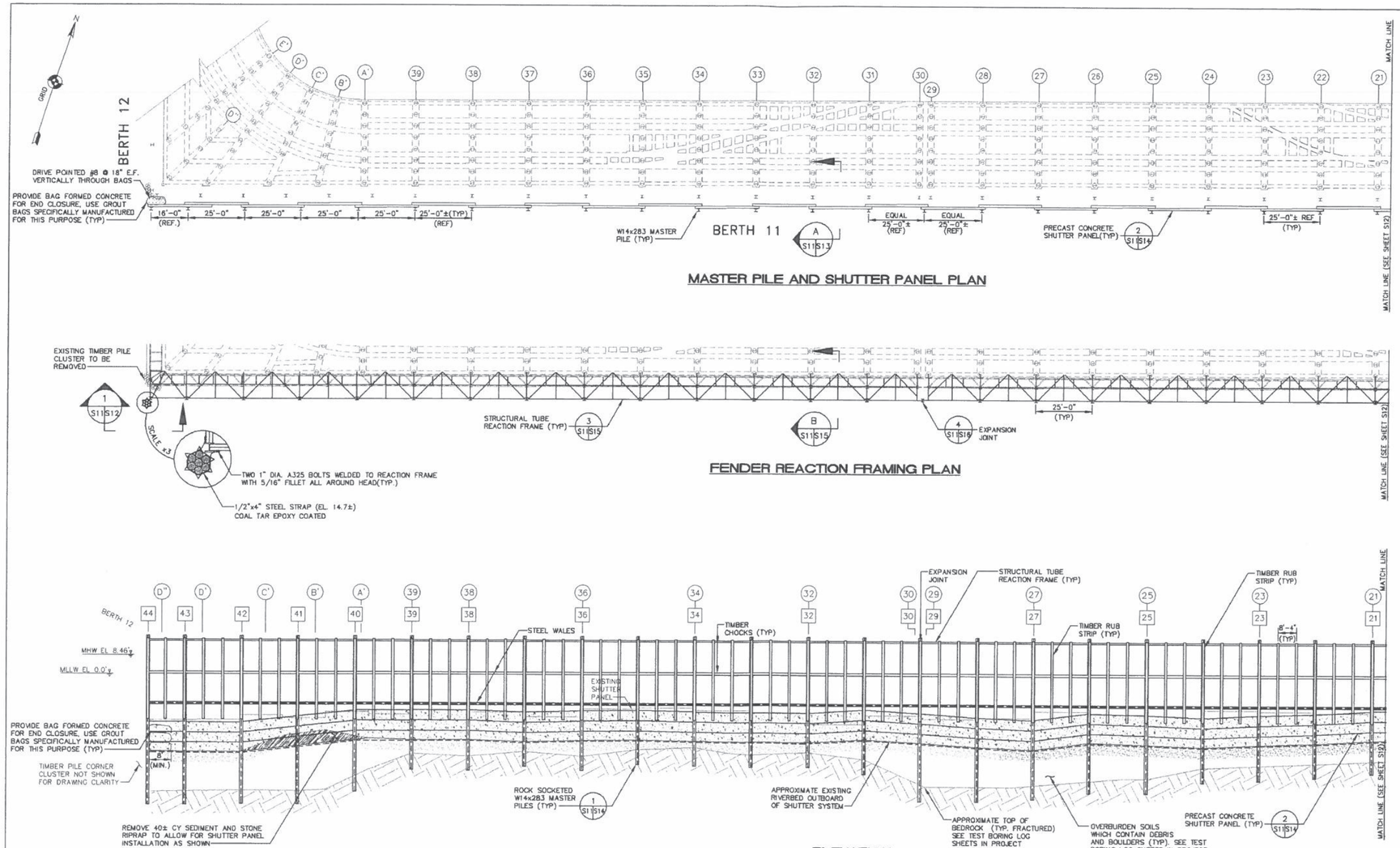
DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND
PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

DECK REPAIR SECTIONS AND DETAILS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196016
SHT S10 SHEET 17 OF 36
PW NO. FP2-98-388

UNCLASSIFIED

AE(1243c/FP2-388.DWG)



LEGEND:

- (42) — SUPPORT PILE BENT LOCATIONS
- [42] — MASTER PILE BENT LOCATIONS
- EXISTING WHARF SUPPORT PILES IN CONCRETE JACKETS

NOTES:

1. CONTRACTOR SHALL DRILL SOCKETS TO CONFIRM DEPTH INTO BEDROCK PRIOR TO CUTTING MASTER PILES TO EXACT LENGTH (TYP).
2. BOLLARDS NOT SHOWN.
3. W14x283 MASTER PILES ARE TO BE LOCATED ADJACENT TO CENTERLINE OF THE EXISTING WHARF SUPPORT PILE BENTS, EXCEPT BETWEEN MASTER PILE BENTS 40 THROUGH 44.

REVISIONS

REVISION	DATE	DESCRIPTION	BY

Applebone Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 436-8813 info@applebone.com
Vice President 10/30/98
TITLE DATE

DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
PORTSMOUTH, N.H.
NAVAL FACILITIES ENGINEERING COMMAND
STRUCTURALLY REPAIR BERTH 11

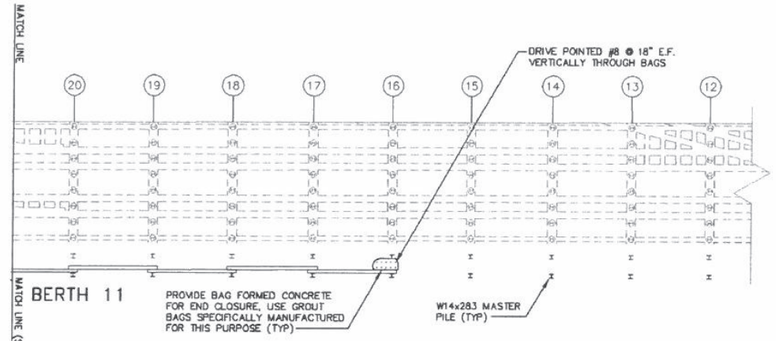
FENDER / SHUTTER SYSTEM PLAN AND ELEVATION – 1

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196017
SHT S11
SHEET 18 OF 36
PW NO. FP2-98-389

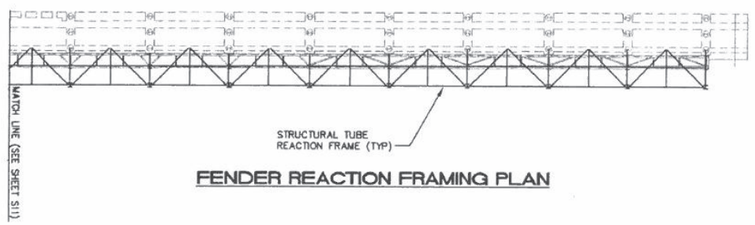
UNCLASSIFIED

D-11

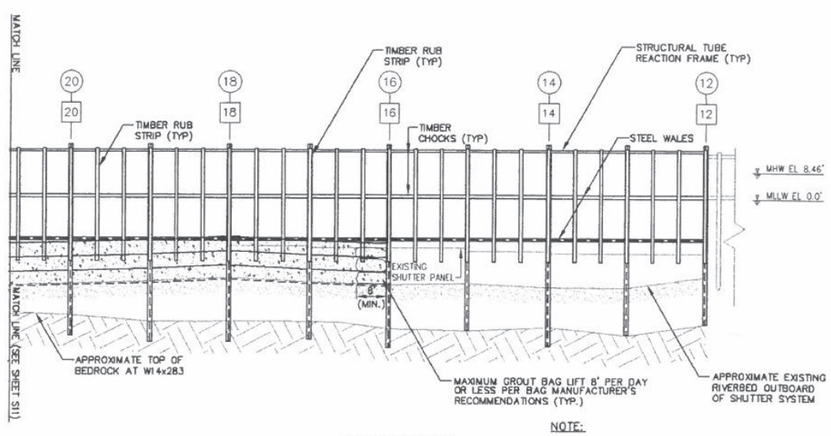
BERTH 11



MASTER PILE AND SHUTTER PANEL PLAN



FENDER REACTION FRAMING PLAN



ELEVATION

NOTE:

1. MASTER PILE SOCKETS ARE NOT REQUIRED BUT MAY BE PROVIDED TO MEET SPECIFIED TOLERANCES AT THE CONTRACTORS OPTION AT BENTS 12, 13 & 15. IF DRIVEN, DRIVE TO 325 KIP CAPACITY.
2. SEE NOTES ON SHEET S11.

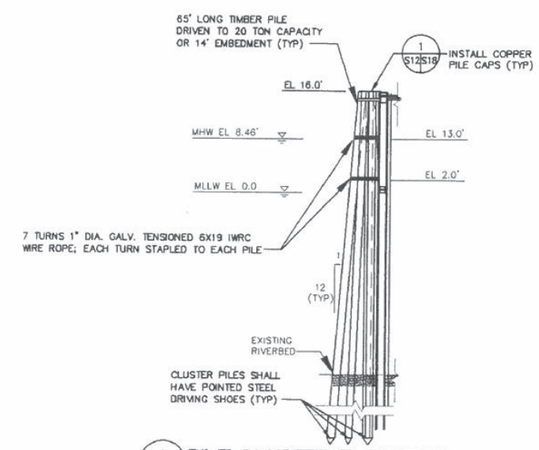
LEGEND:

- (42) — SUPPORT PILE BENT LOCATIONS
- [42] — MASTER PILE BENT LOCATIONS
- ⊗ — EXISTING WHARF SUPPORT PILES IN CONCRETE JACKETS

20 10 0 20 40 60 (FEET)

MASTER PILES (W14x283)

	REFERENCE MASTER PILE	EST. ROCK ELEVATION (BASED ON AEI BORINGS AND 1942 MASTER PILE LEDGE ELEV.)	ROCK SOCKET LENGTH	ANTICIPATED PILE TIP ELEVATION	CUTOFF ELEVATION (REF.)	OFFCUT ALLOWANCE	TOTAL EST. PILE LENGTH (FOR BIDDING PURPOSES)
12	-39.5'	6'	-45.5'	15.51'	5'		66'
13	-43.0'	6'	-49.0'	15.51'	5'		70'
14	-40.5'	6'	-46.5'	15.51'	5'		67'
15	-41.6'	6'	-47.6'	15.51'	5'		69'
16	-41.0'	6'	-47.0'	15.51'	5'		68'
17	-38.9'	6'	-44.9'	15.51'	5'		66'
18	-38.8'	6'	-44.8'	15.51'	5'		66'
19	-38.9'	6'	-44.9'	15.51'	5'		66'
20	-36.9'	6'	-42.9'	15.51'	5'		64'
21	-36.9'	6'	-42.9'	15.51'	5'		64'
22	-38.0'	6'	-44.0'	15.51'	5'		65'
23	-39.0'	6'	-45.0'	15.51'	5'		66'
24	-39.9'	6'	-45.9'	15.51'	5'		67'
25	-44.9'	6'	-50.9'	15.51'	5'		72'
26	-46.1'	6'	-52.1'	15.51'	5'		73'
27	-48.1'	6'	-54.1'	15.51'	5'		75'
28	-48.9'	6'	-54.9'	15.51'	5'		76'
29/30	-47.9'	6'	-53.9'	15.51'	5'		75'
31	-37.0'	6'	-43.0'	15.51'	5'		64'
32	-33.9'	6'	-39.9'	15.51'	5'		61'
33	-35.2'	6'	-41.2'	15.51'	5'		62'
34	-32.0'	6'	-38.0'	15.51'	5'		59'
35	-32.9'	6'	-38.9'	15.51'	5'		60'
36	-35.9'	6'	-41.9'	15.51'	5'		63'
37	-33.9'	6'	-39.9'	15.51'	5'		61'
38	-35.9'	6'	-41.9'	15.51'	5'		63'
39	-34.9'	6'	-40.9'	15.51'	5'		62'
40	-41.9'	6'	-47.9'	15.51'	5'		69'
41	-50.9'	6'	-56.9'	15.51'	5'		78'
42	-51.4'	6'	-57.4'	15.51'	5'		78'
43	-51.3'	6'	-57.3'	15.51'	5'		78'
44	-51.6'	6'	-57.6'	15.51'	5'		79'



1 S11 S12 PILE CLUSTER ELEVATION

10 5 0 10 20 30 (FEET)

REVISION	DATE	DESCRIPTION	BY
		REVISIONS	

ARCH. | CH. ENG. | MECH. | PROJ. | ELEC. | DATE

Applebore Engineering Inc.
600 State Street, Suite D
Portsmouth, New Hampshire 03801
(603) 436-8616 info@applebore.com
CADD: TCK DWN: TLC CKD: RBB SUPV: RBB
DATE: 10/30/98 SCALE: 1/8"=1'-0"
President 10/30/98 DATE
Vice President 10/30/98 DATE
(1024.03)

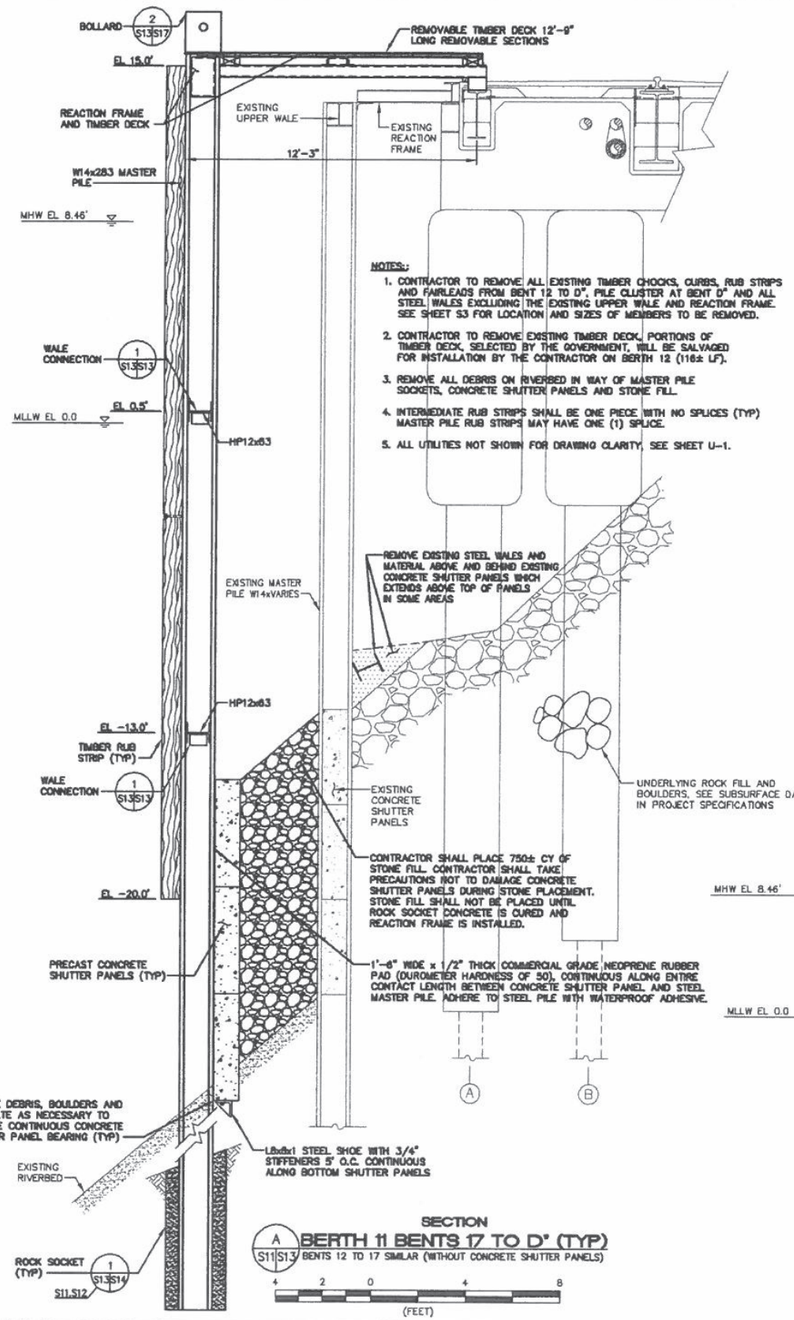
DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
PORTSMOUTH, N.H.
NAVAL FACILITIES ENGINEERING COMMAND

STRUCTURALLY REPAIR BERTH 11

FENDER / SHUTTER SYSTEM
PLAN AND ELEVATION - 2

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196018
SHT S12 | SHEET 19 OF 36
PW NO. FP2-98-390

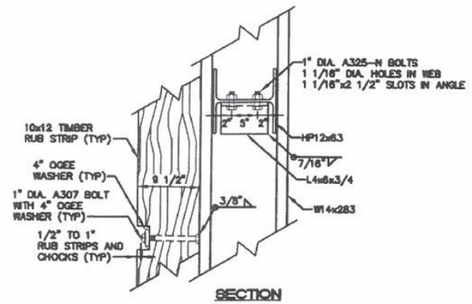
UNCLASSIFIED



NOTES:

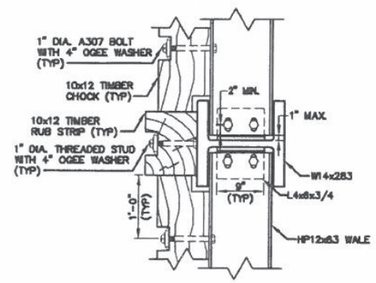
1. CONTRACTOR TO REMOVE ALL EXISTING TIMBER CHOCKS, CURBS, RUB STRIPS AND FAIRLEADS FROM BENT 12 TO 0", PILE CLUSTER AT BENT 0" AND ALL STEEL WALES EXCLUDING THE EXISTING UPPER WALE AND REACTION FRAME. SEE SHEET S3 FOR LOCATION AND SIZES OF MEMBERS TO BE REMOVED.
2. CONTRACTOR TO REMOVE EXISTING TIMBER DECK, PORTIONS OF TIMBER DECK, SELECTED BY THE GOVERNMENT, WILL BE SALVAGED FOR INSTALLATION BY THE CONTRACTOR ON BERTH 12 (116± LF).
3. REMOVE ALL DEBRIS ON RIVERBED IN WAY OF MASTER PILE SOCKETS, CONCRETE SHUTTER PANELS AND STONE FILL.
4. INTERMEDIATE RUB STRIPS SHALL BE ONE PIECE WITH NO SPLICES (TYP) MASTER PILE RUB STRIPS MAY HAVE ONE (1) SPLICE.
5. ALL UTILITIES NOT SHOWN FOR DRAWING CLARITY, SEE SHEET U-1.

SECTION
A S11S13 BERTH 11 BENTS 17 TO D" (TYP)
BENTS 12 TO 17 SIMILAR (WITHOUT CONCRETE SHUTTER PANELS)



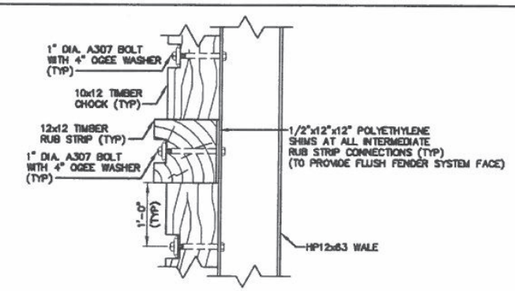
SECTION
WALE CONNECTION DETAIL (TYP)

1 1/2 0 1 2 3
(FEET)



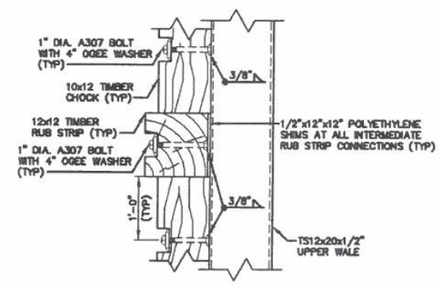
PLAN
1 S13S13 WALE CONNECTION DETAIL (TYP)

1 1/2 0 1 2 3
(FEET)



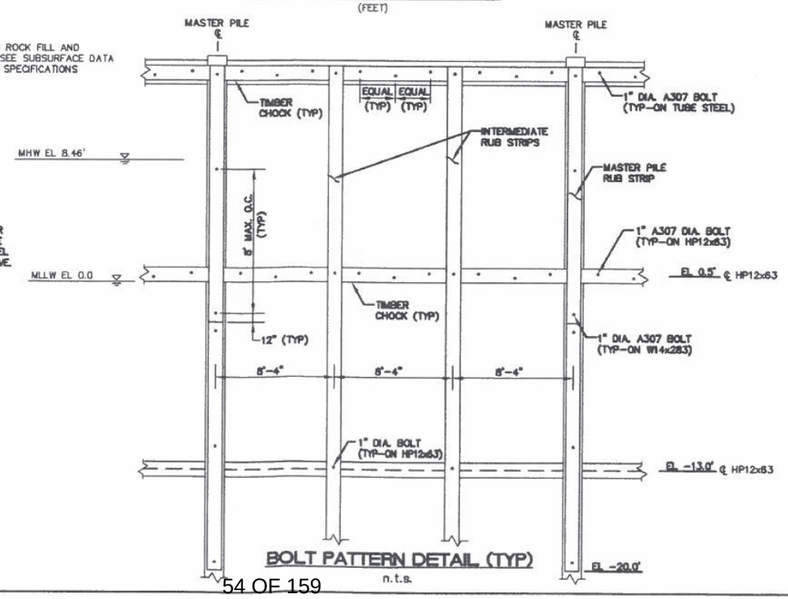
PLAN
TIMBER CONNECTION AT WALES (EL 0.5' AND -13.0') (TYP)

1 1/2 0 1 2 3
(FEET)



PLAN
TIMBER CONNECTION AT UPPER WALE (TYP)

1 1/2 0 1 2 3
(FEET)



BOLT PATTERN DETAIL (TYP)
n.t.s.

NOTES:

1. COUNTERSINK OUTSIDE FACE OF TIMBERS AT ALL FASTENER LOCATIONS.
2. FASTENERS INSTALLED ABOVE MHW (EL 8.46') SHALL BE GALVANIZED. ALL OTHER FASTENERS TO BE UNCOATED.
3. FIELD TREAT ALL CUT AND DRILLED TIMBER SURFACES WITH SEVERAL COATS OF THE SAME PRESERVATIVE USED TO TREAT THE TIMBER OR COPPER NAPTHENATE PRESERVATIVE.
4. CHOCKS AND RUB STRIP TIMBERS SHALL BE CUT TO LENGTH PRIOR TO PRESERVATIVE TREATMENT (TYP).
5. WELDED BOLTS SHALL HAVE WELD AREAS CLEANED OF SLAG TO NEAR WHITE METAL JUST PRIOR TO PRIME AND FINAL COATING.
6. ALL FENDER SYSTEM TIMBER BOLTS SHALL BE COVERED WITH PETROLATUM PRIMER WAX PRIOR TO INSTALLATION.
7. UNDERWATER WELDING WILL NOT BE ALLOWED.

REVISIONS			
REVISION	DATE	DESCRIPTION	BY

Appletore Engineering Inc.
650 Dalton Street, Suite D
Portsmouth, New Hampshire 03801
(603) 433-8818

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD PORTSMOUTH, N.H.
STRUCTURALLY REPAIR BERTH 11

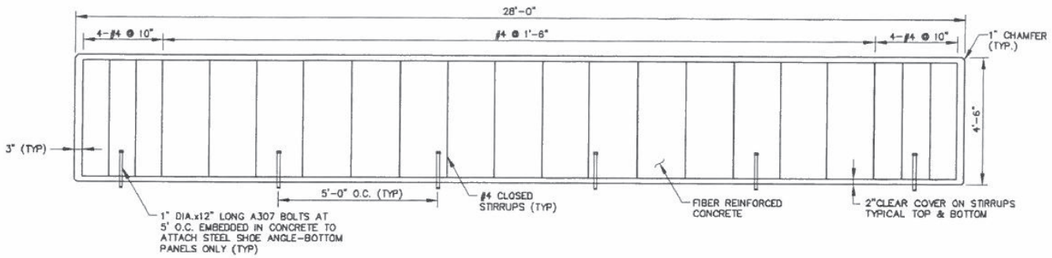
FENDER / SHUTTER SYSTEM
SECTION AND DETAILS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196019
SHT S13 SHEET 20 OF 36
FP2-98-391

D-13

BERTH 11

UNCLASSIFIED

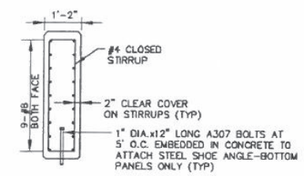


NOTES:

1. CONTRACTOR SHALL DESIGN AND PROVIDE SHUTTER PANEL LIFTING CONNECTIONS AS NECESSARY. DRILL HOLES SHALL NOT BE ALLOWED (TYP).

SECTION
PRECAST CONCRETE SHUTTER PANEL (TYP)

2 1 0 2 4 6
(FEET)



SECTION
PRECAST CONCRETE SHUTTER PANEL (TYP)

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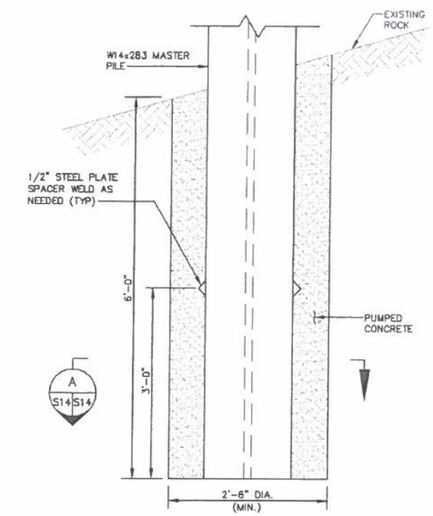
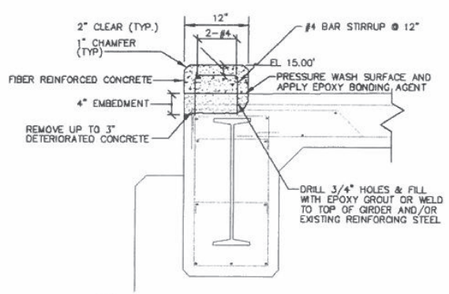


SECTION
ROCK SOCKET

1 S13 S14

1 1/2 0 1 2 3
(FEET)



CONCRETE CURB DETAIL

1 S15 S14

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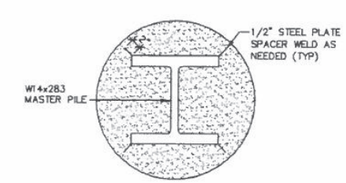
(FEET)



PLAN
ROCK SOCKET

A S14 S14

1 1/2 0 1 2 3
(FEET)

REVISIONS			
REVISION	DATE	DESCRIPTION	BY

Appledore Engineering Inc.
800 Dixie Street, Suite 21
Portsmouth, New Hampshire 03801
603 433 8818
info@appledore.com

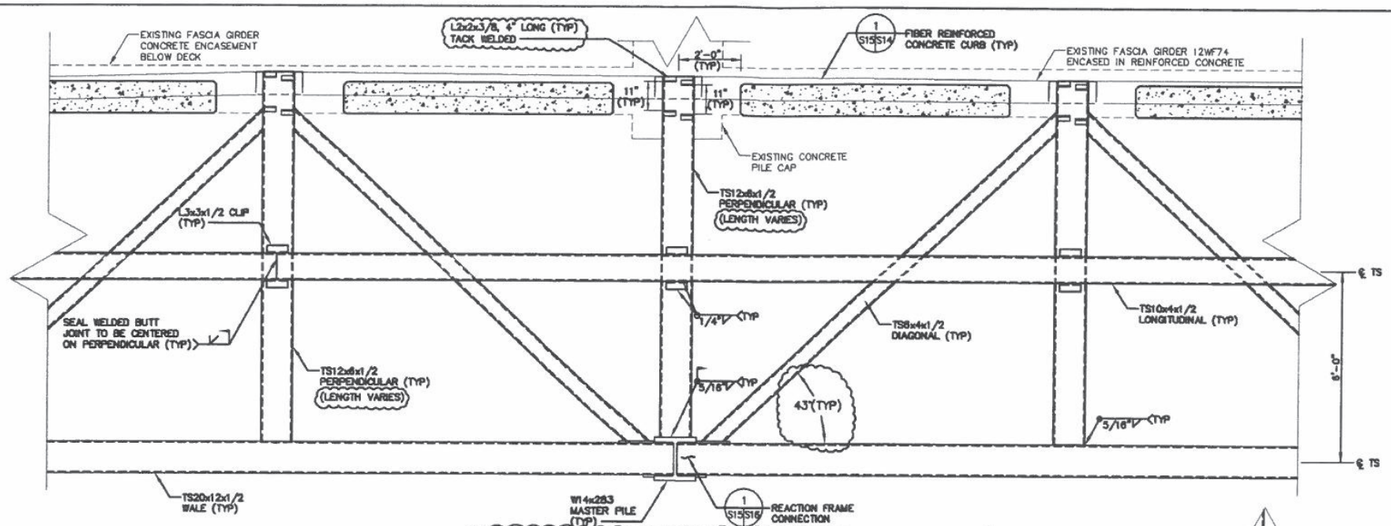
DRN.	DN. CHK.		
APPD.	PROJ.		
		DATE	STATE
SATISFACTORY TO			
SATISFACTORY TO		DATE	STATE
HEAD, ENGINEERING DIVISION			
APPROVED		DATE	STATE
Vice President	10/30/98		
TITLE	DATE		

DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
PORTSMOUTH, N.H.
NAVAL FACILITIES ENGINEERING COMMAND
STRUCTURALLY REPAIR BERTH 11

FENDER / SHUTTER SYSTEM DETAILS

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196020
SHT S14
SHEET 21 OF 36
PW NO. FP2-98-392

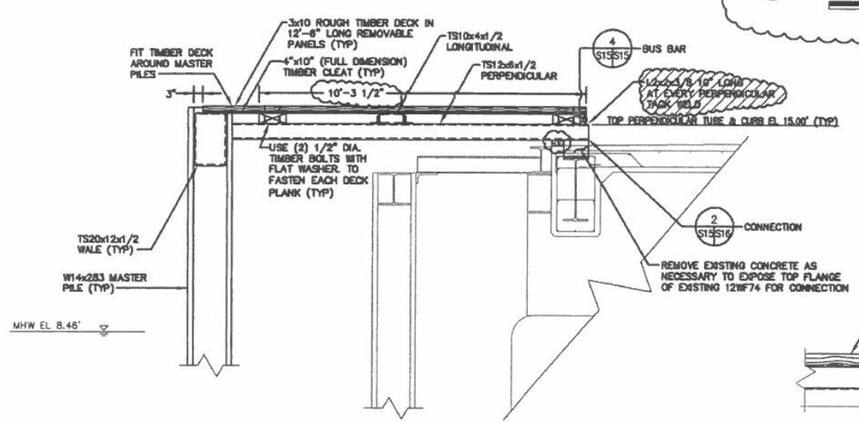
UNCLASSIFIED



PLAN

3 S11S15 REACTION FRAME DETAIL (TYP)

2 1 0 2 4 6 (FEET)

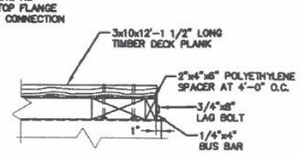


SECTION

B S11S15 REACTION FRAME DETAIL (TYP)

S13

2 1 0 2 4 6 (FEET)



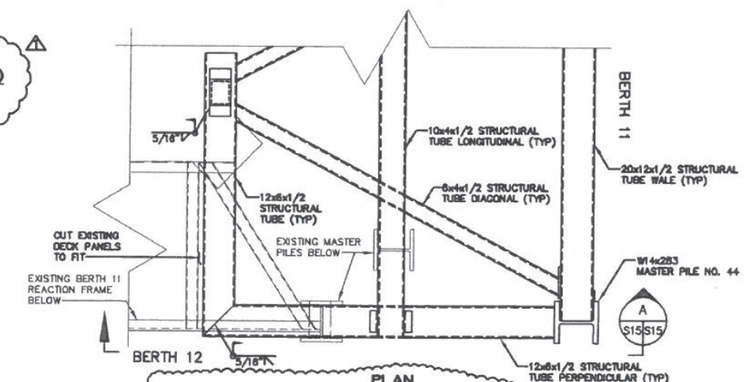
NOTE:
FIBER REINFORCED CONCRETE CURB SHALL BE LOCATED AS SHOWN ON SHEET S16 WHARF CONNECTION DETAIL PLAN

SECTION

4 S15S15 BUS BAR DETAIL

1 1/2 0 1 2 3 (FEET)

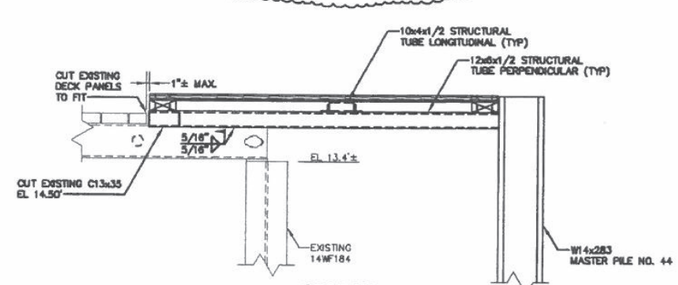
NOTE:
REMOVE EXISTING BUS BAR WHICH CONSISTS OF MULTIPLE 12'-6" LENGTHS BOLTED AND BRAZED TOGETHER TO FORM A CONTINUOUS BAR FASTENED WITH 3/4"x8" LONG LAG SCREWS SPACED 4'± O.C.. CUT BAR 6" FROM EACH SIDE OF EVERY BOLTED/BRAZED JOINT. REINSTALL BAR ON ALTERNATE REMOVABLE DECK PANELS FROM BENT 14 TO 39.



PLAN

REACTION FRAME END CONNECTION DETAIL

2 1 0 2 4 6 (FEET)



SECTION

A S15S15 REACTION FRAME END CONNECTION

2 1 0 2 4 6 (FEET)

NOTES:

1. REACTION FRAME CONNECTION TO FASCIA GIRDER REQUIRES REMOVAL OF 2'-6" LONG CLEATS AT BENTS 16, 20, 28, 33, 37 AND C'. REMOVE NUT POCKET LEAD FILL AND CUT SIX 1 1/4" DIA. ANCHOR BOLTS FLUSH WITH TOP OF FASCIA GIRDER (TYP). CLEATS SHALL BE SALVAGED AND DELIVERED TO LOCATION WITHIN A HALF MILE AS DIRECTED BY THE CONTRACTING OFFICER.
2. ALL STRUCTURAL TUBES SHALL HAVE 1/2" THICK END PLATES WITH 5/16" FILLET (SEAL WELD) ALL AROUND UNLESS SEAL WELDED TO A LARGER MEMBER.
3. FENDER SYSTEM TIMBER NOT SHOWN – SEE S13.
4. TIMBER BOLTS SHALL BE DOME HEAD UP WITH NUT AND WASHER COUNTERSUNK SUCH THAT THE HARDWARE DOES NOT PROJECT BELOW THE CLEATS (TYP). TIMBER BOLTS SHALL BE HOT DIPPED GALVANIZED AND SUITABLE FOR A MARINE ENVIRONMENT.

REVISION	DATE	DESCRIPTION
1	08/20/98	Revised due to redesigned fascia girder

REVISIONS

Applebore Engineering Inc.
800 Slack Street Suite D
Portsmouth, New Hampshire 03801
603-433-8818 info@ae-inc.com

DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
PORTSMOUTH, N.H.
NAVAL FACILITIES ENGINEERING COMMAND
STRUCTURALLY REPAIR BERTH 11

FENDER / SHUTTER SYSTEM
STEEL REACTION FRAME
DETAILS – 1

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196021
SHT S15
SHEET 22 OF 36
PW NO. FP2-98-393

D-15

BERTH 11

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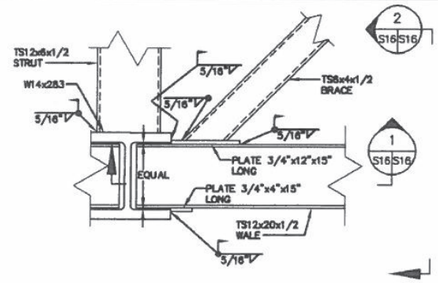
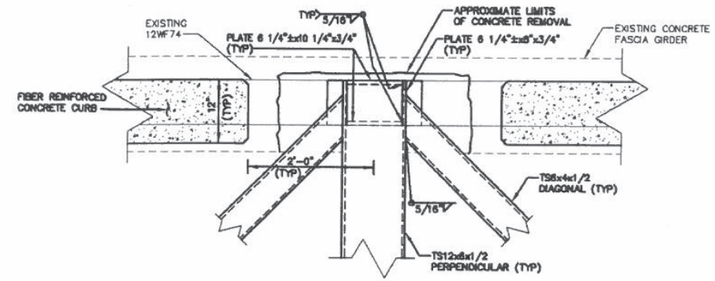


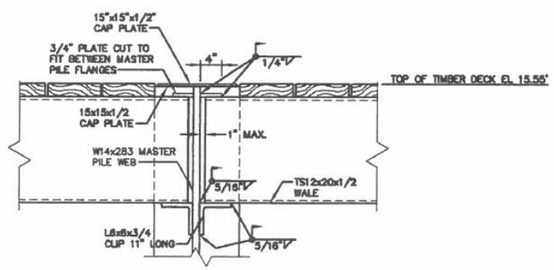
PLAN

1 S15 S16 REACTION FRAME CONNECTION DETAIL (TYP)

1 1/2 0 1 2 3 (FEET)



PLAN



SECTION

1 S16 S16 UPPER WALE CONNECTION DETAIL (TYP)

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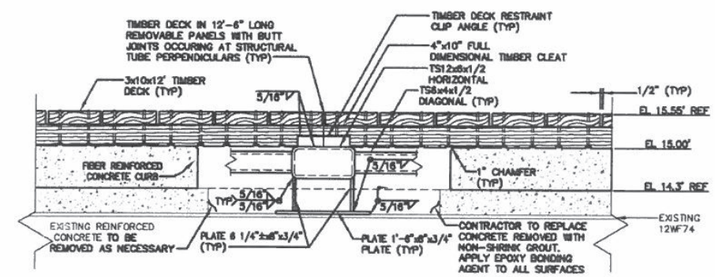
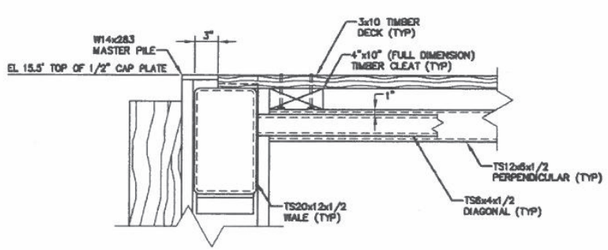


SECTION

2 S15 S16 WHARF CONNECTION DETAIL

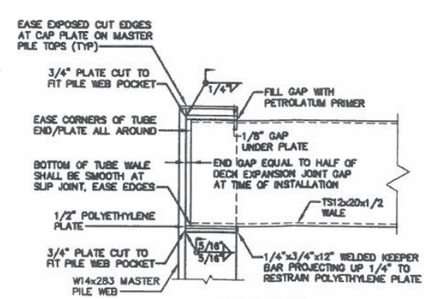
1 1/2 0 1 2 3 (FEET)



SECTION

2 S16 S16 REACTION FRAME CONNECTION DETAIL (TYP)

1 1/2 0 1 2 3 (FEET)

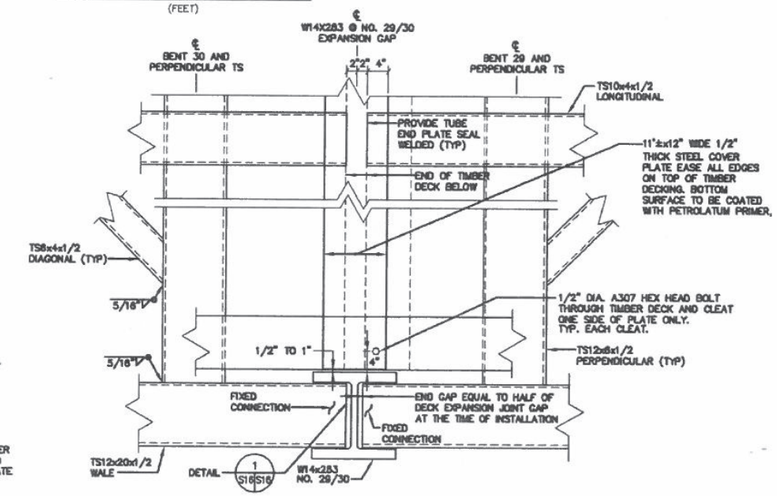


SECTION

WALE SLIP CONNECTION DETAIL AT EXPANSION JOINT

(EAST SIDE MASTER PILE 29/30)

1 1/2 0 1 2 3 (FEET)



PLAN

4 S11 S16 WALE SLIP CONNECTION DETAIL AT EXPANSION JOINT

1 1/2 0 1 2 3 (FEET)

NO.	DATE	DESCRIPTION	BY

REVISIONS

MECH.	CH. ENG.	
ELEC.	PROJ.	
SATISFACTORY TO		DATE
SATISFACTORY TO		DATE
REVISION	DATE	
SATISFACTORY TO		DATE
SATISFACTORY TO		DATE
CHIEF, ENGINEERING DIVISION		DATE
APPROVED		DATE
CHIEF, PLANNING & ENGINEERING		

Appledore Engineering Inc.
800 Dakota Street Suite D
Blacksburg, Virginia 24060
540-953-2670
e-sign-above-use
Dakota Ave. Office Park 3301
Blacksburg, Virginia 24060
540-953-2670
e-sign-above-use
DESIGN: M. Cole CHK: M. Cole DRWN: M. Cole CHK: BBS SUPV: BBS
Vice President 10/8/98
TITLE DATE

(BBS)

NAVAL FACILITIES ENGINEERING COMMAND
PORTSMOUTH, N.H.

DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
PORTSMOUTH, N.H.

STRUCTURALLY REPAIR BERTH 11

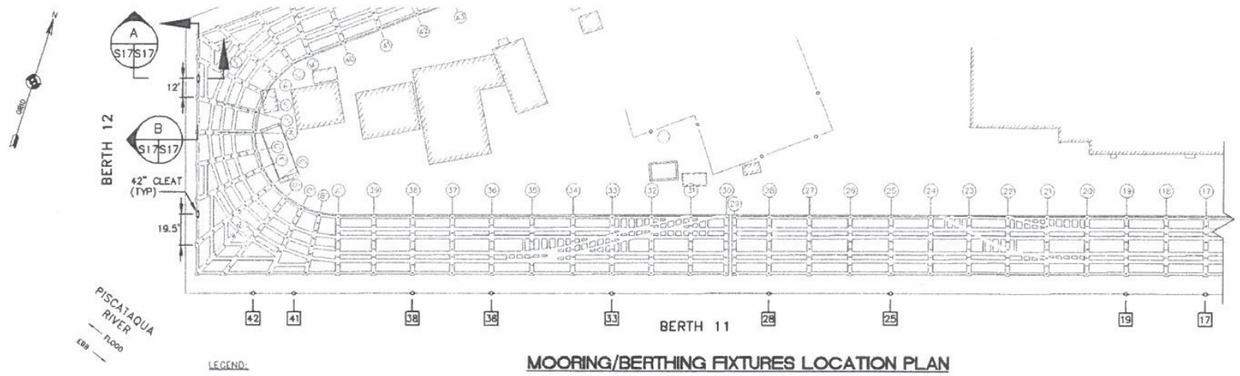
FENDER / SHUTTER SYSTEM
STEEL REACTION FRAME
DETAILS – 2

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196022
SHT S16
SHEET 23 OF 36
FW NO. FP2-98-394

UNCLASSIFIED

D-16

BERTH 11

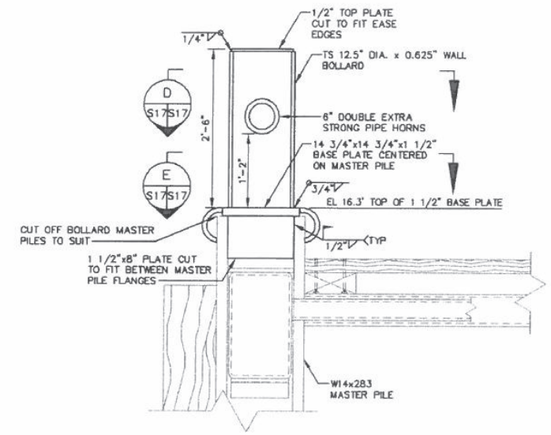


MOORING/BERTHING FIXTURES LOCATION PLAN

40 20 0 40 80 120
(FEET)

LEGEND:

- CLEAT
- 28 BOLLARD AT MASTER PILE BENT LOCATION
- 42 EXISTING PILE BENT LOCATIONS
- EXISTING BUILDING



SECTION
BOLLARD DETAIL (TYP)

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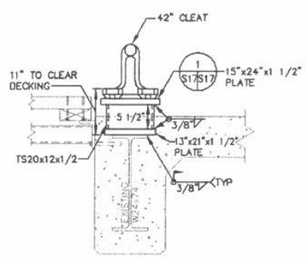
(FEET)



SECTION
A S17/S17 CLEAT INSTALLATION DETAIL

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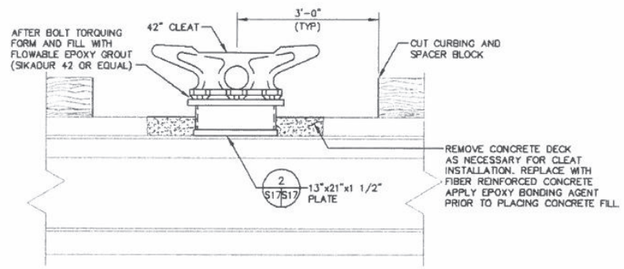
(FEET)



SECTION
B S17/S17 CLEAT INSTALLATION DETAIL

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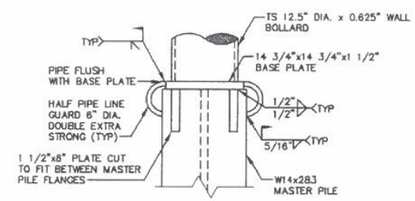
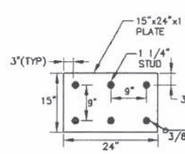
(FEET)



SECTION
C S17/S17 BASE PLATE SECTION

1 1/2 0 1 2 3
(FEET)



PLAN
1 S17/S17 BASE PLATE DETAIL

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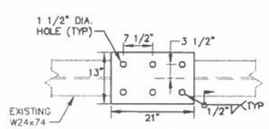
(FEET)

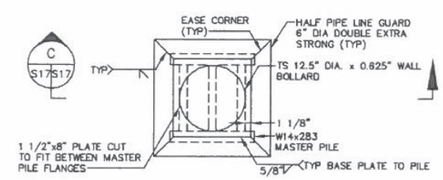


PLAN
2 S17/S17 BASE PLATE DETAIL

1 1/2 0 1 2 3
(FEET)

NOTES:

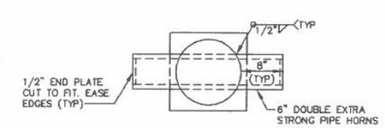
1. BOLLARD TUBE STEEL (12.5" DIA.x0.625" WALL) SHALL CONFORM TO ASTM A500 GRADE B.
2. BOLLARD HORN AND LINE GUARD PIPE (6" DIA. DOUBLE EXTRA STRONG) SHALL CONFORM TO ASTM A53 GRADE B.
3. GRIND SMOOTH ALL EXPOSED BOLLARD / BASE / LINE GUARD SURFACES AFTER INSTALLATION. EASE ALL EXPOSED EDGES.
4. PAINT MOORING FIXTURE ASSEMBLIES AFTER INSTALLATION WITH THREE-COAT EPOXY-POLYAMIDE SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 09967. TOPCOAT COLOR SHALL BE SAFETY YELLOW (FEDERAL COLOR 13591).
5. COAT CLEAT ANCHOR BOLT THREADS WITH ANTI-SEIZE GREASE PRIOR TO ASSEMBLY.
6. SUBMIT CATALOG CUTS OF FLOWABLE EPOXY TO THE CONTRACTING OFFICER FOR APPROVAL.
7. EASE EDGES OF EPOXY FILL TO MINIMIZE MOORING LINE CHAFE.
8. USE CLEATS SALVAGED FROM BERTH 11.
9. THE CONTRACTOR SHALL WELD BENT NUMBERS ONTO MASTER PILE/ BOLLARD COVER PLATES, USE 3" BLOCK LETTERS



PLAN
E S17/S17 BOLLARD SECTION

1 1/2 0 1 2 3
(FEET)

NOTE:
MASTER PILE AND STIFFENER NOT SHOWN FOR DRAWING CLARITY



PLAN
D S17/S17 BOLLARD SECTION

1 1/2 0 1 2 3
(FEET)

REVISIONS			
REVISION	DATE	DESCRIPTION	BY

DEPARTMENT OF THE NAVY
NAVAL SHIPYARD
PORTSMOUTH, N.H.
NAVAL FACILITIES ENGINEERING COMMAND

STRUCTURALLY REPAIR BERTH 11

MOORING FIXTURES AND MISCELLANEOUS DETAILS

Appledore Engineering Inc.

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62472-98-C-6547
SPEC. 04-98-6547
NAVFAC DRAWING NO. 2196023
SHT S17
SHEET 24 OF 36
PW NO. FP2-98-395

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BERTH 11