

# PORT OF TACOMA

## TACOMA, WASHINGTON EAST BLAIR ONE WHARF

CONTRACT NO. 068018  
05/21/2007

### PORT COMMISSIONERS:

CONSTANCE T. BACON  
R. TED BOTTIGER  
JACK A. FABULICH  
RICHARD P. MARZANO  
CLARE PETRICH

### PORT STAFF:

TIMOTHY J. FARRELL  
Executive Director

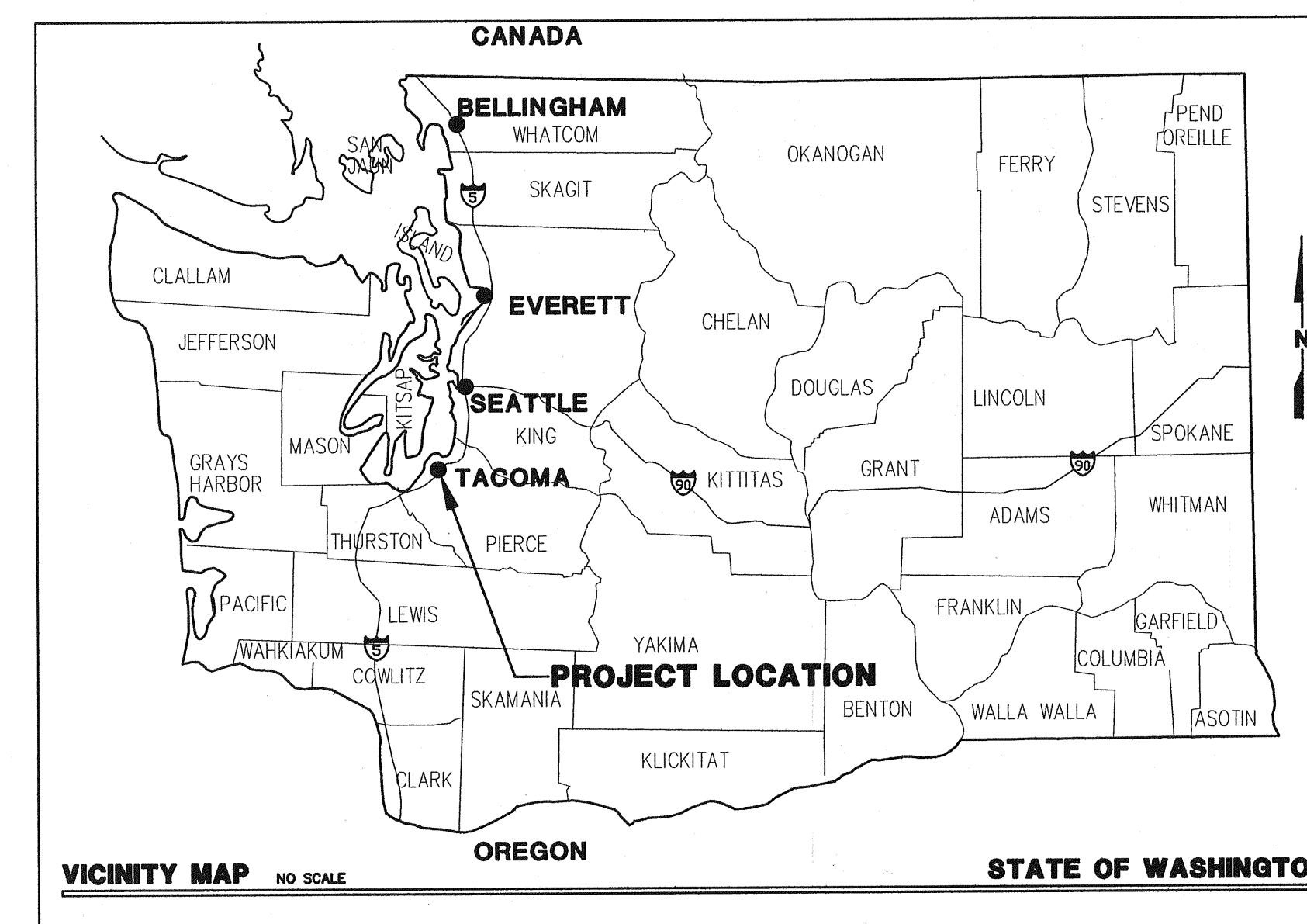
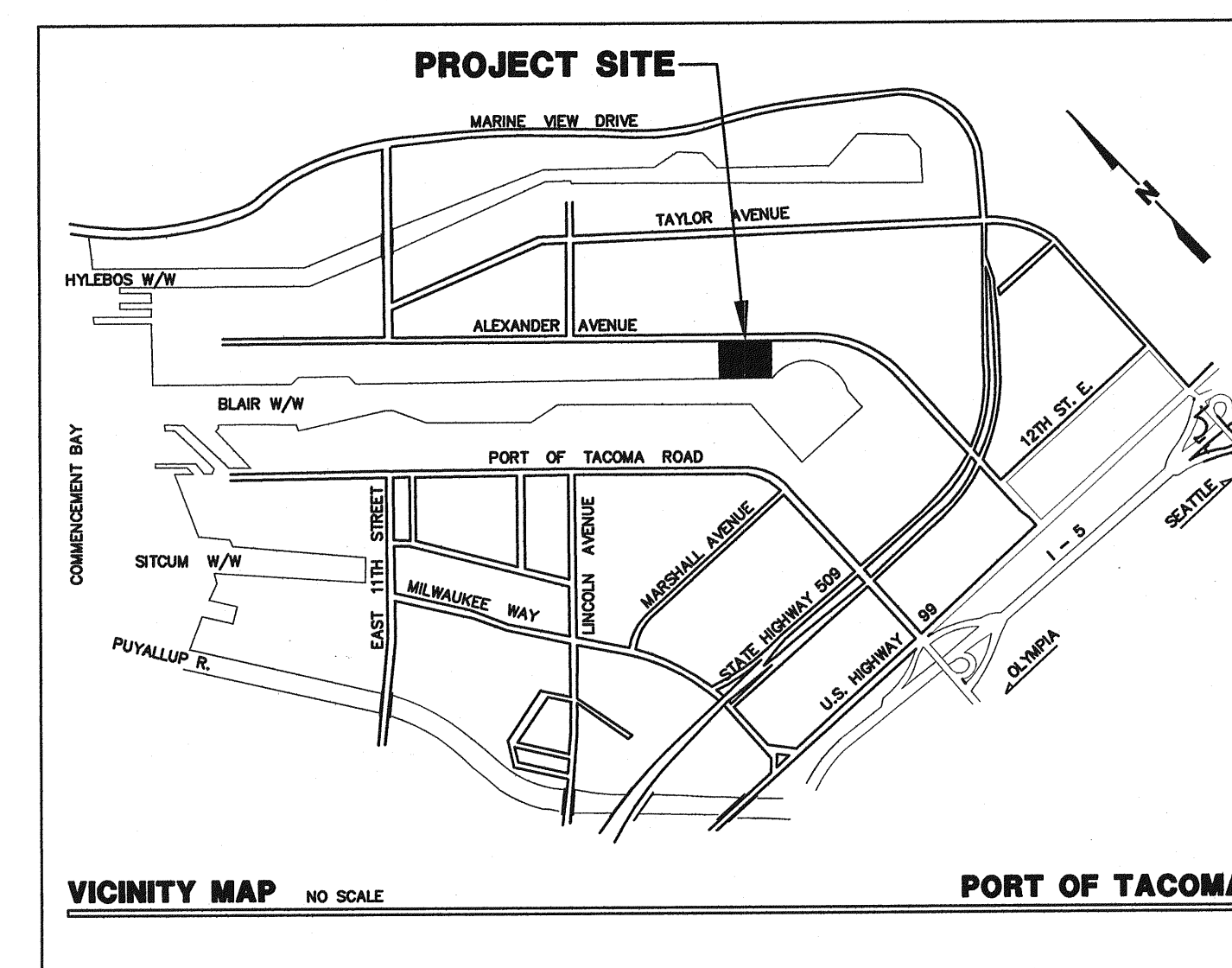
LOUIS W. PAULSEN  
Senior Director,  
Facilities Development

MICHAEL R. ADAMS, P.E.  
Chief Engineer  
Director of Engineering

CONSULTANT:



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**kpff**

PORT OF TACOMA USA

APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 23 May 2007  
DRAWING DATE: 05/21/2007  
PORT OF TACOMA PROJECT NO. 068018

LS 05/2007  
CHECKED BY: - DATE: 05/2007  
CY PROJECT ENGR. - DATE: 05/2007

MARK REVISION

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATING: HORIZ: VERT:  
DRAWING SCALE: AS SHOWN

EP-6305  
SHEET 1 OF 215  
CONTRACT NUMBER: 068018  
E. NUMBER: E2623  
PHASE: BID SET

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
COVER SHEET

BID SET

**GENERAL**

1. CONTRACTOR SHALL VERIFY INFORMATION GIVEN HERE WITH SPECIFICATIONS AND OTHER DOCUMENTS AND BRING ANY CONFLICTS TO THE ATTENTION OF THE PORT BEFORE BEGINNING AFFECTED WORK. THE ENGINEER WILL RESOLVE ANY SUCH CONFLICT.
2. ALL DIMENSIONS AND DETAILS WILL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

**PILING**

1. PILES SHALL BE DRIVEN TO THE MINIMUM TIP ELEVATIONS INDICATED.
2. PRECAST CONCRETE PILES FURNISHED BY PORT. SEE SPECIFICATIONS FOR LOCATIONS OF PORT-FURNISHED PILE MATERIAL.

**SURVEY**

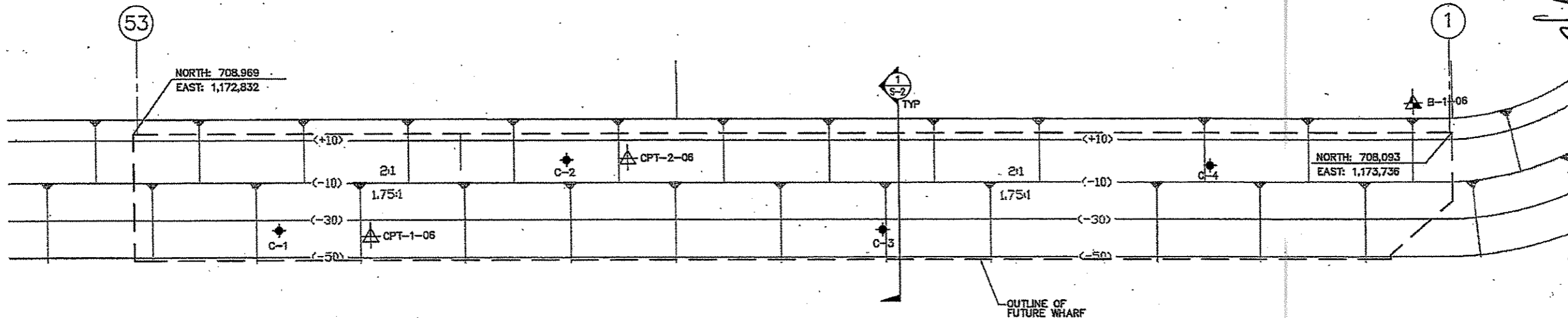
1. CONTRACTOR SHALL SURVEY AND STAKE THE UPLAND EDGE OF THE FUTURE WHARF AS SHOWN ON THE PLAN BELOW.

**TEST PILE SCHEDULE**

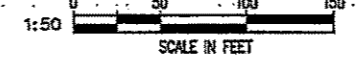
PILE SYMBOL	PILE TYPE	TIP ELEVATION	CUT-OFF ELEVATION	TOTAL PILE LENGTH	NORTHING	EASTING
C-1	24" SOLID OCTAGONAL PRESTRESSED CONCRETE	-123'	-	143 FT	708,807.07	1,172,869.04
C-2	24" SOLID OCTAGONAL PRESTRESSED CONCRETE	-123'	-	143 FT	708,663.05	1,173,112.43
C-3	24" SOLID OCTAGONAL PRESTRESSED CONCRETE	-123'	-	143 FT	708,406.85	1,173,281.90
C-4	24" SOLID OCTAGONAL PRESTRESSED CONCRETE	-123'	-	143 FT	708,232.34	1,173,547.95

**CODES AND STANDARDS**

1. STRUCTURAL
  - A. ALL METHODS AND MATERIALS SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE, 2003 EDITION, AS AMENDED AND ADOPTED BY THE CITY OF TACOMA.



**TEST PILE PLAN**



**NOTES:**

1. SEE SHEET S-3 & S-4 FOR PRECAST CONCRETE PILE DETAILS.
2. B-1-06 INDICATES BORING NUMBER AND APPROXIMATE LOCATION.
3. CPT-1-06 INDICATES CONE PENETRATION TEST NUMBER & APPROXIMATE LOCATION.

Dec 14, 2006 9:48am davidm L:\108088.11 EAST BLAIR POT DESIGN\DWG\TEST PILE PLAN INSTALLATION\TP-S1.dwg TP-S1

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**kpfi**  
 PORT OF TACOMA DESIGN

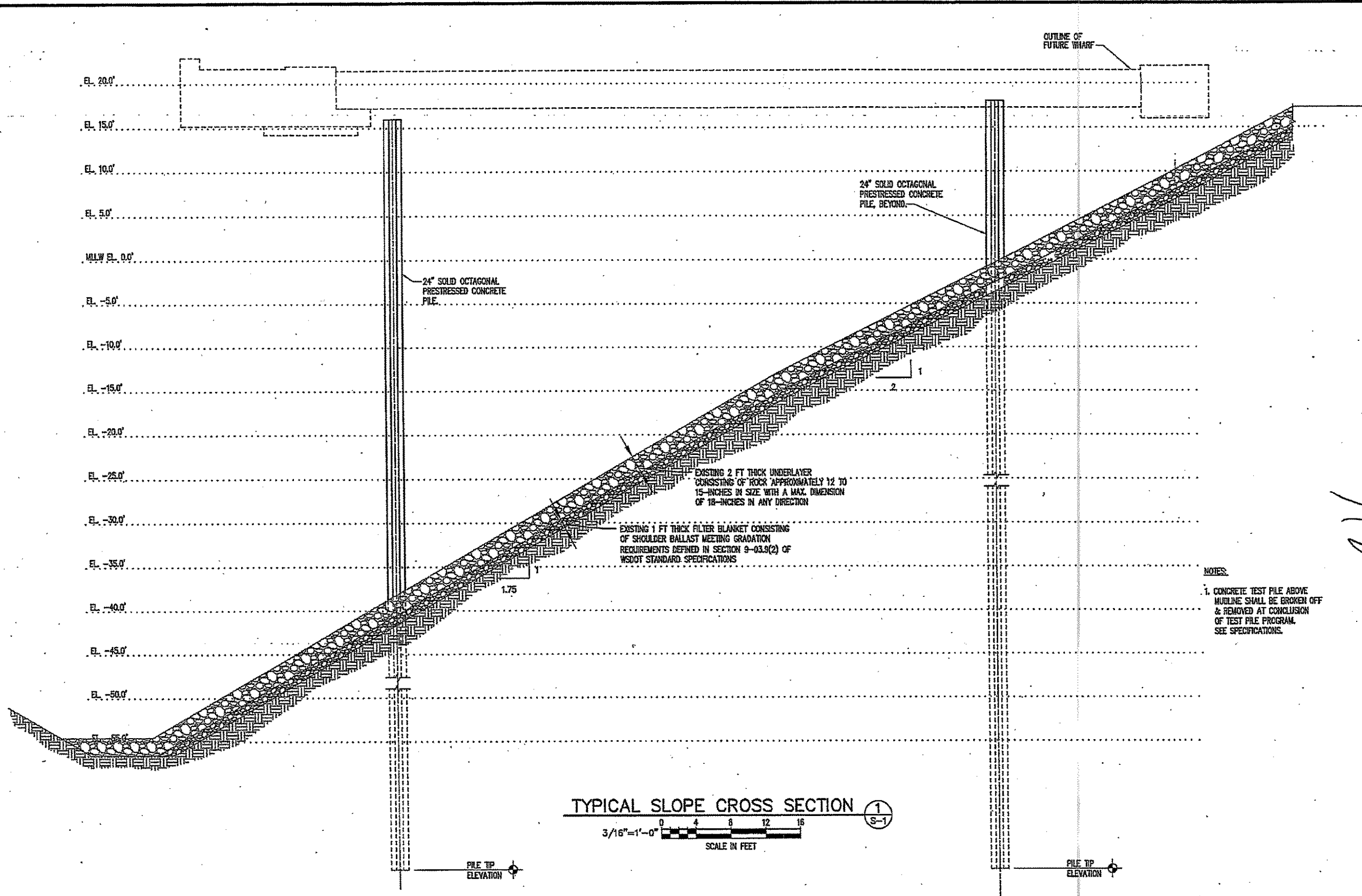
APPROVED	DATE
12/2006	12/2006
CHECKED BY	PROJECT ENGR.
SK	SK

APPROVED: *[Signature]* 12-14-2006  
 CHIEF ENGINEER - DATE  
 PORT OF TACOMA  
 PORT PARALLEL

**PORT OF TACOMA**  
 EBOW - TEST PILE PROGRAM  
 STRUCTURAL NOTES/TEST PILE PLAN

EP-6305  
**S-1**  
 SHEET 3 OF 6  
 CONTRACT NUMBER: 088017  
 S. NUMBER: 2283  
 CROSS SECTION: EBOW  
 TOWNSHIP: RANGE: SECTION:  
 DATUM: HORIZ: VERT:  
 DRAWING SHEET: AS SHOWN

Dec 14, 2006 9:48am d:\admin L:\000056.11 EAST BLAR POT DESIGN\DWG\TEST FILE PLAN\INSTALLATION\TP-S2.dwg TP-S2

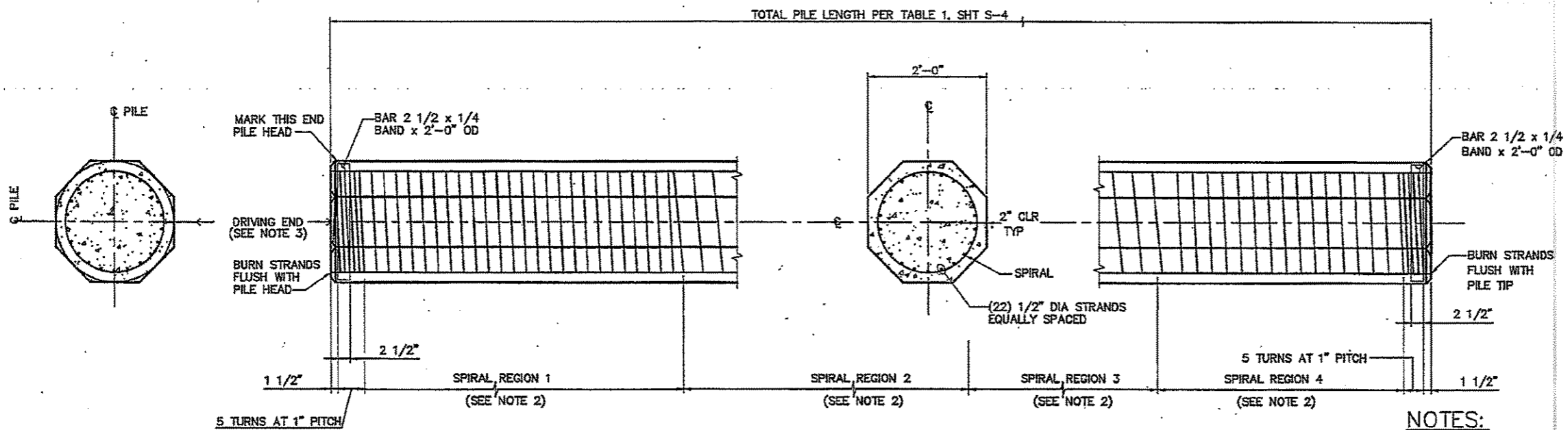


TYPICAL SLOPE CROSS SECTION (1)  
 3/16"=1'-0" SCALE IN FEET

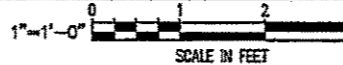
<b>PORT OF TACOMA</b> P.O. BOX 1937 TACOMA, WA 98401 253-889-5841 Consulting Engineers 427 Pacific Avenue, Suite 800 Tacoma, Washington 98402 253-889-0200 Fax: 253-889-0862	
RJK CHECKED BY SEK PROJECT ENGR.	DATE 12/2006 DATE 12/2006 DATE 12/2006
APPROVED  CHIEF ENGINEER DATE 12 Dec 06 DRAWING DATE: 12-14-2006 PORT PROJECT:	
<b>PORT OF TACOMA</b> EBOW - TEST FILE PROGRAM TYPICAL SLOPE CROSS SECTION	
EP-6305 <b>S-2</b> SHEET 4 OF 6 CONTRACT NUMBER: 050017 E. NUMBER: 2203 PHASE: TEST FILE PROGRAM	TOWNSHIP: RANGE: SECTION: COUNTY: DISTRICT: AS SHOWN

NOTES:  
 1. CONCRETE TEST PILE ABOVE MUDLINE SHALL BE BROKEN OFF & REMOVED AT CONCLUSION OF TEST FILE PROGRAM. SEE SPECIFICATIONS.

Dec 14, 2006 9:48am davidm L:\106086.11 EAST BLAIR POT DESIGN\DWG\TEST PILE PLAN\INSTALLATION\TP-83.dwg TP-S3






PORT-FURNISHED 24" SOLID OCTAGONAL PRECAST PRESTRESSED CONCRETE PILE. ①



NOTES:

1. SEE TABLE 1 ON SHEET S-4.
2. SEE TABLE 2 ON SHEET S-4.
3. DRIVING END OF ALL PILES WILL BE MARKED AT PRECAST PLANT BY PILE MANUFACTURER.
4. MARKS DESIGNATING PILE SIZE, LENGTH, AND TYPE WILL BE PAINTED CLEARLY ON THE PILE AT THE PRECAST PLANT BY THE PILE MANUFACTURER.

				PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841 Consulting Engineers 801 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 386-0150 Fax (253) 386-0182	
RKS	12/2006	DATE	CHECKED BY	12/2006	DATE
SEX	PROJECT ENGR.	DATE	DATE	DATE	DATE
		APPROVED K. J. Jones CHIEF ENGINEER DRAWING DATE: 12-14-2006 PORT OF TACOMA			
PORT OF TACOMA EBOW - TEST PILE PROGRAM PRECAST PILE DETAILS		SHEET 5 OF 6 COUNTY NUMBER: 08047 TOWNSHIP: RANGE: SECTION: DATUM: 10002 DRAWING SCALE: AS SHOWN PLEASE TEST PILE PROGRAM			

Dec 14, 2006 9:48am davidm L:\06066.11 EAST BLAIR POT\DESIGN\DWG\TEST PILE PLAN\INSTALLATION\TP-S4.dwg TP-S4

**TABLE 1 – PORT-FURNISHED PRECAST PRESTRESSED CONCRETE PILES**

DESIGNATION	DETAIL	SECTION AREA	WEIGHT	SECTION MODULUS	PRESTRESS INFORMATION			LONGITUDINAL (GRADE 60) REINF. STEEL	QUANTITY	TOTAL LENGTH EACH PILE
					# OF STRANDS	DESIGN FORCE	PRESTRESS IN CONCRETE			
24" CONC. SOLID OCT		477 IN <sup>2</sup>	524 LBS/FT	1513 IN <sup>3</sup>	22	578 KIPS	1211 PSI	NONE	4	143 FT

**TABLE 2 – PORT-FURNISHED PRECAST PRESTRESSED CONCRETE PILE SPIRAL REINFORCING**

DESIGNATION	SPIRAL REGION 1			SPIRAL REGION 2			SPIRAL REGION 3			SPIRAL REGION 4		
	WIRE SIZE	PITCH	LENGTH	WIRE SIZE	PITCH	LENGTH	WIRE SIZE	PITCH	LENGTH	WIRE SIZE	PITCH	LENGTH
24" CONC. SOLID OCT	W18	3 IN	25'-0"	W18	3 IN	20'-0"	W5.5	4 IN	REMAINDER	W5.5	2 IN	4'-6"

**NOTES:**

- MINIMUM CONCRETE STRENGTHS ARE AS FOLLOWS:
  - ⊗ DRIVING F<sub>c</sub> = 8000 PSI
  - ⊗ 28 DAYS F<sub>c</sub> = 8000 PSI

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PROJECT BY  
TACOMA  
USE-XX

REVISION

DATE

12/2006  
CHECKED BY - DATE  
SEK 12/2008  
PROJECT ENGR. - DATE

APPROVED  
  
H. J. Jones  
12 Dec 06  
CHIEF ENGINEER - DATE  
DRAWING DATE: 12-11-2008  
PORT ADDRESS: X  
PORT PARCEL: X

EP-6305

PORT OF TACOMA  
EBOW - TEST PILE PROGRAM  
PRECAST PILE DETAILS

SHEET 6 OF 6  
CONTRACT NUMBER: 08007  
DRAWING SCALE: AS SHOWN

## GENERAL

- THESE NOTES CONTAIN GENERAL INFORMATION AND ARE NOT COMPLETE FOR CONSTRUCTION PURPOSES. CONTRACTOR SHALL VERIFY INFORMATION GIVEN HERE WITH SPECIFICATIONS AND OTHER DOCUMENTS AND BRING ANY CONFLICTS TO THE ATTENTION OF THE PORT BEFORE BEGINNING AFFECTED WORK. THE ENGINEER WILL RESOLVE ANY SUCH CONFLICT.
- ALL DIMENSIONS AND DETAILS WILL BE VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION AND CONSTRUCTION.
- ALL SHOP DRAWINGS FOR PRECAST CONCRETE ELEMENTS, REINFORCING STEEL, MISCELLANEOUS STEEL, AND FENDER SYSTEM SHALL BE SUBMITTED TO AND REVIEWED BY THE ENGINEER PRIOR TO FABRICATION.
- IN THE EVENT OF CONFLICTING REQUIREMENTS BETWEEN THE CONTRACT DRAWINGS, GENERAL NOTES AND SPECIFICATIONS. REFER TO SECTION G-02.02 OF THE CONTRACT SPECIFICATIONS FOR GUIDANCE.
- VERTICAL DATUM: SEE SHEET G7.0.

## CODES AND STANDARDS

### 1. STRUCTURAL

- ALL METHODS AND MATERIALS SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE, 2003 EDITION, AS AMENDED AND ADOPTED BY THE CITY OF TACOMA.
- REINFORCED CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE".
- STRUCTURAL AND MISCELLANEOUS STEEL FABRICATION AND ERECTION SHALL CONFORM TO THE AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" 2005.
- WELDING OF STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO THE AWS D1.1, 2004.
- WELDING OF REINFORCING STEEL SHALL CONFORM TO THE AWS D1.4, 1998.

## PILING

- PILES SHALL BE DRIVEN TO THE MINIMUM TIP ELEVATIONS INDICATED.
- ALL P222 STEEL SHEET PILING ALONG THE WHARF BULKHEAD HAVE BEEN PRE-PURCHASED BY THE PORT. SEE S61.0 FOR ADDITIONAL INFORMATION.
- P222 SHEET PILING AT THE WINGWALLS BEYOND THE ENDS OF THE WHARF BULKHEAD SHALL BE ASTM A690, GRADE 50, WITH MARINE COATING PER SPECIFICATIONS.
- (392) CONCRETE PILES HAVE BEEN PRE-PURCHASED BY THE PORT. SEE SHEET S61.0 FOR ADDITIONAL INFORMATION.

## REINFORCED CONCRETE

### 1. REINFORCING STEEL

- PRESTRESSING STEEL SHALL BE UNCOATED LOW-RELAXATION SEVEN-WIRE STRAND CONFORMING TO ASTM A 416, GRADE 270.
- ALL REINFORCING STEEL SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 - GRADE 60, EXCEPT AS NOTED.
  - ALL REINFORCING STEEL TO BE WELDED SHALL BE ASTM A 706 - GRADE 60.
  - DOWEL BARS FOR PILE TO PILE CAP CONNECTIONS SHALL BE ASTM A 706 - GRADE 60.
  - SPIRAL REINFORCEMENT SHALL BE ASTM A 615, PLAIN (UN-DEFORMED) ROUND, UNO.
  - ASTM A 615 GRADE 60 REINFORCEMENT SHALL BE PERMITTED FOR USE AS DOWEL BARS FOR PILE TO PILE CAP CONNECTIONS IF THE FOLLOWING ARE MET.
    - THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED  $F_y$  BY MORE THAN 18,000 PSI (RETESTS SHALL NOT EXCEED THIS VALUE BY MORE THAN AN ADDITIONAL 3000 PSI); AND
    - THE RATIO OF THE ACTUAL TENSILE STRENGTH TO THE ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25.

- LAP ALL REINFORCING BARS AS NOTED ON THE DRAWINGS. PROVIDE CLASS B SPLICE LENGTH PER SCHEDULE UNLESS NOTED OTHERWISE.

MINIMUM SPLICE LENGTH (INCHES)		
BAR SIZE	CLASS A	CLASS B
#4	25	33
#5	31	41
#6	37	49
#7	54	71
#8	62	81
#9	70	91
#10	78	102
#11	85	111

- PROVIDE CORNER BARS AT ALL CORNERS. CORNER BARS SHALL MATCH THE NUMBER, SPACING AND DIAMETER OF ALL HORIZONTAL REINFORCEMENT AT THE CORNER, UNLESS SHOWN OTHERWISE. TERMINATED STRAIGHT BARS SHALL EXTEND FULL AVAILABLE LENGTH INTO ADJOINING MEMBERS.
- MECHANICAL SPLICES SHALL DEVELOP AT LEAST 125 PERCENT OF THE YIELD STRENGTH OF THE BAR IN TENSION.
- REINFORCING SHALL BE SUPPORTED AS SPECIFIED BY THE PROJECT SPECIFICATIONS AND THE CRSI MANUAL OF STANDARD PRACTICE, (MSP). REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH "ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES," ACI 315.
- ALL HORIZONTAL REINFORCEMENT AT DISCONTINUITIES AND CORNERS SHALL END WITH STANDARD 90° HOOKS IN ACCORDANCE WITH ACI 315, UNLESS SHOWN OTHERWISE.

### 2. PRECAST CONCRETE

- |                                       |          |
|---------------------------------------|----------|
| A. PRECAST PRESTRESSED CONCRETE PILES | 8000 PSI |
| B. PRECAST CONCRETE PANELS            | 6000 PSI |

MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS

### 3. CAST-IN-PLACE CONCRETE

- |   |          |
|---|----------|
| A. CAST-IN-PLACE CONCRETE PILE CAPS       | 4000 PSI |
| B. BULLRAIL                               | 4000 PSI |
| C. DECK PANEL SHEAR KEY CONCRETE          | 4000 PSI |
| D. CAST-IN-PLACE CONCRETE IN PILE BUILDUP | 6000 PSI |

MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS

- ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4 IN.
- CONSTRUCTION JOINTS SHALL BE PROVIDED ONLY AS NOTED ON THE DRAWINGS AND AS SPECIFICALLY PERMITTED BY THE ENGINEER.
- CONCRETE MIX SHALL HAVE A MAXIMUM WATER CEMENT RATIO OF 0.40 UNLESS NOTED OTHERWISE.
- ALL CONCRETE SHALL BE AIR ENTRAINED WITH A TARGET OF  $5\% \pm 1\ 1/2\%$  UNLESS NOTED OTHERWISE IN THE SPECIFICATIONS.

## ANCHORS

- USE OF DRILLED ADHESIVE CONCRETE ANCHORS, WHERE NOT SPECIFIED IN THE DOCUMENTS, SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
- EPOXY OR ADHESIVE-TYPE ANCHORS SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATION. SPECIAL INSPECTION IS REQUIRED FOR ALL ADHESIVE ANCHORS.
- ACCEPTABLE ADHESIVES ARE HITL HIT HY 150, ICE, OR HVA SYSTEMS; OR SUMPSON EPOXY TIE (SET) SYSTEM. ICBO OR ICC REPORTS SHALL BE SUBMITTED FOR ALL ADHESIVE ANCHOR PRODUCTS.

## MISCELLANEOUS STEEL

- ALL MISCELLANEOUS STEEL SHAPES AND PLATES, EXCEPT AS NOTED BELOW, SHALL CONFORM TO ASTM A 36.
- STEEL PLATE NOTED AS GRADE 50 SHALL CONFORM TO ASTM A572, GRADE 50.
- ALL BOLTS SHALL CONFORM TO ASTM A 307, UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.
- ALL ANCHOR BOLTS SHALL CONFORM TO ASTM F 1554, GRADE 36 (TYPICAL), AND GRADE 105 (AT CRANE STOPS AND CAPSTANS).
- PROVIDE BLEED HOLES IN EMBEDDED PLATES AND SHAPES AT 24-IN. ON CENTER MAXIMUM.
- ALL MISCELLANEOUS PIPES AND SLEEVES, INCLUDING BOLLARDS, SHALL CONFORM TO ASTM A 53, GRADE B.
- ALL NUTS SHALL BE ASTM A 563, UNLESS NOTED OTHERWISE.
- ALL WASHERS SHALL BE ASTM F 436, UNLESS NOTED OTHERWISE.
- ALL STEEL ITEMS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS, UNLESS NOTED OTHERWISE.
- SEE THE CONTRACT SPECIFICATIONS FOR ITEMS TO RECEIVE MARINE COATING IN ADDITION TO GALVANIZING.

## WELDING

- ALL WELDING SHALL BE PERFORMED BY WELDERS QUALIFIED FOR THE WELD AND POSITION SHOWN IN ACCORDANCE WITH AWS AND HAVING CURRENT CERTIFICATION FROM WABO.
- ALL WELDS SHALL BE PERFORMED WITH PROCEDURES PREQUALIFIED OR QUALIFIED IN ACCORDANCE WITH AWS D1.1 AND D1.4.
- THE WELDS SHOWN ARE FOR THE FINAL CONNECTIONS. FIELD WELD SYMBOLS ARE SHOWN WHERE FIELD WELDS ARE REQUIRED BY THE STRUCTURAL DESIGN. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING IF A WELD SHOULD BE SHOP- OR FIELD-WELDED IN ORDER TO FACILITATE THE STRUCTURAL STEEL ERECTION.
- WELDING ELECTRODES SHALL BE 70 KSI STRENGTH AND SHALL BE "LOW-HYDROGEN" ELECTRODES.

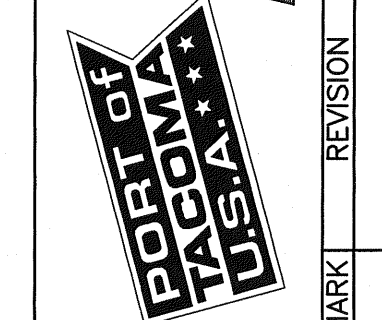
## INSPECTION

THE CRITICAL ELEMENTS REQUIRING SPECIAL INSPECTION PER IBC 2003 CHAPTER 17 ARE AS FOLLOWS:

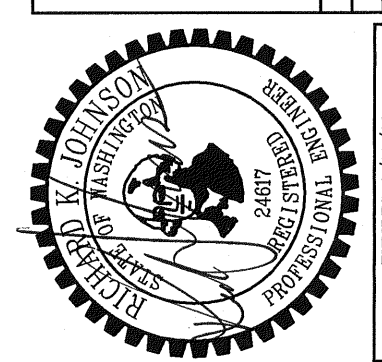
- CONCRETE
- BOLTS INSTALLED IN CONCRETE
- REINFORCING STEEL
- STRUCTURAL WELDING
- PILE DRIVING

SPECIAL INSPECTION WILL BE PERFORMED BY THE PORT.

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APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 05-21-2007  
PROJECT ENGR. - DATE: 05/2007  
CHECKED BY - DATE: 05/2007  
GSGN



PORT OF TACOMA  
EAST BLAIR ONE WHARF  
STRUCTURAL NOTES 1

EP-6305  
**S1.0**  
SHEET 73 OF 215  
CONTRACT NUMBER: 068018  
E NUMBER: E2623  
PHASE: BID SET

BID SET

# DESIGN CRITERIA

## DESIGN LOADS

- UNIFORM LIVE LOADS:**  
1000 PSF TYPICAL  
2000 PSF ON HEAVY LOAD ZONE  
250 PSF WITHIN 10 FT OF BOTH SIDES OF CRANE RAIL APPLIED SIMULTANEOUSLY WITH CRANE WHEEL LOAD.
- CONCENTRATED LIVE LOADS:**  
HS25 TRUCK  
CRANE OUTRIGGERS  
STRADDLE CARRIER  
CONTAINER HANDLER } SEE DIAGRAMS ON THIS SHEET
- RAILROAD LIVE LOAD:**  
COOPER E80 - WITH 20% IMPACT
- DEAD LOADS:**  
CONCRETE 160 PCF  
BALLAST 150 PCF  
OVERLAY 150 PCF  
STEEL 490 PCF
- CONTAINER CRANE LOADS**
  - VERTICAL LOADS:**  
100' GAUGE CRANE:  
EQUIVALENT SERVICE LEVEL UNIFORM LOAD  

OPERATING CONDITION	WATERSIDE (OUTBOARD)	48 KIPS/FT
	LANDSIDE (INBOARD)	44 KIPS/FT
STOWED CONDITION	WATERSIDE (OUTBOARD)	44 KIPS/FT
	LANDSIDE (INBOARD)	52 KIPS/FT
  - LONGITUDINAL LOADS AT PIN SOCKETS:  $P_u = 150$  KIPS (L.F.=1.0), PER SOCKET.
  - CRANE STOPS:  $P_u = 200$  KIPS (L.F.=1.0), ACTING HORIZONTALLY 4'-6" ABOVE TOP OF RAIL, PER STOP.
  - OUTBOARD AND INBOARD CRANE BEAM STRUCTURAL COMPONENTS (PANELS, BULKHEAD, PILE CAPS AND PILES) HAVE BEEN DESIGNED TO ACCOMMODATE INCREASED DEMAND FROM POSSIBLE FUTURE CONTAINER CRANES. CRANE BEAM STRUCTURAL COMPONENTS HAVE THE CAPACITY TO SUPPORT CONTAINER CRANE LOADS OF AT LEAST 65 KLF - OPERATING CONDITION, AND 80 KLF - STOWED CONDITION.

### 6. FENDER SYSTEM DESIGN CRITERIA

#### A. VESSELS

##### 1. CONTAINER VESSELS

(a) CURRENT VESSEL:  
LENGTH OVERALL (LOA): 984 FEET  
BEAM: 140 FEET (17 CONTAINERS ACROSS ON DECK)  
DRAFT: 46 FEET  
CAPACITY: 6,332 TEU (76,000 DEADWEIGHT TONS (DWT))  
TOTAL DISPLACEMENT: 108,000 LONG TONS

(b) POTENTIAL FUTURE VESSEL:  
LOA: 1,246 FEET  
BEAM: 176 FEET (22 CONTAINERS ACROSS ON DECK)  
CAPACITY: 12,500 TEU (156,250 DWT)  
TOTAL DISPLACEMENT: 200,760 LONG TONS

##### 2. AUTO CARRIER AND RO/RO VESSELS

LOA: 789 FEET  
BEAM: 105.9 FEET  
CAPACITY: 37,893 DWT  
TOTAL DISPLACEMENT: 58,000 LONG TONS

#### B. BERTHING LOADS:

##### 1. CURRENT CONTAINER VESSEL

APPROACH VELOCITY: 1 KNOT  
APPROACH ANGLE: 10 DEGREES

##### 2. POTENTIAL FUTURE CONTAINER VESSEL:

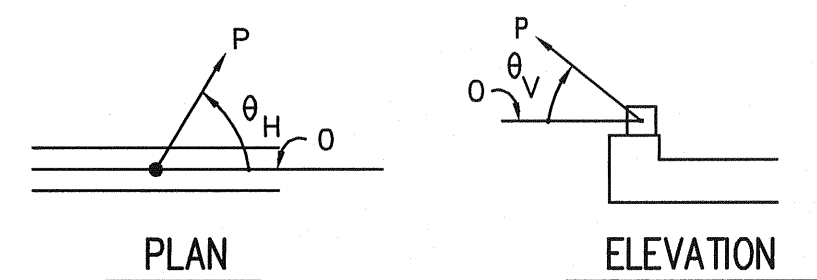
APPROACH VELOCITY: 0.75 KNOTS  
APPROACH ANGLE: 10 DEGREES

##### 3. AUTO CARRIER AND RO/RO VESSELS:

APPROACH VELOCITY: 1.3 KNOT  
APPROACH ANGLE: 10 DEGREES

##### 4. MAX. ALLOWABLE HULL PRESSURE = 4.18 KIPS/SQ FT

### 7. LINE PULL ON BOLLARDS



LOCATION	LINE PULL P	RANGE OF HORIZONTAL ANGLE 0-H	RANGE OF VERTICAL ANGLE 0-V
WHARF BOLLARD	125 KIPS	0° TO 180°	0° TO +45°
DOLPHIN BOLLARD	350 KIPS	SEE SHEET S2.0	0° TO +45°

### 8. LOAD COMBINATIONS

#### ALLOWABLE SOIL CAPACITY LOAD COMBINATIONS

$$S1 = 1.0D + 1.0L$$

$$S2 = 1.0D + 1.0CS + 1.0L \text{ (WITH 33% ALLOWABLE INCREASE)}$$

$$S3 = 1.0D + 1.0CD + 1.0L + E/1.4 \text{ (WITH 33% ALLOWABLE INCREASE)}$$

#### ULTIMATE STRENGTH LOAD COMBINATIONS

$$U1 = 1.2D + 1.6L + 1.6H + 1.2T$$

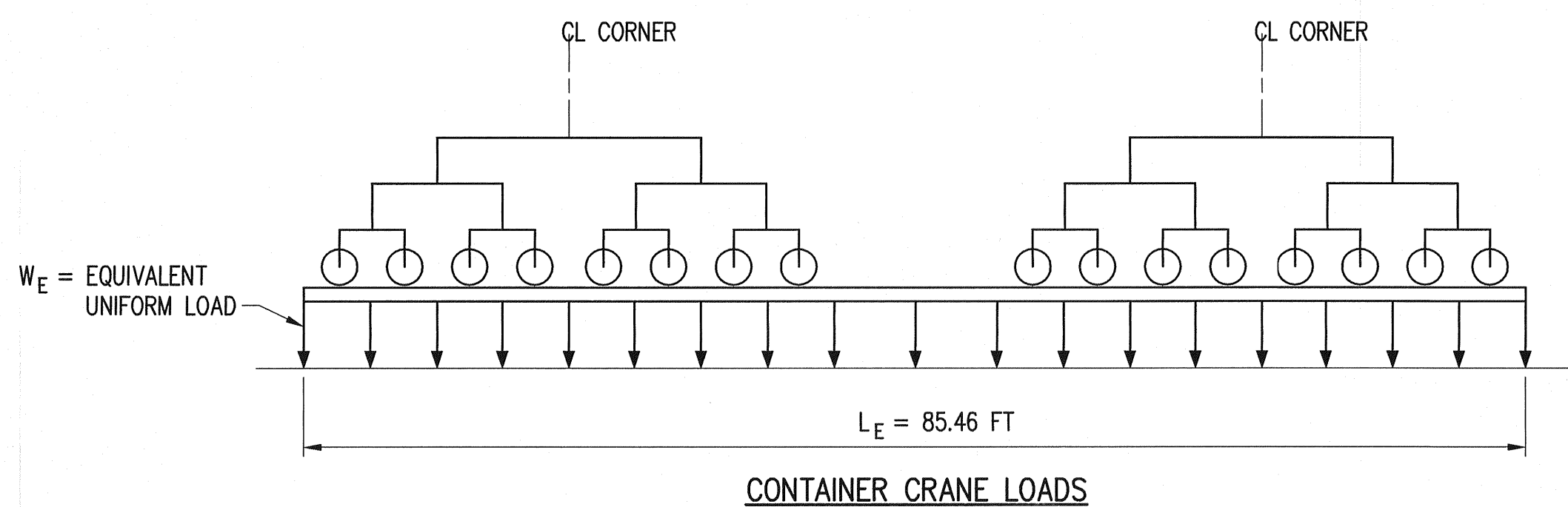
$$U2 = 1.2D + 0.1L + 1.6BE + 1.0W$$

$$U3 = 1.2D + 1.0L + 1.6H + 1.3(W \text{ OR } CS) + 1.3M$$

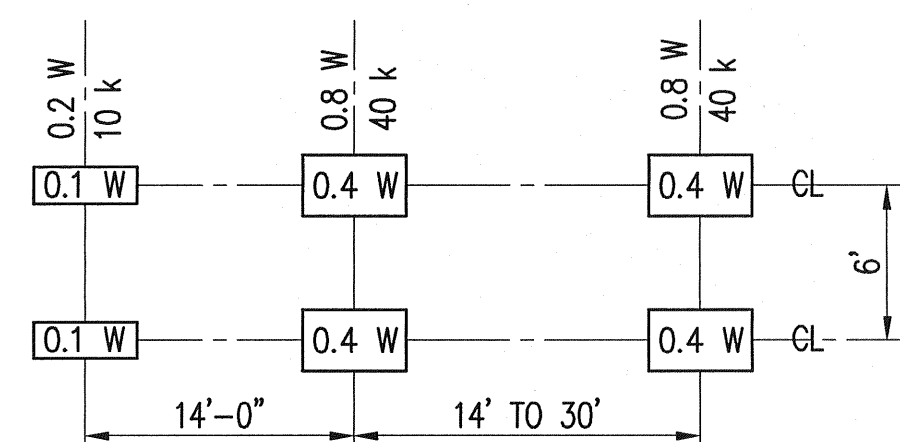
$$U4 = 1.2D + 1.0E + 1.0CD + 1.0L$$

$$U5 = 0.9D + 1.0E + 1.6H$$

- BE - BERTHING LOAD
- CD - DEAD LOAD OF CONTAINER CRANE (80% OF OPERATING LOAD)
- CO - CRANE LOAD UNDER OPERATING CONDITION
- CS - CRANE LOAD UNDER STOWED CONDITION
- D - DEAD LOAD
- E - EARTHQUAKE - PER IBC 2003
- H - HORIZONTAL EARTH PRESSURE LOAD
- L - LIVE LOAD + IMPACT (INCLUDES CO UNLESS OTHER CRANE LOAD IS SPECIFIED IN COMBINATION)
- M - MOORING LOAD
- T - TEMPERATURE LOAD ( $\Delta T = \pm 30^\circ$ )
- W - WIND LOAD



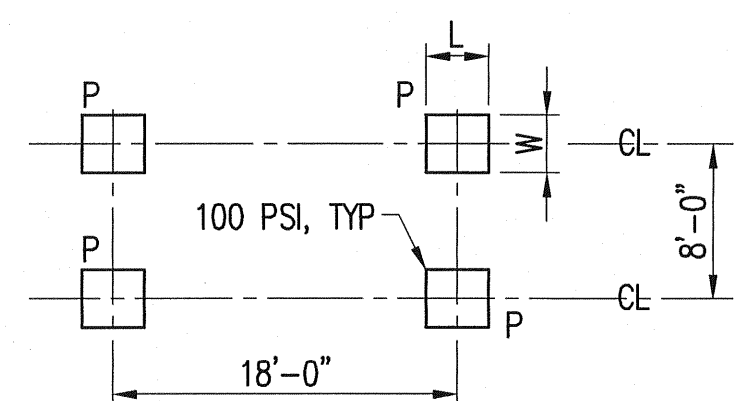
CONTAINER CRANE LOADS



W = COMBINED WEIGHT ON THE FIRST TWO AXLES WHICH IS THE SAME AS FOR THE CORRESPONDING H TRUCK.

HS25 TRUCK = (1.25 x HS20)

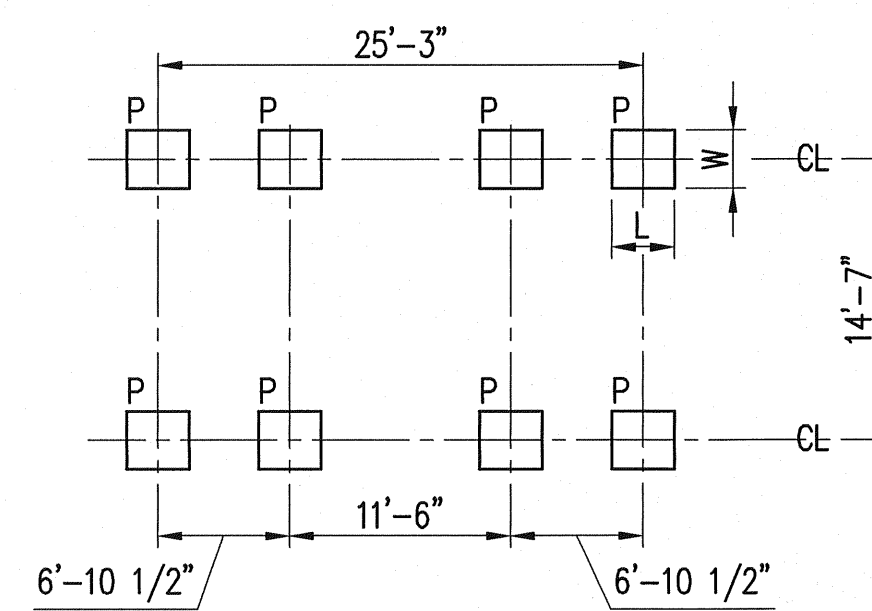
NOTE: ADD 10% IMPACT TO ABOVE LOADS



P = 100 k (INCLUDES IMPACT)

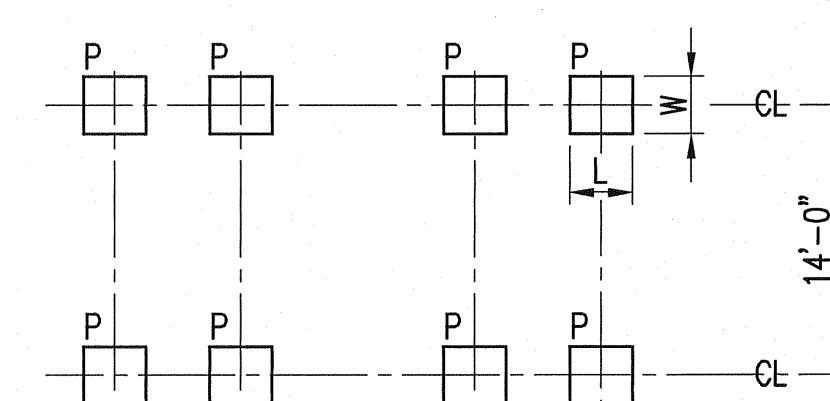
$$L = W \sqrt{\frac{P}{100}} \text{ (P IN LBS, L OR W IN INCHES)}$$

CRANE OUTRIGGERS



P = 30.4 k (INCLUDES 10% IMPACT)  
W = 10.24"  
L = 20.24"  
q = 145 psi

KALMAR CSC 340 STRADDLE CARRIER



P = 35 k (INCLUDES 10% IMPACT)  
W = 18"  
L = 19.5"  
q = 100 psi

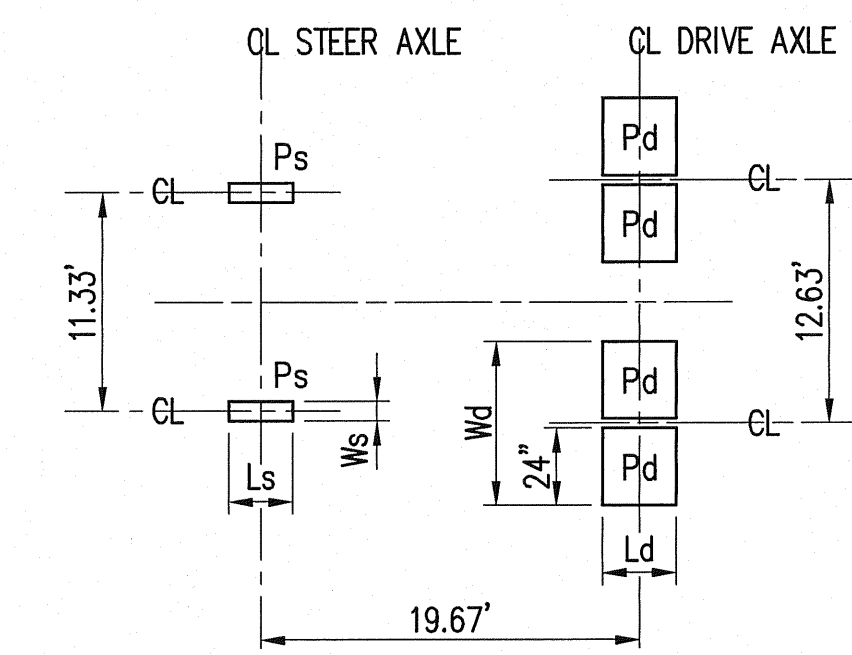
NOELL SC544 STRADDLE CARRIER

# IBC 2003 - EARTHQUAKE DESIGN DATA

- SEISMIC IMPORTANCE FACTOR I - 1.00  
SEISMIC USE GROUP - I
- MAPPED SPECTRAL RESPONSE ACCELERATIONS:  
 $S_s = 1.23$   
 $S_1 = 0.39$
- SITE CLASS - F
- SPECTRAL RESPONSE COEFFICIENTS:  
 $S_{DS} = 0.682$   
 $S_{D1} = 0.615$  } FROM SITE SPECIFIC RESPONSE SPECTRUM
- SEISMIC DESIGN CATEGORY - CATEGORY D
- BASIC SEISMIC FORCE RESISTING SYSTEM:  
INTERMEDIATE REINFORCED CONCRETE MOMENT FRAME  
(HEIGHT <= 50FT, R=3.0, ASCE 7-02 9.14.6.1)
- DESIGN BASE SHEAR:  
 $V_x = 13,800$  KIPS  
 $V_y = 13,500$  KIPS
- SEISMIC RESPONSE COEFFICIENTS:  
 $C_{sx} = 0.13$   
 $C_{sy} = 0.12$
- RESPONSE MODIFICATION FACTORS:  
R = 3.75 (IBC 1622.1.1 (1), R=3.0/0.8)  
 $\Omega_o = 3$  SYSTEM OVERSTRENGTH FACTOR  
p = 1.0 REDUNDANCY FACTOR (IBC 1617.2.1)  
 $\Omega_s = 2$  SHEAR OVERSTRENGTH FACTOR (ACI 318 21.12.3(B))
- ANALYSIS PROCEDURE USED:  
MODAL RESPONSE SPECTRUM ANALYSIS

# IBC 2003 - WIND DESIGN DATA

- BASIC WIND SPEED (3-SECOND GUST) - 85 MPH
- WIND IMPORTANCE FACTOR,  $I_w = 1.0$   
BUILDING CATEGORY - II
- WIND EXPOSURE - EXPOSURE D
- DESIGN WIND LOAD ON OPEN BUILDINGS AND OTHER STRUCTURES:  
 $q_{GC} \approx 31$  PSF (ASCE 7 Section 6.5.13)  
INTERNAL PRESSURE COEFFICIENT - N/A  
COMPONENTS AND CLADDING DESIGN WIND PRESSURE - N/A



$P_s = 16$  k (INCLUDES 10% IMPACT)  
 $W_s = 20$ "  
 $L_s = 6.1$ "  
 $q_s = 131$  psi

$P_d = 62$  k (INCLUDES 10% IMPACT)  
 $W_d = 51$ "  
 $L_d = 23$ "  
 $q_d = 112$  psi

TAYLOR "BIG RED" THDC-976  
CONTAINER HANDLER

# DESIGN CONCEPT

## 1. VERTICAL LOADS

LOADS ARE DISTRIBUTED THROUGH ASPHALT/CONCRETE PAVING TO DECK PANELS, DECK PANELS TO PILE CAPS, PILE CAPS TO PILES, PILES TO SOIL IN FRICTION.

## 2. HORIZONTAL LOADS

HORIZONTAL LOADS INCLUDING SEISMIC FORCES, SOIL PRESSURE, SHIP IMPACT, AND MOORING FORCES ARE TRANSMITTED THROUGH THE DECK ACTING AS A DIAPHRAGM TO THE PLUMB PILES. HORIZONTAL LOADS PARALLEL TO THE WHARF ARE RESISTED BY A COMBINATION OF THE SHEET PILES AND PLUMB PILES.

# SEISMIC DESIGN

- THE SEISMIC DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS OR CONVENTIONS:
  - INTERNATIONAL BUILDING CODE, IBC 2003.  
THE ANALYSIS INCLUDES FORCE-BASED DESIGN WHICH INCORPORATES A MAXIMUM CONSIDERED EARTHQUAKE (MCE) HAVING 2% PROBABILITY OF EXCEEDENCE IN 50 YEARS AND A SITE SPECIFIC RESPONSE SPECTRUM.
  - MARINE OIL TERMINAL ENGINEERING AND MAINTENANCE STANDARDS (MOTEMS).
    - THE ANALYSIS INCLUDES DISPLACEMENT BASED DESIGN FOR SEISMIC STRUCTURAL PERFORMANCE LEVELS FOR THE TWO FOLLOWING SEISMIC EVENTS.
      - OPERATING LEVEL EVENT (OLE):  
GROUND MOTION: 50% PROBABILITY OF EXCEEDENCE IN 50 YEARS.
      - CONTINGENCY LEVEL EVENT (CLE):  
GROUND MOTION: 10% PROBABILITY OF EXCEEDENCE IN 50 YEARS.
- SEISMIC MASS INCLUDES 10% OF THE TYPICAL UNIFORM LIVE LOAD MASS OVER THE ENTIRE SURFACE OF THE WHARF.

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

**kpfi**

APPROVED: *[Signature]* DATE: 05/20/07  
CHECKED BY: GSN DATE: 05/20/07  
PROJECT ENGR.: DATE: 05/20/07

APPROVED: *[Signature]* DATE: 05-21-2007  
CHIEF ENGINEER: DATE: 05-21-2007  
DRAWING ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT PARCEL: 17 & 18

REVISION: MARK: REVISION: MARK: REVISION: MARK:

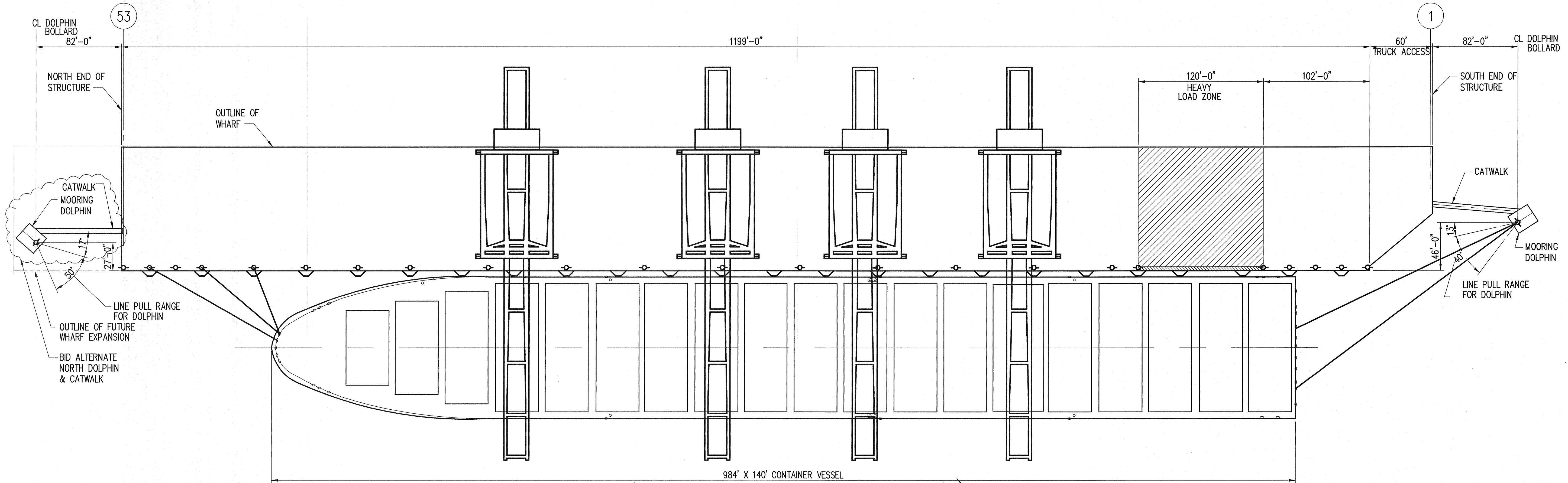
PHASE: BID SET

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
STRUCTURAL NOTES 2

EP-6305  
**S1.1**  
SHEET 74 OF 215  
CONTRACT NUMBER: 068018  
E. NUMBER: E2623  
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ: VERT: DRAWING SCALE: NONE

EXPIRES: 9/10/08

BID SET



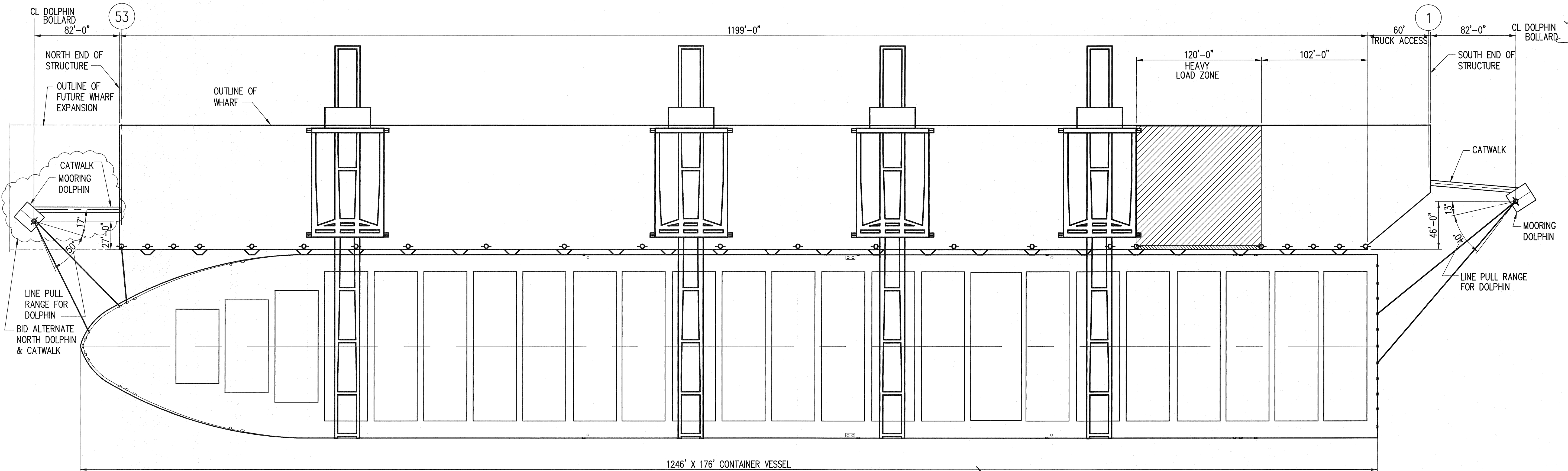
**BID ALTERNATE** - NORTH DOLPHIN AND CATWALK  
 THE INDICATED ITEMS ARE BID ALTERNATES PER THE SPECIFICATION.

BLAIR WATERWAY

984' X 140' CONTAINER VESSEL  
 (TYPICAL OF CONTAINER VESSELS CURRENTLY CALLING AT THE PORT OF TACOMA)

**WHARF PLAN - CURRENT CONTAINER VESSELS**

SCALE: 1:50



BID ALTERNATE  
 NORTH DOLPHIN  
 & CATWALK

BLAIR WATERWAY

1246' X 176' CONTAINER VESSEL  
 (ESTIMATED FUTURE CONTAINER VESSELS CALLING AT THE PORT OF TACOMA)

**WHARF PLAN - FUTURE CONTAINER VESSELS**

SCALE: 1:50

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Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162

**kprf**

PORT OF TACOMA  
 U.S.A.

APPROVED: *M. Adams*  
 CHIEF ENGINEER - DATE: 23 APR 07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

REVISION: MARK

REVISION: MARK

DATE: 05/2007  
 CHECKED BY: - DATE: 05/2007  
 GGN PROJECT ENGR. - DATE: 05/2007

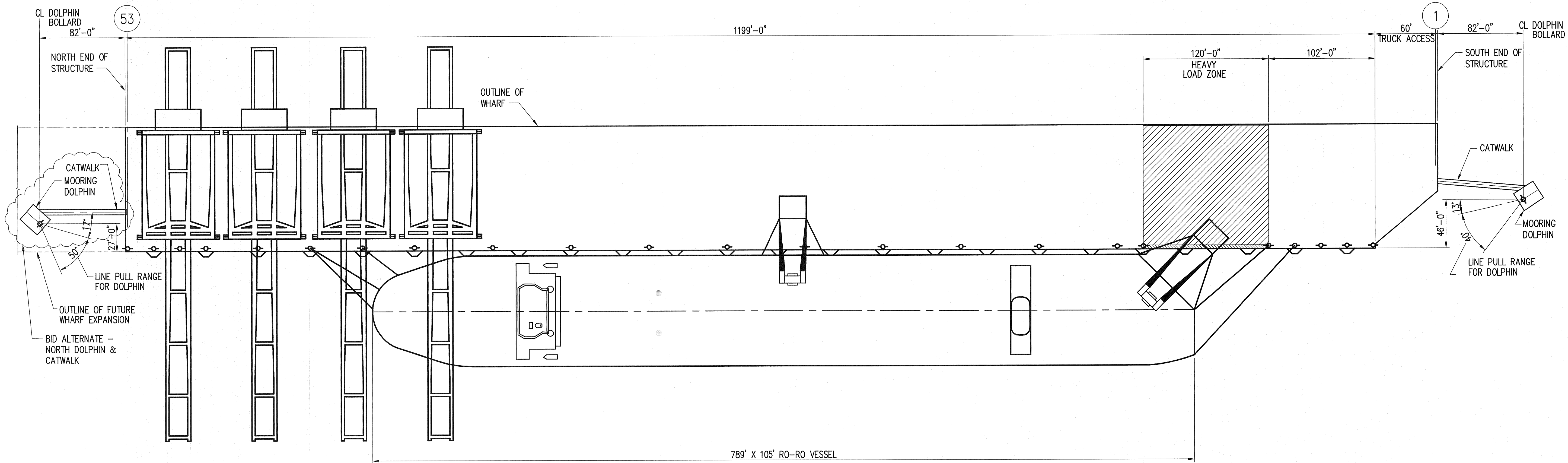
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

EP-6305  
**S2.0**  
 SHEET 75 OF 215  
 CONTRACT NUMBER: 068018  
 E NUMBER: E26623  
 PHASE: BID SET

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 WHARF PLAN

EXPIRES 9/30/08

**BID SET**

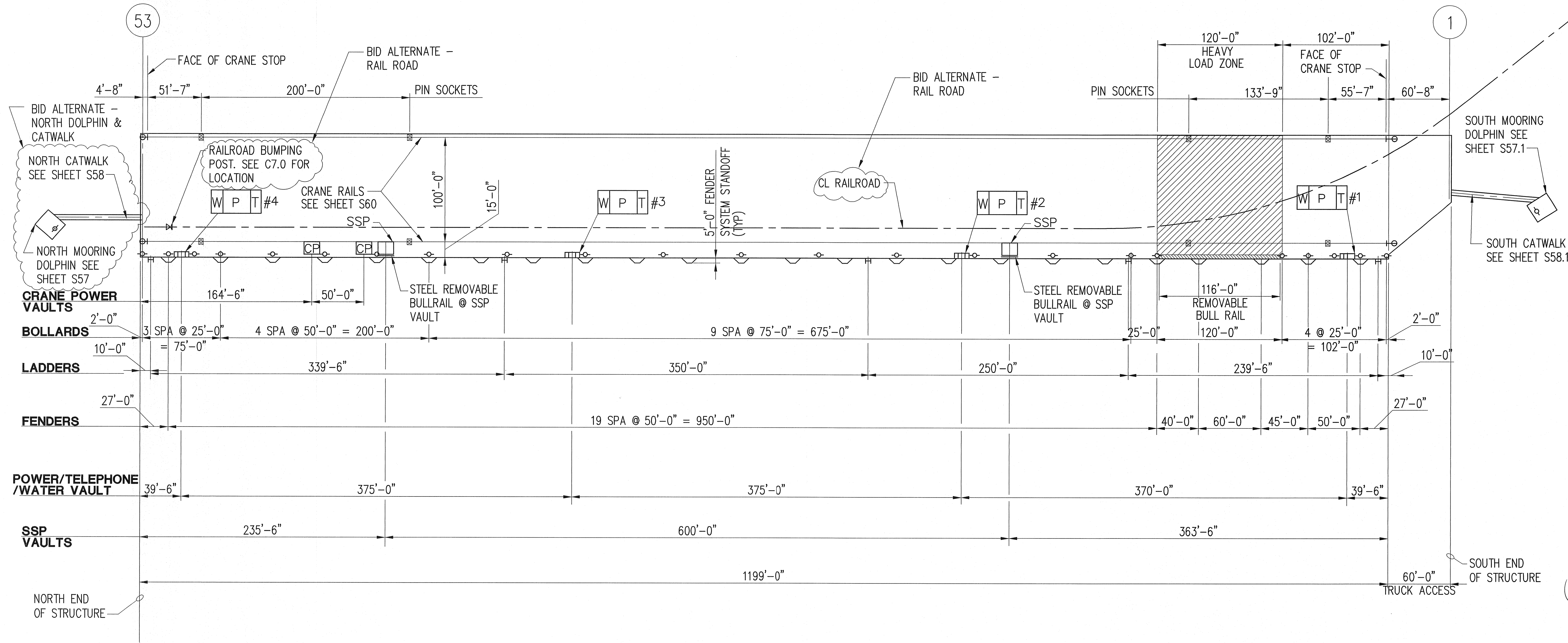


**BID ALTERNATE** - NORTH DOLPHIN AND CATWALK  
 THE INDICATED ITEMS ARE BID ALTERNATES PER THE SPECIFICATION.

**WHARF PLAN - RO-RO VESSELS**  
 SCALE: 1:50

EP-6305 <b>S2.1</b> SHEET 76 OF 215 CONTRACT NUMBER: 088018 NUMBER: E223 PHASE: BID SET	PORT OF TACOMA EAST BLAIR ONE WHARF WHARF PLAN	TOWNSHIP: 21N RANGE: 3E SECTION: 27 COUNTY: TACOMA DRAWING SCALE: AS SHOWN
	APPROVED 	CHIEF ENGINEER - DATE <i>K. J. Johnson</i> 22 APR 07
PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841 		MARK REVISION DATE:

BID SET



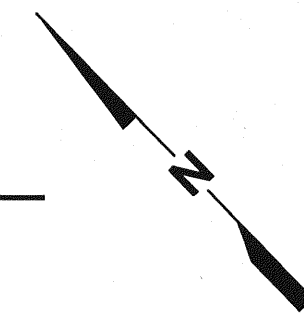
**BID ALTERNATE** - NORTH DOLPHIN, CATWALK AND RAILROAD  
 THE INDICATED ITEMS ARE BID ALTERNATES PER THE SPECIFICATION.

**NOTES:**

- CONTRACTOR SHALL COORDINATE WITH THE PORT TO OBTAIN INFORMATION FOR CRANES, PIN SOCKETS AND CABLE TRENCH. COORDINATION SHALL OCCUR PRIOR TO PRODUCT SUBMITTALS AND SHOP DRAWING REVIEW.

**WHARF SURFACE FEATURES PLAN**

SCALE: 1:50



**LEGEND:**

SYMBOL	DESCRIPTION	SHEET REFERENCE
[P T]	POWER/TELEPHONE VAULT IN BULL RAIL	S49
[W]	WATER VAULT IN BULL RAIL	S49
○	BOLLARD	S52
∇	FENDER UNIT	S54
H	LADDER	S53
⊖	CRANE STOP	S48
⊠	CRANE PIN SOCKET	S47
[Hatched]	TIMBER REMOVABLE BULLRAIL SECTION	S35
[Diagonal Hatched]	HEAVY LOAD ZONE	
[CP]	CRANE POWER VAULT	S45
[SSP]	SHIP-TO-SHORE POWER (SSP) VAULT W/STEEL REMOVABLE BULLRAIL	S50

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 Tacoma, Washington 98402  
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**k p f i**  
 PORT OF TACOMA  
 P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841

APPROVED: *[Signature]*  
 CHIEF ENGINEER - DATE: 23 MAY 07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

RJK 05/2007  
 CHECKED BY - DATE  
 GGN 05/2007  
 PROJECT ENGR. - DATE

MARK REVISION  
 BY: DATE:

EXPIRES 2/10/08

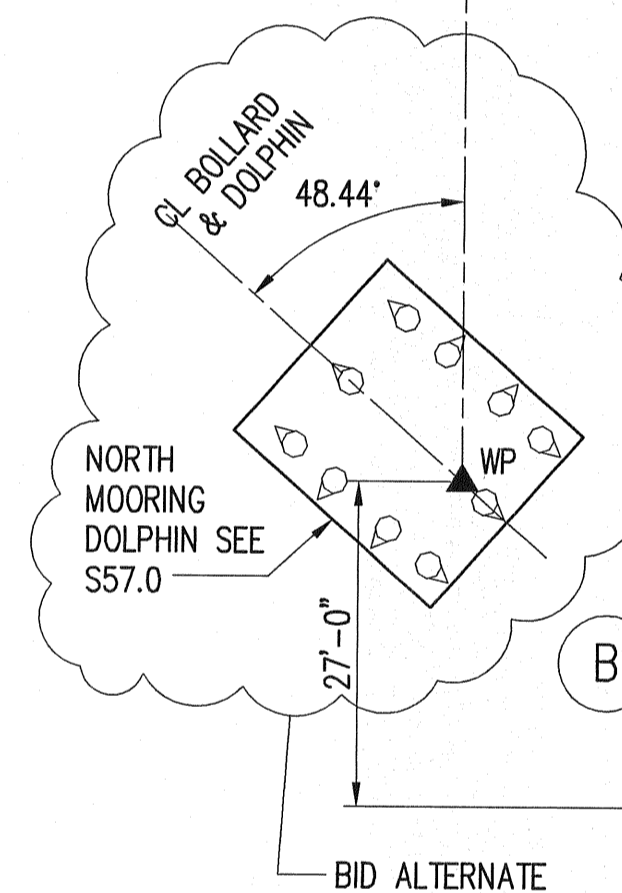
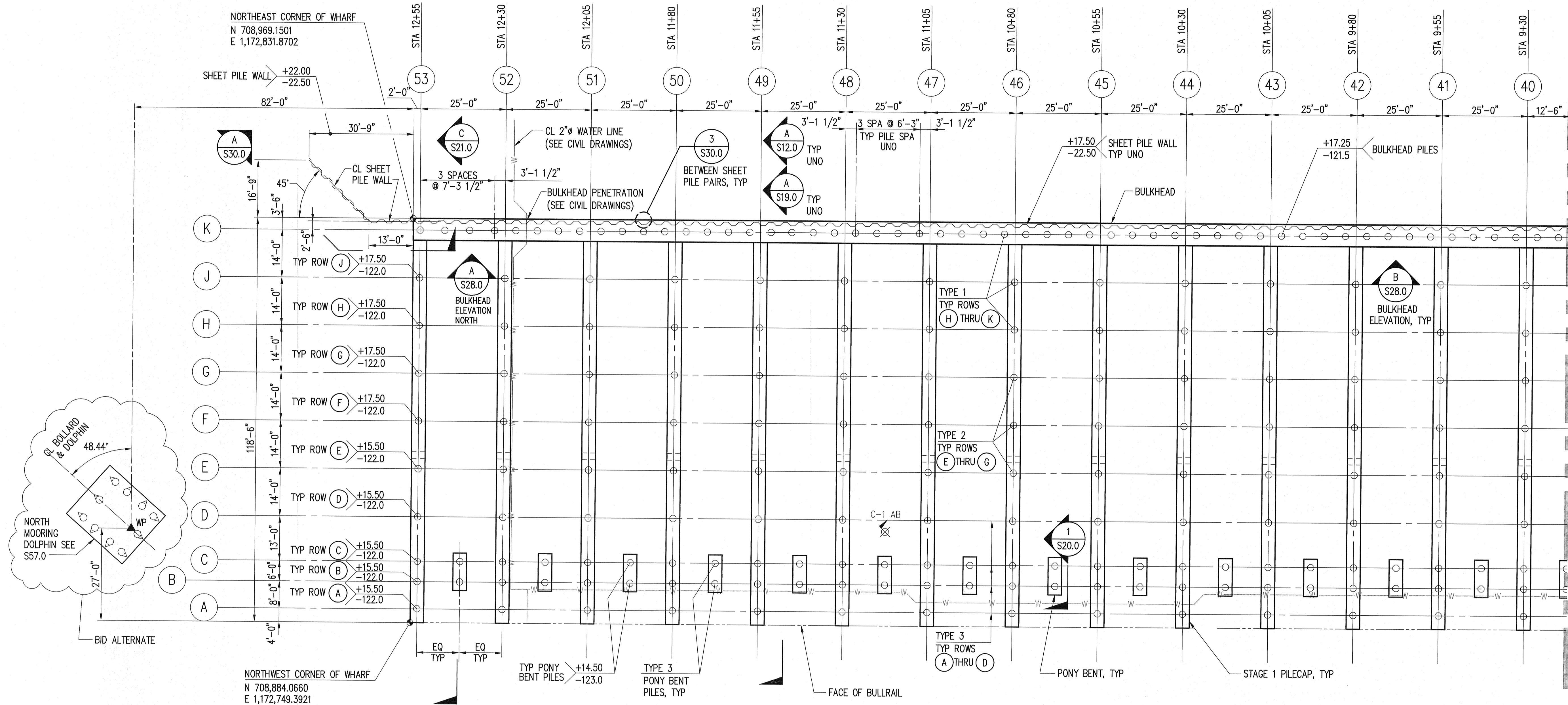
**PORT OF TACOMA**  
**EAST BLAIR ONE WHARF**  
**WHARF SURFACE FEATURES PLAN**

**EP-6305**  
**S3.0**  
**SHEET 77 OF 215**

CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

TOWNSHIP: 21N. RANGE: 3E. SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

**BID SET**



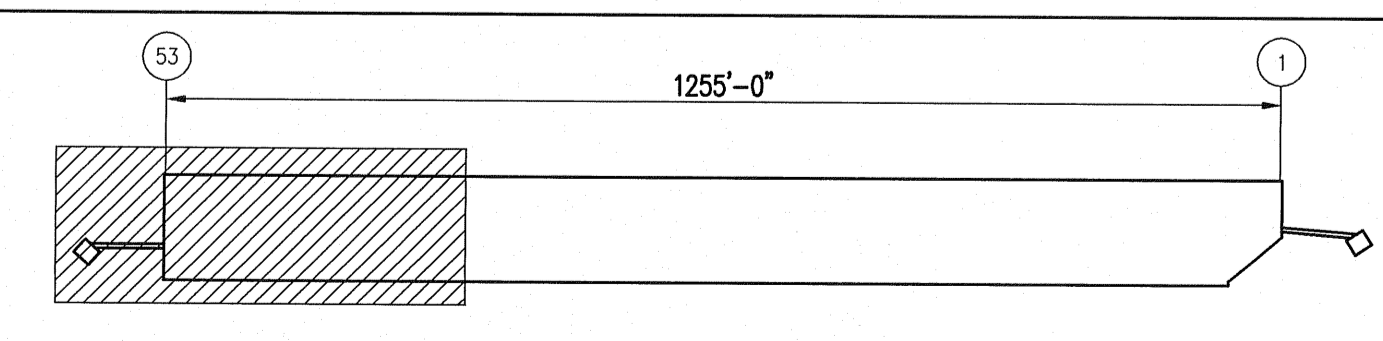
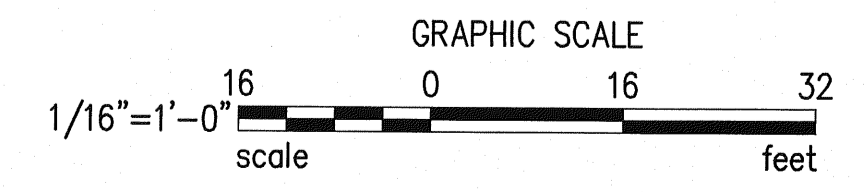
**LEGEND:**

- 24" SOLID OCTAGONAL PRECAST CONCRETE PILE - PLUMB, SEE S15.0
- 24" SOLID OCTAGONAL PRECAST CONCRETE PILE - 1:3 BATTER, TYPE D1, SEE S15.0
- STEEL SHEET PILE CUTOFF WALL, SEE S14.0
- +XX.XX PILE CUT-OFF ELEVATION
- XX.X PILE TIP ELEVATION
- +XX.XX TOP OF SHEET PILE ELEVATION
- XX.X SHEET PILE TIP ELEVATION
- TEST PILE

**NOTES:**

1. FOR PORT PRE-PURCHASED PILES SEE S61.0.
2. INSTALL ALL PRE-PURCHASED TYPE 3 PILES AS INDICATED ON THE PLANS. AT CONTRACTOR'S OPTION, TYPE 2 PILES AND CONNECTION DETAILS MAY THEN BE SUBSTITUTED FOR REMAINING CONTRACTOR-PURCHASED TYPE 3 PILES.

**PILE AND PILE CAP PLAN**  
SCALE: 1/16"=1'-0"



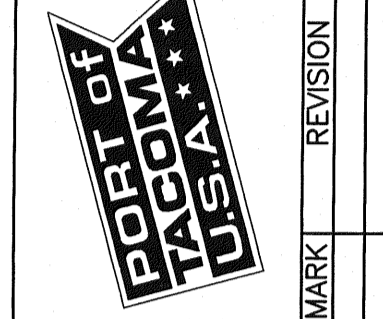
**KEY PLAN**

**MATCHLINE SEE SHEET S5.0**

**PORT OF TACOMA  
EAST BLAIR ONE WHARF  
PILE AND PILE CAP PLAN 1**

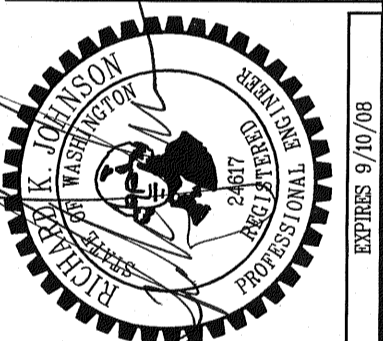
**EP-6305  
S4.0  
SHEET 78 OF 215**

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TACOMA, WA 98401 253-383-5841  
Consulting Engineers  
201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax: (253) 396-0862



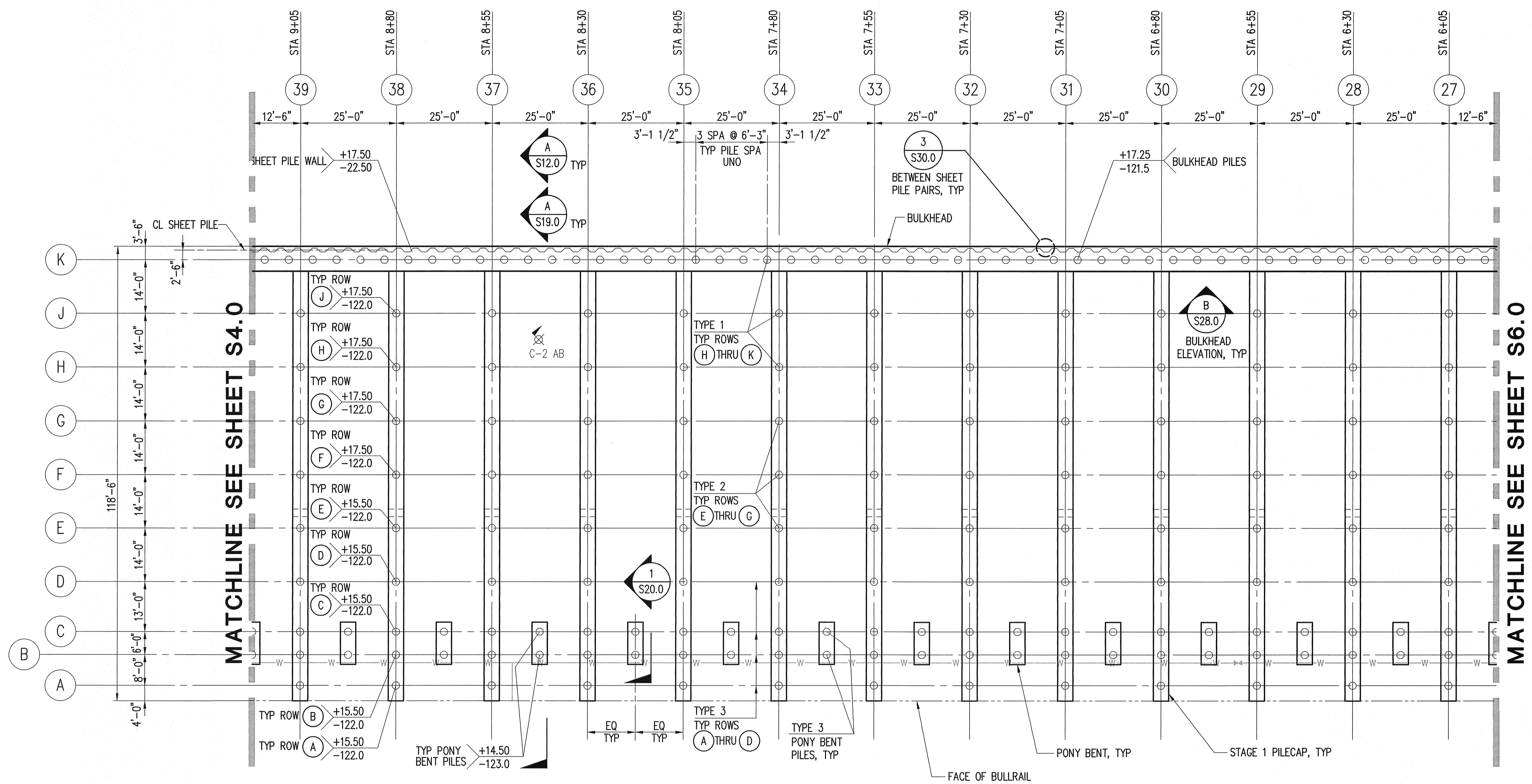
APPROVED	REVISION
MARK	BY:
DATE	DATE

CHECKED BY: RJK 05/2007  
PROJECT ENGR.: GGN 05/2007  
DATE: 05/21/2007  
CHIEF ENGINEER: M. Adams  
DATE: 07/23/07  
PORT ADDRESS: 2340 F ALEXANDER AVENUE  
PORT PARCEL: 17 & 18



TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ.  
DRAWING SCALE: AS SHOWN  
CONTRACT NUMBER: 068018  
E NUMBER: E2693  
PHASE: BID SET

**BID SET**



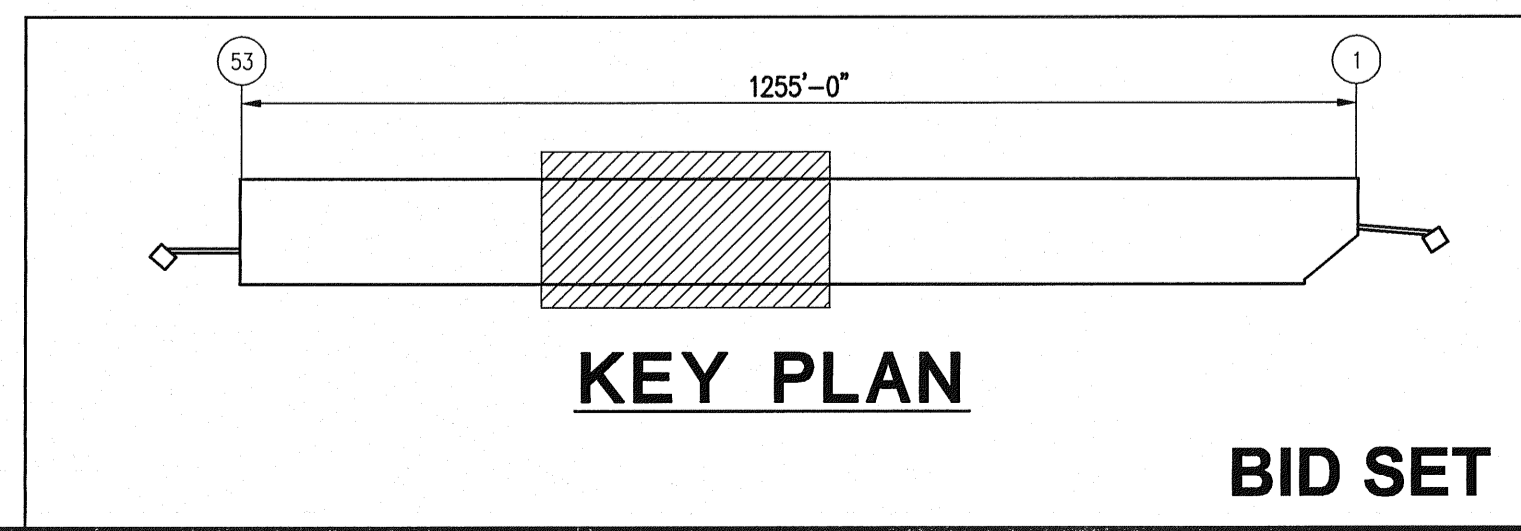
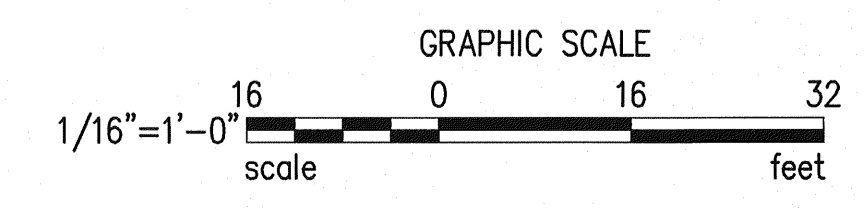
**PILE AND PILE CAP PLAN**  
SCALE: 1/16"=1'-0"

**LEGEND:**

- 24" SOLID OCTAGONAL PRECAST CONCRETE PILE - PLUMB, SEE S15.0
- 24" SOLID OCTAGONAL PRECAST CONCRETE PILE - 1:3 BATTER, TYPE D1, SEE S15.0
- STEEL SHEET PILE CUTOFF WALL, SEE S14.0
- PILE CUT-OFF ELEVATION  
PILE TIP ELEVATION
- TOP OF SHEET PILE ELEVATION  
SHEET PILE TIP ELEVATION
- TEST PILE

**NOTES:**

1. FOR PORT PRE-PURCHASED PILES SEE S61.0.
2. INSTALL ALL PRE-PURCHASED TYPE 3 PILES AS INDICATED ON THE PLANS. AT CONTRACTOR'S OPTION, TYPE 2 PILES AND CONNECTION DETAILS MAY THEN BE SUBSTITUTED FOR REMAINING CONTRACTOR-PURCHASED TYPE 3 PILES.



**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
PILE AND PILE CAP PLAN 2

**EP-6305**  
**S5.0**  
SHEET 79 OF 215

CONTRACT NUMBER: 068018  
E NUMBER: E2823  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ: VERT:  
DRAWING SCALE: AS SHOWN

APPROVED: *M. Ashby*  
CHIEF ENGINEER - DATE: 23 July 07

CHKD BY: GGN 05/2007  
PROJECT ENGR. - DATE: 05/2007

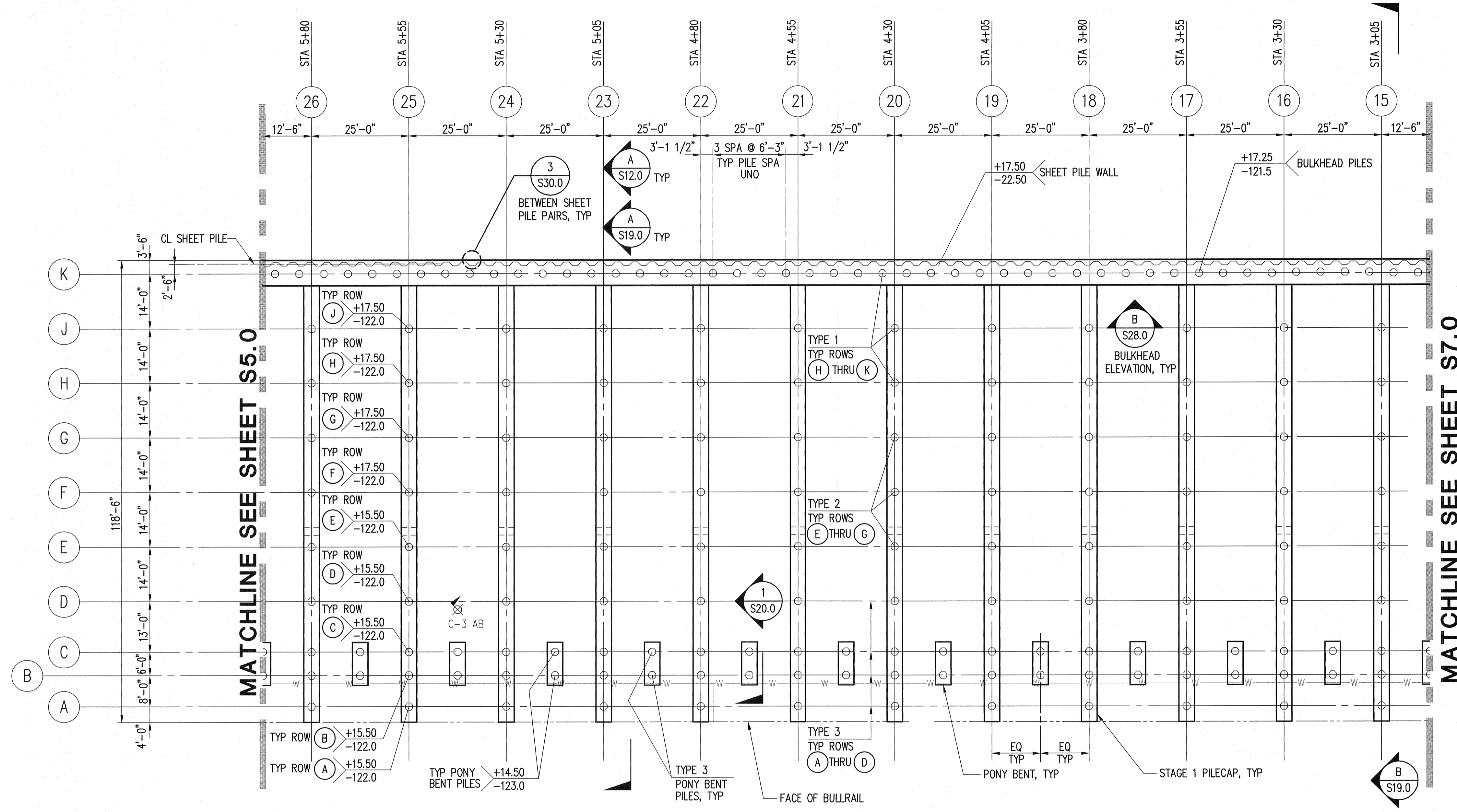
DATE: 05/2007

REVISION: MARK: REVISION: MARK: REVISION: MARK:

BY: APPROVED: DATE:

PORT OF TACOMA  
TACOMA, WA 98401 253-383-5841

**kprf**  
Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162



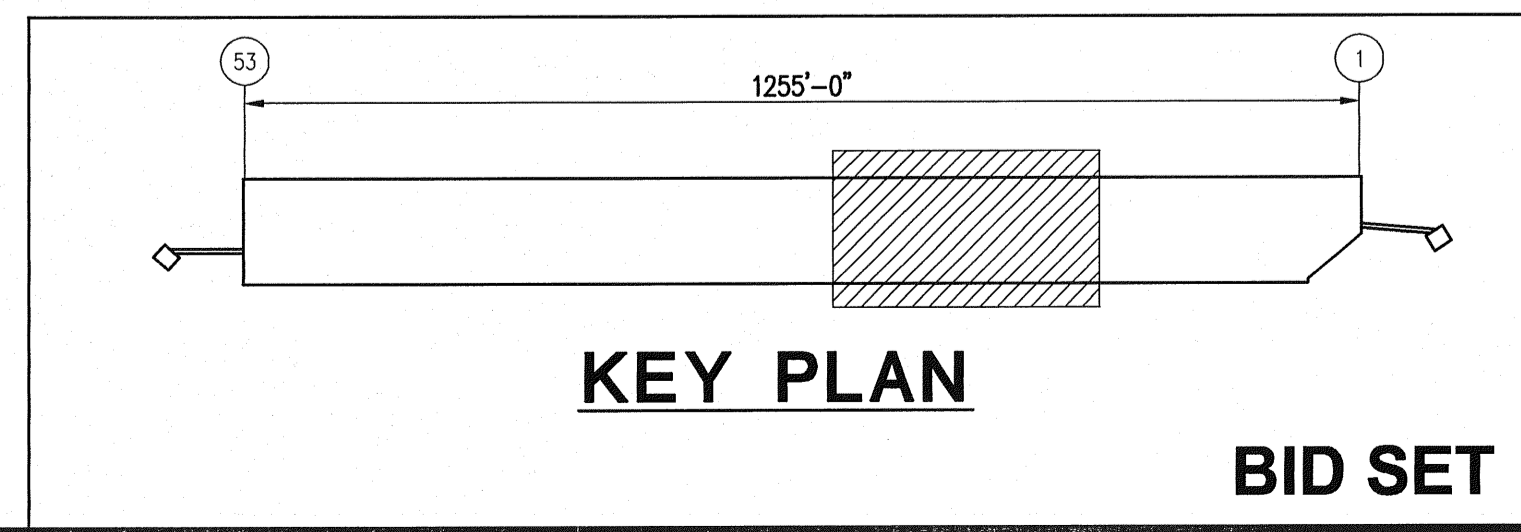
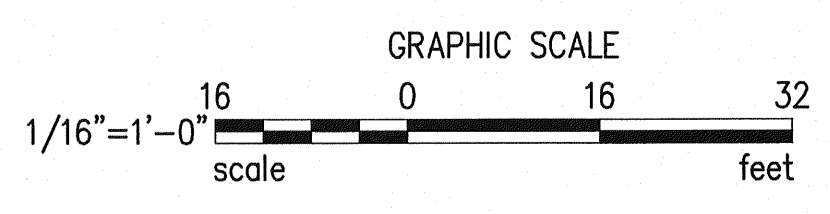
**PILE AND PILE CAP PLAN**  
SCALE: 1/16"=1'-0"

**LEGEND:**

- 24" SOLID OCTAGONAL PRECAST CONCRETE PILE - PLUMB, SEE S15.0
- 24" SOLID OCTAGONAL PRECAST CONCRETE PILE - 1:3 BATTER, TYPE D1, SEE S15.0
- STEEL SHEET PILE CUTOFF WALL, SEE S14.0
- PILE CUT-OFF ELEVATION
- PILE TIP ELEVATION
- TOP OF SHEET PILE ELEVATION
- SHEET PILE TIP ELEVATION
- TEST PILE

**NOTES:**

1. FOR PORT PRE-PURCHASED PILES SEE S61.0.
2. INSTALL ALL PRE-PURCHASED TYPE 3 PILES AS INDICATED ON THE PLANS. AT CONTRACTOR'S OPTION, TYPE 2 PILES AND CONNECTION DETAILS MAY THEN BE SUBSTITUTED FOR REMAINING CONTRACTOR-PURCHASED TYPE 3 PILES.



**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
PILE AND PILE CAP PLAN 3

**EP-6305**  
**S6.0**  
SHEET 80 OF 215

**BID SET**

APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 23 MAY 07

CHECKED BY: GGN - DATE: 05/2007  
PROJECT ENGR. - DATE: 05/2007

RKJ - DATE: 05/2007

DATE: 05/2007  
APPROVED: [Signature]  
DATE: 05/2007

MARK: [Blank]  
REVISION: [Blank]

PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT PARCEL: 17 & 18

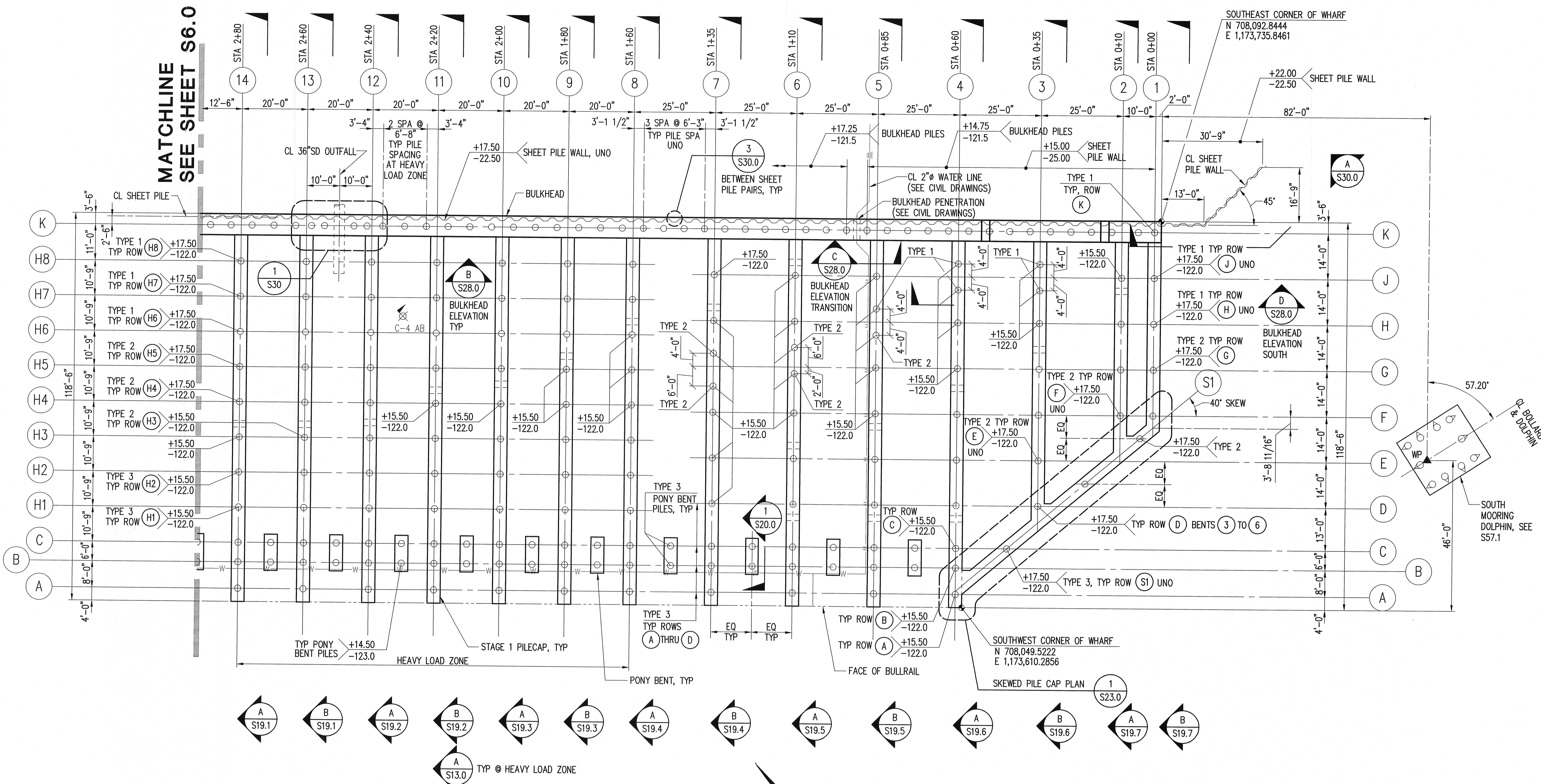
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ: AS SHOWN VERT: AS SHOWN  
DRAWING SCALE: AS SHOWN

PORT OF TACOMA  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0500 Fax (253) 396-0162

**kprf**

PORT OF TACOMA  
TACOMA, WA 98401 253-383-5841



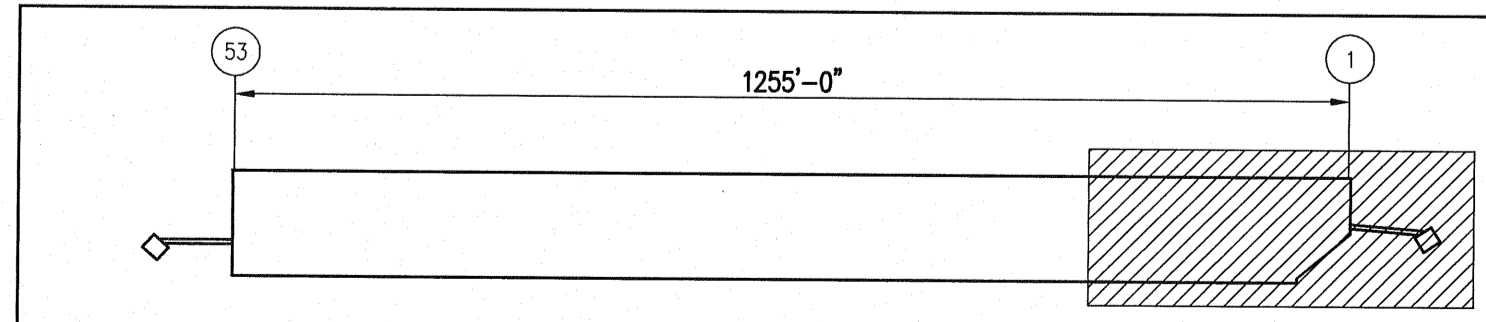
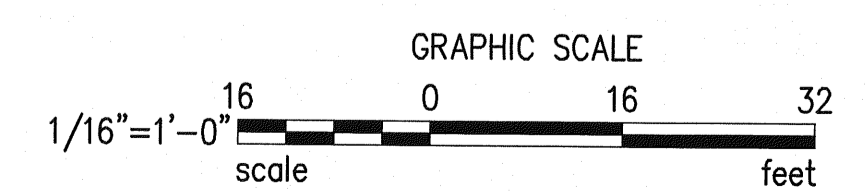
**LEGEND:**

- TYPE 1 24" SOLID OCTAGONAL PRECAST CONCRETE PILE - PLUMB, SEE S15.0
- TYPE 2 24" SOLID OCTAGONAL PRECAST CONCRETE PILE - 1:3 BATTER, TYPE D1, SEE S15.0
- STEEL SHEET PILE CUTOFF WALL, SEE S14.0
- +XX.XX PILE CUT-OFF ELEVATION
- XX.X PILE TIP ELEVATION
- +XX.XX TOP OF SHEET PILE ELEVATION
- XX.X SHEET PILE TIP ELEVATION
- TEST PILE

**NOTES:**

- FOR PORT PRE-PURCHASED PILES SEE S61.0.
- INSTALL ALL PRE-PURCHASED TYPE 3 PILES AS INDICATED ON THE PLANS. AT CONTRACTOR'S OPTION, TYPE 2 PILES AND CONNECTION DETAILS MAY THEN BE SUBSTITUTED FOR REMAINING CONTRACTOR-PURCHASED TYPE 3 PILES.

**PILE AND PILE CAP PLAN**  
SCALE: 1/16"=1'-0"



**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
PILE AND PILE CAP PLAN 4

**EP-6305**  
**S7.0**  
SHEET 81 OF 215

CONTRACT NUMBER: 086018  
E. NUMBER: E2623  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ: VERT:  
DRAWING SCALE: AS SHOWN

APPROVED: *M. Aspin* CHIEF ENGINEER - DATE: 12/14/07  
CHECKED BY: GGN PROJECT ENGR. - DATE: 05/20/07  
RJK 05/20/07  
DATE: 05/20/07

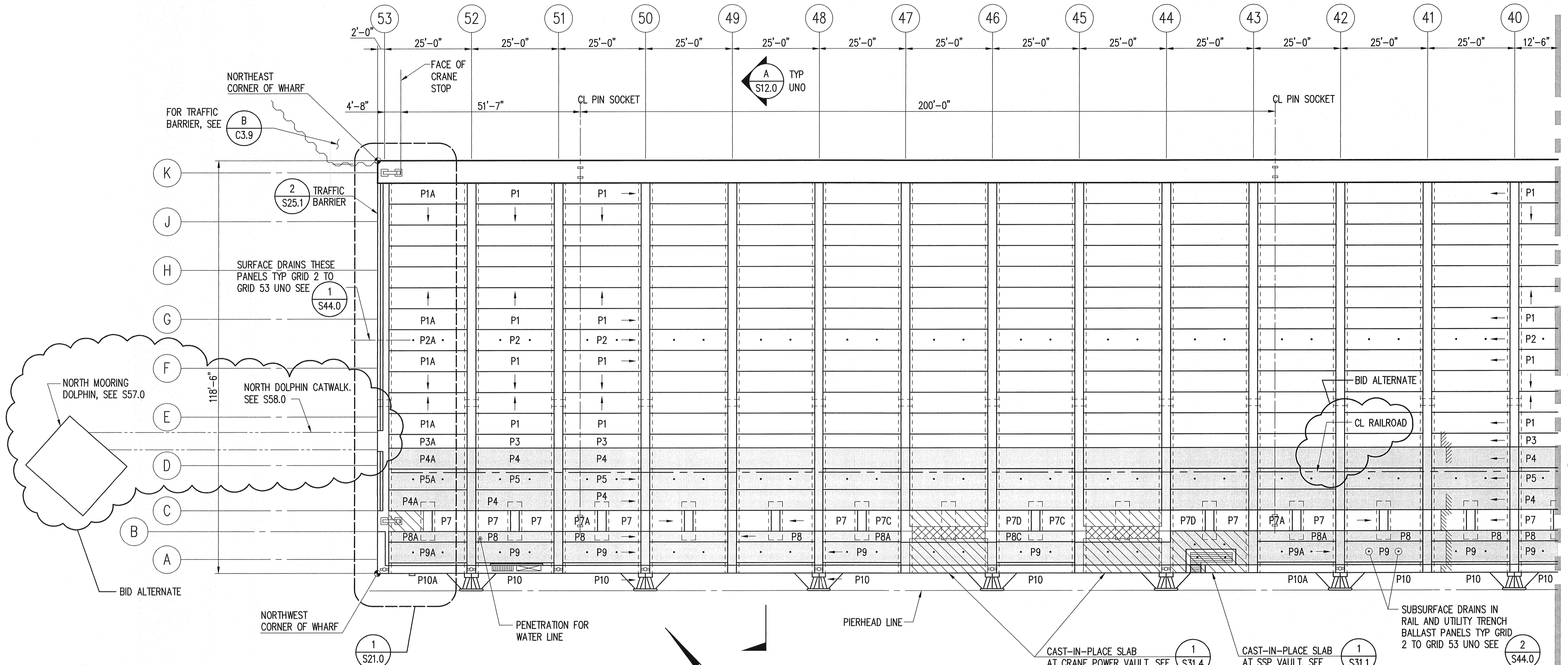
PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
253-566-0100 Fax: (253) 396-0622

**kpi**

REVISION: MARK REVISION

DATE: APPROVED: BY: APPROVED: BY: DATE:



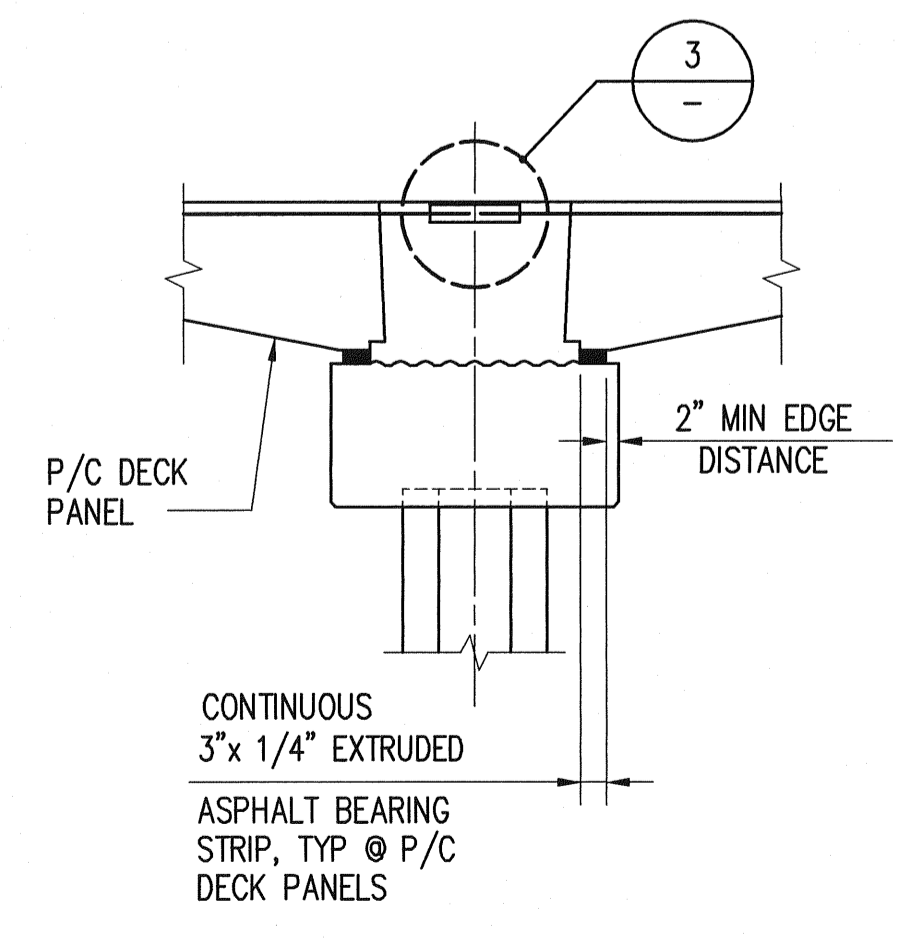
MATCHLINE SEE SHEET S9.0

**NOTES:**

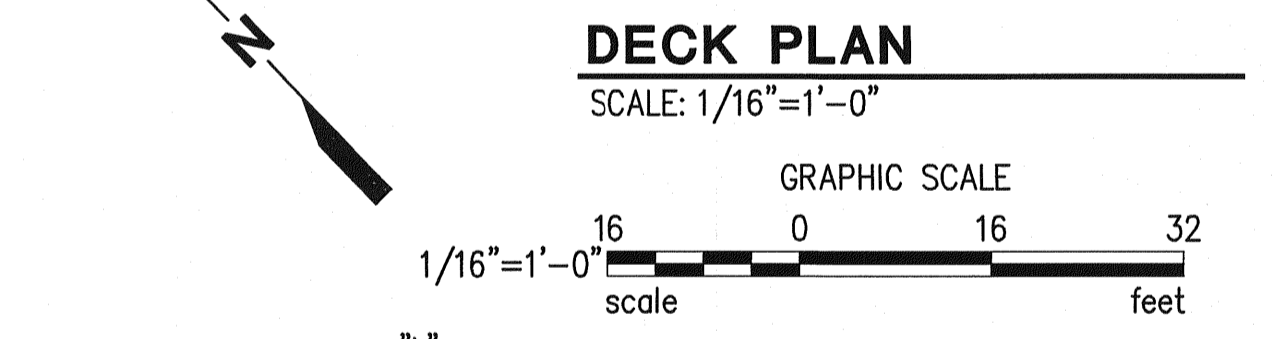
- FOR DECK PANEL DETAILS, SEE S36.0 THRU S43.1
- FOR DRAIN DETAILS, SEE S44.0
- FOR BULLRAIL AND BOLLARD DETAILS, SEE S32.0 THRU S35.0

**LEGEND:**

- DECK PANEL DESIGNATION
- CRANE PIN SOCKETS WITH DRAINS, SEE S47.0
- CRANE STOP, SEE S48.0
- LADDER, FOR DETAILS SEE S53.0
- FENDER, FOR DETAILS SEE S54.0
- WHARF BOLLARD, SEE S52.0
- POWER/TELEPHONE VAULT WITH DRAINS, SEE S49.0
- WATER VAULT WITH DRAINS, SEE S49.0
- SHIP TO SHORE POWER (SSP) VAULT SEE S31.1
- DRAIN (UNO)
- CRANE POWER VAULT, SEE S31.4
- CIP CONCRETE
- RAIL AND UTILITY TRENCH BALLAST

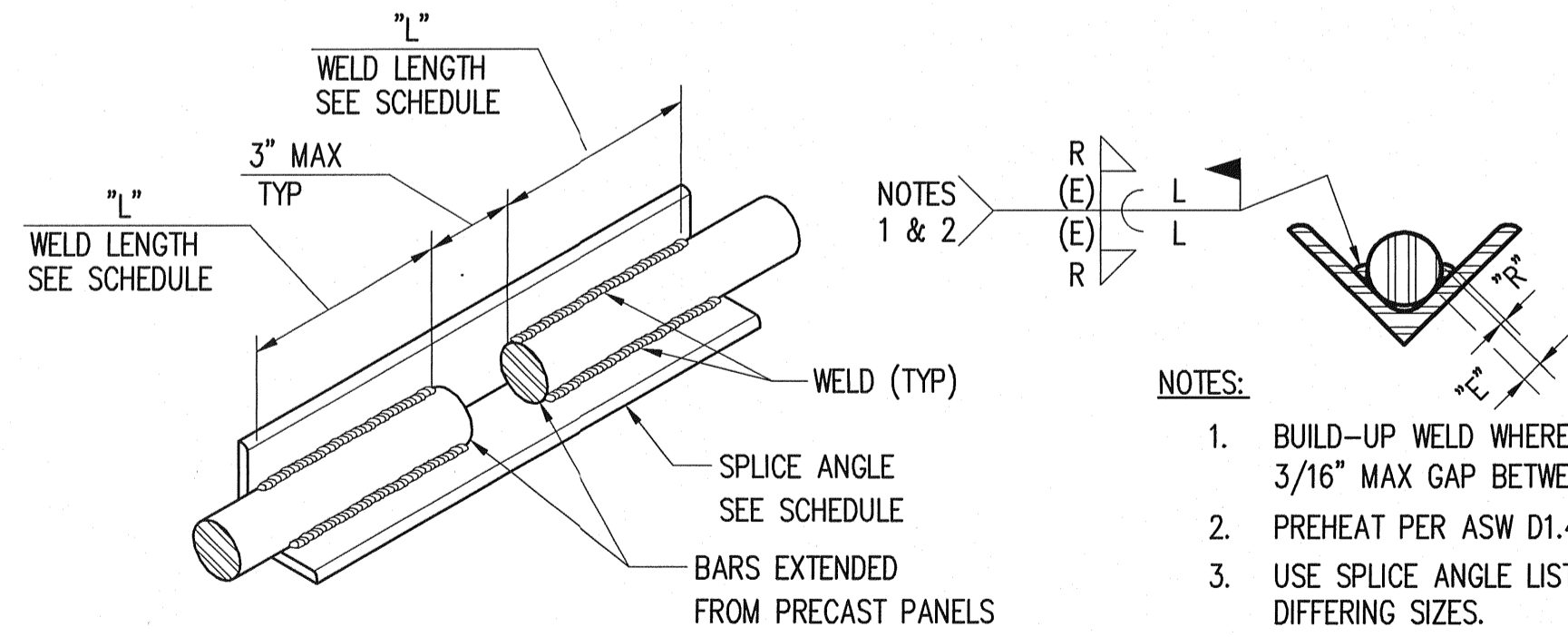


**PILE CAP SECTION** (2)  
SCALE: NONE S24.0 S25.0, S31.0



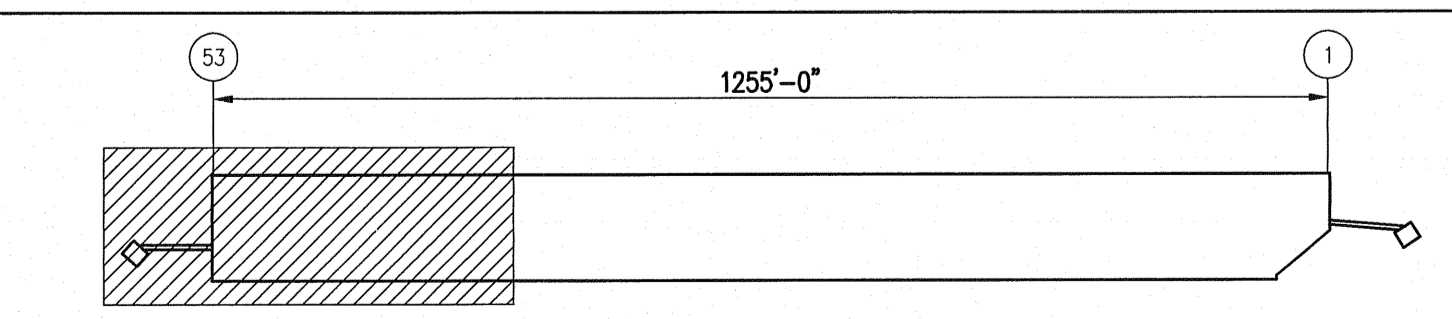
**DECK PLAN**

SCALE: 1/16"=1'-0"



BAR SIZE	SPLICE ANGLE	WELD SIZE		
		EFF THROAT "E"	REINF "R"	WELD LENGTH "L"
#10	L 3 x 3 x 1/2 x 1'-7"	1/4" MIN	1/8" MIN	8"
#9	L 3 x 3 x 3/8 x 1'-4"	7/32" MIN	1/8" MIN	7"
#8	L 3 x 3 x 3/8 x 1'-3"	3/16" MIN	1/8" MIN	6"

**REBAR SPLICE** (3)  
SCALE: NONE S31.0, S31.5, S31.7, S38.1, S38.2



**KEY PLAN**

**BID SET**

APPROVED

CHIEF ENGINEER - DATE: 23 May 07

PROJECT ENGR. - DATE: 05/2007

GGN 05/2007

CHECKED BY - DATE: 05/2007

RKJ 05/2007

DATE: 05-21-2007

REVISION: 17 & 18

MARK: ALEXANDER AVENUE

PORT ADDRESS: 2340 E. ALEXANDER AVENUE

PHASE: BID SET

E NUMBER: E2623

CONTRACT NUMBER: 068018

SHEET 82 OF 215

**S8.0**

EP-6305

TOWNSHIP: 21N RANGE: 3E SECTION: 27

DATUM: HORIZ. VERT.

DRAWING SCALE: AS SHOWN

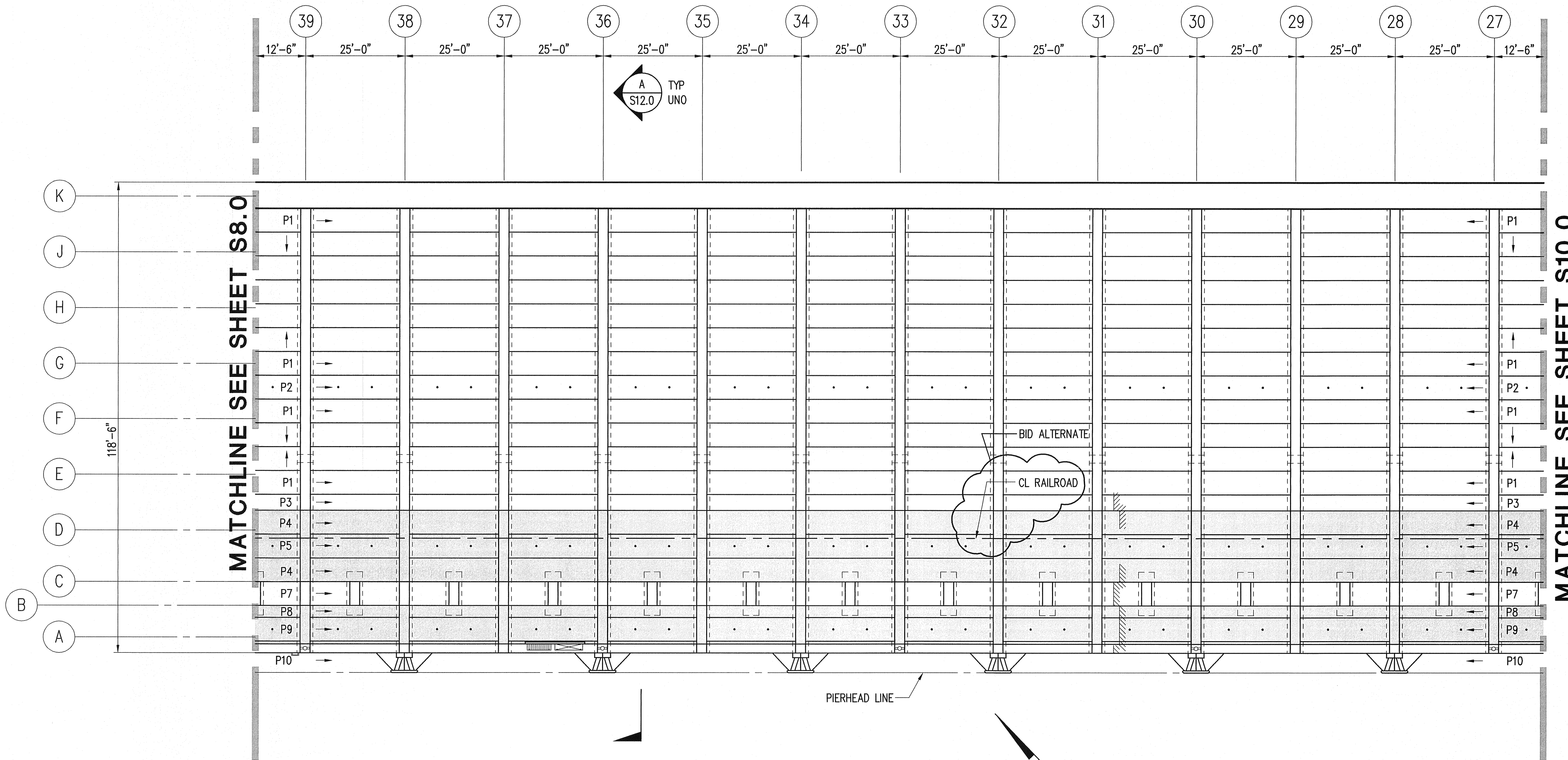
EXPIRES 9/30/08

PORT OF TACOMA  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

**kpfi**

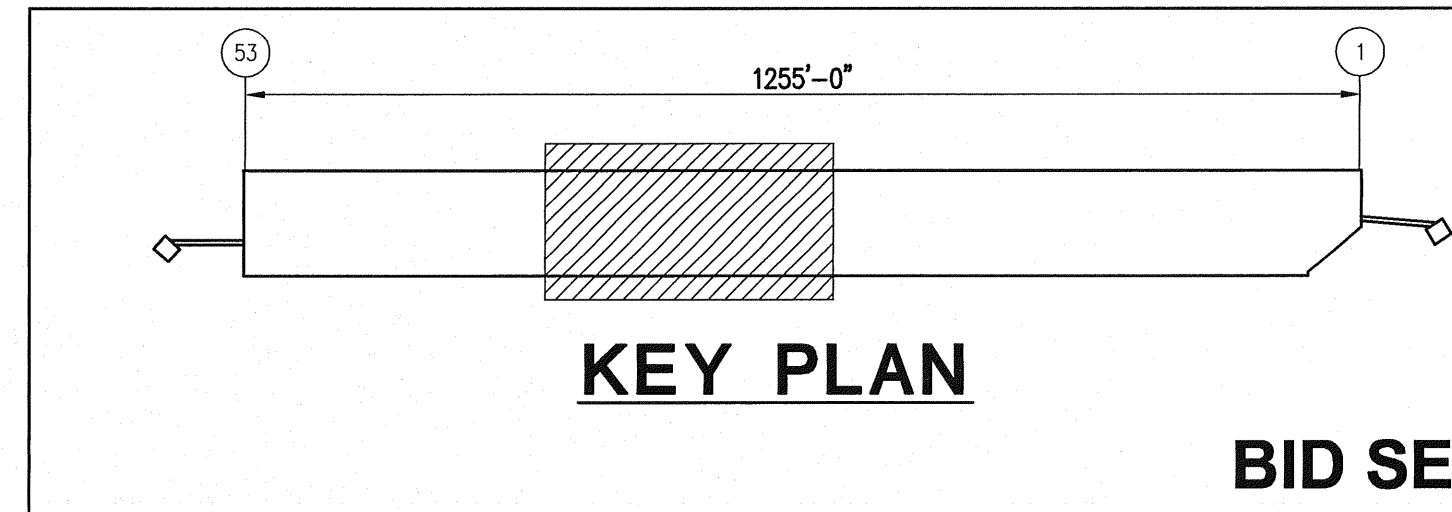
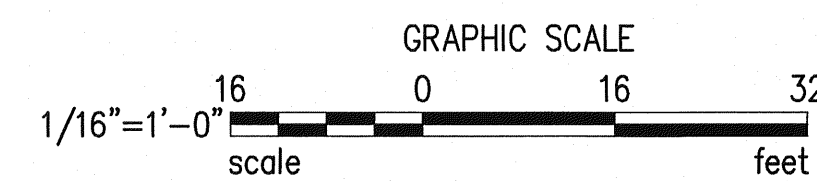
PORT OF TACOMA  
TACOMA, WA 98401 253-383-5841



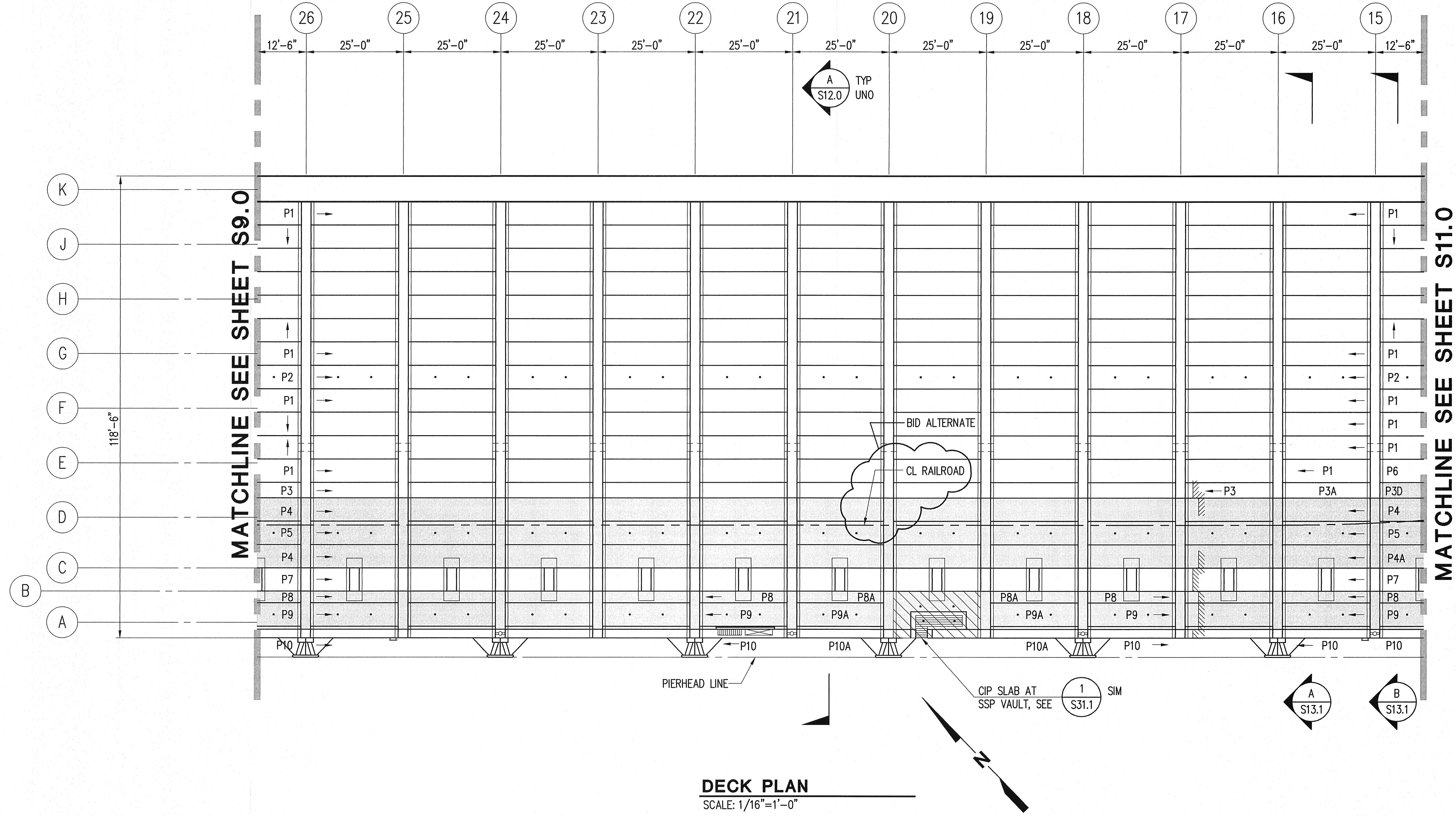
**NOTES:**

- 1. SEE S8.0 FOR NOTES, LEGEND AND DECK PANEL REBAR DETAILS.

**DECK PLAN**  
SCALE: 1/16"=1'-0"



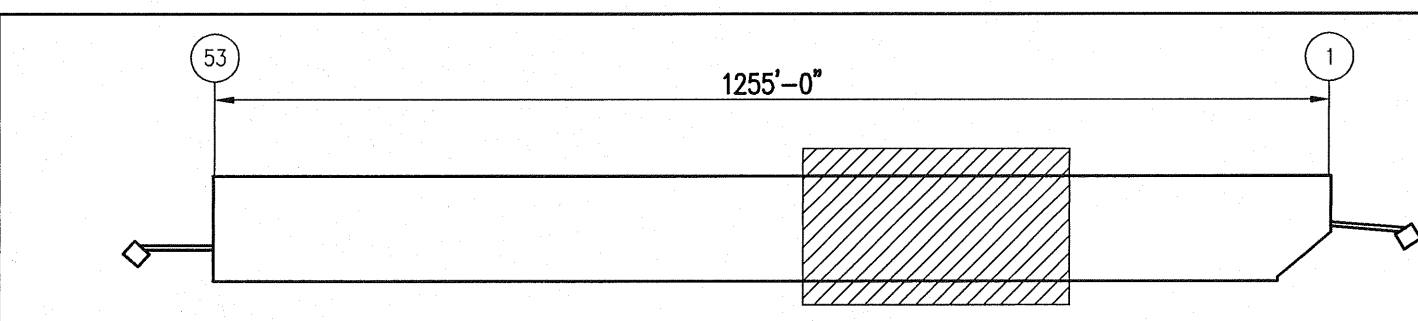
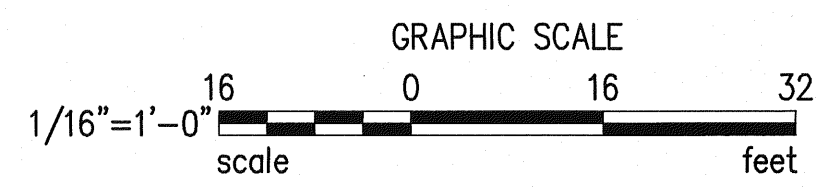
<p>EP-6305 <b>S9.0</b> SHEET 83 OF 215 CONTRACT NUMBER: 068018 E NUMBER: E2623 PHASE: BID SET</p>	<p>PORT OF TACOMA EAST BLAIR ONE WHARF DECK PLAN 2</p>	<p>APPROVED: <i>H. Adams</i> CHIEF ENGINEER - DATE: 23 May 07</p>	<p>05/2007 - DATE GGN - PROJECT ENGR. - DATE</p>	<p>PORT OF TACOMA TACOMA, WA 98401 253-383-5841</p>
	<p>TOWNSHIP: 21N. RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT. DRAWING SCALE: AS SHOWN</p>	<p>EXPRES 9/10/08</p>	<p>MARK REVISION</p>	<p>BY: APPROVED: DATE:</p>



**DECK PLAN**  
SCALE: 1/16"=1'-0"

**NOTES:**

- 1. SEE S8.0 FOR NOTES, LEGEND AND DECK PANEL REBAR DETAILS.

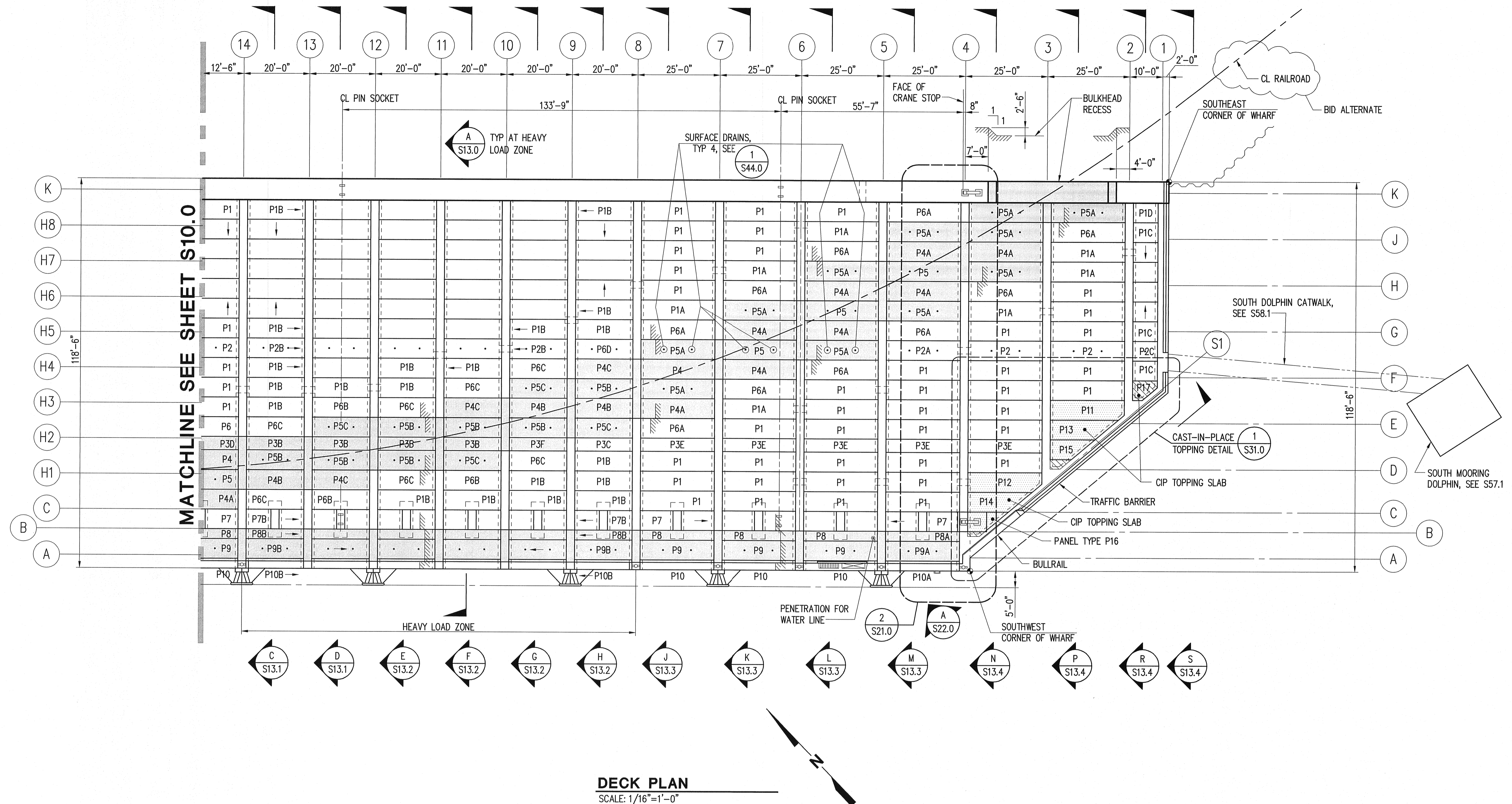


**KEY PLAN**

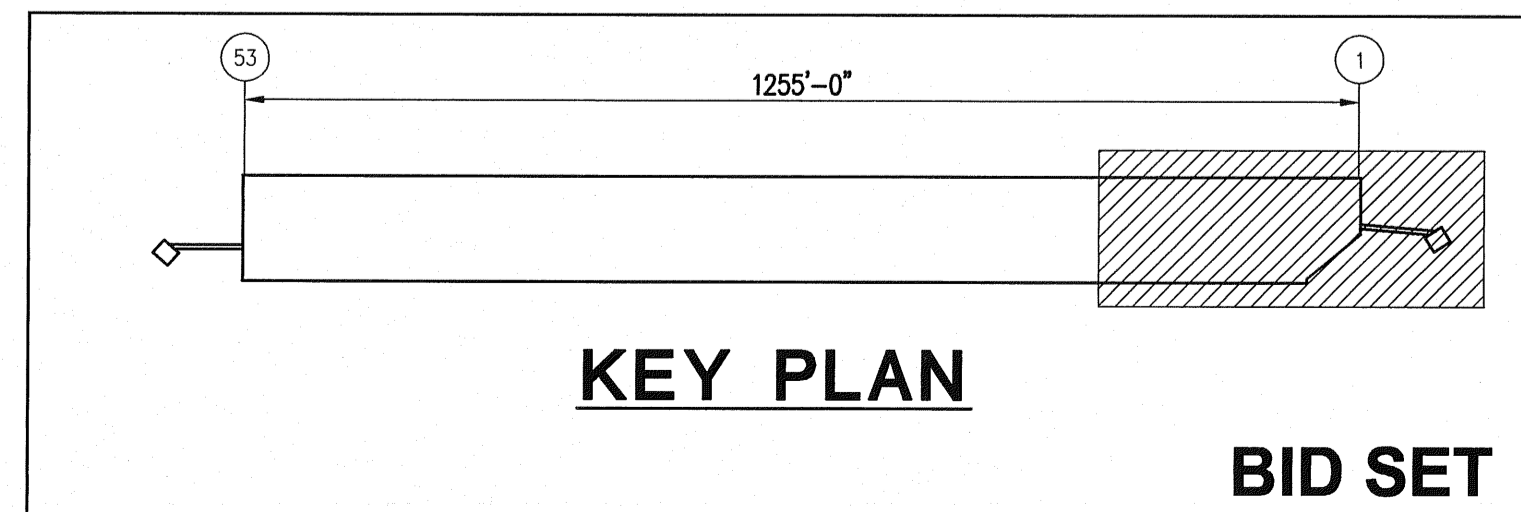
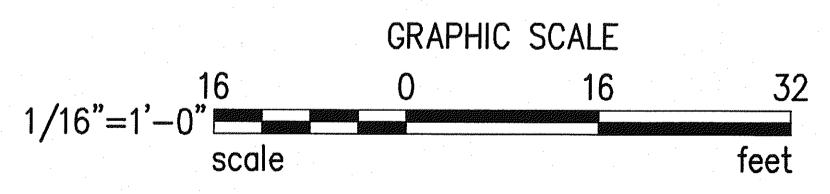
**BID SET**

<p>EP-6305 <b>S10.0</b> SHEET 84 OF 215</p>	<p>PORT OF TACOMA EAST BLAIR ONE WHARF DECK PLAN 3</p>			<p>APPROVED</p>	<p>05/2007 CHECKED BY - DATE</p>	<p>05/2007 PROJECT ENGR. - DATE</p>
	<p>TOWNSHIP-21N RANGE-3E SECTION-27 DATUM: HORIZ. DRAWING SCALE: AS SHOWN</p>	<p>CONTRACT NUMBER: 06801B E. NUMBER: E223 PHASE: BID SET</p>		<p>MARK</p>	<p>REVISION</p>	<p>BY: APPROVED DATE:</p>

PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841



**NOTES:**  
1. SEE S8.0 FOR NOTES, LEGEND AND DECK PANEL REBAR DETAILS.



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Consulting Engineers  
201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

**kp11**

PORT OF TACOMA USA

APPROVED: *[Signature]* DATE: 05/2007  
CHECKED BY: GGN DATE: 05/2007  
PROJECT ENGR.: DATE: 05/2007

CHIEF ENGINEER: DATE: 05-21-2007  
DRAWING DATE: 05-21-2007  
DRAWING BY: 9330 E ALEXANDER AVENUE  
PORT PARKET, W.A. 98148

REVISION: MARK REVISION

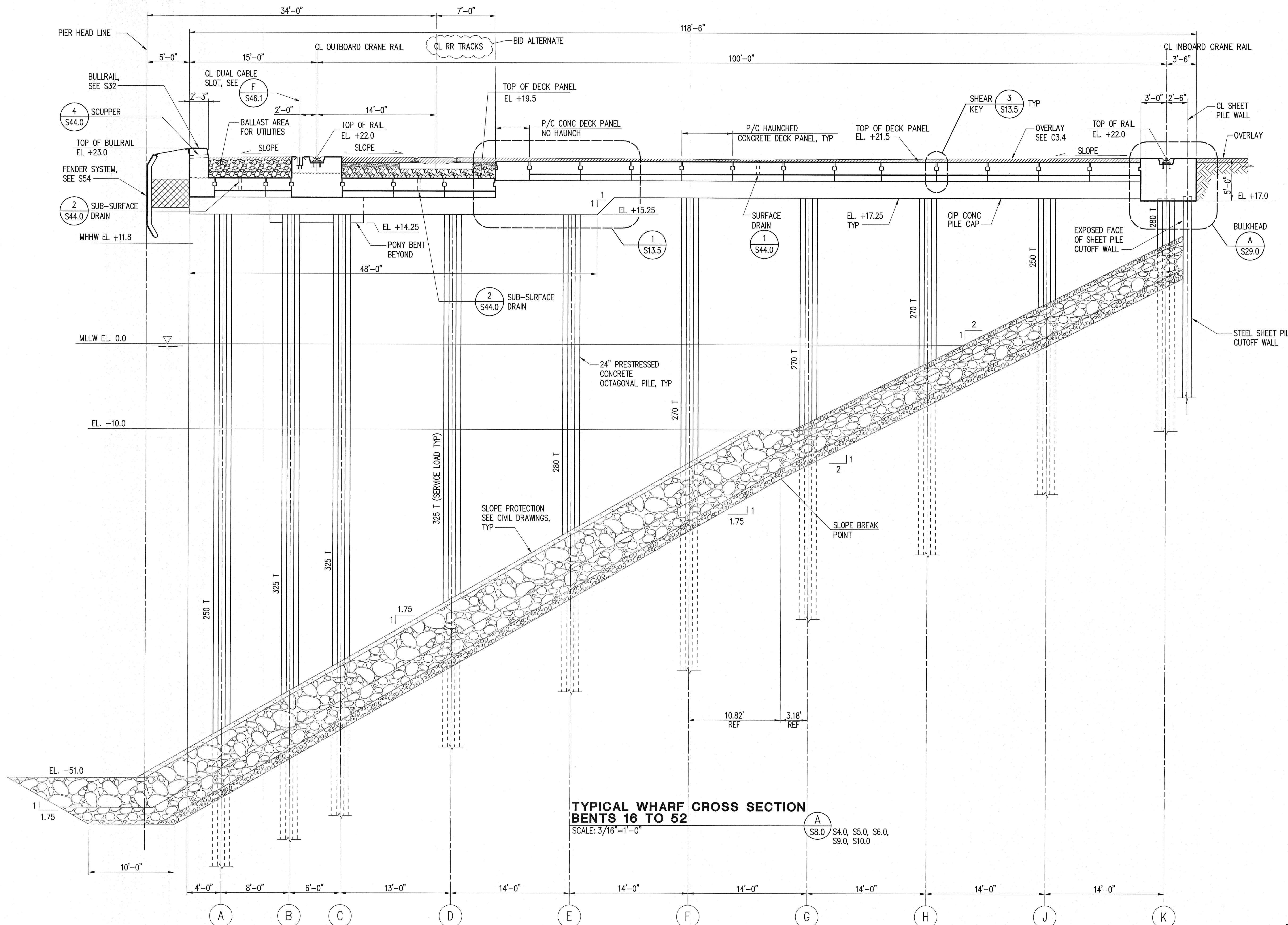
PHASE: BID SET

CONTRACT NUMBER: 068018  
SHEET 85 OF 215  
E NUMBER: E2823

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ. VERT.  
DRAWING SCALE: AS SHOWN

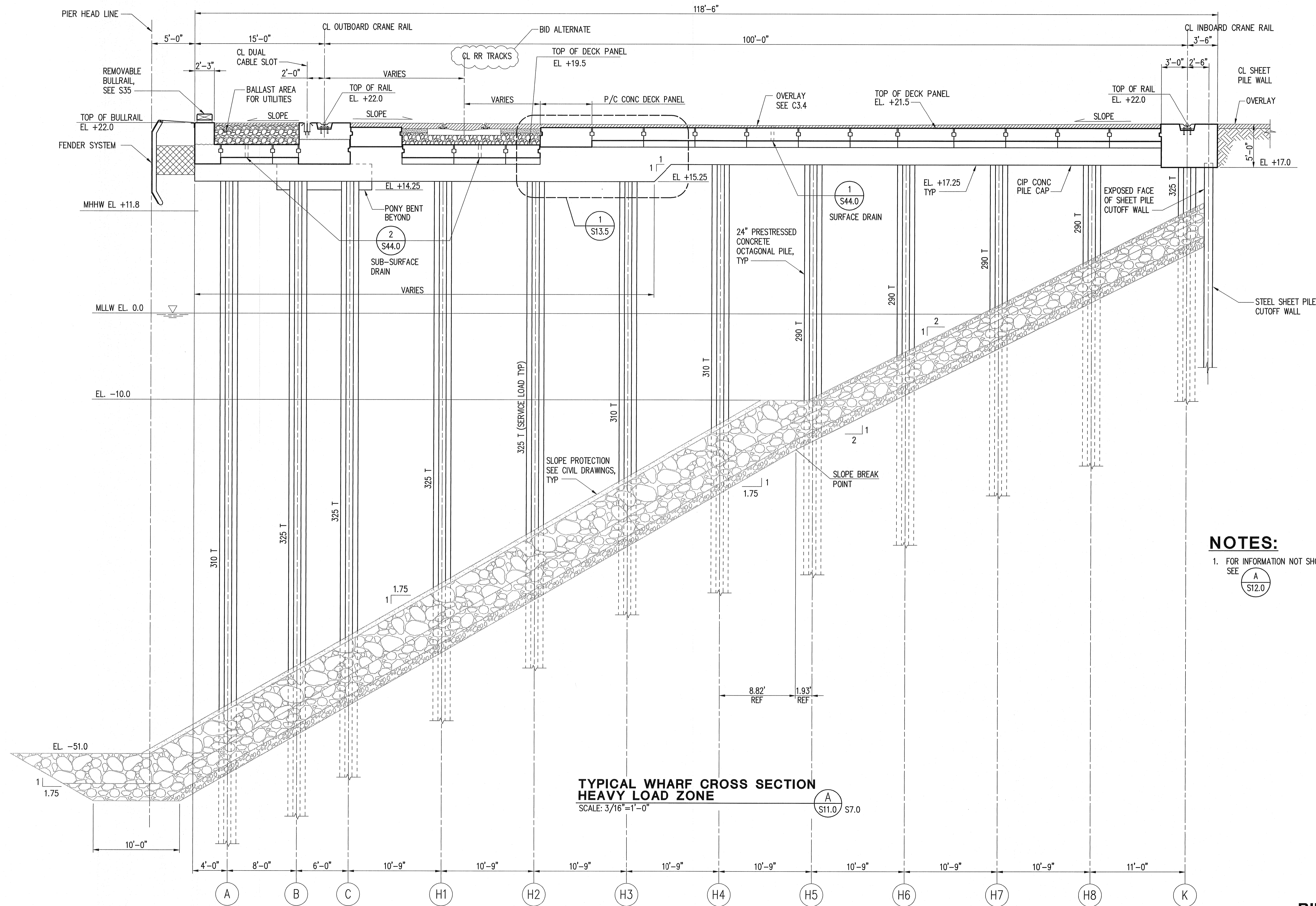
EP-6305  
**S11.0**  
PORT OF TACOMA  
EAST BLAIR ONE WHARF  
DECK PLAN 4

**BID SET**



**TYPICAL WHARF CROSS SECTION  
BENTS 16 TO 52**  
SCALE: 3/16"=1'-0"

<b>PORT OF TACOMA</b> CONSULTING ENGINEERS 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-0162	
<b>PORT OF TACOMA</b> P.O. BOX 1837 TACOMA, WA 98401 253-383-5841	
APPROVED  H. Anderson CHIEF ENGINEER - DATE 22 MAR 07	CHECKED BY - DATE GGN 05/2007 PROJECT ENGR. - DATE DATE: 05-21-2007 PORT ADDRESS: 330 E. ALEXANDER AVENUE PORT PARCEL: 1 & 18
RKJ 05/2007 CHECKED BY - DATE	GGN 05/2007 PROJECT ENGR. - DATE
PORT OF TACOMA EAST BLAIR ONE WHARF TYPICAL WHARF CROSS SECTION BENTS 16 TO 52 TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT. CONTRACT NUMBER: 068018 SHEET 86 OF 215 E NUMBER: E2823 PHASE: BID SET	
<b>S12.0</b> <b>SHEET 86 OF 215</b>	
PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841	
kpf1	
BID SET	

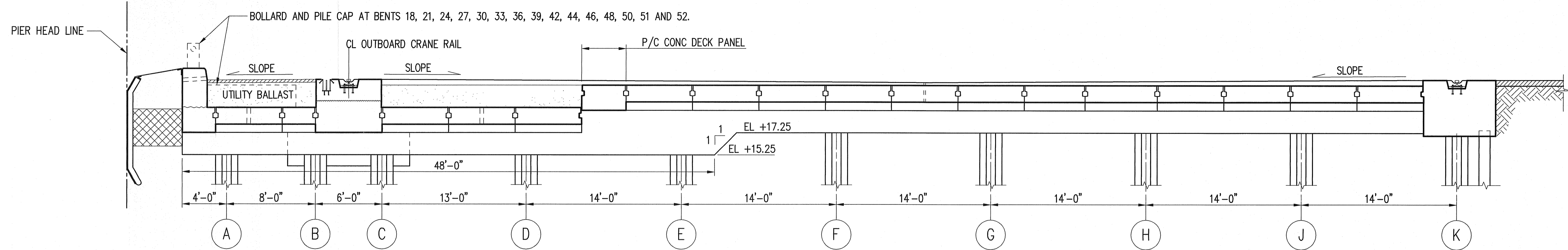


**TYPICAL WHARF CROSS SECTION  
HEAVY LOAD ZONE**  
SCALE: 3/16"=1'-0"

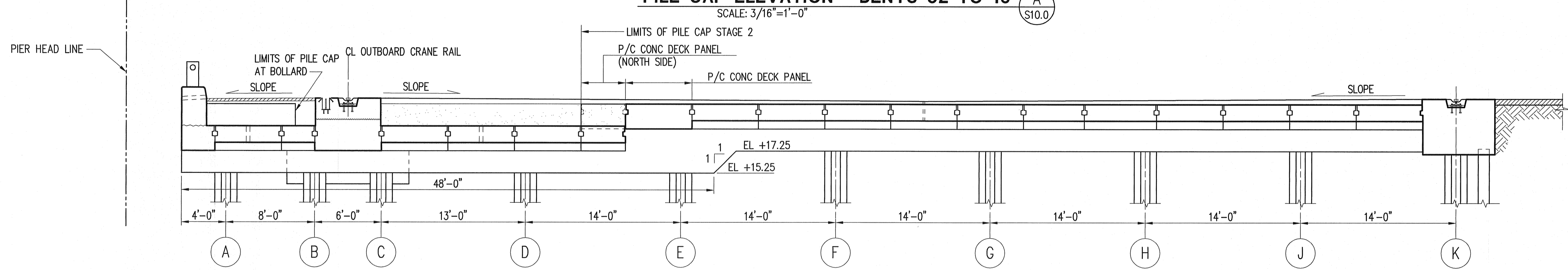
- NOTES:**
- FOR INFORMATION NOT SHOWN SEE A  
S12.0

<p>EP-6305 <b>S13.0</b> SHEET 87 OF 215 CONTRACT NUMBER: 08801B E. NUMBER: E2623 PHASE: BID SET</p>	<p><b>PORT OF TACOMA</b> EAST BLAIR ONE WHARF TYPICAL WHARF CROSS SECTION HEAVY LOAD ZONE</p>	<p>PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841 Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0160 Fax (253) 396-0162</p> <p><b>kpf1</b></p> <p>APPROVED: <i>M. Adams</i> CHIEF ENGINEER - DATE 23 MAY 07</p> <p>DRAWING DATE: 05-21-2007 PROJECT: EAST BLAIR ONE WHARF PORT PARCEL 17 &amp; 18</p>
<p>REVISION: _____ MARK: _____</p>		
<p>05/2007 - DATE RJK CHECKED BY: _____ GGN PROJECT ENGR. - DATE</p>		
<p>EXP. 9/30/08</p>		

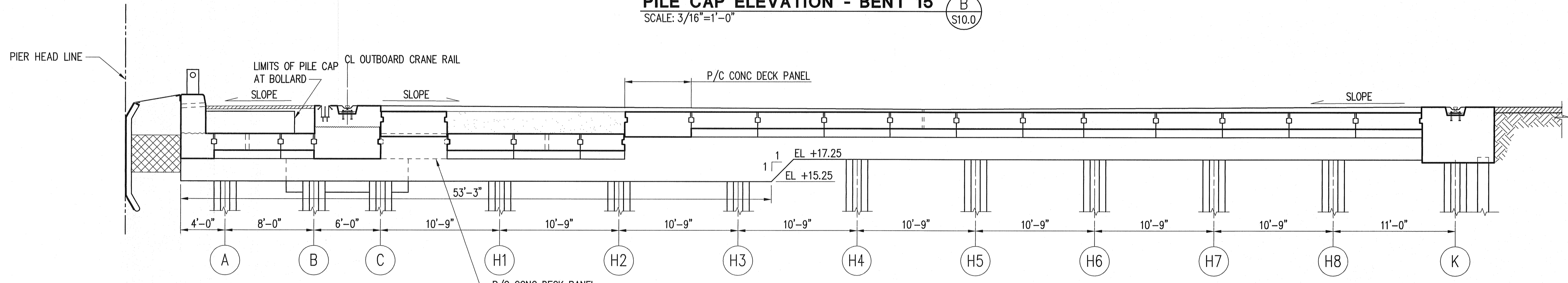
**BID SET**



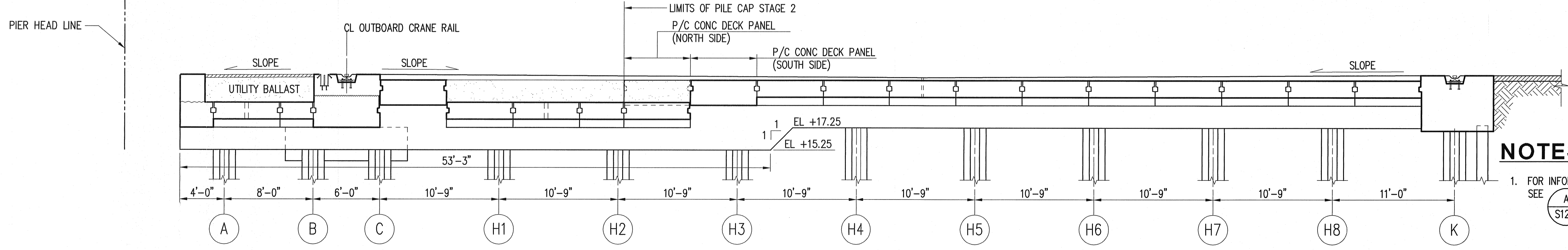
**PILE CAP ELEVATION - BENTS 52 TO 16** (A)  
SCALE: 3/16"=1'-0" S10.0



**PILE CAP ELEVATION - BENT 15** (B)  
SCALE: 3/16"=1'-0" S10.0



**PILE CAP ELEVATION - BENT 14** (C)  
SCALE: 3/16"=1'-0" S11.0



**PILE CAP ELEVATION - BENT 13** (D)  
SCALE: 3/16"=1'-0" S11.0

**NOTES:**  
1. FOR INFORMATION NOT SHOWN ON THIS SHEET SEE (A) AND (A) S12.0 S13.0

EP-6305  
**S13.1**  
 SHEET 88 OF 215  
 CONTRACT NUMBER: 068018  
 E. NUMBER: E2623  
 PHASE: BID SET

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 WHARF CROSS SECTIONS 1

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ.  
 DRAWING SCALE: AS SHOWN

APPROVED: *[Signature]*  
 CHECKED BY: GGN  
 PROJECT ENGR.: GGN  
 DATE: 05/2007  
 DATE: 05/2007

CHIEF ENGINEER: *[Signature]*  
 DATE: 23 Mar 07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

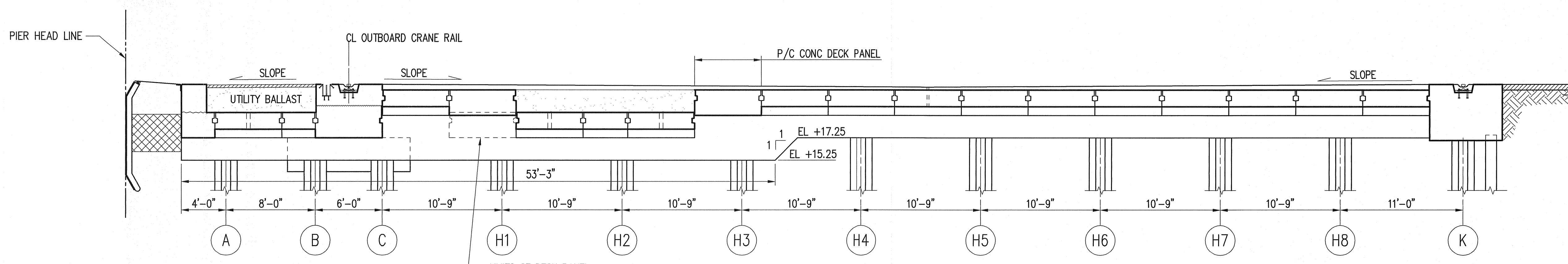
PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162

**kpf**  
 PORT OF TACOMA U.S.A.

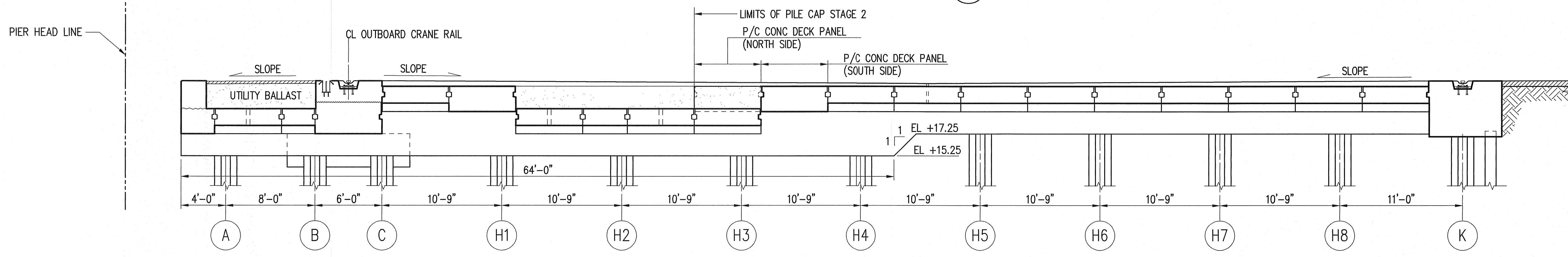
REVISION: MARK  
 BY: APPROVED: DATE:

EXPIRES 9/30/08

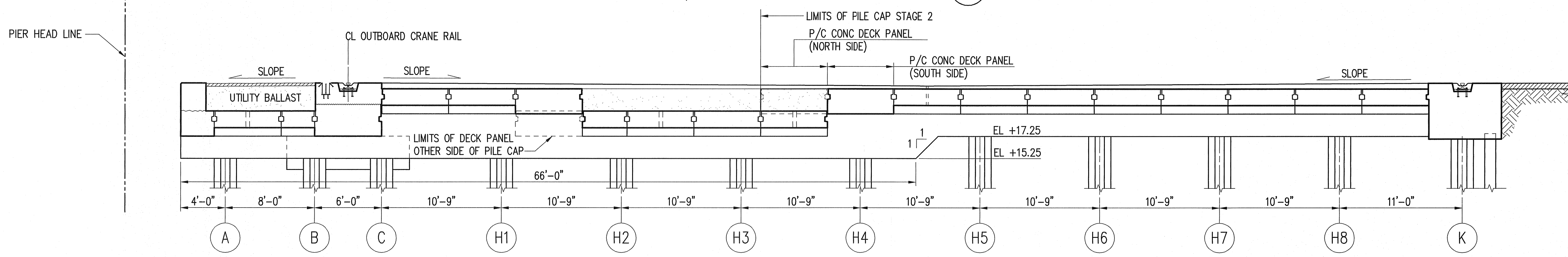
**BID SET**



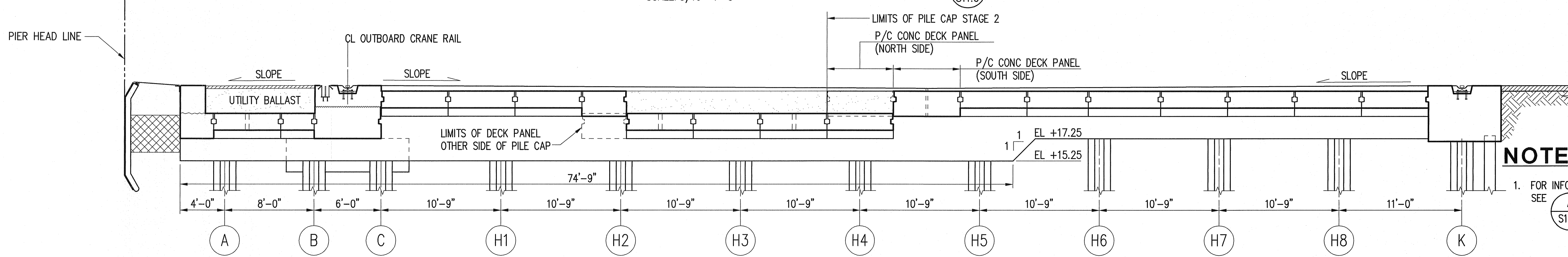
**PILE CAP ELEVATION - BENT 12**  
SCALE: 3/16"=1'-0"



**PILE CAP ELEVATION - BENT 11**  
SCALE: 3/16"=1'-0"



**PILE CAP ELEVATION - BENT 10**  
SCALE: 3/16"=1'-0"



**PILE CAP ELEVATION - BENT 9**  
SCALE: 3/16"=1'-0"

**NOTES:**  
1. FOR INFORMATION NOT SHOWN ON THIS SHEET SEE A S12.0 AND A S13.0

**PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841**

**kpfi**  
Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

APPROVED: *H. Adams* CHIEF ENGINEER - DATE: 05/21/2007  
CHECKED BY: GGN PROJECT ENGR. - DATE: 05/20/2007

REVISION: MARK REVISION DATE: BY: APPROVED: DATE:

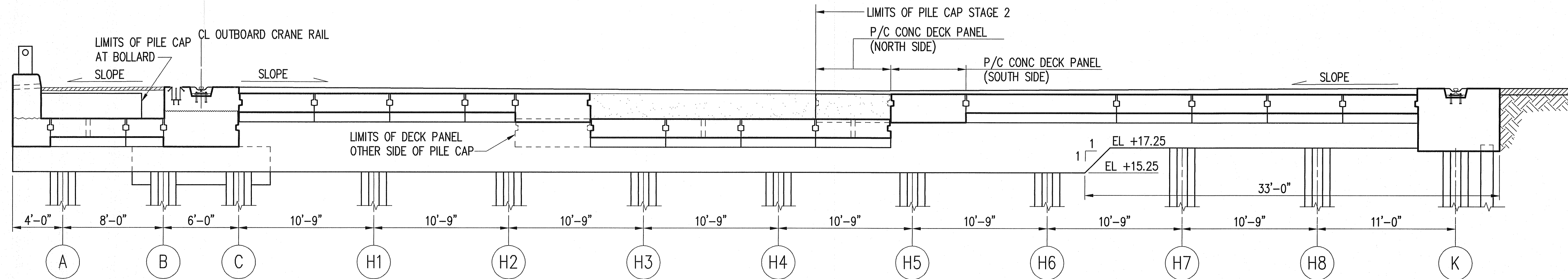
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ. DRAWING SCALE: AS SHOWN

**PORT OF TACOMA  
EAST BLAIR ONE WHARF  
WHARF CROSS SECTIONS 2**

EP-6305  
**S13.2**  
SHEET 89 OF 215  
CONTRACT NUMBER: 068018  
NUMBER: E2623  
PHASE: BID SET

**BID SET**

PIER HEAD LINE

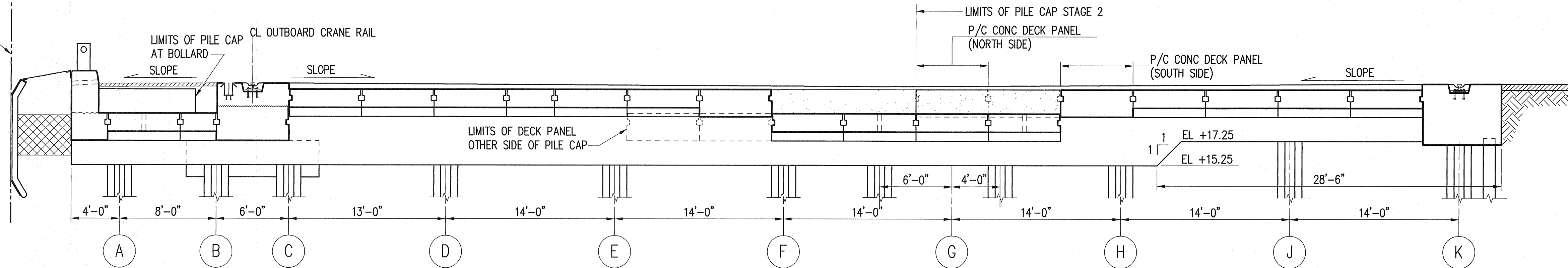


**PILE CAP ELEVATION - BENT 8**

SCALE: 3/16"=1'-0"

(J) S11.0

PIER HEAD LINE

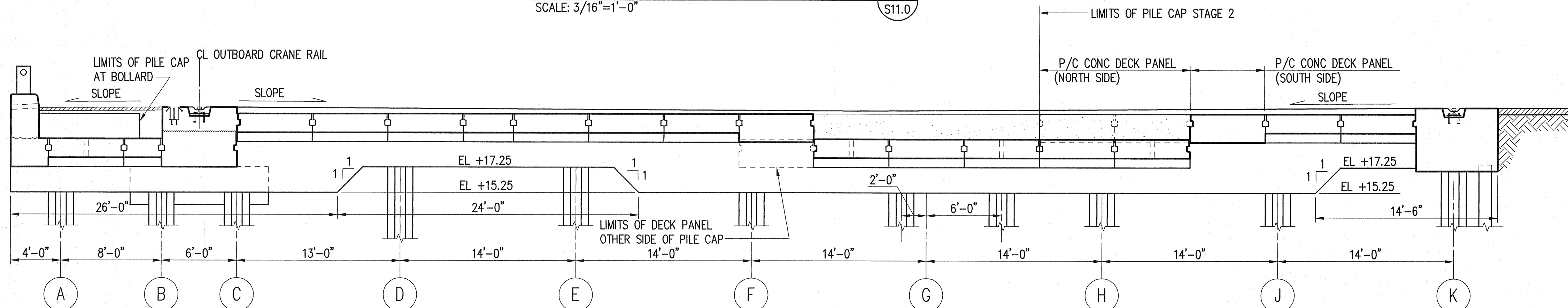


**PILE CAP ELEVATION - BENT 7**

SCALE: 3/16"=1'-0"

(K) S11.0

PIER HEAD LINE

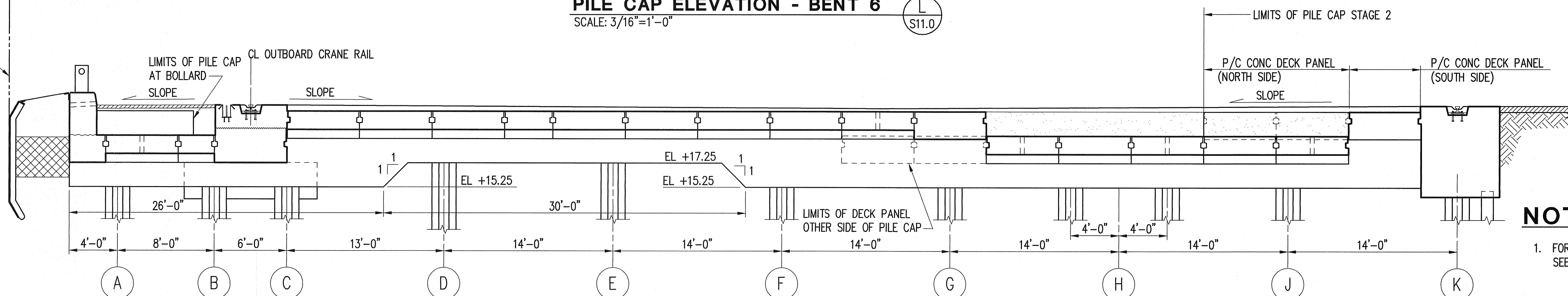


**PILE CAP ELEVATION - BENT 6**

SCALE: 3/16"=1'-0"

(L) S11.0

PIER HEAD LINE



**PILE CAP ELEVATION - BENT 5**

SCALE: 3/16"=1'-0"

(M) S11.0

**NOTES:**

1. FOR INFORMATION NOT SHOWN ON THIS SHEET

SEE (A) S12.0 AND (A) S13.0

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 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162

**PORT OF TACOMA USA**  
**kpti**

APPROVED: *H. Adams*  
 CHIEF ENGINEER - DATE: 23 MAR 07  
 CHECKED BY: GGN - DATE: 05/2007  
 PROJECT ENGR. - DATE: 05/2007

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT. AS SHOWN  
 DRAWING SCALE: AS SHOWN

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 WHARF CROSS SECTIONS 3

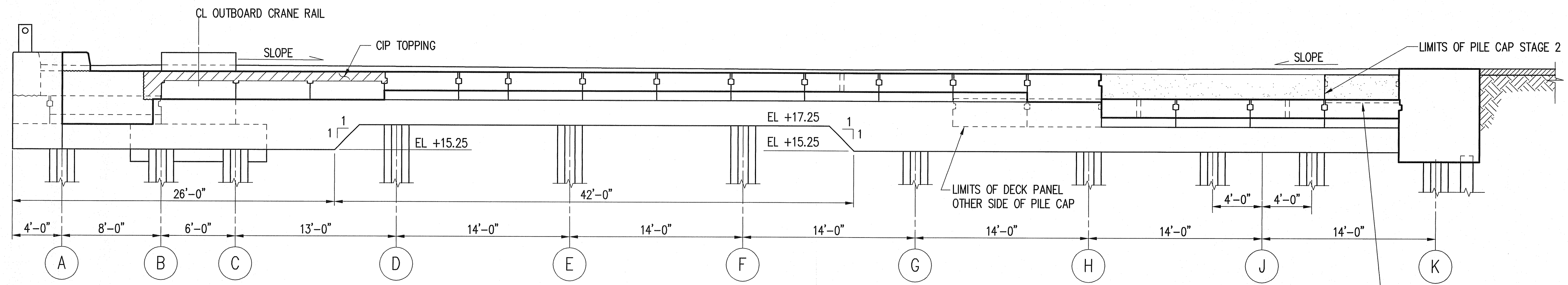
EP-6305  
**S13.3**  
 SHEET 90 OF 215  
 CONTRACT NUMBER: 066018  
 E. NUMBER: E2623  
 PHASE: BID SET

REVISION  
 MARK REVISION  
 BY: DATE:

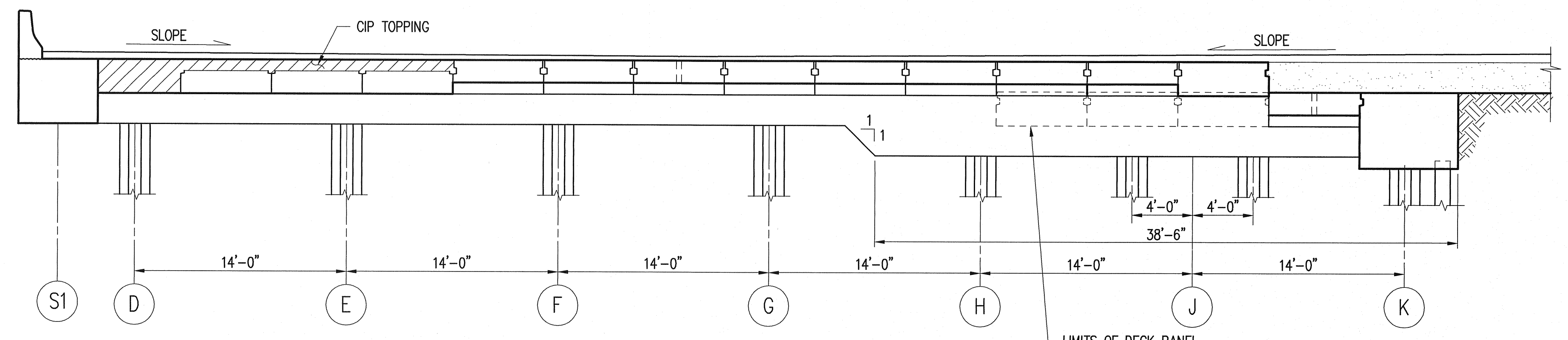
EXPIRES 9/30/08

**BID SET**

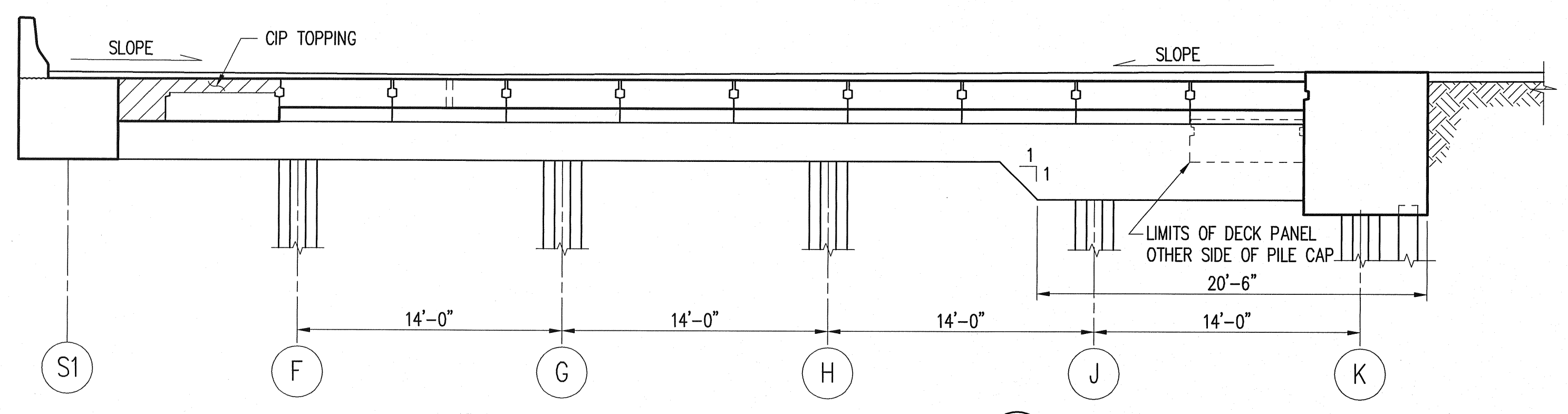
PIER HEAD LINE



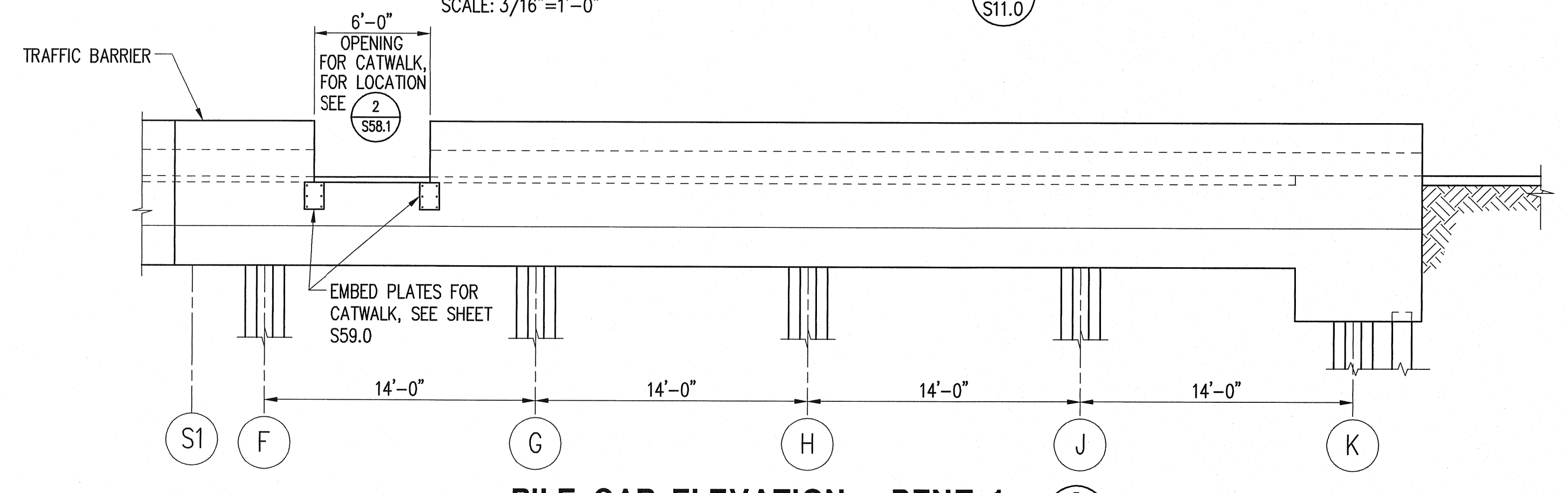
**PILE CAP ELEVATION - BENT 4** (N)  
SCALE: 3/16"=1'-0"



**PILE CAP ELEVATION - BENT 3** (P)  
SCALE: 3/16"=1'-0"



**PILE CAP ELEVATION - BENT 2** (R)  
SCALE: 3/16"=1'-0"



**PILE CAP ELEVATION - BENT 1** (S)  
SCALE: 3/16"=1'-0"

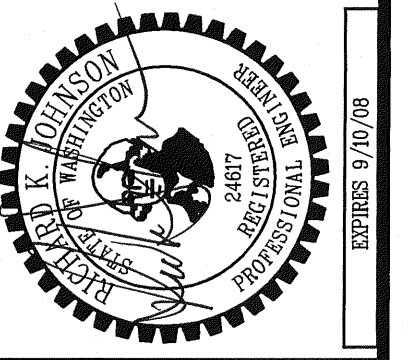
**NOTES:**

- 1. FOR INFORMATION NOT SHOWN ON THIS SHEET SEE (A) S12.0 AND (A) S13.0

APPROVED: *M. J. [Signature]*  
 CHIEF ENGINEER - DATE: 23 APR 07  
 PROJECT ENGR. - DATE: 05/2007  
 CHECKED BY - DATE: 05/2007  
 RJK

PORT OF TACOMA USA  
 PORT OF TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0162 Fax (253) 396-0162

REVISION: MARK BY: DATE:  
 17 & 18



PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 WHARF CROSS SECTIONS 4

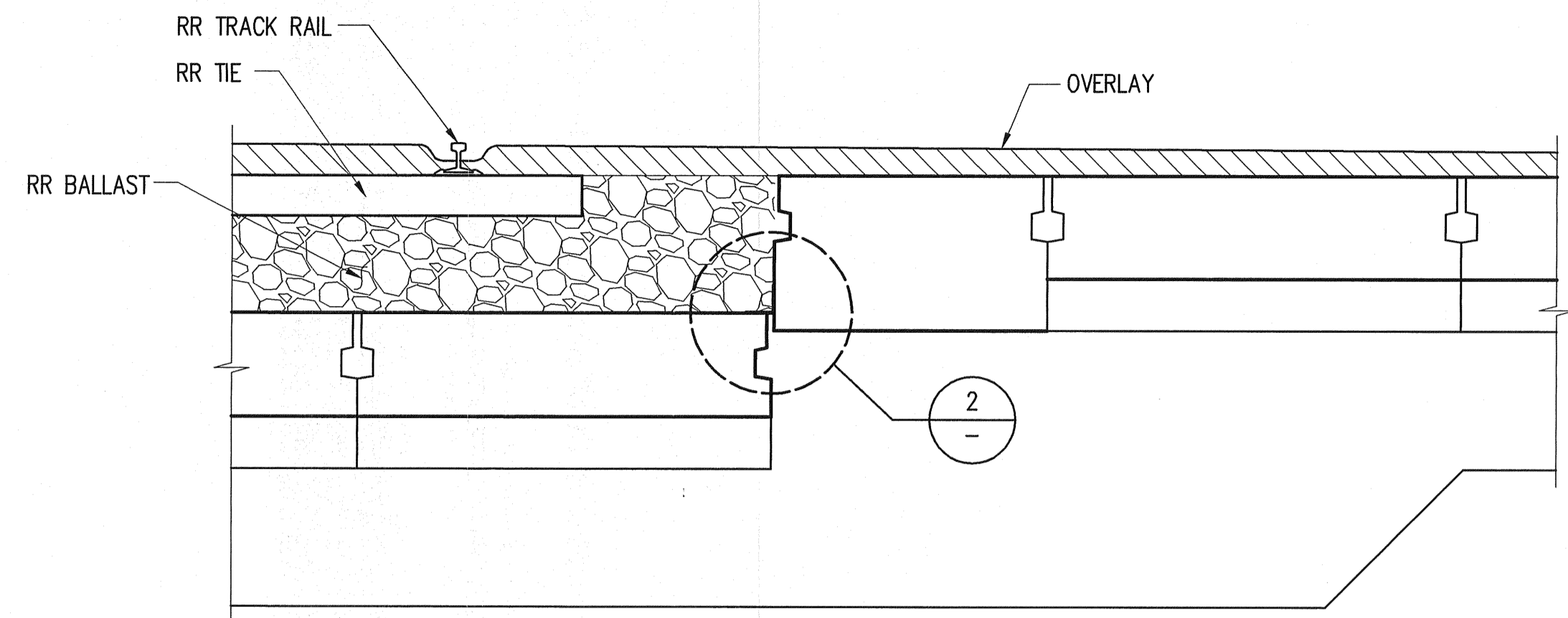
EP-6305  
**S13.4**  
 SHEET 91 OF 215

CONTRACT NUMBER: 088018  
 E NUMBER: E2623  
 PHASE: BID SET

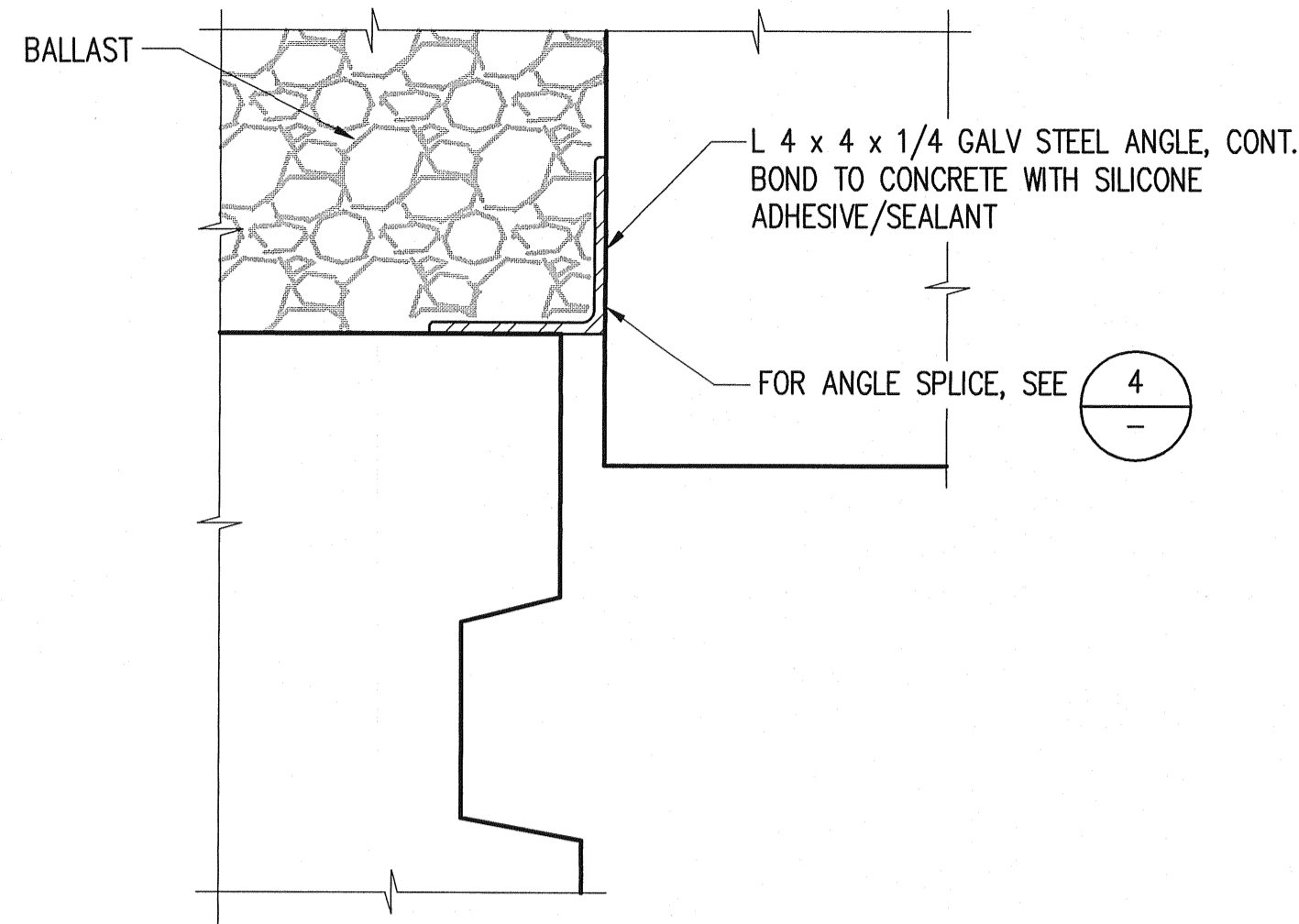
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ: VERT:  
 DRAWING SCALE: AS SHOWN

EXPIRES 9/10/08

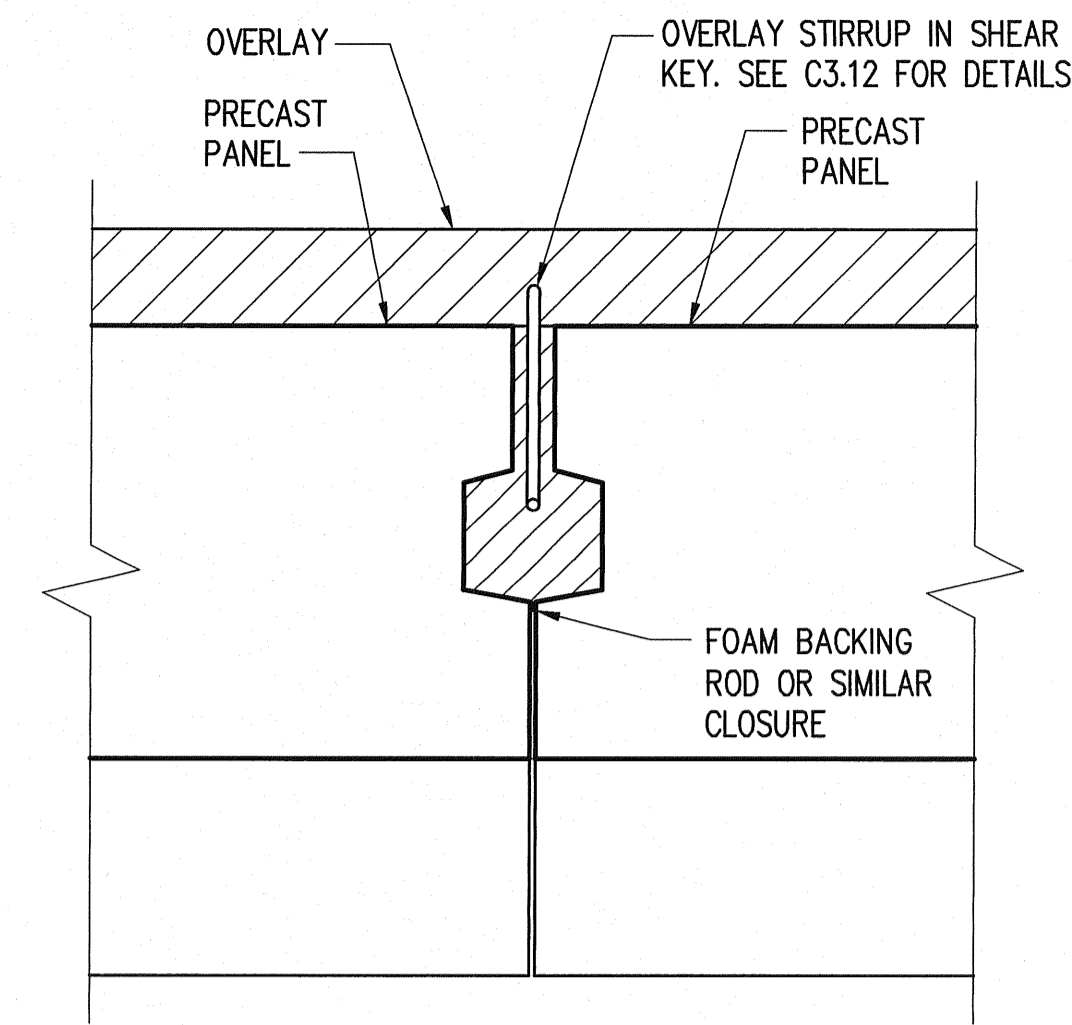
**BID SET**



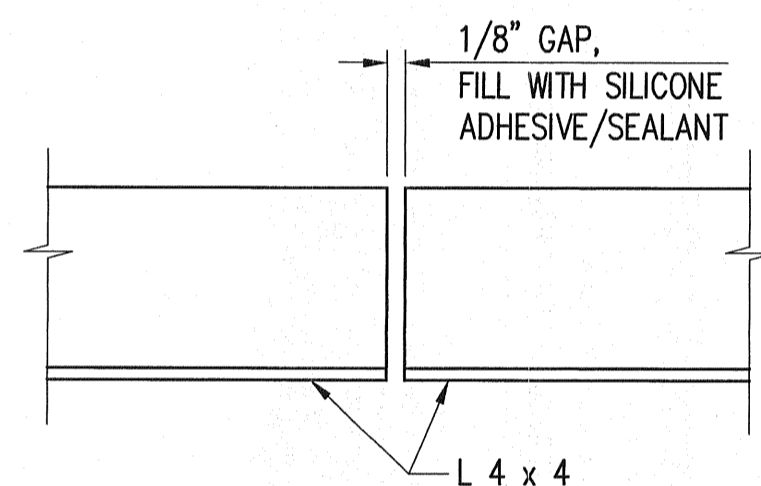
**DETAIL**  
SCALE: 1/2"=1'-0"  
① S12.0 S13.0



**DETAIL**  
SCALE: 3"=1'-0"  
②

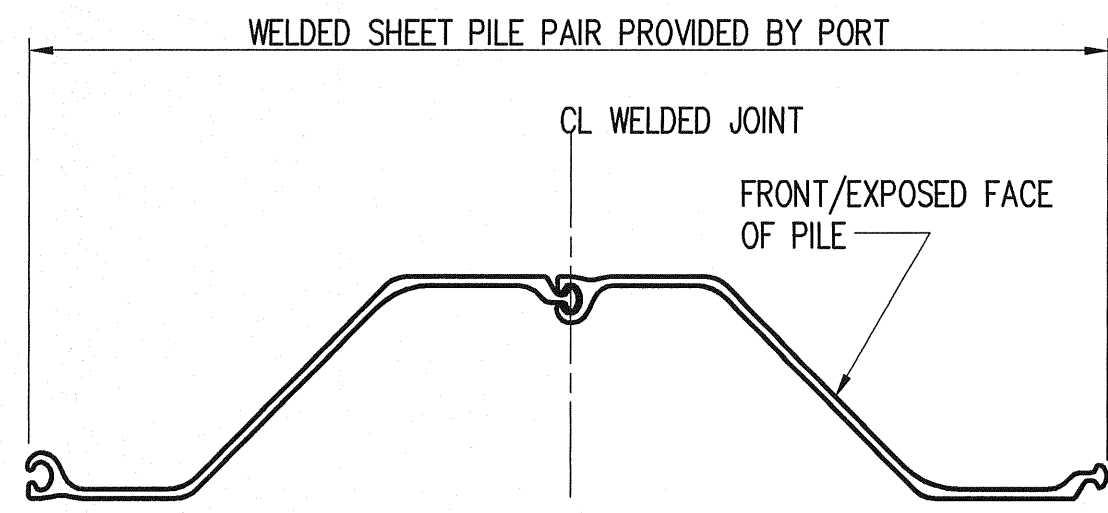


**TYPICAL SHEAR KEY DETAIL**  
SCALE: NONE  
③ S12.0 S36.0, S36.1, S37.0, S38.0, S38.1, S38.2, S39.0, S39.1, S40.0, S41.0

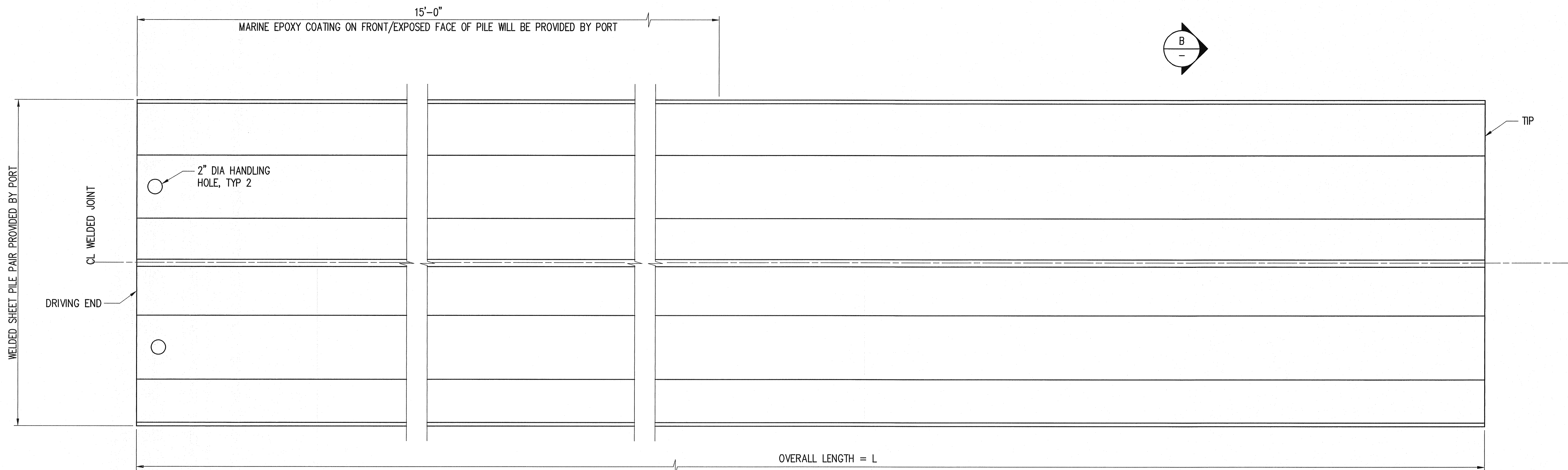


**DETAIL**  
SCALE: 3"=1'-0"  
④

<b>PORT OF TACOMA</b> P. O. BOX 1837 TACOMA, WA 98401 253-383-5841 Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0160 Fax (253) 396-0162		MARK REVISION	APPROVED: DATE:
		CHECKED BY: 05/2007 RKJ	PROJECT ENGR.: 05/2007 GGN
APPROVED  CHIEF ENGINEER - DATE 23 APR 07		DRAWING DATE: 05-21-2007 ADDRESS: 2940 E ALEXANDER AVENUE PORT TACOMA, WA 98151	
		EXPIRES 9/30/08	
<b>PORT OF TACOMA</b> <b>EAST BLAIR ONE WHARF</b> <b>TYPICAL DECK PANEL DETAILS</b>		TOWNSHIP: 21N. RANGE: 3E SECTION: 27 DATUM: HORIZ. AS SHOWN DRAWING SCALE: AS SHOWN	
EP-6305 <b>S13.5</b> SHEET 92 OF 215	CONTRACT NUMBER: 06801B E NUMBER: E2623 PHASE: BID SET	<b>BID SET</b>	



**SECTION**  
SCALE: 1 1/2"=1'-0" B

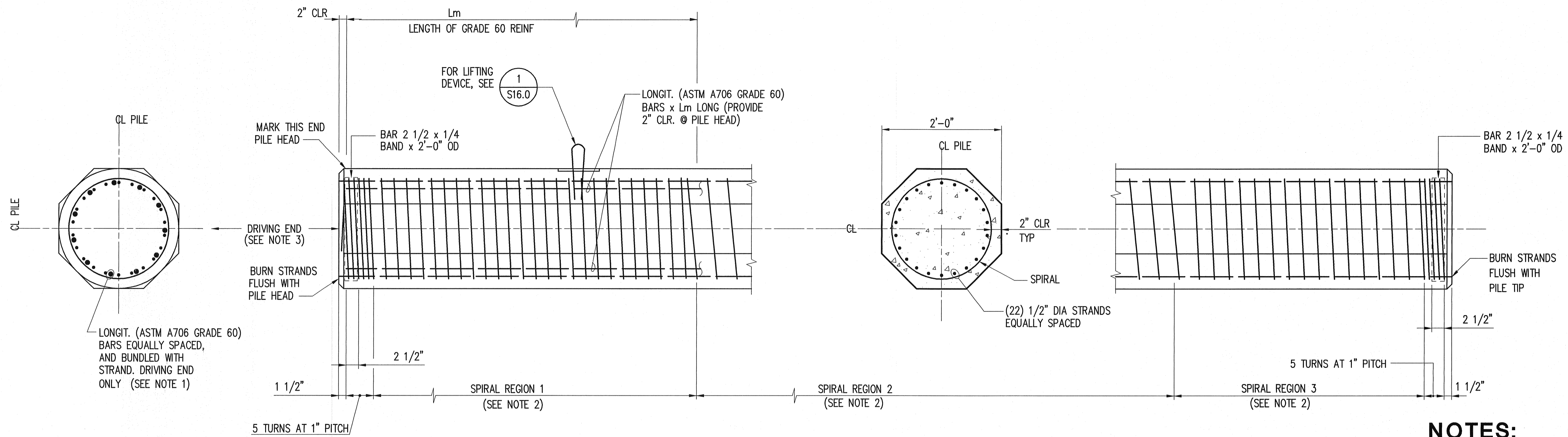


**TYPICAL PORT PREPURCHASED PZ22 SHEET PILE PAIR**  
SCALE: 1 1/2"=1'-0" A S4.0 S5.0, S6.0, S7.0

- NOTES:**
1. ALL PZ22 SHEET PILES ARE PRE-PURCHASED BY THE PORT AND CONFORM TO ASTM A690. SEE SHEET S61.0 FOR ADDITIONAL INFORMATION.
  2. SEE 3/S30.0 FOR PZ22 SHEET PILE PAIR-TO-PAIR FIELD WELDS.

	<p><b>PORT OF TACOMA</b> EAST BLAIR ONE WHARF STEEL SHEET PILE DETAILS</p>	<p>EP-6305 <b>S14.0</b> SHEET 93 OF 215</p>	<p>PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841</p> <p>Consulting Engineers <b>kpfi</b> 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-0162</p>						
<p>TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT. DRAWING SCALE: AS SHOWN</p>	<p>APPROVED: <i>H. Jones</i> CHIEF ENGINEER - DATE: 23 May 07 DRAWING DATE: 05-21-2007 PORT ADDRESS: 2340 F. ALEXANDER AVENUE PORT PARCEL: 17 &amp; 18</p>	<p>REVISION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>MARK</th> <th>REVISION</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	MARK	REVISION	DATE				<p>CHKD BY: - DATE: 05/2007 GGN 05/2007 PROJECT ENGR. - DATE: 05/2007</p>
MARK	REVISION	DATE							

**BID SET**



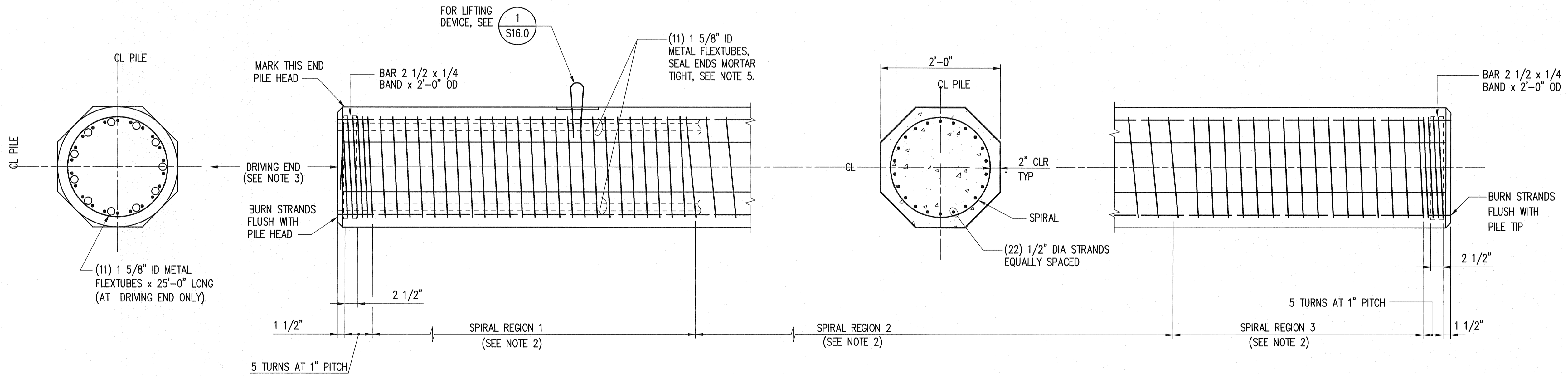
**24" SOLID OCTAGONAL PRECAST  
PRESTRESSED CONCRETE PILE  
TYPES 1, 3 AND D1**

SCALE: 1"=1'-0"

1  
S4.0 S5.0, S6.0, S7.0

**NOTES:**

- SEE TABLE 1 ON S16.0.
- SEE TABLE 2 ON S16.0.
- MARK DRIVING END OF ALL PILES CLEARLY AT PRECAST PLANT.
- PILES SHALL HAVE MARKS DESIGNATING THE SIZE, LENGTH, RESPECTIVE ROW LOCATION, PILE TYPE AND STRUCTURE PORTION PAINTED CLEARLY ON THE PILE.
- FLEXTUBES SHALL BE RIGID, GALVANIZED, SPIRAL, FERROUS METAL, MORTAR TIGHT, DUCTS CONFORMING TO ASTM A653. THE MINIMUM THICKNESS SHALL BE 26 GAGE.



**24" SOLID OCTAGONAL PRECAST  
PRESTRESSED CONCRETE PILE  
TYPE 2**

SCALE: 1"=1'-0"

2  
S4.0 S5.0, S6.0, S7.0

**NOTE:**

FOR PORT PRE-PURCHASED PILES SEE S61.0.

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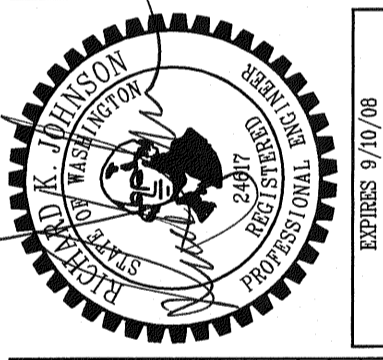
**kpti**

PORT OF TACOMA  
USA

APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 05-21-2007  
PROJECT ENGR. - DATE: 05/2007

RKJ 05/2007 - DATE CHECKED BY  
GGN 05/2007 - DATE PROJECT ENGR.

MARK REVISION  
BY: DATE:  
REVISION: DATE:  
MARK: REVISION:  
BY: DATE:



PORT OF TACOMA  
EAST BLAIR ONE WHARF  
PRECAST PILE DETAILS

EP-6305  
**\$15.0**  
SHEET 94 OF 215

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
CONTRACT NUMBER: 06801B  
DATE: 02/2003  
E. NUMBER: E2823  
PHASE: BID SET

DRAWING SCALE: AS SHOWN

**BID SET**

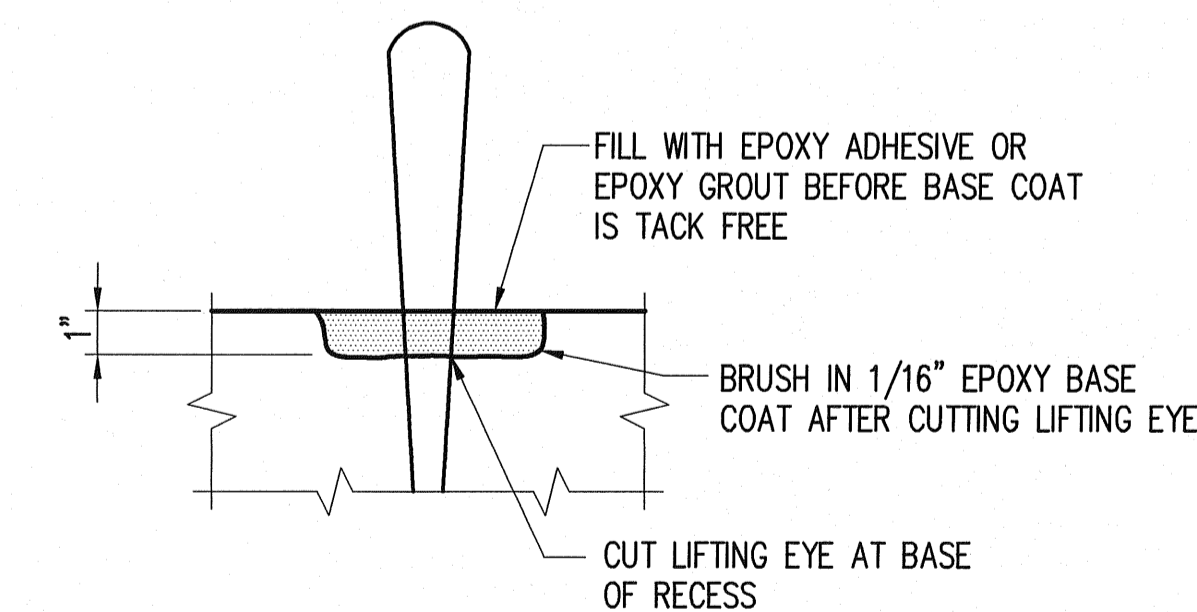
TABLE 1 – PRECAST PRESTRESSED CONCRETE PILES											
DESIGNATION	DETAIL	SECTION AREA	WEIGHT	SECTION MODULOUS	PRESTRESS INFORMATION			LONGITUDINAL (GRADE 60) REINF. STEEL	Lm	BUILD UP OR DOWELLED CONNECTION	OVERDRIVE ALLOWANCE SEE NOTE 4
					# OF STRANDS	DESIGN FORCE	PRESTRESS IN CONCRETE				
24" CONC. SOLID OCT – TYPE 1		477 IN <sup>2</sup>	524 LBS/FT	1513 IN <sup>3</sup>	22	578 KIPS	1211 PSI	(11) #8	25'-0"	&	1'-0"
24" CONC. SOLID OCT – TYPE 2		477 IN <sup>2</sup>	524 LBS/FT	1513 IN <sup>3</sup>	22	578 KIPS	1211 PSI	NONE	—		1'-0"
24" CONC. SOLID OCT – TYPE 3		477 IN <sup>2</sup>	524 LBS/FT	1513 IN <sup>3</sup>	22	578 KIPS	1211 PSI	(11) #4	25'-0"		1'-0"
24" CONC. SOLID OCT – TYPE D1		477 IN <sup>2</sup>	524 LBS/FT	1513 IN <sup>3</sup>	22	578 KIPS	1211 PSI	(11) #10	40'-0"		5 FT

TABLE 2 – PRECAST PRESTRESSED CONCRETE PILE SPIRAL REINFORCING									
DESIGNATION	SPIRAL REGION 1			SPIRAL REGION 2			SPIRAL REGION 3		
	SIZE	PITCH	LENGTH	SIZE	PITCH	LENGTH	SIZE	PITCH	LENGTH
24" CONC. SOLID OCT – TYPE 1	ASTM A706 0.50 IN DIA	2 1/4 IN	25'-0"	0.375 IN DIA	2 3/4 IN	REMAINDER	0.375 IN DIA	2 1/4 IN	5'-0"
24" CONC. SOLID OCT – TYPE 2	ASTM A706 0.50 IN DIA	2 1/2 IN	25'-0"	0.375 IN DIA	2 3/4 IN	REMAINDER	0.375 IN DIA	2 1/4 IN	5'-0"
24" CONC. SOLID OCT – TYPE 3	ASTM A706 0.50 IN DIA	2 1/2 IN	25'-0"	0.375 IN DIA	2 3/4 IN	REMAINDER	0.375 IN DIA	2 1/4 IN	5'-0"
24" CONC. SOLID OCT – TYPE D1	ASTM A706 0.50 IN DIA	2 1/2 IN	25'-0"	0.375 IN DIA	2 3/4 IN	REMAINDER	0.375 IN DIA	2 1/4 IN	5'-0"

**NOTE:**  
FOR PORT PRE-PURCHASED PILES SEE S61.0.

**NOTES:**

- MINIMUM CONCRETE STRENGTHS ARE AS FOLLOWS:  
 @ RELEASE F<sub>c</sub> = 4800 PSI  
 @ DRIVING F<sub>c</sub> = 8000 PSI  
 @ 28 DAYS F<sub>c</sub> = 8000 PSI
- PRESTRESSING STEEL SHALL BE 270 KSI – 1/2"Ø – 7 WIRE, LOW RELAXATION, STRAND
- FOR PILE TIP AND CUTOFF ELEVATIONS SEE S4.0 THRU S7.0.
- PILE ORDER LENGTH SHALL EQUAL PILE CUTOFF ELEVATION MINUS PILE TIP ELEVATION PLUS OVERDRIVE AND STRAND EXPOSURE ALLOWANCES. SEE S61.0 FOR PORT PRE-PURCHASED PILES.
- SPIRAL REINFORCING MAY BE SPLICED IN REGIONS 2 AND 3 BY WRAPPING ONE AND ONE HALF TURNS OF SPIRAL AND TERMINATING WITH A 135° SEISMIC HOOK.
- SPIRAL REINFORCING SPLICED IN REGION 1 SHALL BE WELDED IN ACCORDANCE WITH DETAIL 5 ON S17.0.
- SPIRAL REINFORCEMENT SHALL BE ASTM A615 PLAIN (UN-DEFORMED) ROUND, UNO.
- IN SPIRAL REGIONS 2 AND 3 THE CONTRACTOR MAY SUBSTITUTE ASTM A82 WIRE FOR ASTM A615 PLAIN ROUND. THE A82 WIRE SHALL CONFORM TO THE DIAMETERS SHOWN IN TABLE 2. ALTERNATIVELY, THE CONTRACTOR MAY ADJUST THE PITCH (± 1/4 INCH) AND THE A82 WIRE SIZE ACCORDINGLY TO ACHIEVE A SPIRAL REINFORCEMENT RATIO EQUIVALENT TO THAT PROVIDED BY THE SIZE AND PITCH SHOWN IN TABLE 2. THE SPIRAL REINFORCEMENT RATIO SHALL BE DEFINED AS THE CROSS-SECTIONAL AREA OF AN INDIVIDUAL SPIRAL WIRE (OR PLAIN ROUND) DIVIDED BY THE PITCH OF THE SPIRAL.



**NOTE:**  
LIFTING DEVICE AND LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR CONSIDERING ALL LOADS IMPARTED TO THE PILE (NORMAL AND PARALLEL TO THE LONGITUDINAL AXIS) BY THE RIGGING BEING USED. ALL MODES OF LIFTING (FABRICATION AND FIELD) SHALL BE CONSIDERED.

**LIFTING EYE DETAIL**   
SCALE: NONE

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**kpfi**  
 PORT OF TACOMA U.S.A.

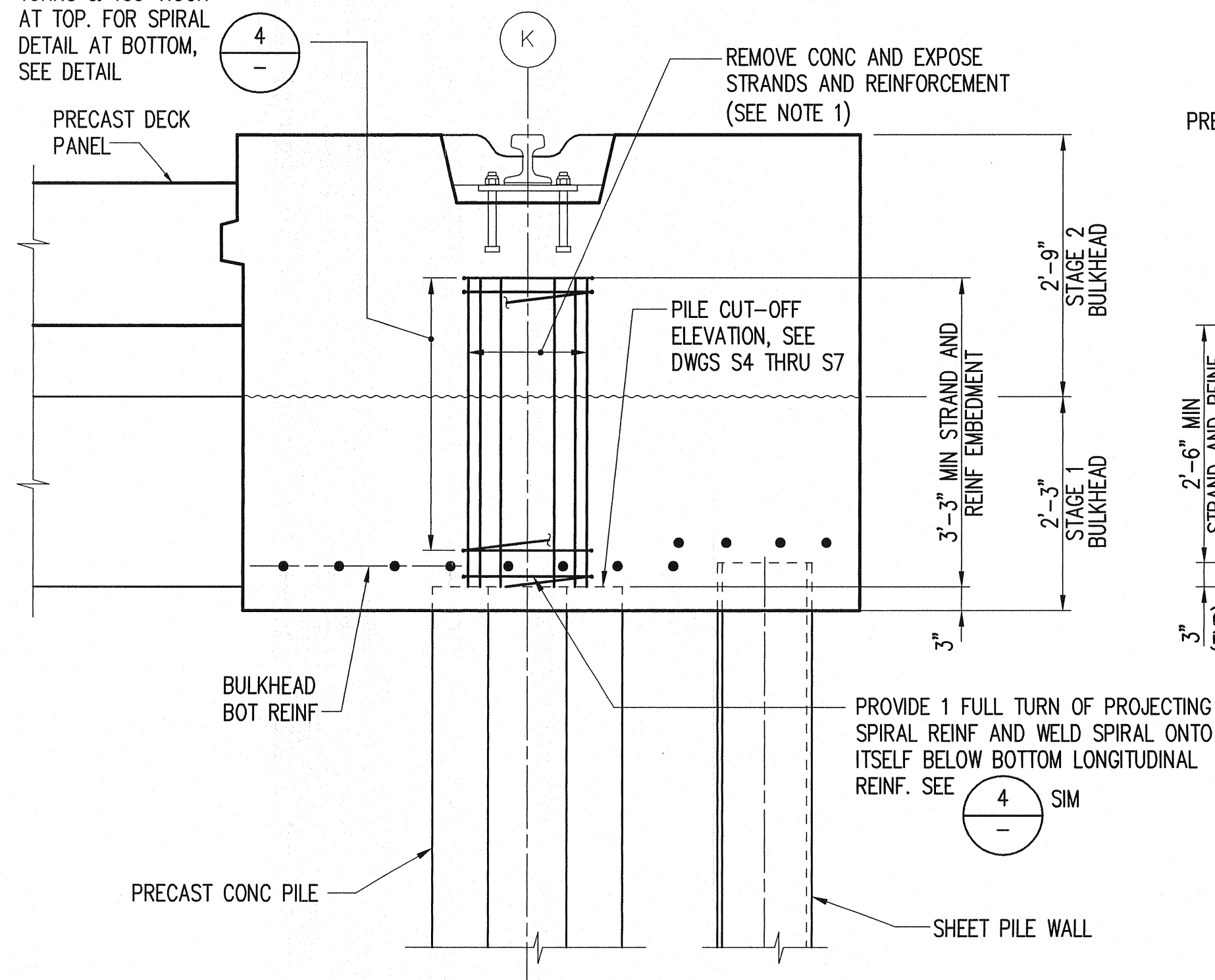
APPROVED:   
 CHIEF ENGINEER – DATE: 23 May 07  
 CHECKED BY: RJK – DATE: 05/2007  
 GSN – DATE: 05/2007  
 PROJECT ENGR. – DATE:

MARK REVISION  
 TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. AS SHOWN  
 DRAWING SCALE: AS SHOWN  
 CONTRACT NUMBER: 068018  
 SHEET NUMBER: E2623  
 PHASE: BID SET

EP-6305  
**S16.0**  
 SHEET 95 OF 215  
 PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 PRECAST PILE SCHEDULE

**BID SET**

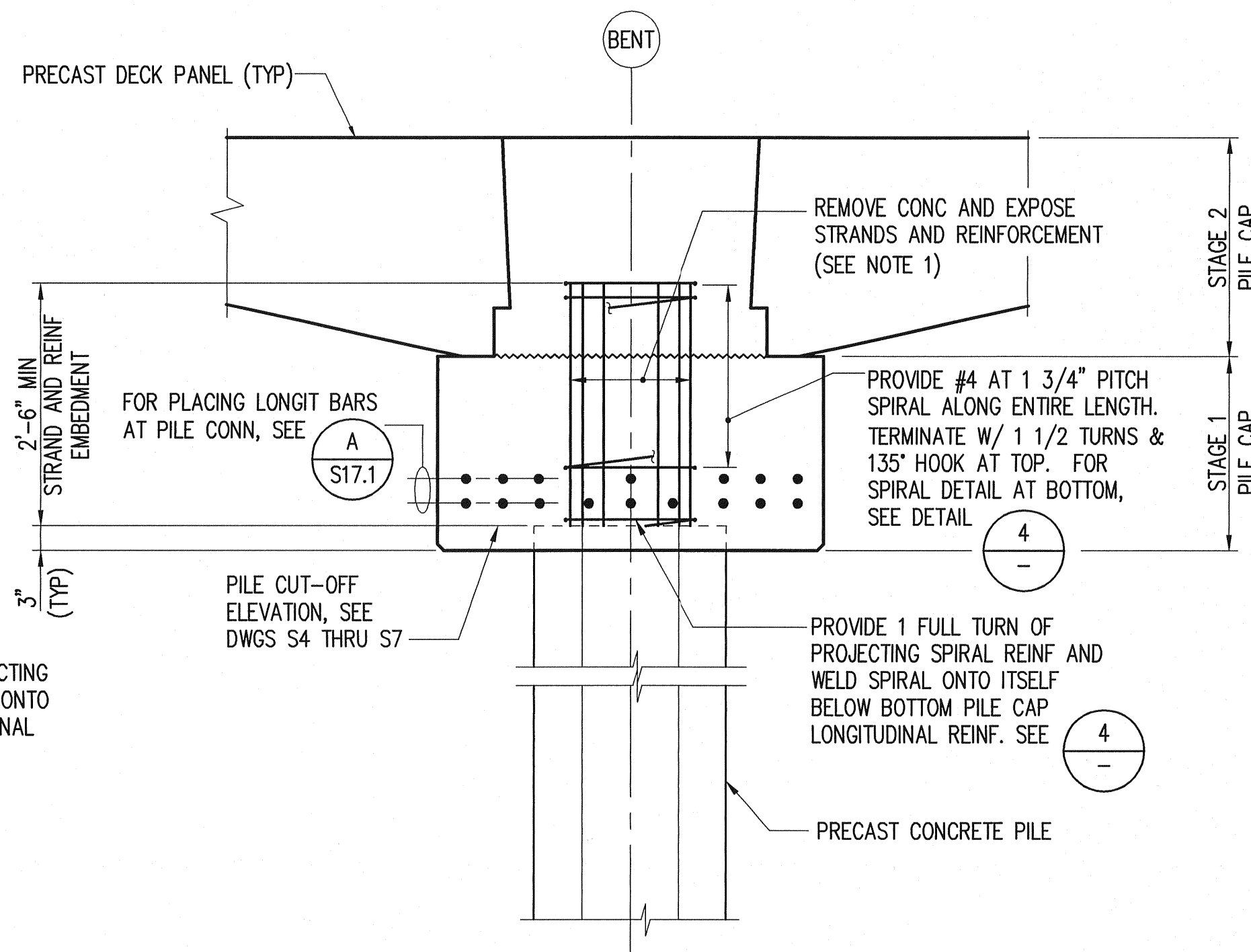
PROVIDE #4 AT 3" PITCH SPIRAL ALONG ENTIRE LENGTH. TERMINATE W/ 1 1/2 TURNS & 135° HOOK AT TOP. FOR SPIRAL DETAIL AT BOTTOM, SEE DETAIL



**DETAIL - PILE TYPE 1 CUT-OFF AT BULKHEAD**

SCALE: 3/4"=1'-0"

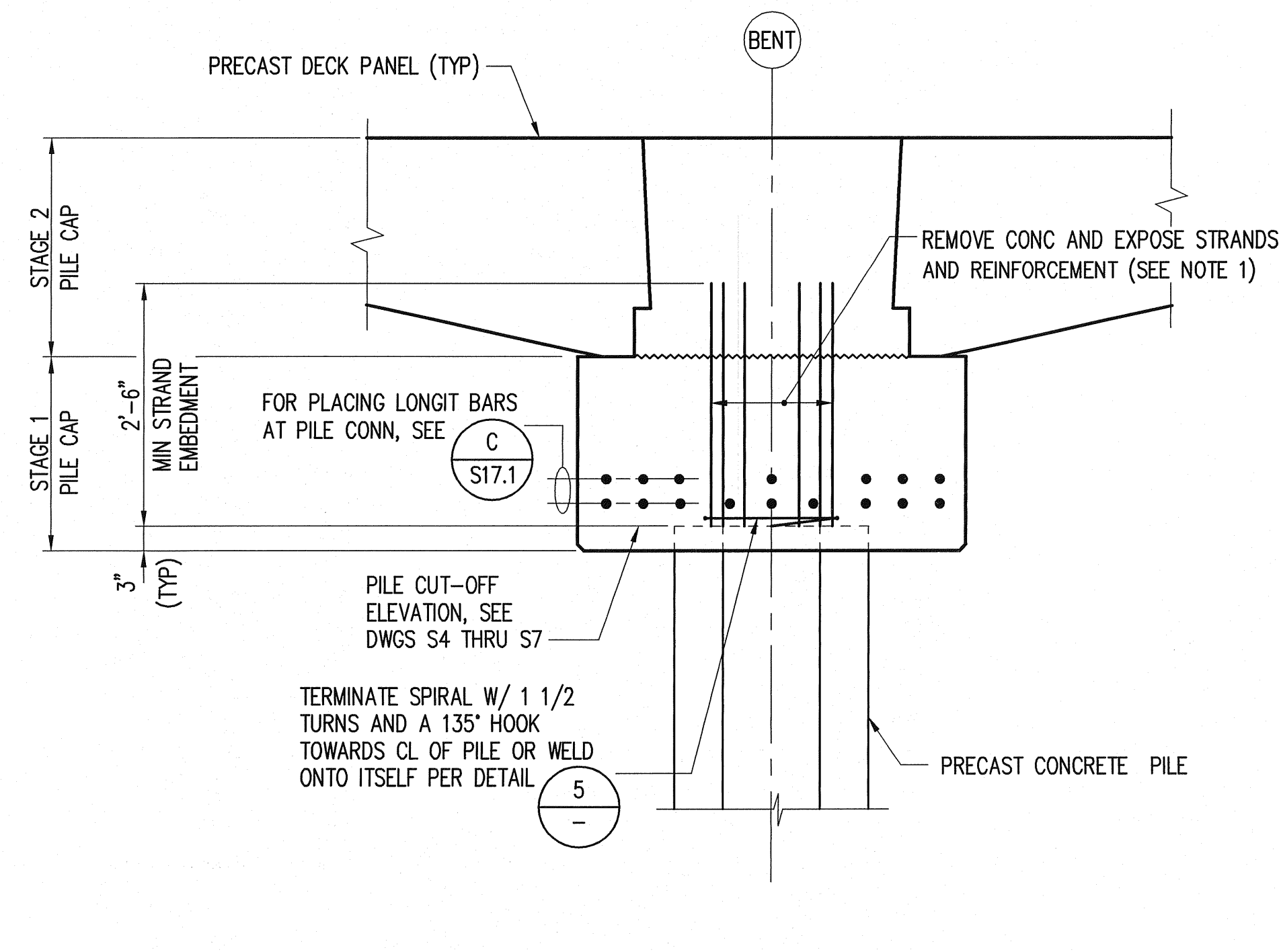
1  
S16.0



**DETAIL - PILE TYPE 1 CUT-OFF**

SCALE: 3/4"=1'-0"

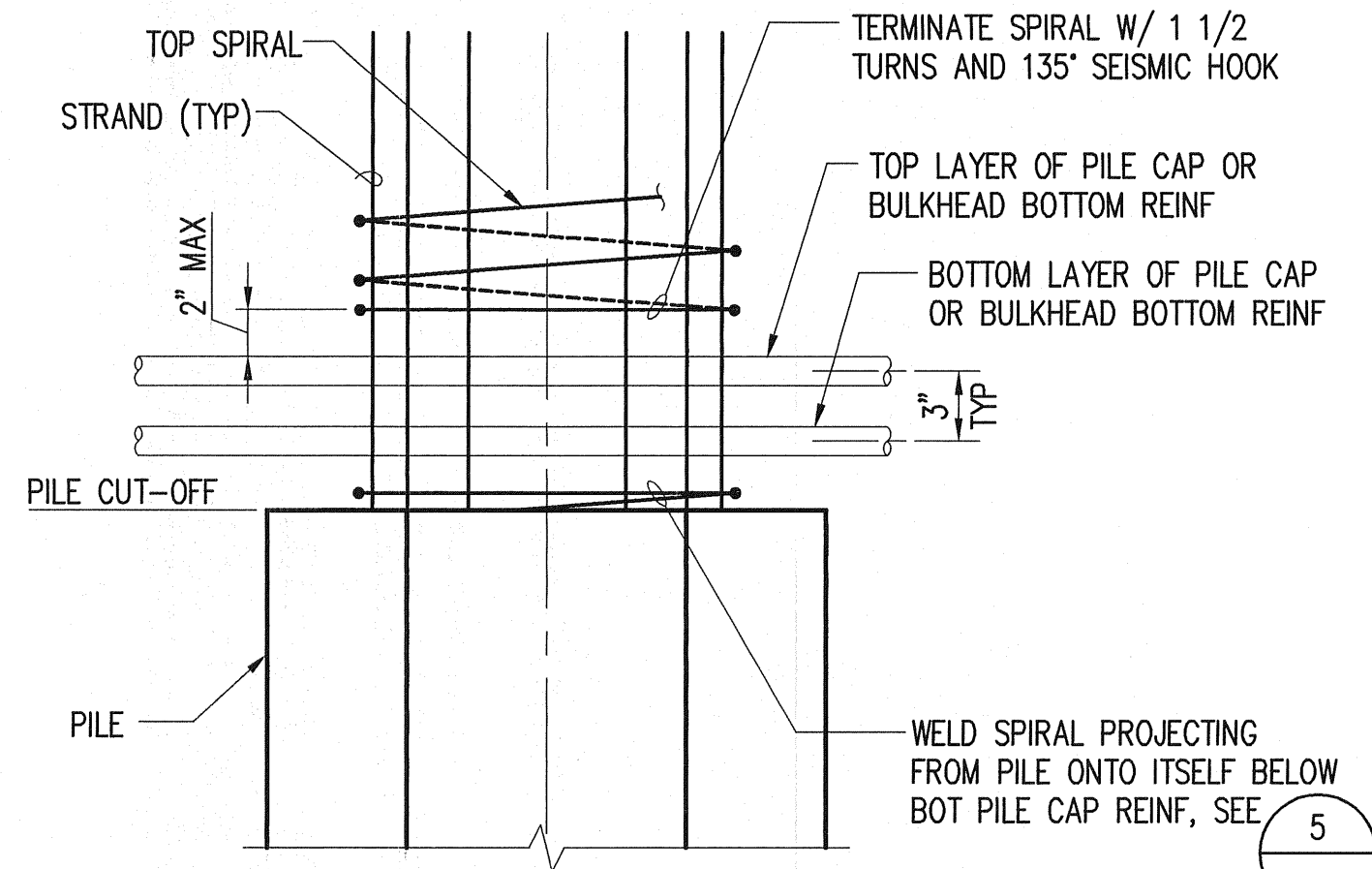
2  
S16.0



**DETAIL - PILE TYPE 3 CUT-OFF**

SCALE: 3/4"=1'-0"

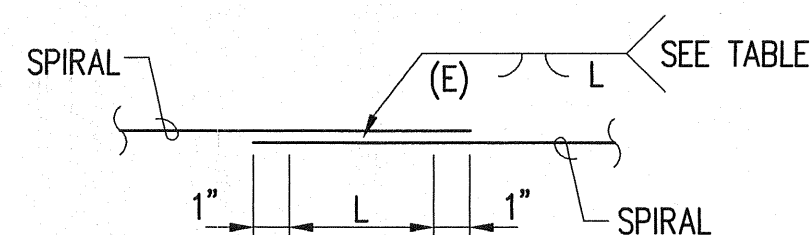
3  
S16.0



**SPIRAL DETAIL**

SCALE: 1 1/2"=1'-0"

4  
S18.0



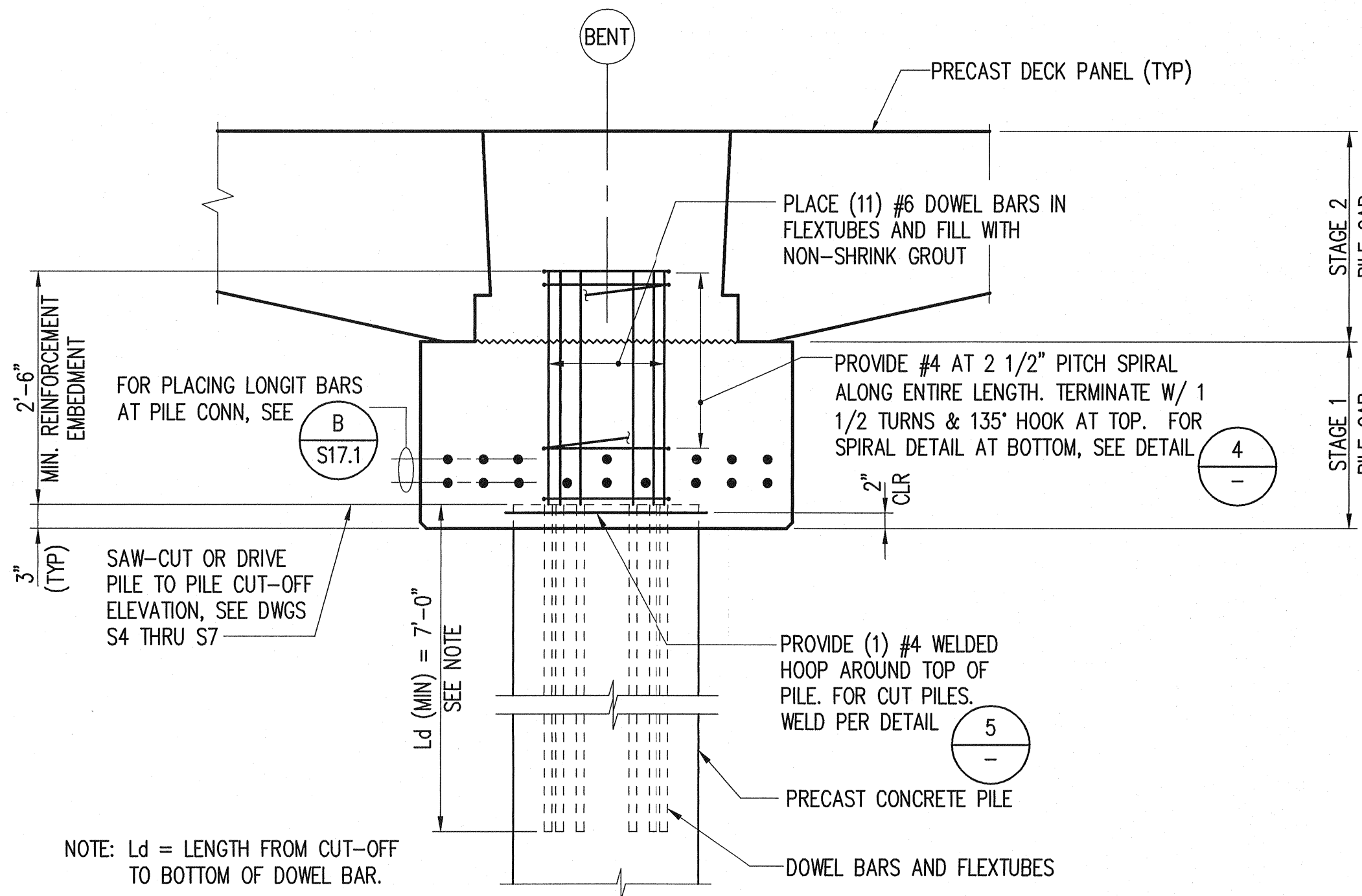
SPIRAL REINFORCEMENT WELD TABLE		
SPIRAL WIRE OR BAR SIZE	WELD THROAT (E) (INCHES)	WELD LENGTH "L" (INCHES)
#3	1/8"	4"
#4	5/32"	5"

**WELD DETAIL**

SCALE: NONE

5  
S16.0

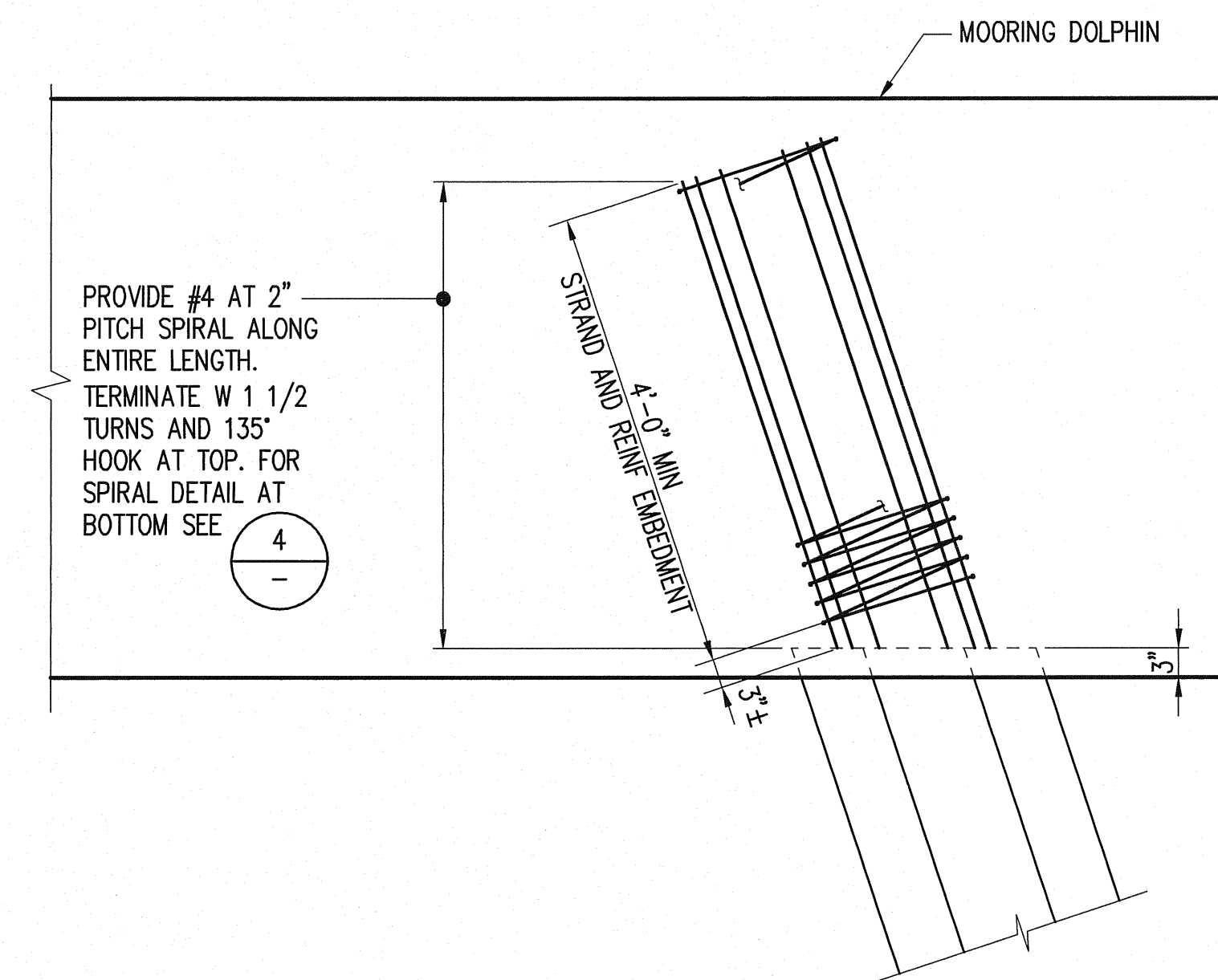
S18.0



**DETAIL - PILE TYPE 2 CUT-OFF**

SCALE: 3/4"=1'-0"

6  
S16.0



**DETAIL - PILE AT DOLPHIN TYPE D1 CUT-OFF**

SCALE: 3/4"=1'-0"

7  
S16.0

**NOTES:**

1. THE CONTRACTOR SHALL NOT REMOVE MORE THAN 15' OF PILE WITHOUT ENGINEER'S APPROVAL.
2. WELDED HOOPS SHALL BE ASTM A706, GRADE 60 STEEL.

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 PORT OF TACOMA USA

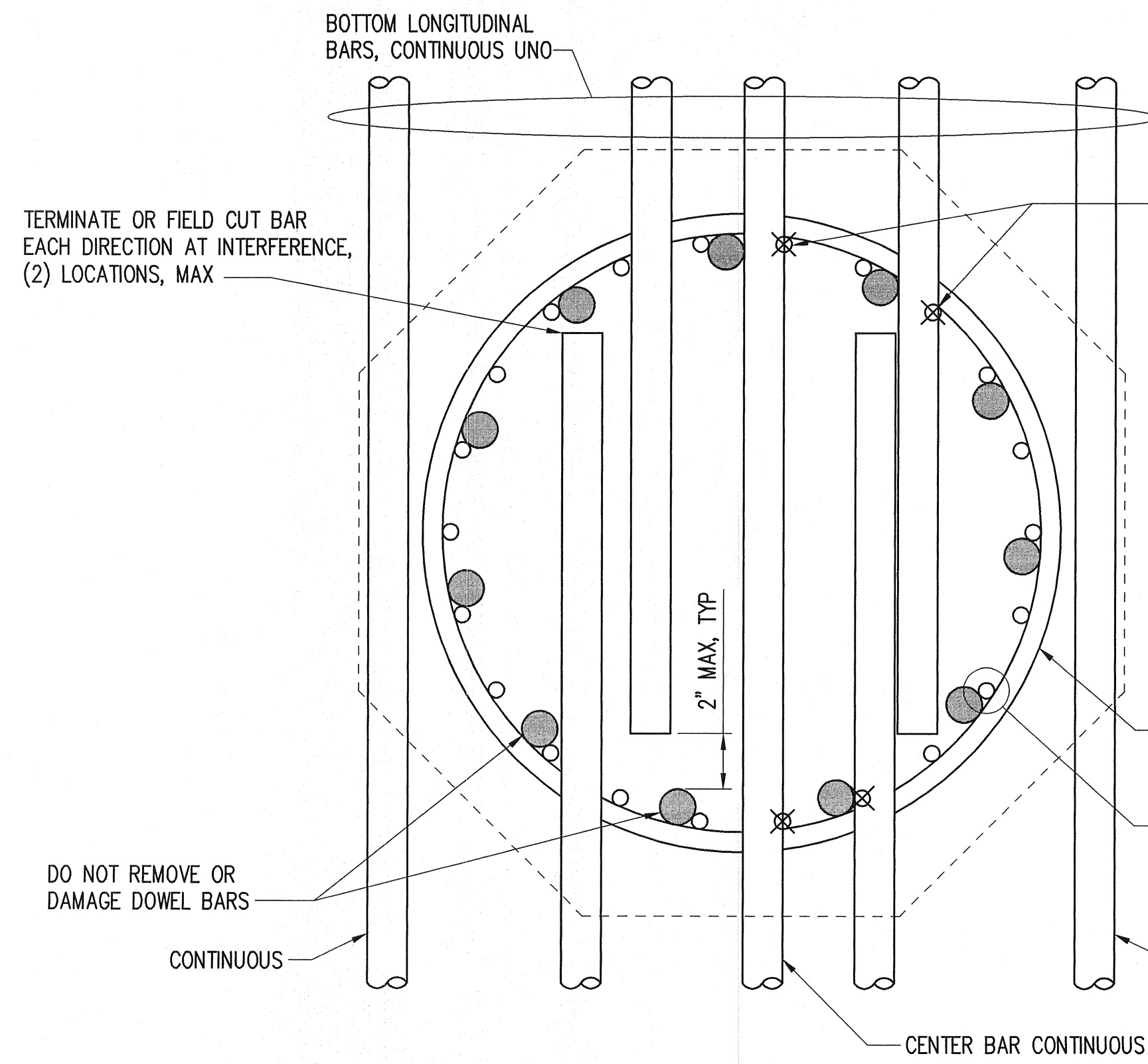
APPROVED: *H. Jones*  
 CHIEF ENGINEER - DATE: 23 MAR 07  
 CHECKED BY: RKJ - DATE: 05/2007  
 PROJECT ENGR: GGN - DATE: 05/2007

DRAWING DATE: 05-21-2007  
 TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 COUNTY: PUYALLUP COUNTY  
 PORT ADDRESS: 2340 1 E  
 PORT PARCEL: 17 & 18  
 EXPIRES: 9/10/08

EP-6305  
**S17.0**  
 SHEET 96 OF 215  
 CONTRACT NUMBER: 068018  
 NUMBER OF SHEETS: 215  
 BLANKS: 51  
 DRAWING SCALE: AS SHOWN

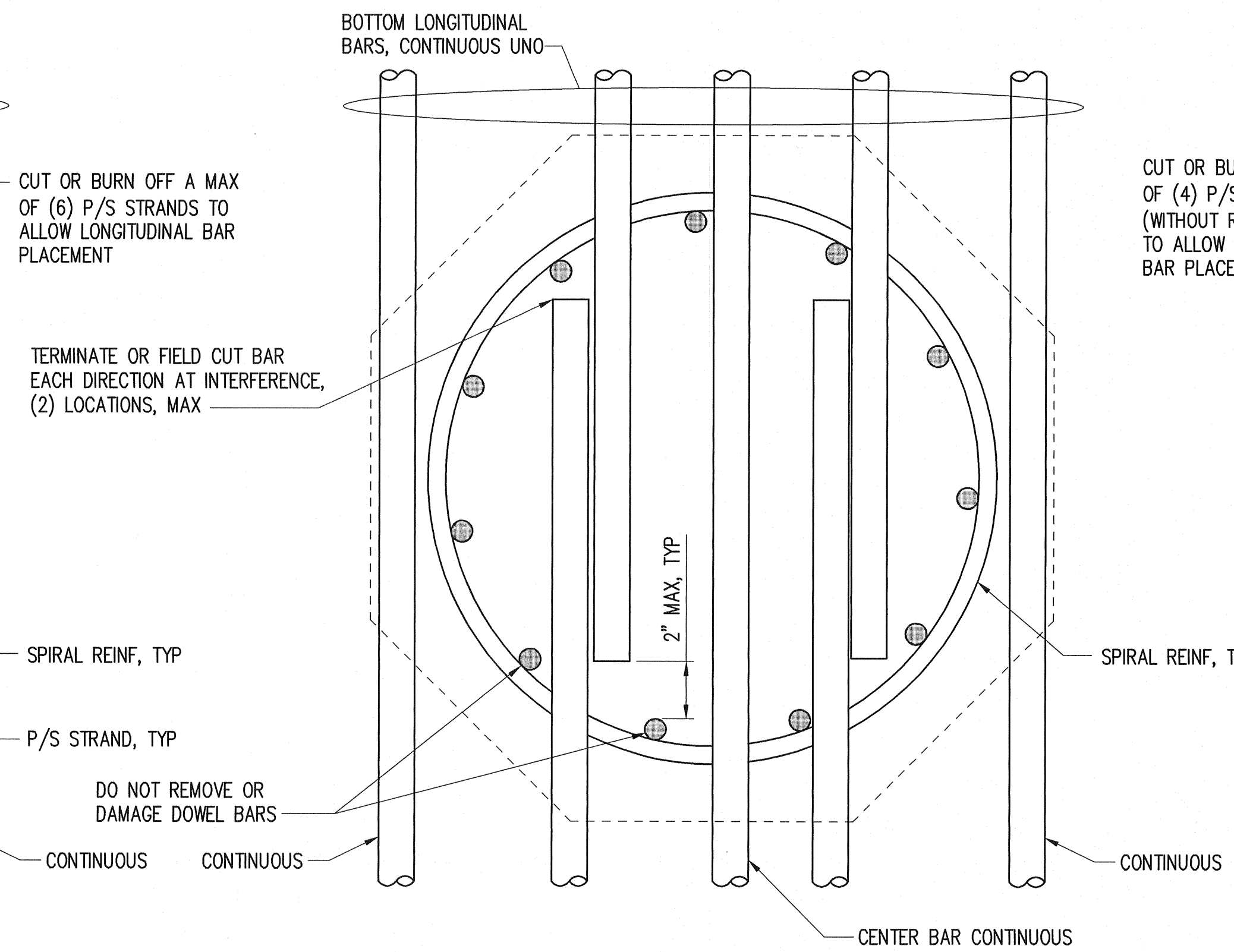
PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 PILE CONNECTION DETAILS 1

**BID SET**



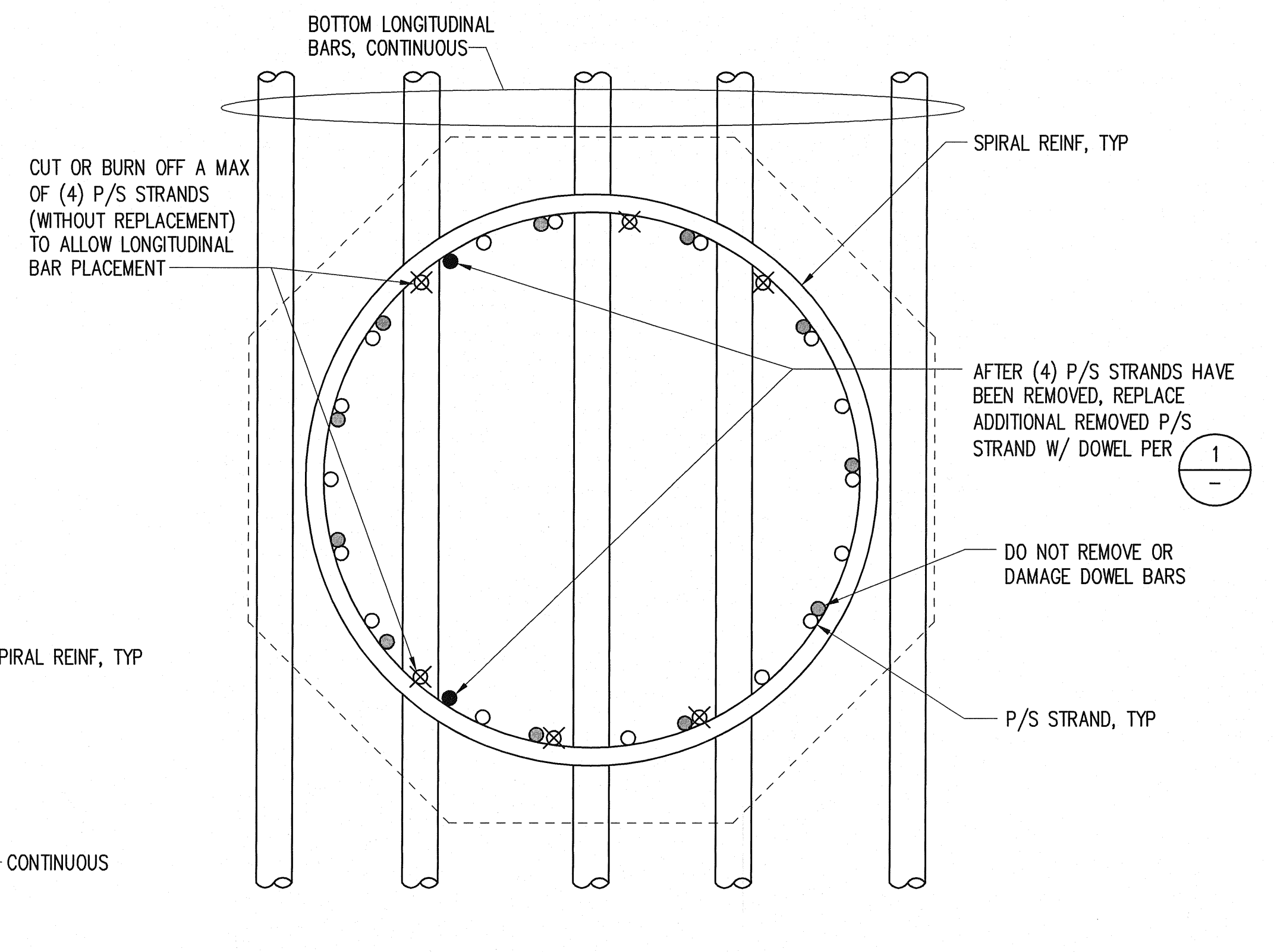
**SECTION - PILE TYPE 1**  
SCALE: 3"=1'-0"

A  
S17.0



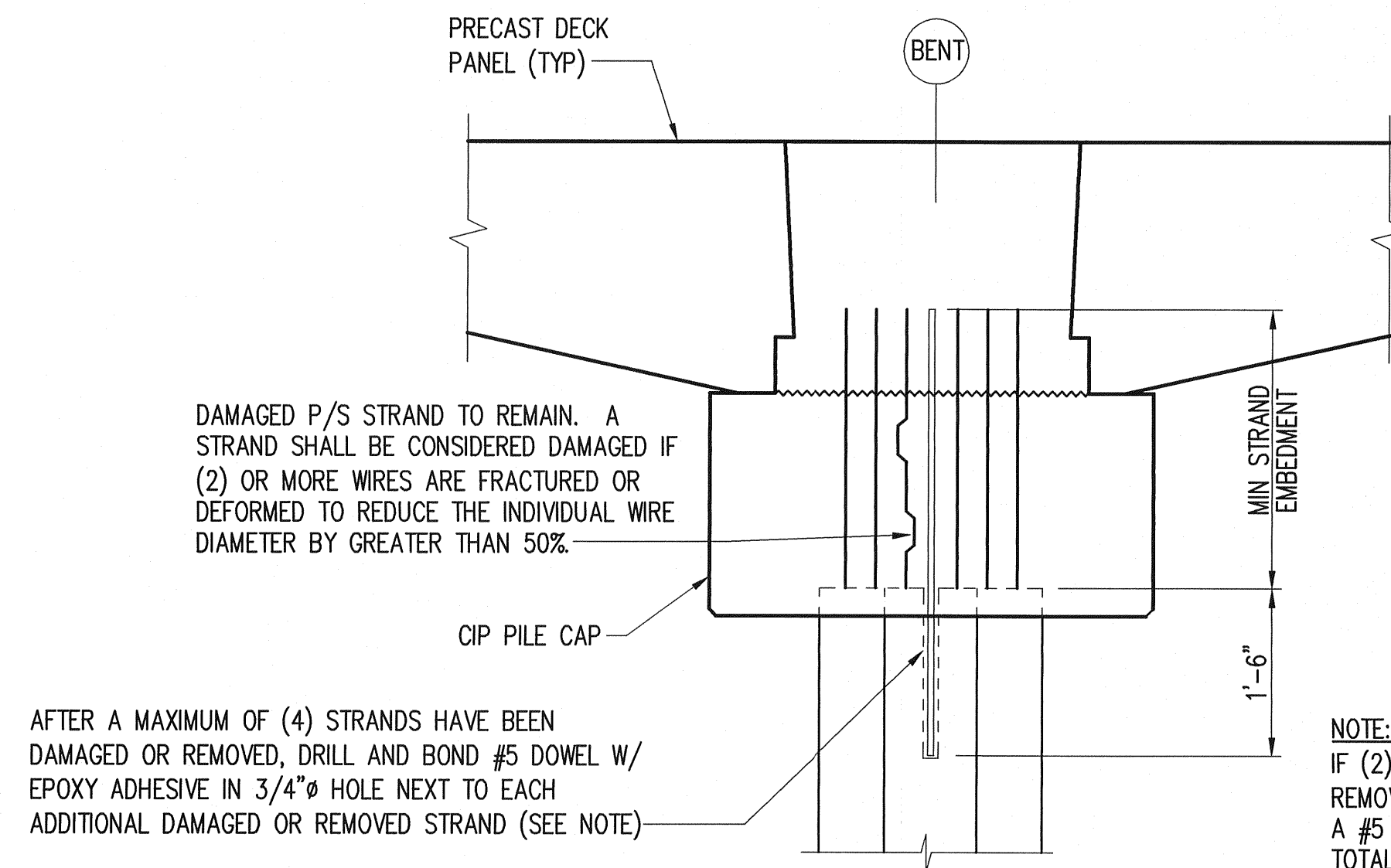
**SECTION - PILE TYPE 2**  
SCALE: 3"=1'-0"

B  
S17.0



**SECTION - PILE TYPE 3**  
SCALE: 3"=1'-0"

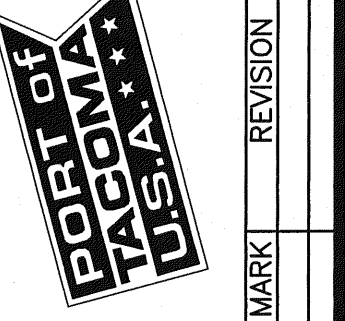
C  
S17.0



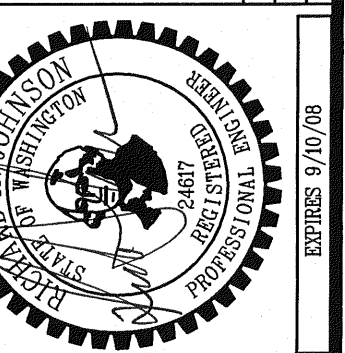
**DAMAGED STRAND DETAIL**  
SCALE: 3/4"=1'-0"

1  
-

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APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 23 MAR 07  
DRAWING DATE: 05-21-2007  
DRAWING DESIGNED BY: E. ALEXANDER AVENUE  
PORT PROJECT: 17-8-18

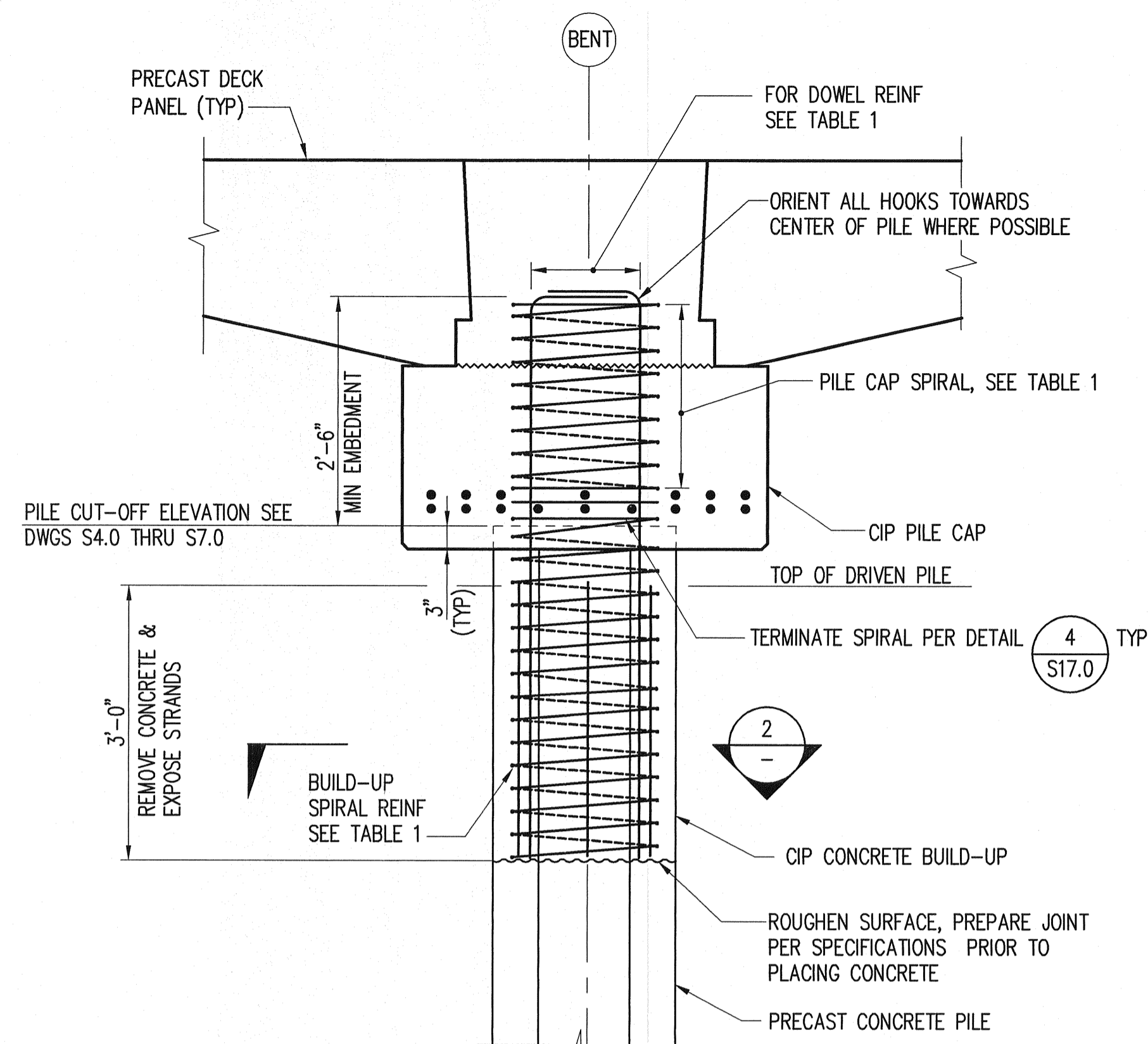


PORT OF TACOMA  
EAST BLAIR ONE WHARF  
PILE CONNECTION DETAILS 2

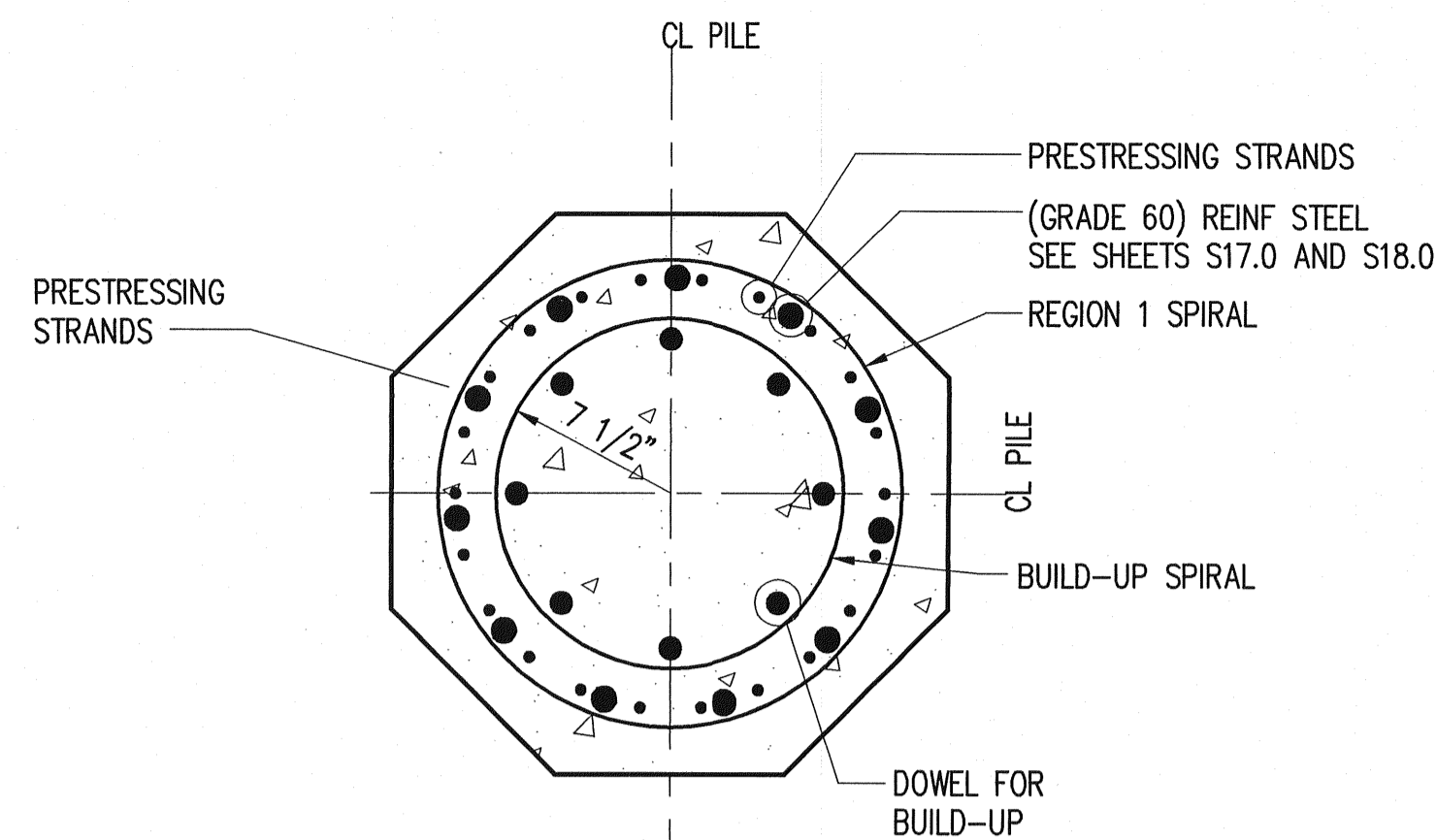
EP-6305  
**S17.1**  
SHEET 97 OF 215  
CONTRACT NUMBER: 068018  
E NUMBER: E2603  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ. ADVERT.  
DRAWING SCALE: AS SHOWN

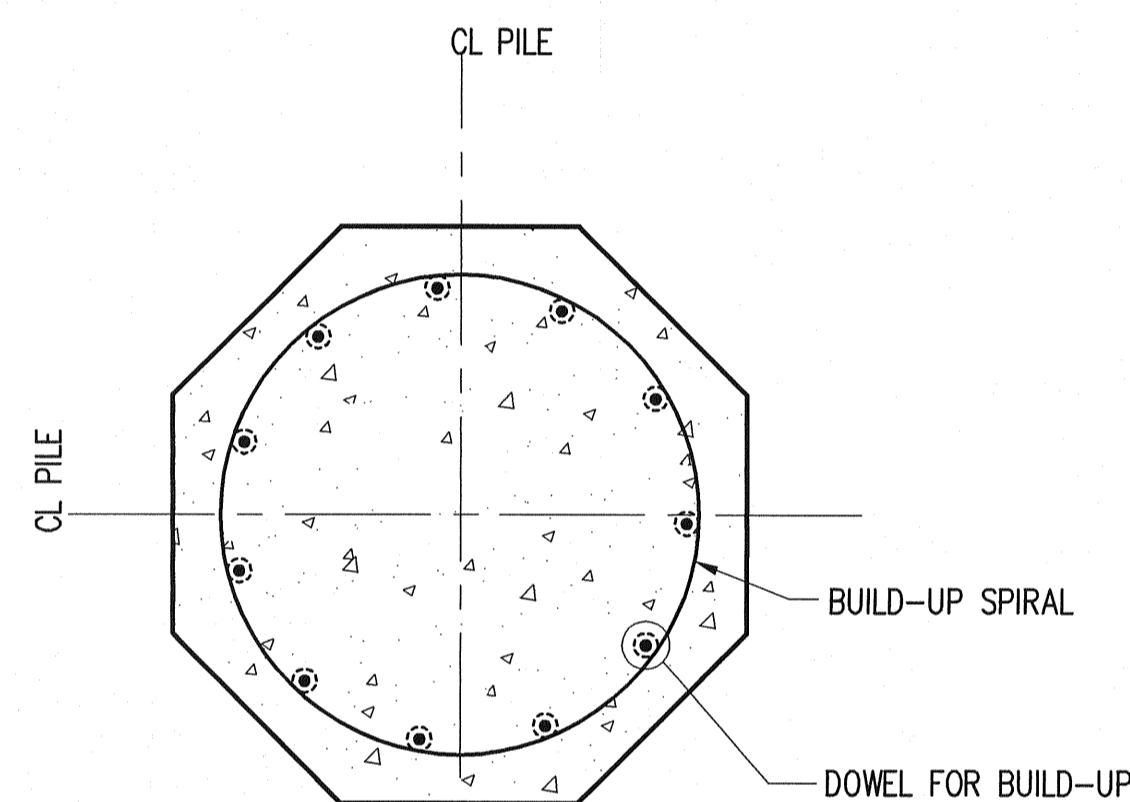
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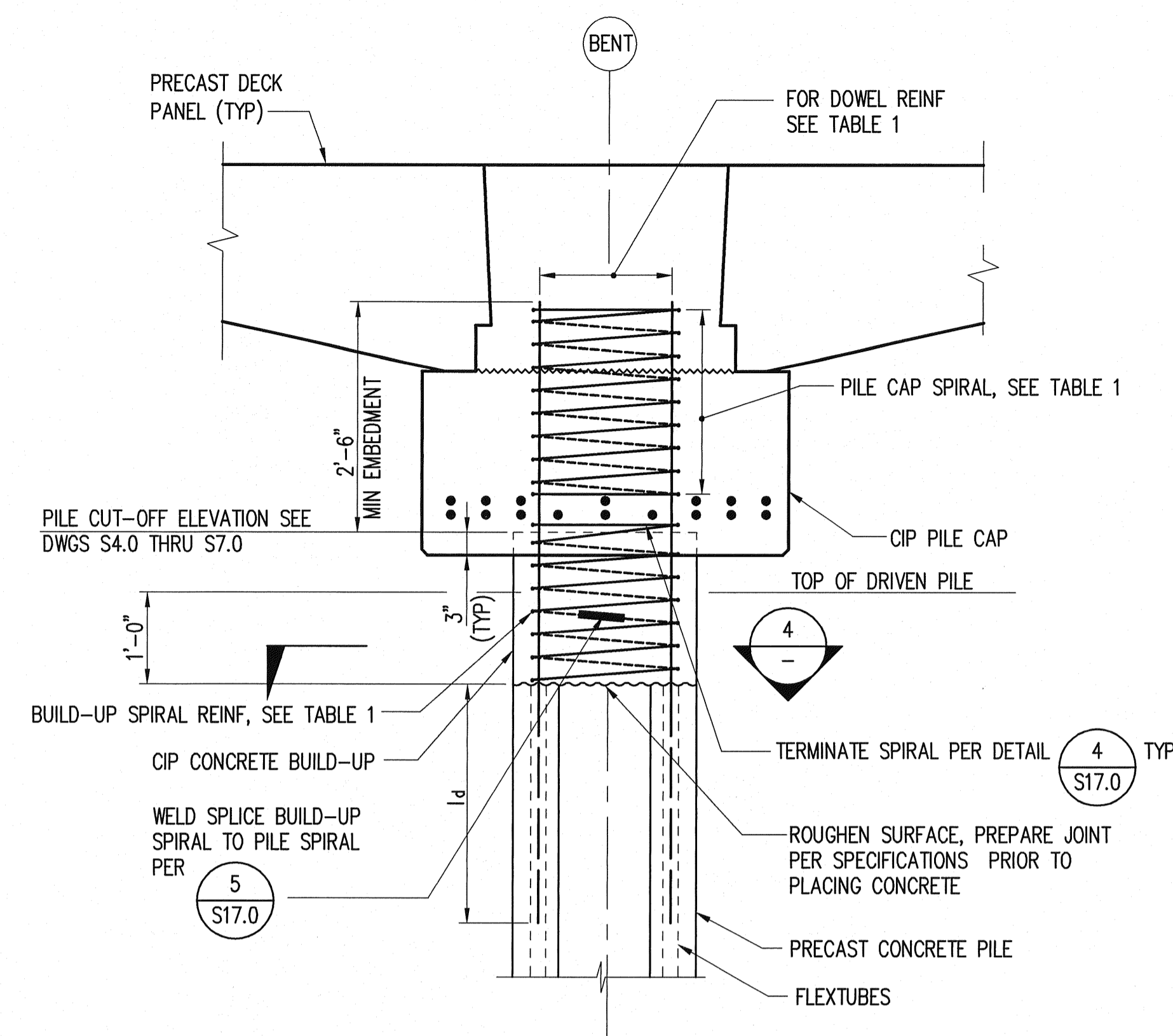
**DETAIL - PILE BUILD-UP TYPES 1 & 3  
(PILE TOP BELOW CUT-OFF)**  
SCALE: 3/4"=1'-0" (1)



**SECTION - PILE TYPE 1 & 3 AT BUILD-UP**  
SCALE: 1 1/2"=1'-0" (2)



**SECTION - SOLID PILE TYPE 2 AT BUILD-UP**  
SCALE: 1 1/2"=1'-0" (4)



**DETAIL - PILE BUILD-UP TYPE 2  
(PILE TOP BELOW CUT-OFF)**  
SCALE: 3/4"=1'-0" (3)

TABLE 1 - PILE BUILD-UP				
PILE TYPE	BUILD-UP SPIRAL	PILE CAP SPIRAL	DOWEL REINFORCING	l <sub>d</sub> (MIN)
24" OCTAGONAL SOLID - TYPE 1	0.50" DIA AT 2 1/4" PITCH	0.50" DIA AT 3" PITCH	(11) #9 HOOKED	--
24" OCTAGONAL SOLID - TYPE 2	0.50" DIA AT 2 1/2" PITCH	0.50" DIA AT 2 1/2" PITCH	(11) #6	7'-0"
24" OCTAGONAL SOLID - TYPE 3	0.50" DIA AT 2 1/2" PITCH	0.50" DIA AT 2 1/2" PITCH	(11) #6	--
24" OCTAGONAL SOLID - TYPE D1	0.50" DIA AT 2 1/2" PITCH	0.50" DIA AT 2" PITCH	(11) #10	--

**NOTES:**

- BUILD-UP SPIRAL SHALL BE ASTM A706.

**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
PILE BUILD-UP DETAILS

**EP-6305**  
**S18.0**  
SHEET 98 OF 215  
CONTRACT NUMBER: 088018  
E NUMBER: E2823  
PHASE: BID SET

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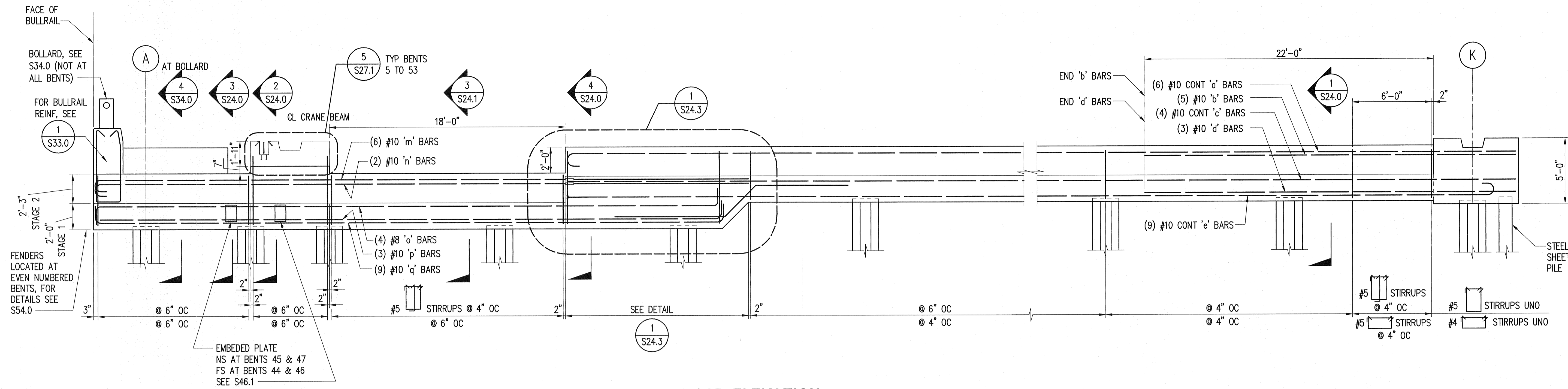
APPROVED: *[Signature]* CHIEF ENGINEER - DATE: 23 APR 07  
CHECKED BY: GGN PROJECT ENGR. - DATE: 05/20/07  
DATE: 05/20/07

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ. VERT.:  
DRAWING SCALE: AS SHOWN

REVISION: MARK REVISION  
BY: DATE: APPROVED: DATE:

EXPIRES 9/30/08

**BID SET**

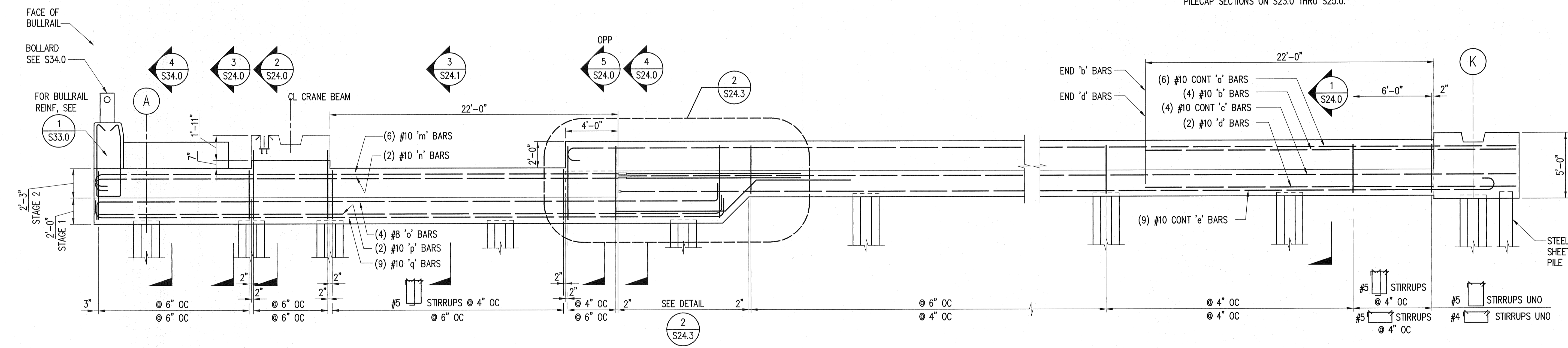


**PILE CAP ELEVATION  
BENTS 16 THRU 52**  
SCALE: 1/4"=1'-0"

A  
S4.0 S5.0, S6.0

**NOTES:**

1. PROVIDE LAP SPLICES AS REQUIRED.
2. CENTER LAPS OF 'd', 'e', 'p' AND 'q' BARS OVER PILES.
3. CENTER LAPS OF 'a', 'b', 'c', 'm', 'n' AND 'o' BARS MIDWAY BETWEEN PILES.
4. DO NOT SPLICE MORE THAN 60% OF REINFORCEMENT IN ONE LOCATION. IF 50% OR LESS OF THE REINFORCEMENT IN A GIVEN LAYER IS SPLICED, CLASS A SPLICE LENGTHS MAY BE USED AT THAT LOCATION.
5. FOR GEOMETRY NOT SHOWN HERE SEE SHEETS S12.0 TO S13.4.
6. ALPHANUMERIC LAYER IDENTIFIERS ('a' BARS) CORRESPOND WITH LAYERS SHOWN ON PILECAP SECTIONS ON S23.0 THRU S25.0.



**PILE CAP ELEVATION - BENT 15**  
SCALE: 1/4"=1'-0"

B  
S6.0

**NOTES:**

REFER TO NOTES ON ELEVATION A

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**kpfi**

PORT OF TACOMA  
TACOMA, WA

APPROVED: *H. B. Bay*  
2/24/07  
CHIEF ENGINEER - DATE

REVISION  
MARK  
BY: DATE:

RKJ 05/2007  
CHECKED BY - DATE  
GGN 05/2007  
PROJECT ENGR. - DATE

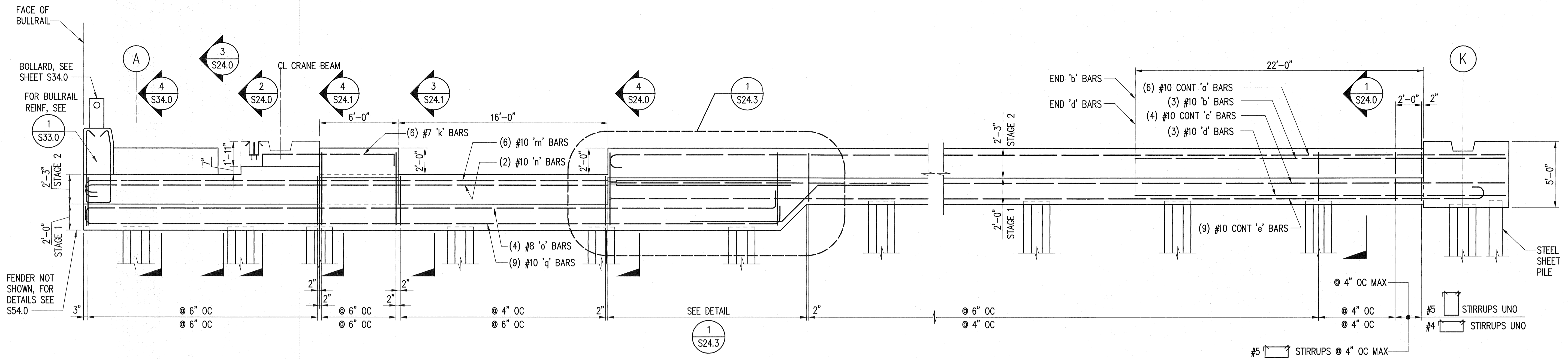
DESIGNED BY: 05-21-2007  
DRAWING NO.: S34.0  
PORT ADDRESS: 17 & 18  
PORT PARCEL: 17 & 18  
EXPRES 9/10/08

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
PILE CAP ELEVATIONS 1

EP-6305  
SHEET 99 OF 215  
S19.0

TOWNSHIP 21 N. RANGE 3E SECTION 27  
CONTRACT NUMBER: 068018  
DRAWING SCALE: AS SHOWN

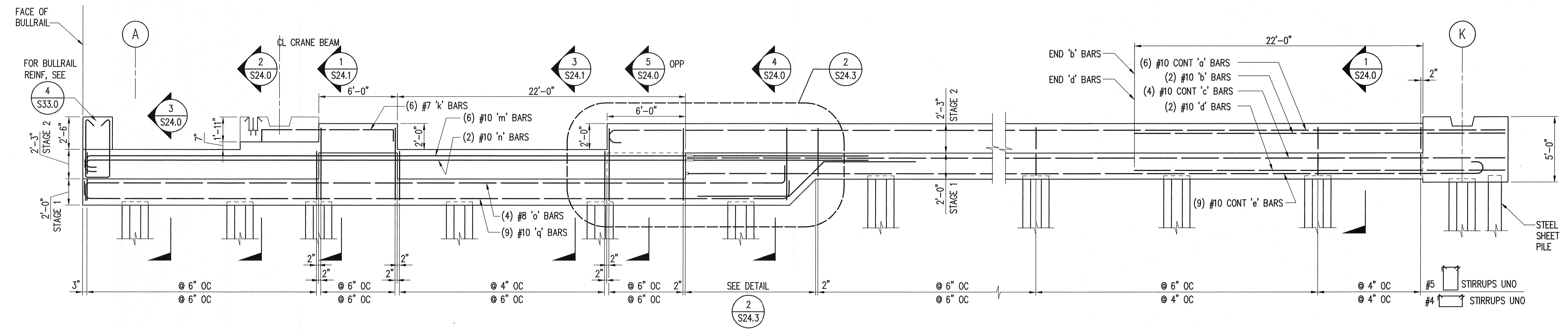
BID SET



**PILE CAP ELEVATION - BENT 14** (A)  
SCALE: 1/4"=1'-0" (S7.0)

**NOTES:**

REFER TO NOTES ON ELEVATION (A)  
(S19.0)



**PILE CAP ELEVATION - BENT 13** (B)  
SCALE: 1/4"=1'-0" (S7.0)

**NOTES:**

REFER TO NOTES ON ELEVATION (A)  
(S19.0)

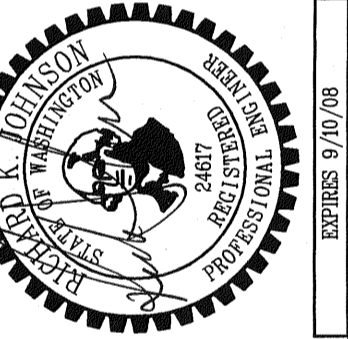
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 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162

**kpfi**  
 PORT OF TACOMA  
 USA

APPROVED	REVISION	MARK	DATE

RKJ 05/2007 - DATE  
 CHECKED BY - DATE  
 GGN 05/2007  
 PROJECT ENGR. - DATE

APPROVED: *H. Johnson*  
 CHIEF ENGINEER - DATE  
 23 APR 07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2440 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18



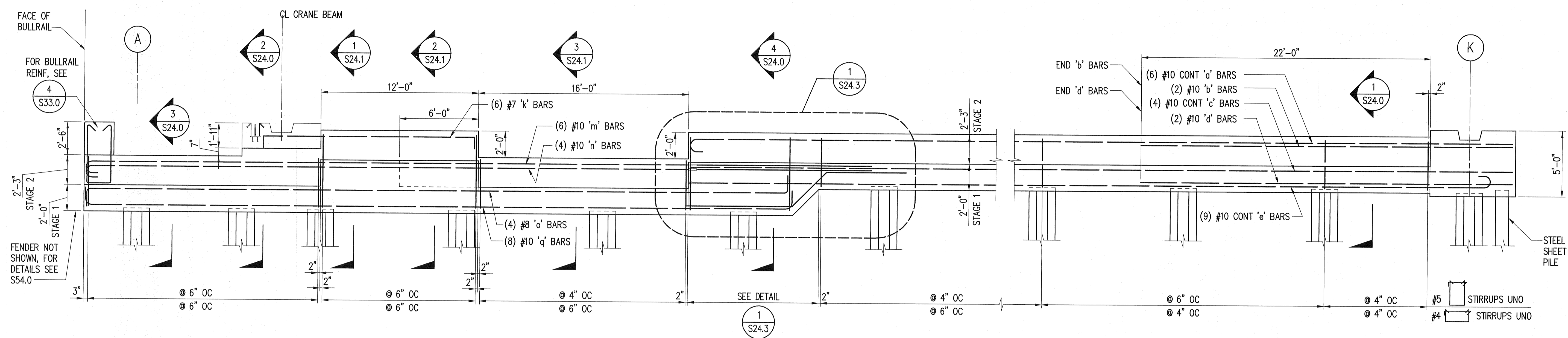
PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 PILE CAP ELEVATIONS 2

EP-6305  
**S19.1**  
 SHEET 100 OF 215

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

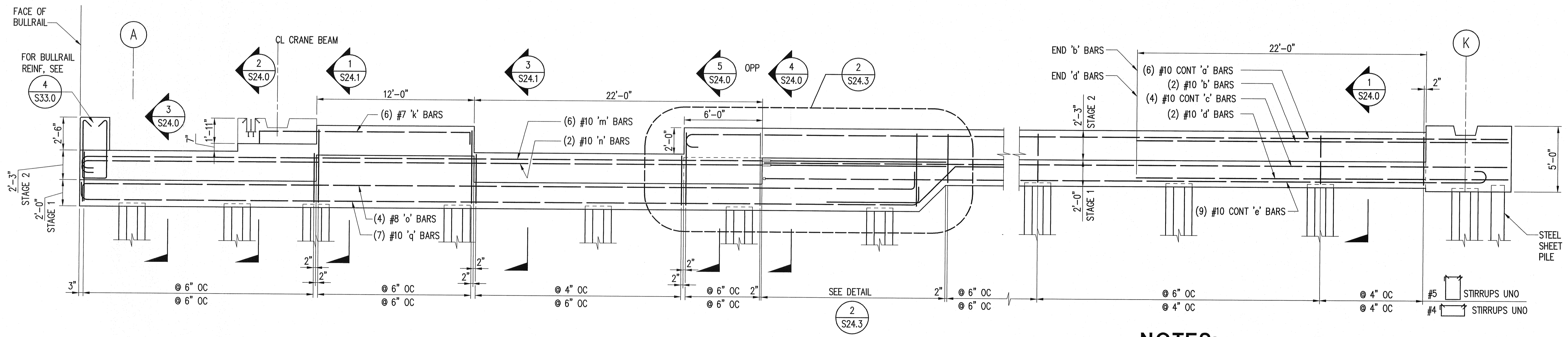
EXPIRES 9/30/08

**BID SET**



**PILE CAP ELEVATION - BENT 12** (A)  
SCALE: 1/4"=1'-0" (S7.0)

**NOTES:**  
REFER TO NOTES ON ELEVATION (A)  
(S19.0)



**PILE CAP ELEVATION - BENT 11** (B)  
SCALE: 1/4"=1'-0" (S7.0)

**NOTES:**  
REFER TO NOTES ON ELEVATION (A)  
(S19.0)

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201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
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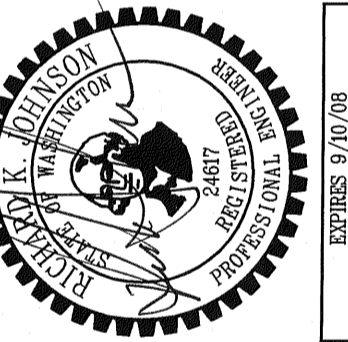
**KOPI**

PORT OF TACOMA  
USA

APPROVED: *H. Anderson*  
CHIEF ENGINEER - DATE: 23 May 07

RKJ 05/2007  
CHECKED BY - DATE  
GGN 05/2007  
PROJECT ENGR. - DATE

DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 E ALEXANDER AVENUE  
PORT PACKAGE 17 & 18

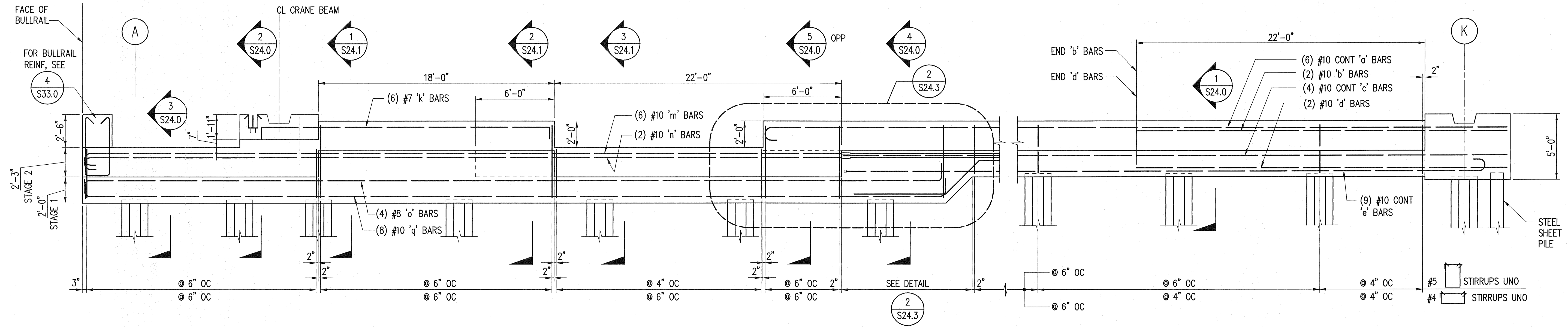


PORT OF TACOMA  
EAST BLAIR ONE WHARF  
PILE CAP ELEVATIONS 3

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORZ. VERT.  
DRAWING SCALE: AS SHOWN

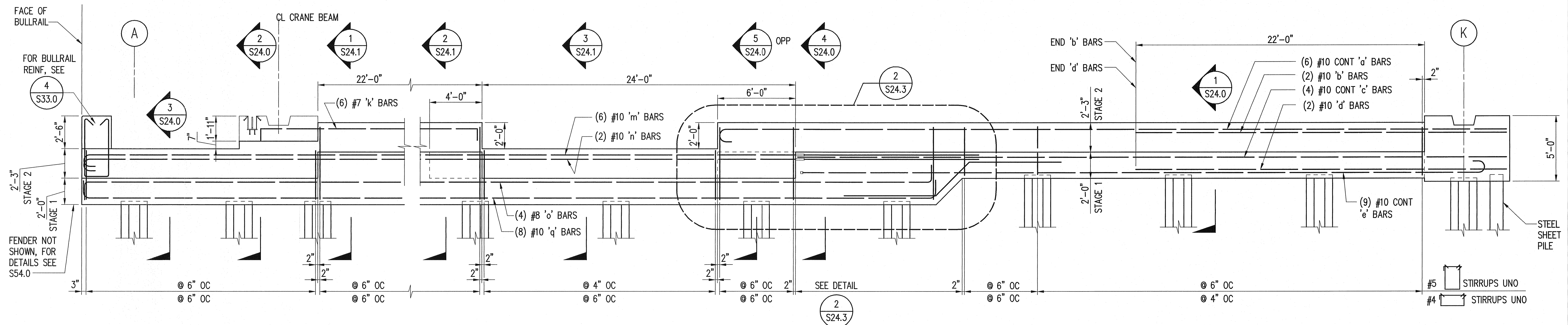
EP-6305  
**S19.2**  
SHEET 101 OF 215  
CONTRACT NUMBER: 068018  
E. NUMBER: E2623  
PHASE: BID SET

**BID SET**



**PILE CAP ELEVATION - BENT 10** (A)  
SCALE: 1/4"=1'-0" (S7.0)

**NOTES:**  
REFER TO NOTES ON ELEVATION (A)  
(S19.0)



**PILE CAP ELEVATION - BENT 9** (B)  
SCALE: 1/4"=1'-0" (S7.0)

**NOTES:**  
REFER TO NOTES ON ELEVATION (A)  
(S19.0)

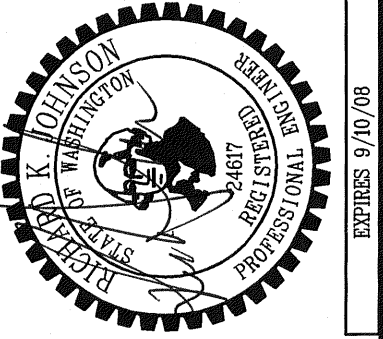
PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
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 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162

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CHECKED BY: - DATE: 05/2007  
 GGN 05/2007  
 PROJECT ENGR. - DATE:

APPROVED: *H. Bishop*  
 CHIEF ENGINEER - DATE: 05-21-2007  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

MARK REVISION  
 DATE:



PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 PILE CAP ELEVATIONS 4

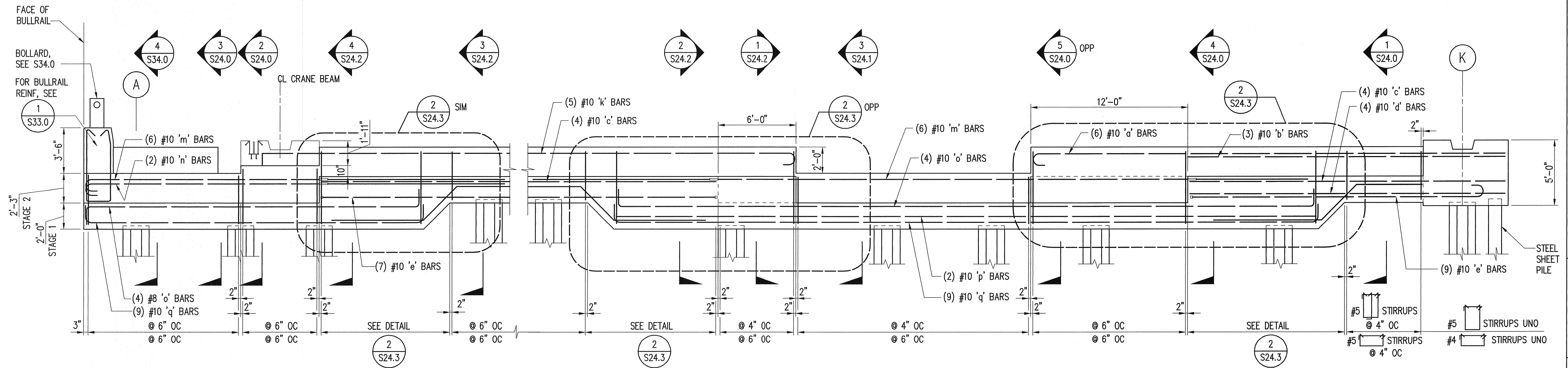
EP-6305  
**S19.3**  
 SHEET 102 OF 215  
 CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ: VERT: DRAWING SCALE: AS SHOWN

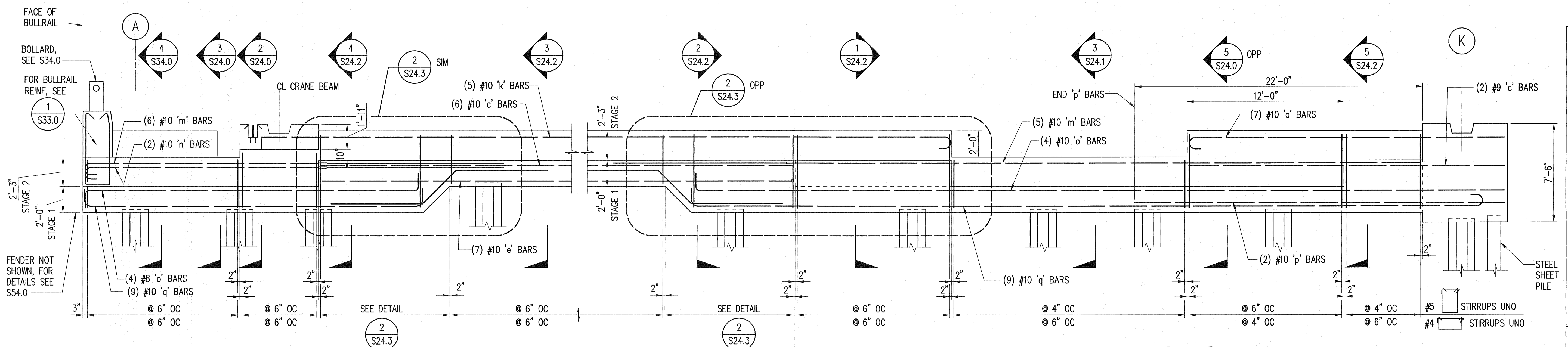
EXPIRES 9/10/08

**BID SET**





**PILE CAP ELEVATION - BENT 6** (A)  
SCALE: 1/4"=1'-0" (S7.0)



**PILE CAP ELEVATION - BENT 5** (B)  
SCALE: 1/4"=1'-0" (S7.0)

**NOTES:**

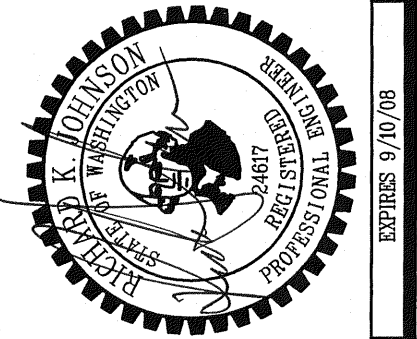
REFER TO NOTES ON ELEVATION (A) S19.0

**NOTES:**

REFER TO NOTES ON ELEVATION (A) S19.0

PORT OF TACOMA P.O. BOX 1837  
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**kpfi**  
 PORT OF TACOMA  
 USA

APPROVED	REVISION	MARK
CHIEF ENGINEER - DATE <i>M. J. [Signature]</i> 23 May 17	DATE 05/2007	DATE 05/2007
DRAWING DATE: 05-21-2007	PROJECT ENGR. - DATE GSN 05/2007	PROJECT ENGR. - DATE GSN 05/2007
PORT ADDRESS: 2340 E. ALEXANDER AVENUE	REVISION	MARK
PORT PARCEL: 17 & 18		

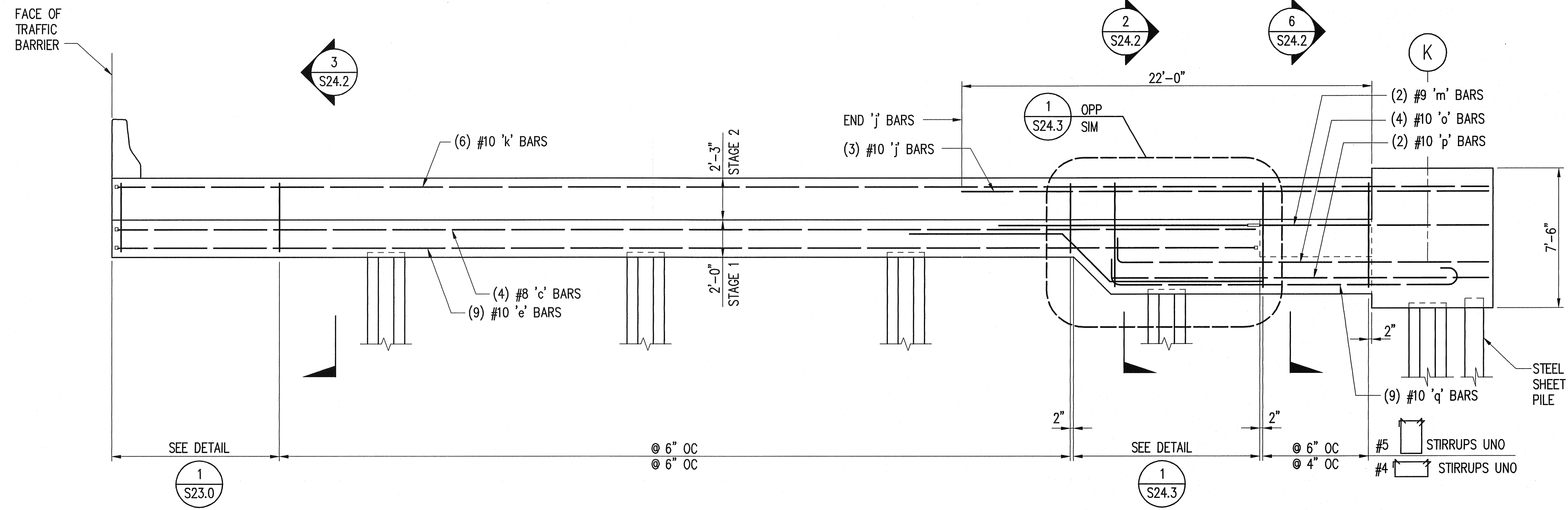


PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 PILE CAP ELEVATIONS 6

EP-6305  
**S19.5**  
 SHEET 104 OF 215  
 CONTRACT NUMBER: 068018  
 E. NUMBER: E2623  
 PHASE: BID SET

**BID SET**

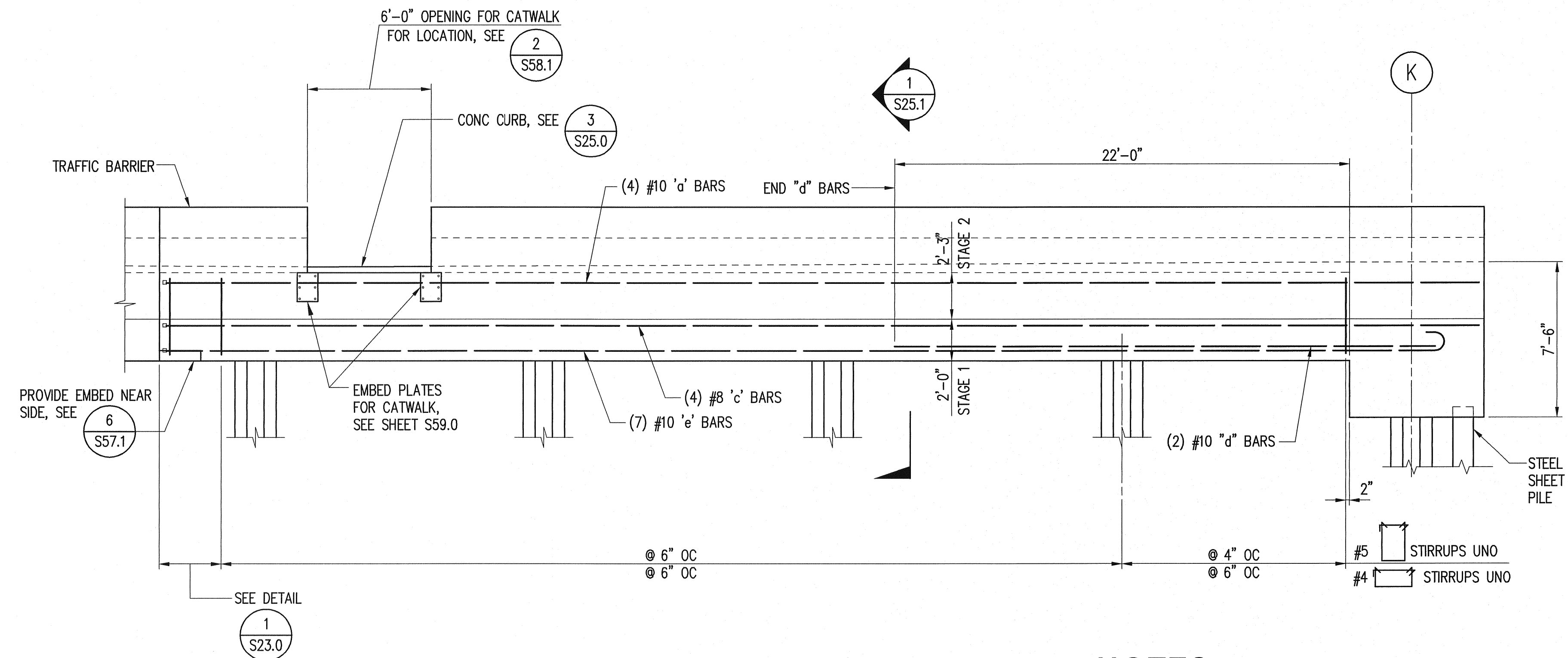




**NOTES:**

REFER TO NOTES ON ELEVATION A  
S19.0

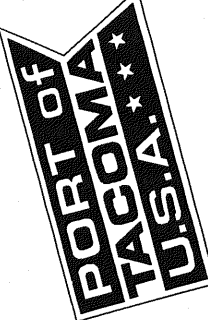
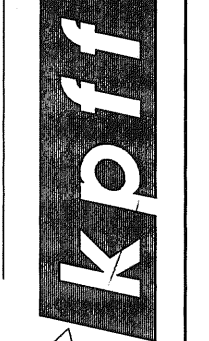
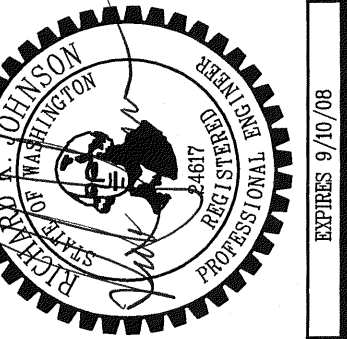
**PILE CAP ELEVATION - BENT 2** A  
SCALE: 1/4"=1'-0" S7.0

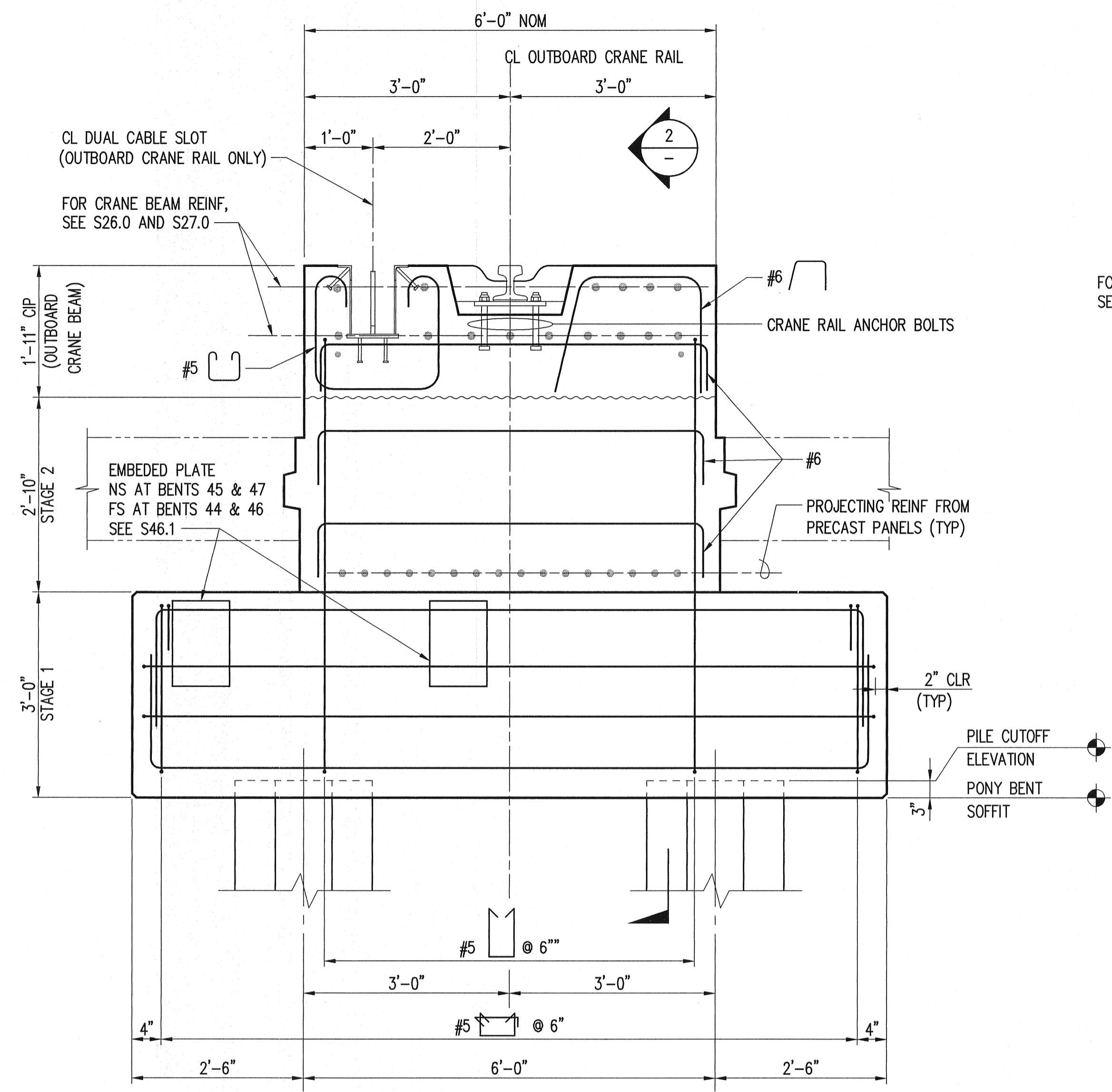


**NOTES:**

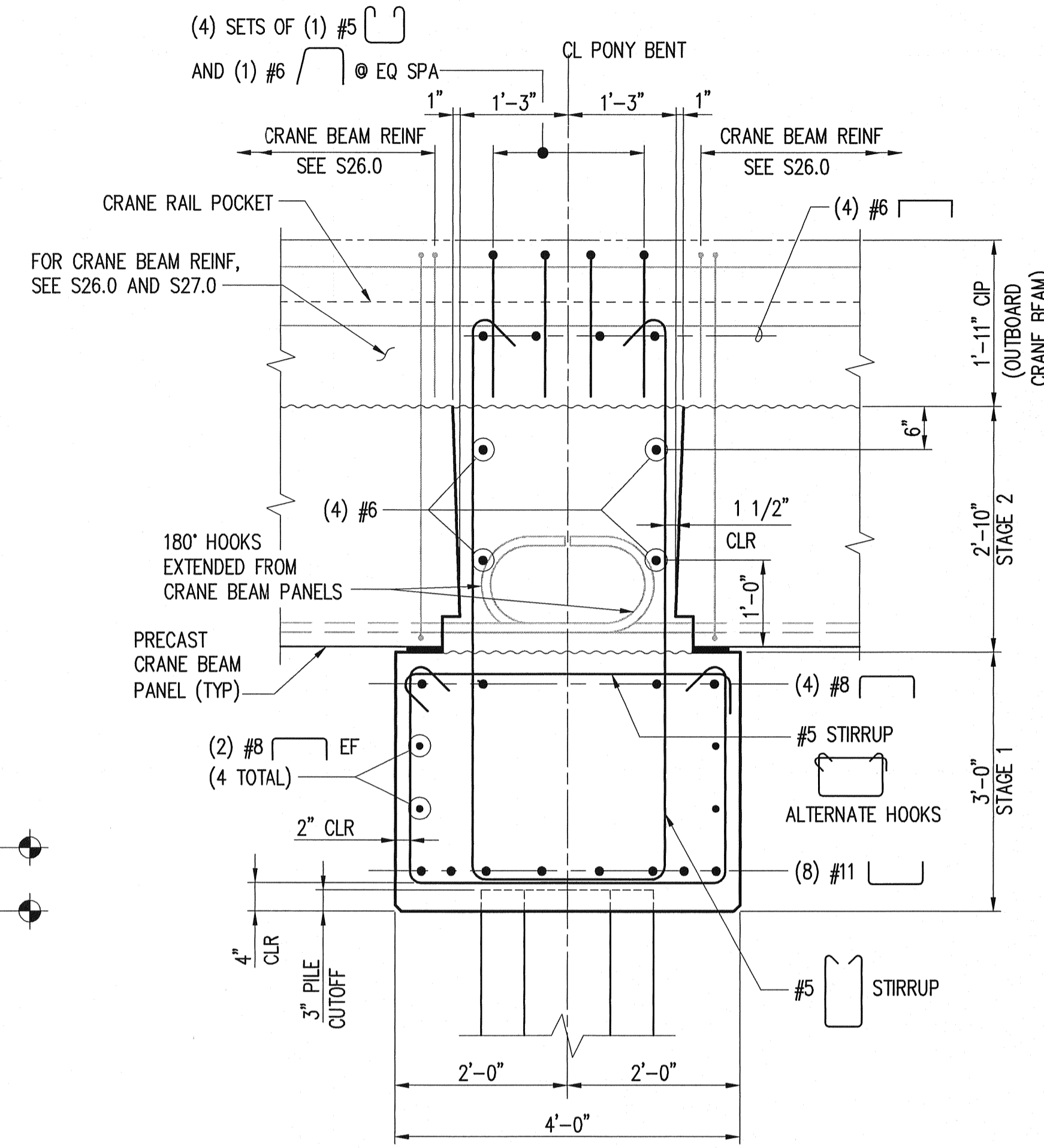
REFER TO NOTES ON ELEVATION A  
S19.0

**PILE CAP ELEVATION - BENT 1** B  
SCALE: 1/4"=1'-0" S7.0

 	PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841 Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-0162
RKJ CHECKED BY - DATE SGN 05/2007 PROJECT ENGR. - DATE APPROVED: <i>H. Adams</i> CHIEF ENGINEER - DATE 05/21/07 DRAWING DATE: 05-21-2007 PORT ADDRESS: 2340 E ALEXANDER AVENUE PORT PARCEL: 17 & 18	REVISION MARK DATE:
	EXP. 9/30/08 PORT OF TACOMA EAST BLAIR ONE WHARF PILE CAP ELEVATIONS 8 TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. DRAWING SCALE: AS SHOWN
EP-6305 <b>S19.7</b> SHEET 106 OF 215 CONTRACT NUMBER: 068018 E NUMBER: E2623 PHASE: BID SET	<b>BID SET</b>



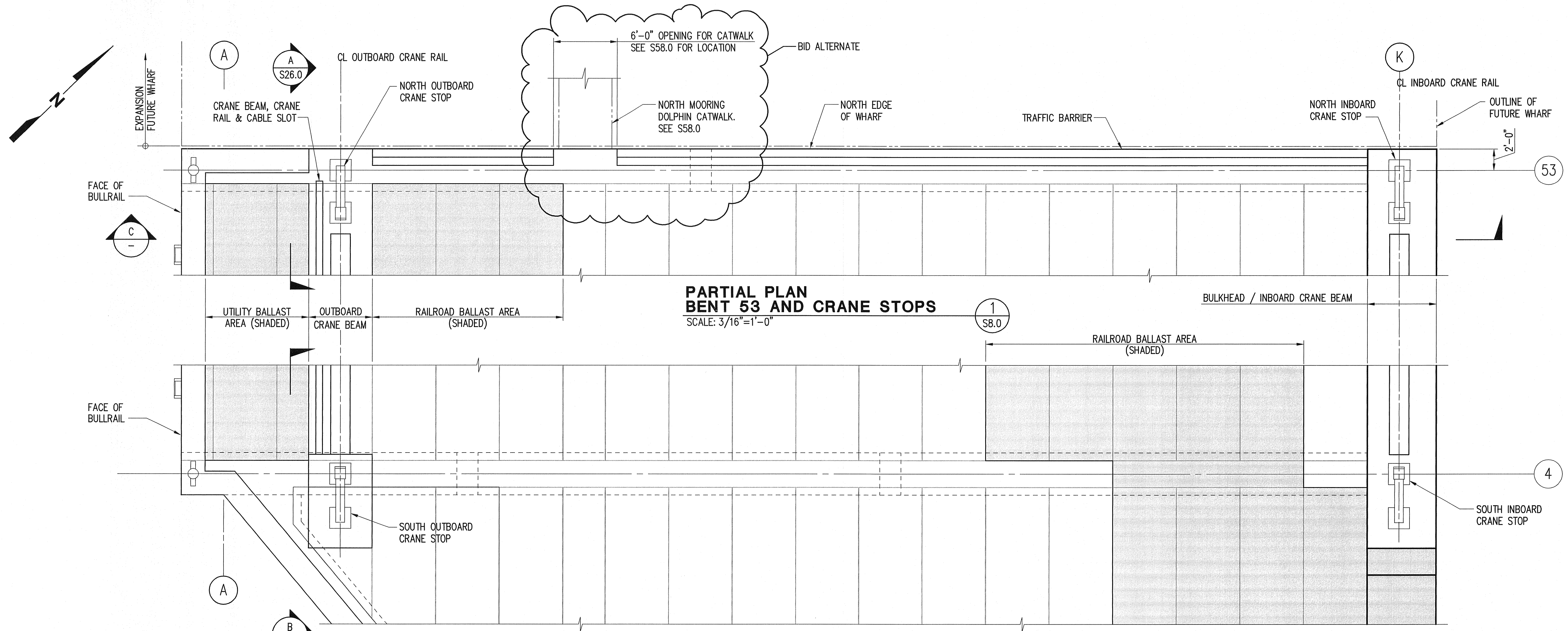
**ELEVATION - LOOKING NORTH  
PONY BENT PILE CAP**  
SCALE: 3/4"=1'-0"  
S4.0 S5.0, S6.0, S7.0



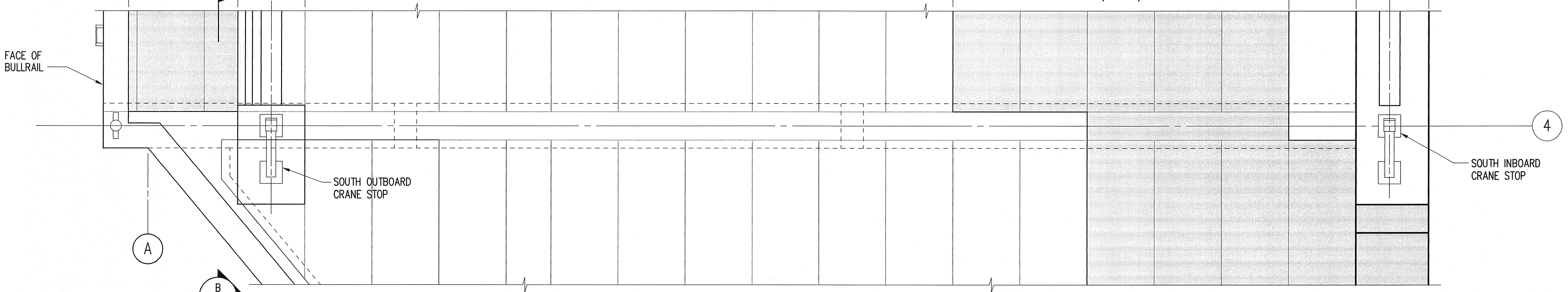
**PONY BENT PILE CAP - SECTION 2**  
SCALE: 3/4"=1'-0"

<b>EP-6305</b> <b>S20.0</b> SHEET 107 OF 215 CONTRACT NUMBER: 068018 E. NUMBER: E2623 PHASE: BID SET	<b>PORT OF TACOMA</b> EAST BLAIR ONE WHARF PONY BENT PILE CAP ELEVATION AND SECTIONS TOWNSHIP: 21N RANGE: 35E SECTION: 27 DATUM: HORIZ. VERT: DRAWING SCALE: AS SHOWN		APPROVED  <b>M. Apollos</b> CHIEF ENGINEER - DATE 23 May 07	RKJ 05/2007 - DATE CHECKED BY - DATE GGN 05/2007 PROJECT ENGR. - DATE	<b>PORT OF TACOMA USA</b>  Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-062	PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841
	BY: _____ APPROVED: _____ DATE: _____		MARK REVISION 1 2 & 15	EXP: 9/30/08		

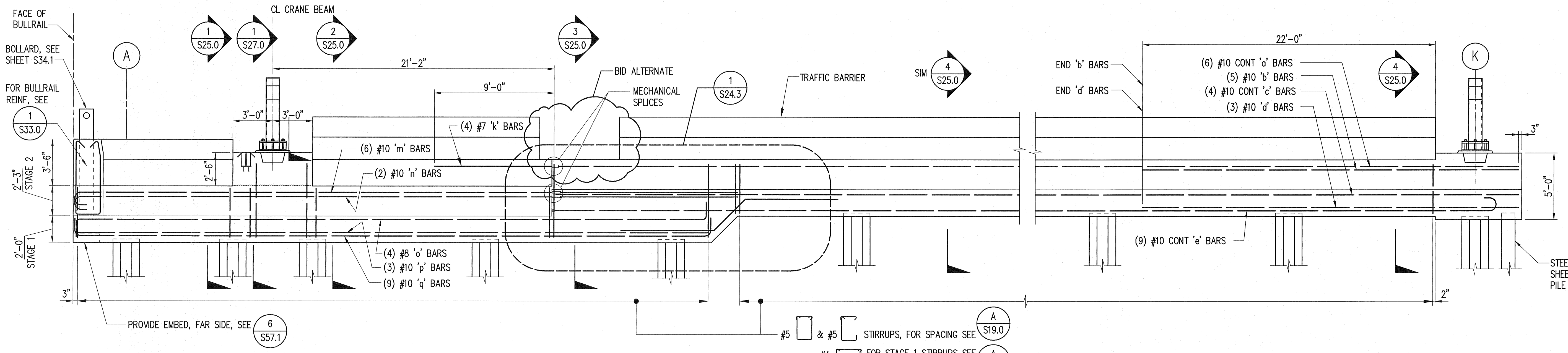
BID SET



**PARTIAL PLAN BENT 53 AND CRANE STOPS**  
SCALE: 3/16"=1'-0"



**PARTIAL PLAN BENT 4 AND CRANE STOPS**  
SCALE: 3/16"=1'-0"



**ELEVATION PILE CAP - BENT 53**  
SCALE: 1/4"=1'-0"

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 PORT OF TACOMA  
 U.S.A.

APPROVED: *H. Anderson*  
 CHIEF ENGINEER - DATE: 23 Mar 07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ: VERT:  
 DRAWING SCALE: AS SHOWN

**PORT OF TACOMA**  
**EAST BLAIR ONE WHARF**  
**PILE CAP**  
**PLAN AND ELEVATION**

EP-6305  
**S21.0**  
 SHEET 108 OF 215  
 CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

CHECKED BY: - DATE: 05/2007  
 GSN 05/2007  
 PROJECT ENGR. - DATE: 05/2007

REVISION  
 MARK  
 DATE:

EXPANSION FUTURE WHARF  
 FACE OF BULLRAIL  
 CL CRANE BEAM  
 CL INBOARD CRANE RAIL  
 OUTLINE OF FUTURE WHARF  
 SOUTH INBOARD CRANE STOP  
 SOUTH OUTBOARD CRANE STOP  
 RAILROAD BALLAST AREA (SHADED)  
 BULKHEAD / INBOARD CRANE BEAM  
 TRAFFIC BARRIER  
 NORTH MOORING DOLPHIN CATWALK  
 NORTH EDGE OF WHARF  
 NORTH OUTBOARD CRANE STOP  
 CRANE BEAM, CRANE RAIL & CABLE SLOT  
 UTILITY BALLAST AREA (SHADED)  
 OUTBOARD CRANE BEAM  
 RAILROAD BALLAST AREA (SHADED)

#5 & #5 STIRRUPS, FOR SPACING SEE A S19.0  
 #4 FOR STAGE 1 STIRRUPS SEE A S19.0

PROVIDE EMBED, FAR SIDE, SEE 6 S57.1

BOLLARD, SEE SHEET S34.1  
 FOR BULLRAIL REINF, SEE 1 S33.0

STAGE 1  
 STAGE 2

2'-0" STAGE 1  
 2'-3" STAGE 2  
 3'-6"

3'-0" 3'-0" 2'-6" 21'-2" 9'-0" 3'-0" 3'-0" 22'-0" 5'-0" 2"

1 S25.0 1 S27.0 2 S25.0 3 S25.0 4 S25.0 1 S24.3 6 S57.1

1 S8.0 4 1 S25.0

1 S26.0 2 S26.0

53 4

A B C 1 4 53 K

NORTH INBOARD CRANE STOP  
 NORTH OUTBOARD CRANE STOP  
 SOUTH INBOARD CRANE STOP  
 SOUTH OUTBOARD CRANE STOP

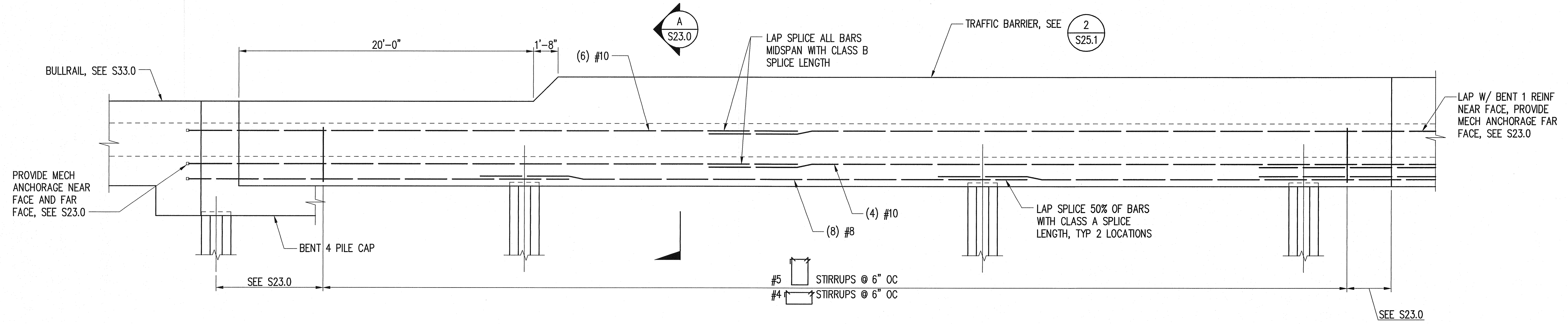
CL CRANE BEAM  
 CL INBOARD CRANE RAIL  
 CL OUTBOARD CRANE RAIL

BENT 53  
 BENT 4

BENT 53 AND CRANE STOPS  
 BENT 4 AND CRANE STOPS

ELEVATION PILE CAP - BENT 53

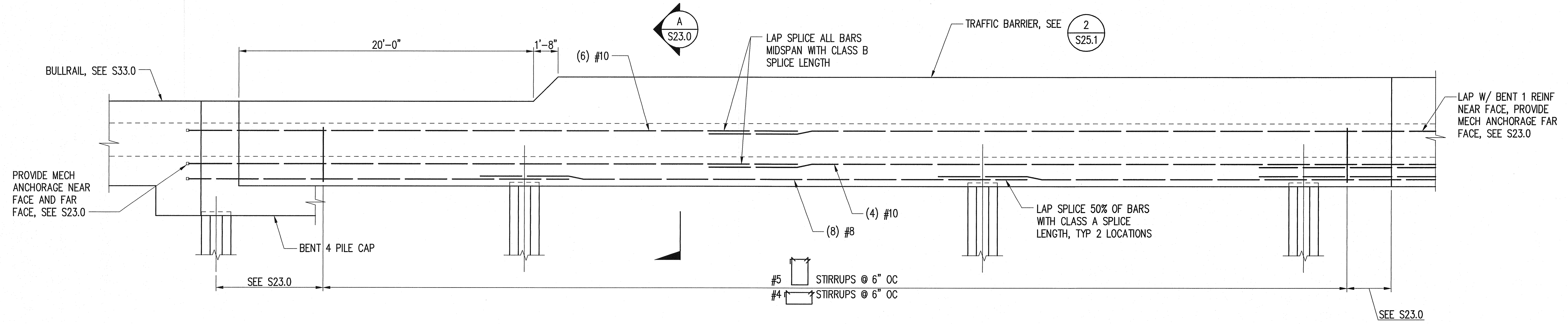
BID SET



**PILE CAP ELEVATION - BENT S1** (A) S11.0  
 SCALE: 1/4"=1'-0"

<b>EP-6305</b> <b>S22.0</b> SHEET 109 OF 215 CONTRACT NUMBER: 068018 E. NUMBER: E2620 PHASE: BID SET	<b>PORT OF TACOMA</b> <b>EAST BLAIR ONE WHARF</b> <b>PILE CAP ELEVATION</b> <b>BENT S1</b> TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT.: DRAWING SCALE: AS SHOWN		APPROVED <i>H. Anderson</i> CHIEF ENGINEER - DATE 05/21/2007 PORT ADDRESS: 2340 E ALEXANDER AVENUE PORT TACOMA, WA 98401	RJK 05/2007 - DATE CHECKED BY - DATE GGN 05/2007 PROJECT ENGR. - DATE	PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841 Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-0162
	PORT OF TACOMA USA 	MARK REVISION BY: APPROVED: DATE:	PORT OF TACOMA USA	PORT OF TACOMA USA	PORT OF TACOMA USA

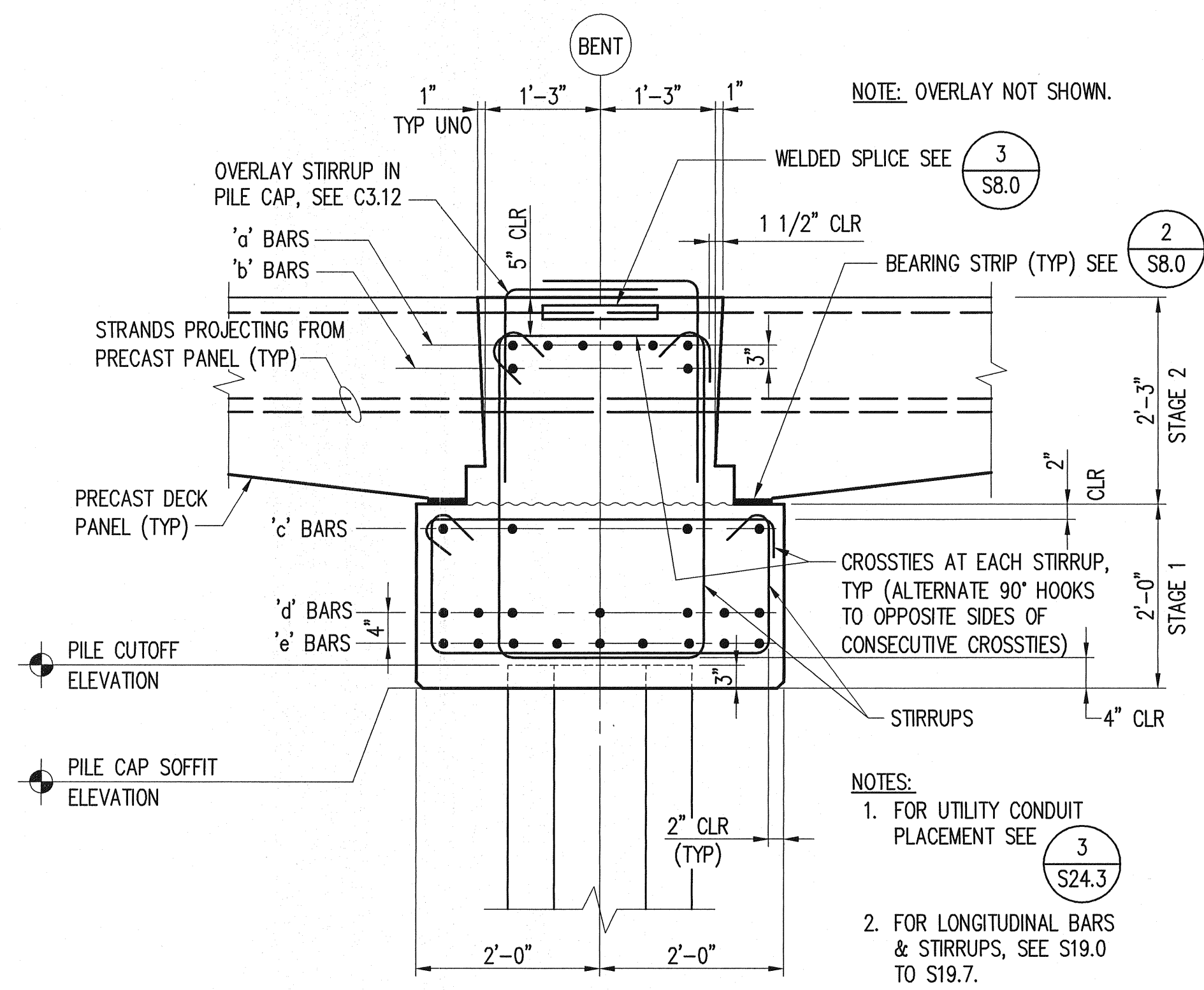
BID SET



**PILE CAP ELEVATION - BENT S1** A  
S11.0  
SCALE: 1/4"=1'-0"

<p>EP-6305 <b>S22.0</b> SHEET 109 OF 215 CONTRACT NUMBER: 068018 E. NUMBER: E2620 PHASE: BID SET</p>	<p><b>PORT OF TACOMA</b> EAST BLAIR ONE WHARF PILE CAP ELEVATION BENT S1</p>	<p>APPROVED: <i>H. Anderson</i> CHIEF ENGINEER - DATE: 05-21-2007 23 MAY 07 DRAWING NO.: 2340 PORT ADDRESS: 2340 PORT PARCEL: 1 &amp; 18</p>	<p>05/2007 - DATE RkJ CHECKED BY GGN PROJECT ENGR. - DATE 05/2007</p>	<p>MARK REVISION</p>	<p>BY: APPROVED: DATE:</p>
<p>PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841</p> <p>Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-0162</p> <p><b>kpfi</b></p>					

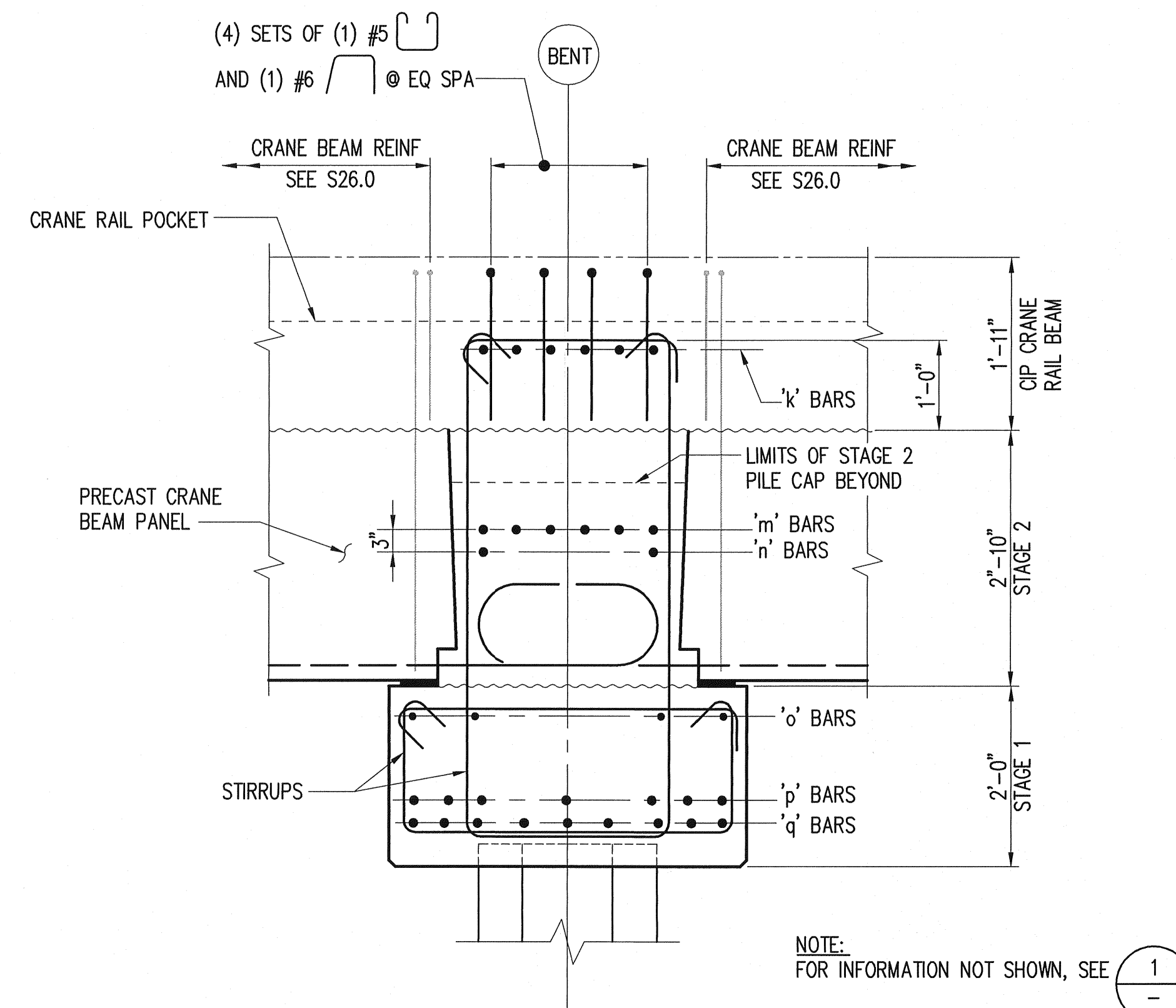
BID SET



**SECTION - TYPICAL PILE CAP**

SCALE: 3/4"=1'-0"

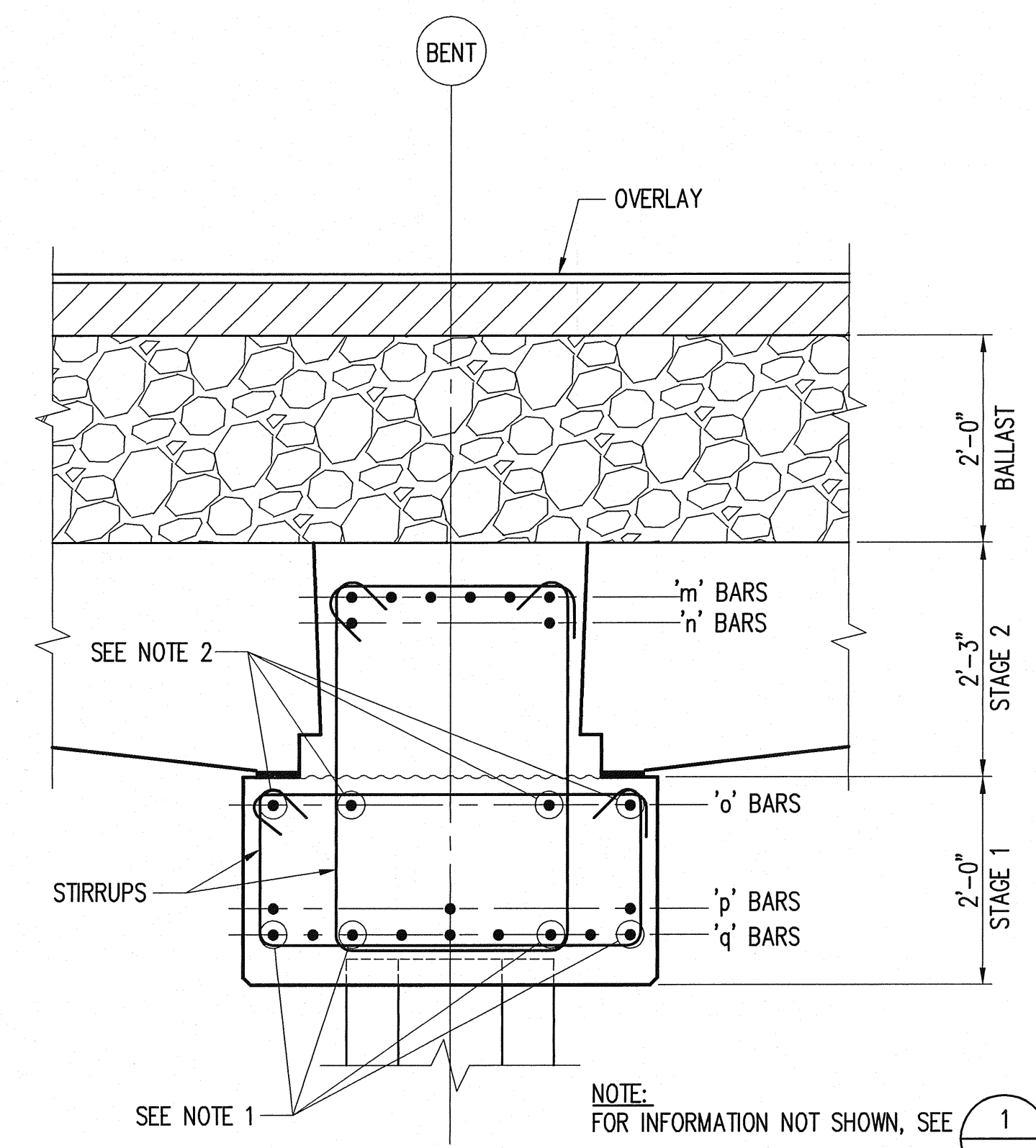
1  
S19.0, S19.1, S19.2, S19.3, S19.4, S19.5



**SECTION - PILE CAP AT OUTBOARD CRANE BEAM**

SCALE: 3/4"=1'-0"

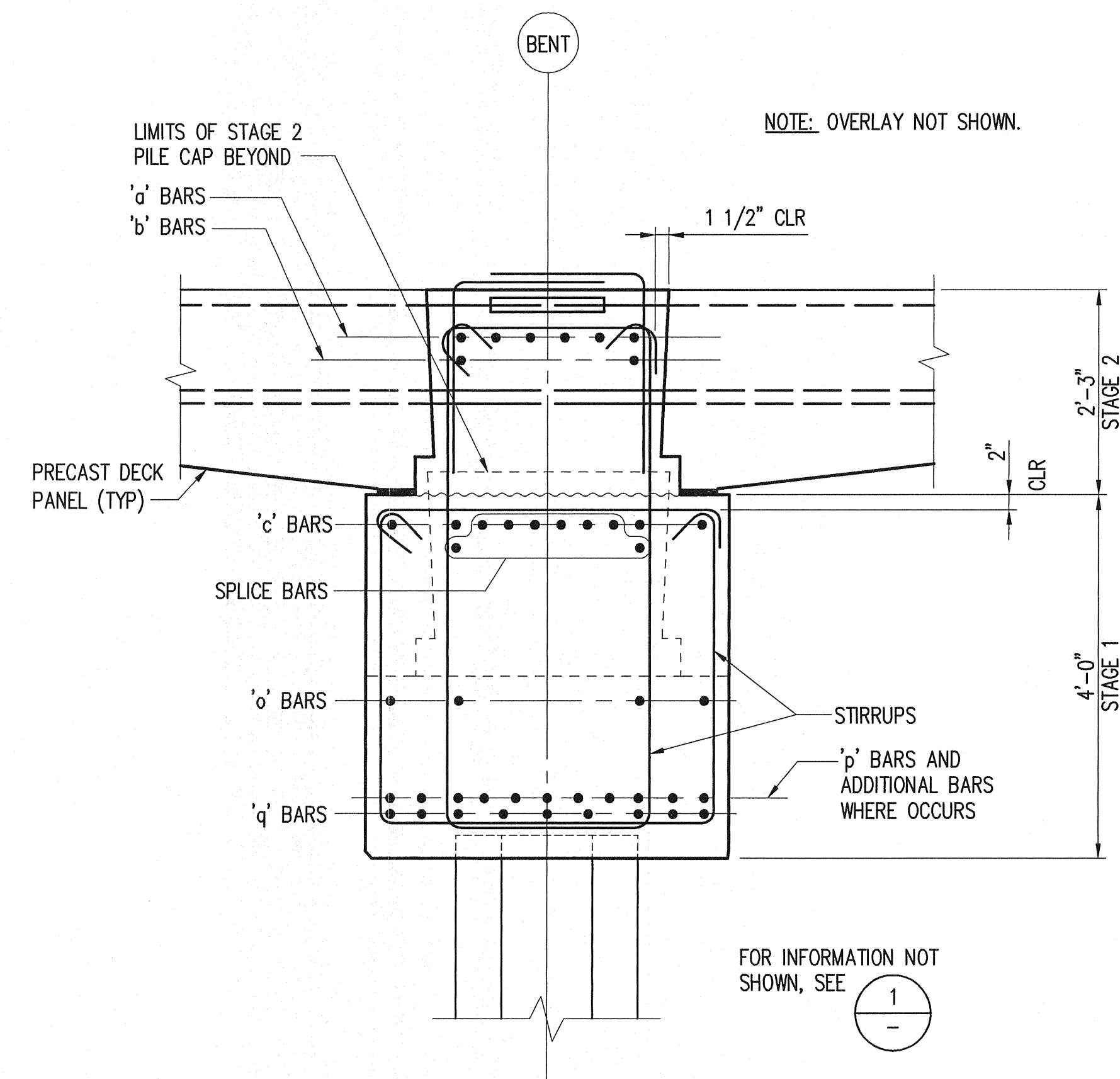
2  
S19.0, S19.1, S19.2, S19.3, S19.4, S19.5



**SECTION - PILE CAP AT UTILITY TRENCH**

SCALE: 3/4"=1'-0"

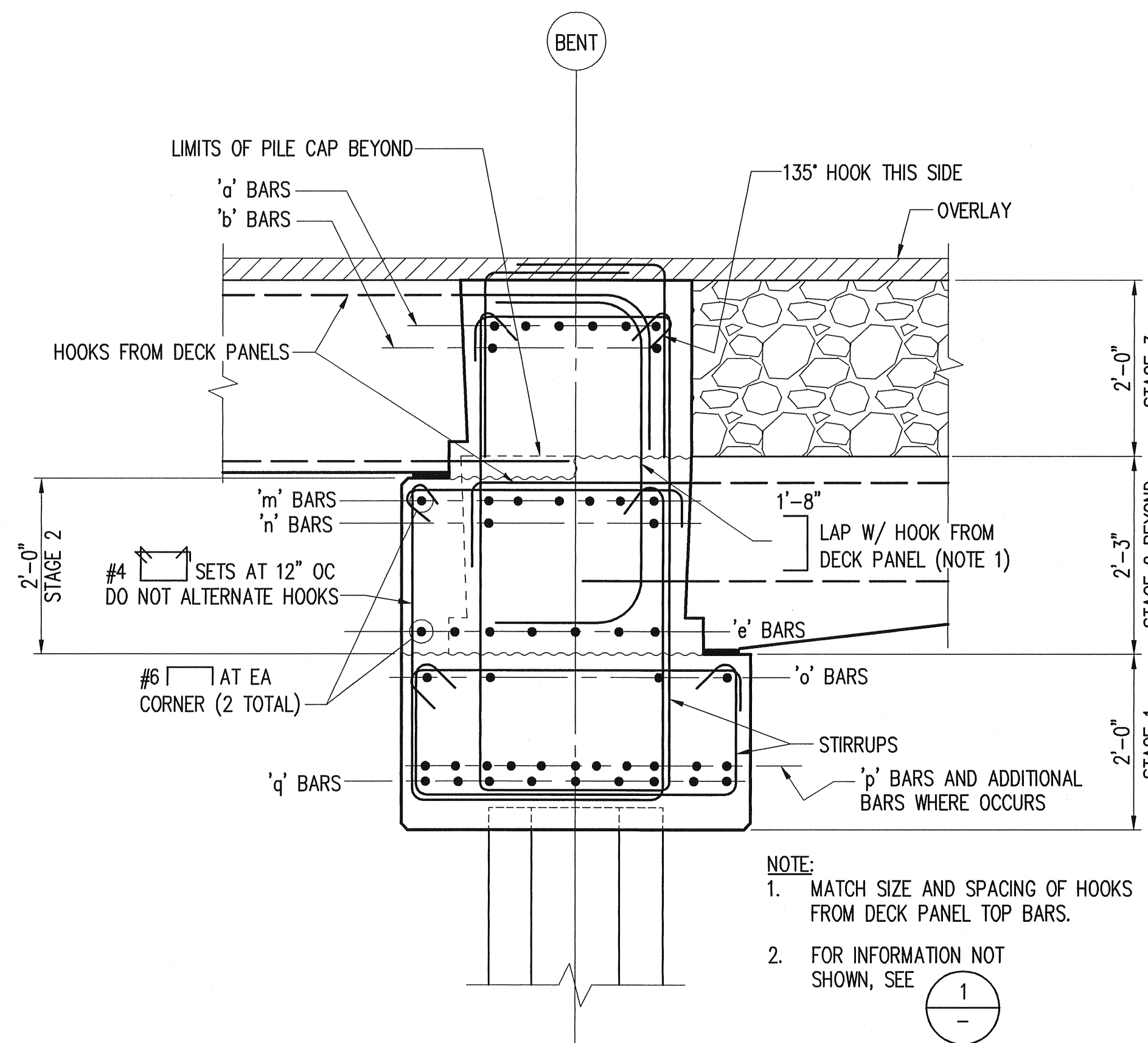
3  
S19.0, S19.1, S19.2, S19.3, S19.4, S19.5



**SECTION - DOUBLE PILE CAP**

SCALE: 3/4"=1'-0"

4  
S19.0, S19.1, S19.2, S19.3, S19.4, S19.5



**SECTION - PILE CAP AT STEP TO RAIL TRENCH**

SCALE: 3/4"=1'-0"

5  
S19.0, S19.1, S19.2, S19.3, S19.4, S19.5, S19.6

**NOTES:**

1. TERMINATE FOUR 'q' BARS AT OUTBOARD FACE OF PILE CAP WITH 180-DEGREE HOOKS.
2. TERMINATE FOUR 'o' BARS AT OUTBOARD FACE OF PILE CAP WITH 90-DEGREE HOOKS.
3. TERMINATE ALL 'm' AND 'n' BARS AT OUTBOARD FACE OF PILE CAP WITH 180-DEGREE HOOKS.
4. TERMINATE ALL REMAINING BARS AT OUTBOARD FACE OF PILE CAP WITH STRAIGHT ENDS.
5. FOR INFORMATION NOT SHOWN, SEE 1
6. SEE PILE CAP ELEVATIONS FOR SIZE AND NUMBER OF BARS FOR EACH LAYER WITH THE COORESPONDING ALPHANUMERIC IDENTIFIER.

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841



05/2007 - DATE CHECKED BY  
05/2007 - DATE PROJECT ENGR. -

APPROVED  
M. A. [Signature]  
CHIEF ENGINEER - DATE  
23 [Signature]

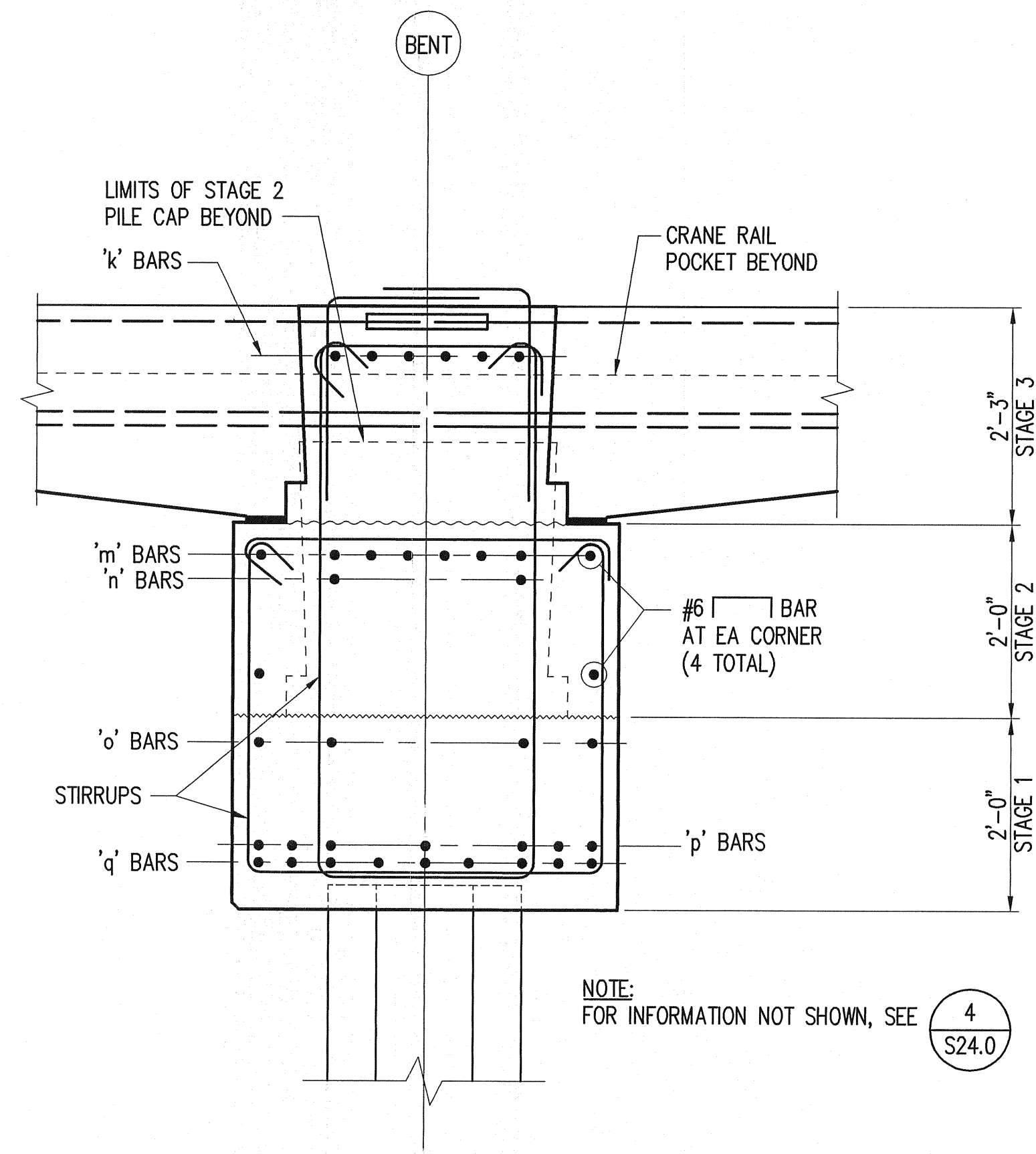


PORT OF TACOMA  
EAST BLAIR ONE WHARF  
PILE CAP SECTIONS 1

EP-6305  
S24.0  
SHEET 111 OF 215

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
CONTRACT NUMBER: 068018  
DATE: 05/2007  
DRAWING NUMBER: EP6305  
DRAWING SCALE: AS SHOWN  
PHASE: BID SET

BID SET

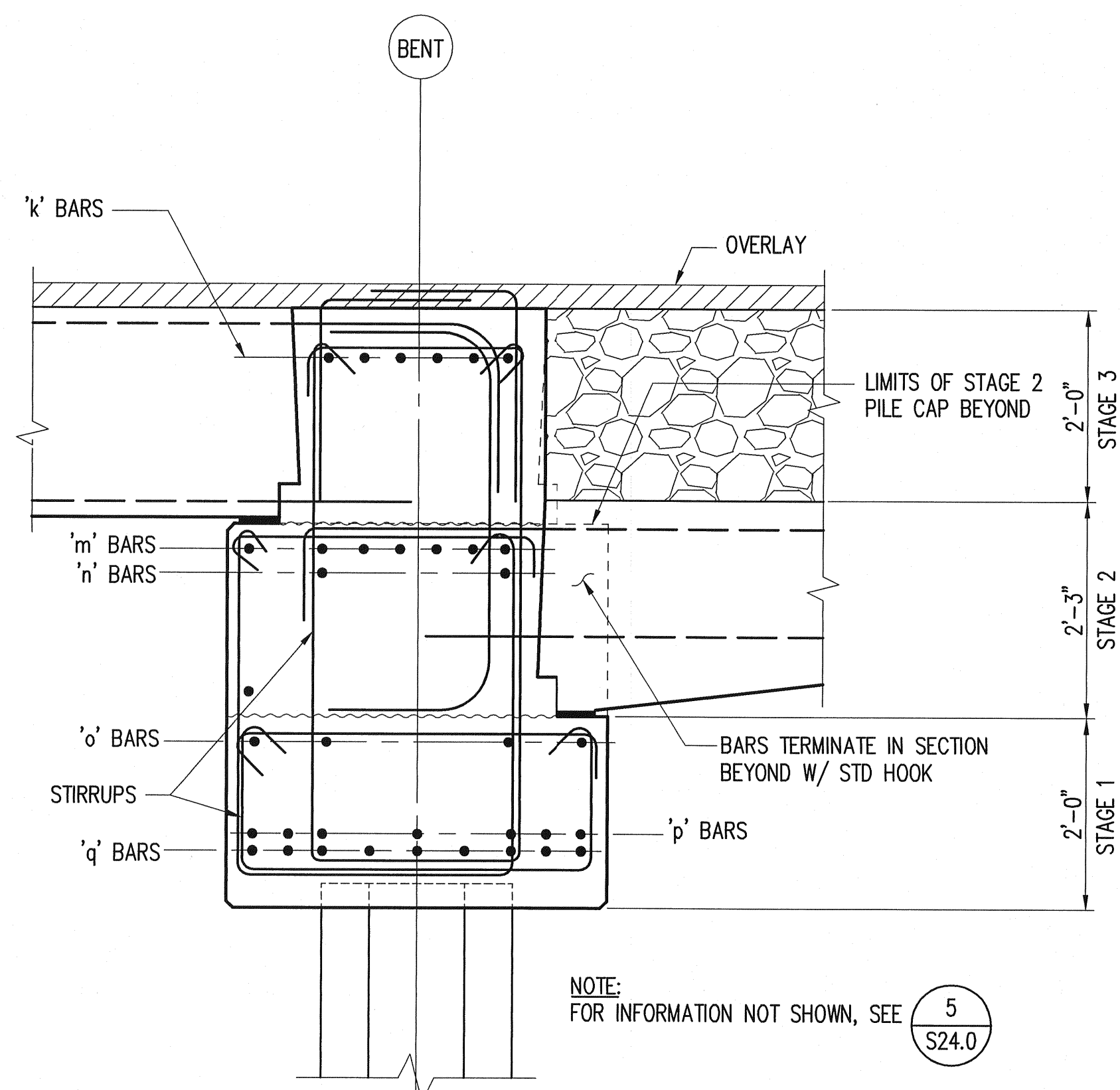


**SECTION - DOUBLE PILE CAP**

SCALE: 3/4"=1'-0"

1

S19.1, S19.2, S19.3, S19.4

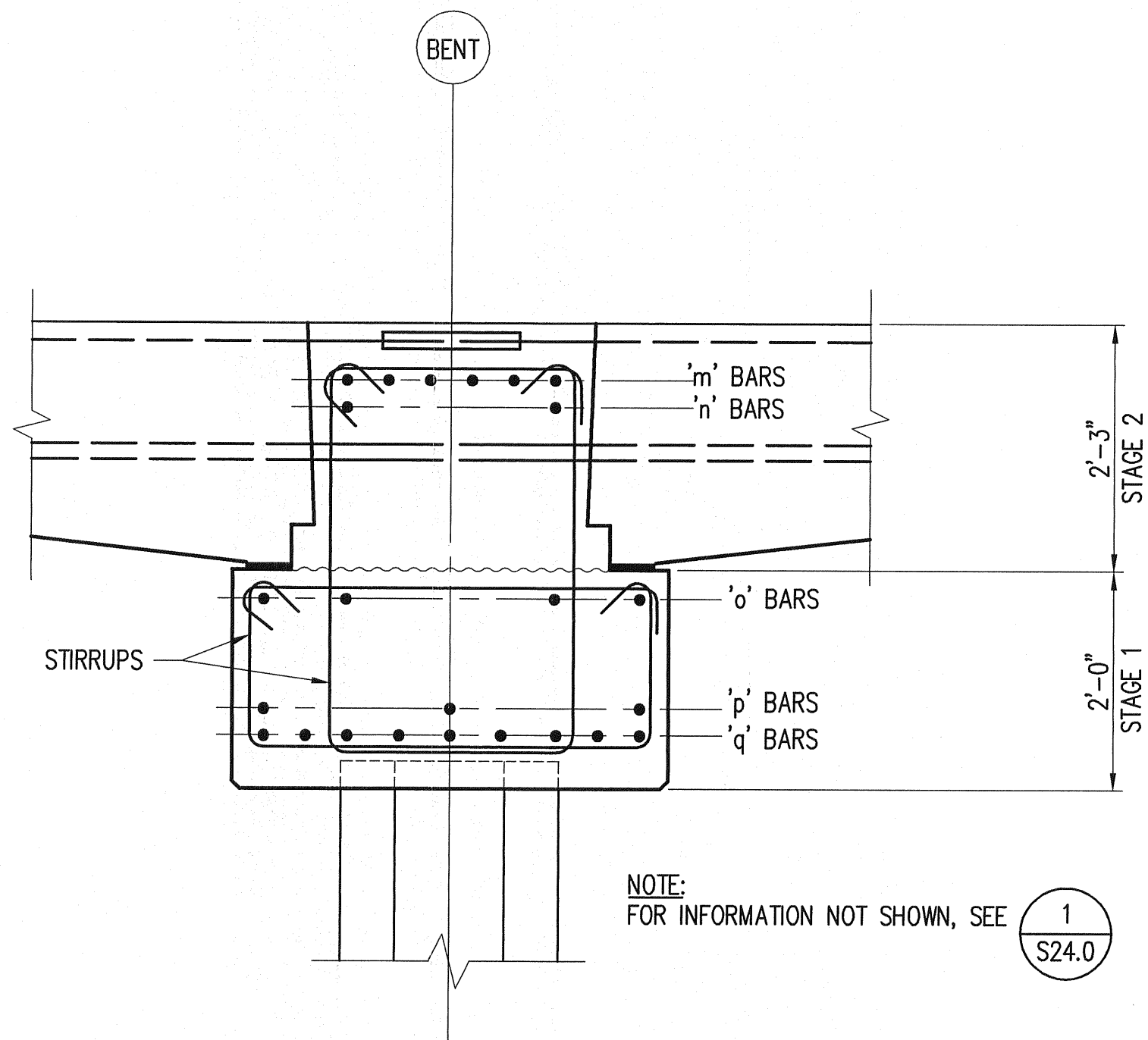


**SECTION - PILE CAP AT STEP TO RAIL TRENCH**

SCALE: 3/4"=1'-0"

2

S19.2, S19.3, S19.4

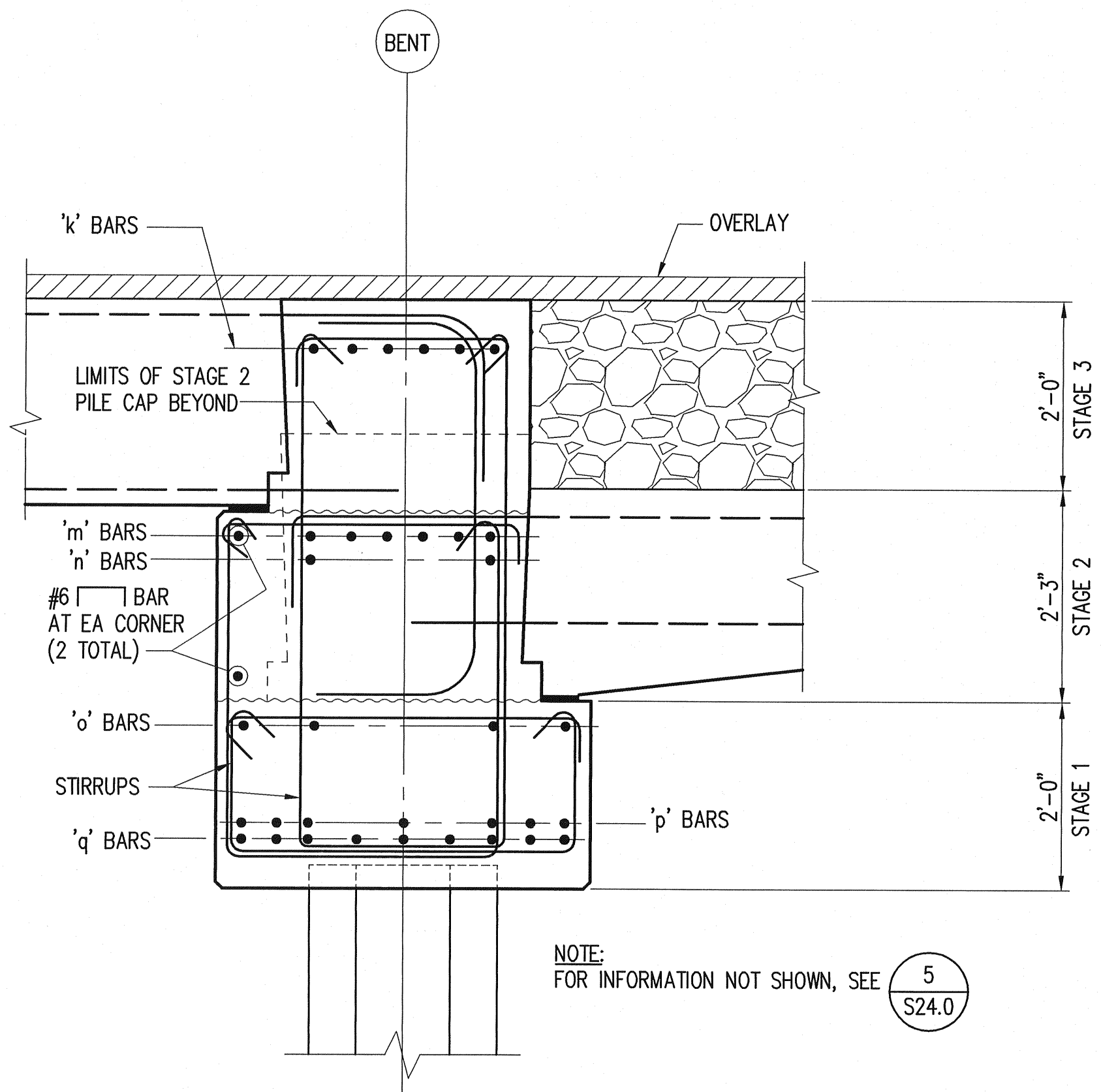


**SECTION - PILE CAP AT RAIL TRENCH**

SCALE: 3/4"=1'-0"

3

S19.0, S19.1, S19.2, S19.3, S19.4, S19.5, S19.6



**SECTION - PILE CAP AT STEP TO RAIL TRENCH**

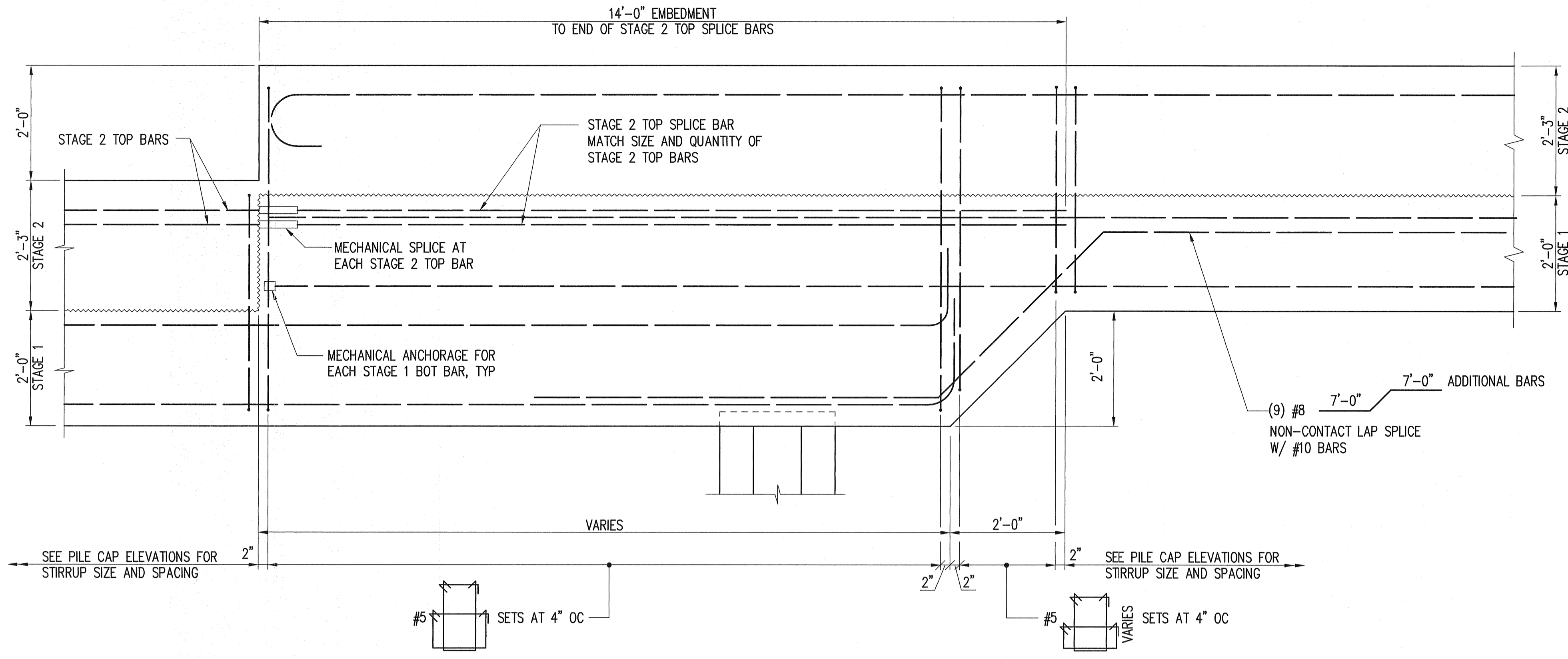
SCALE: 3/4"=1'-0"

4

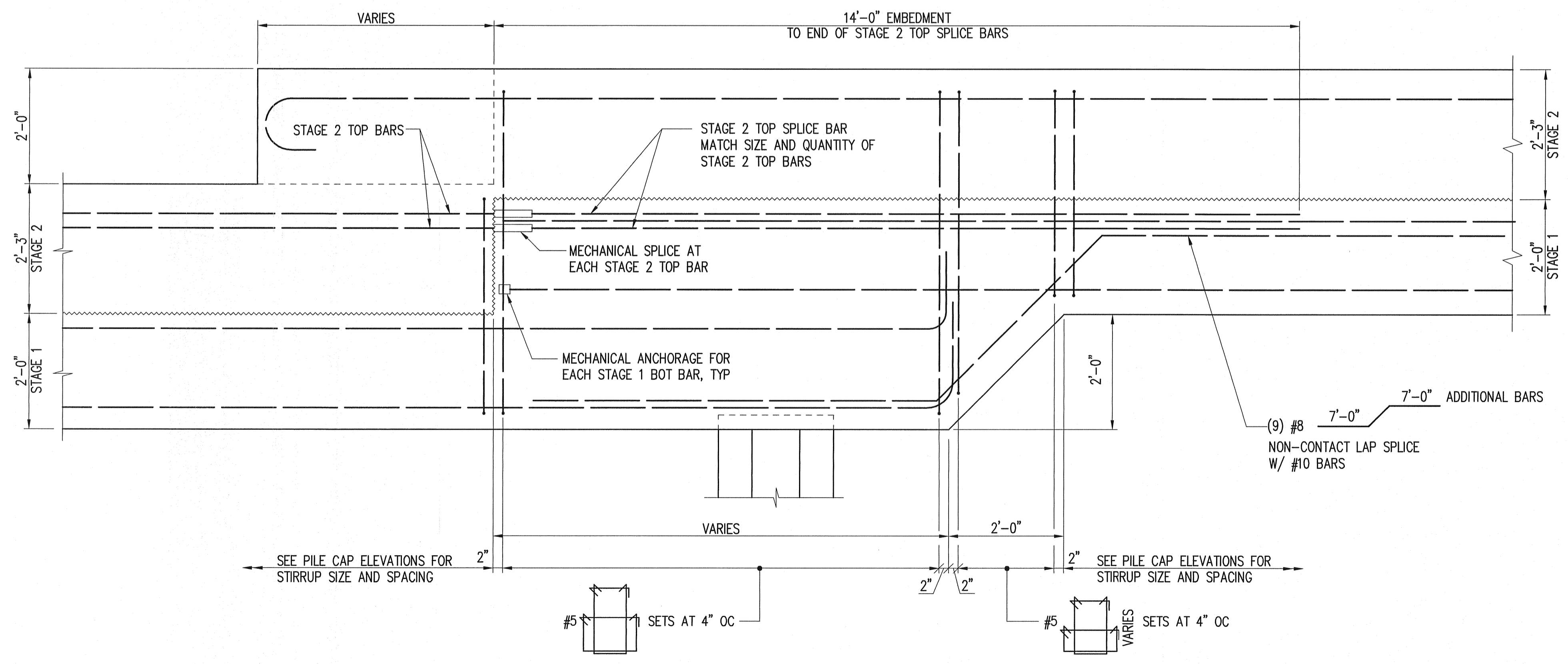
S19.1

PORT OF TACOMA P. O. BOX 1837 TACOMA, WA 98401 253-383-5841 Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-0162	
APPROVED  M. Adams CHIEF ENGINEER - DATE 12/14/07	CHECKED BY - DATE GGN 05/2007 PROJECT ENGR - DATE
R.K.J. 05/2007	DATE
MARK REVISION	BY DATE
TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT. DRAWING SCALE: AS SHOWN	
PORT OF TACOMA EAST BLAIR ONE WHARF PILE CAP SECTIONS 2	
EP-6305 <b>S24.1</b> SHEET 112 OF 215 CONTRACT NUMBER: 068018 E. NUMBER: E2823 PHASE: BID SET	BID SET

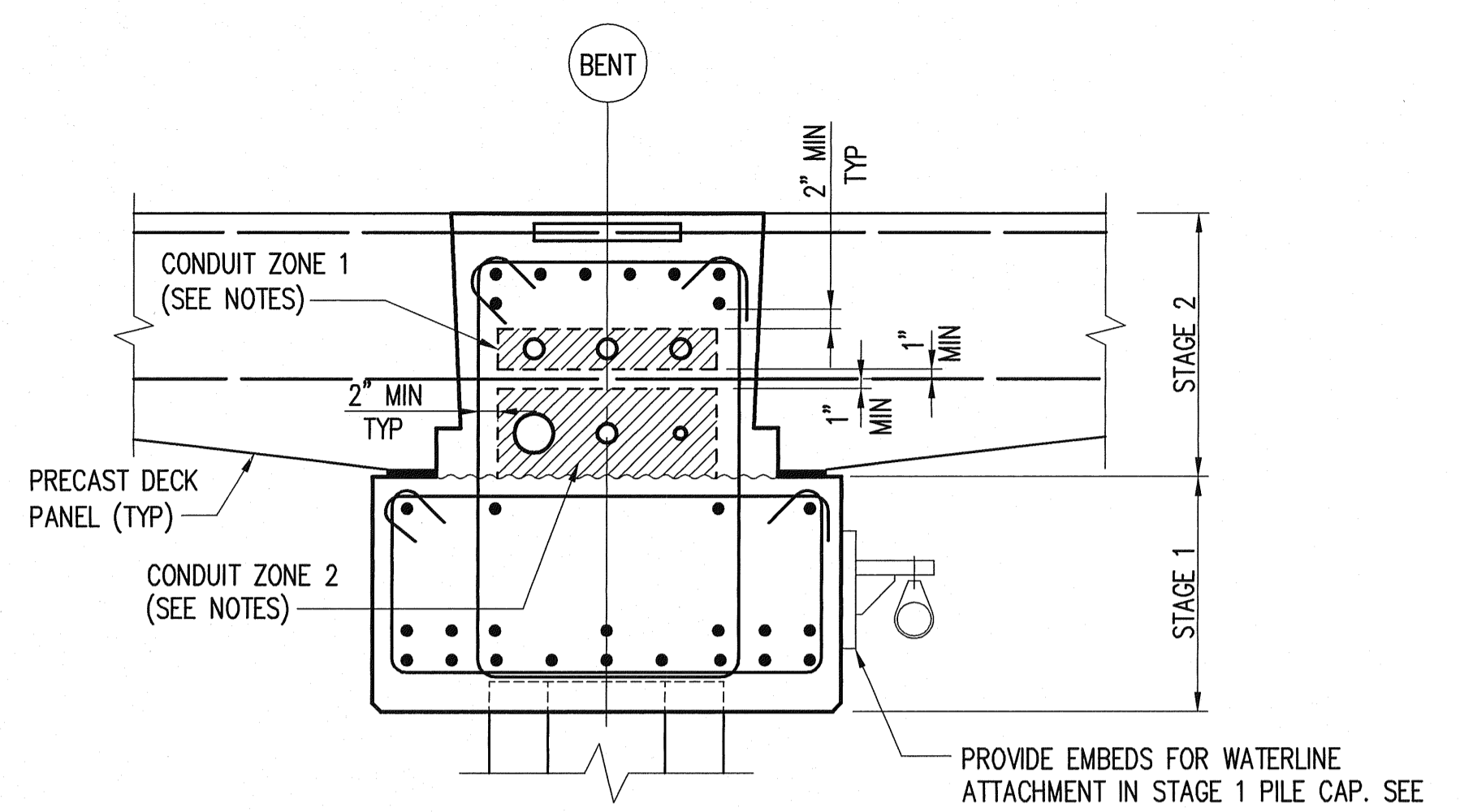




**PILE CAP STEP DETAIL**  
SCALE: 3/4"=1'-0"  
①  
S19.0 S19.1, S19.2, S19.7, S21.0



**PILE CAP STEP DETAIL**  
SCALE: 3/4"=1'-0"  
②  
S19.0 S19.1, S19.2, S19.3, S19.4, S19.5, S19.6



- NOTES:**
- FOR CONDUIT TYPE, SIZE, SPACING, LOCATION, AND DETAILS SEE ELECTRICAL SHEETS. CONDUIT SIZE AND SPACING SHALL COMPLY WITH THE FOLLOWING NOTES.
  - ALL CONDUIT SHALL BE PLACED WITHIN THE LIMITS OF ZONE 1 AND ZONE 2 AS SHOWN ON THIS DETAIL.
  - THE MAXIMUM OUTSIDE DIAMETER OF ANY CONDUIT (O.D.) SHALL NOT EXCEED 9 INCHES.
  - THE MINIMUM CENTER TO CENTER SPACING OF CONDUIT SHALL BE 3 TIMES THE DIAMETER OF THE CONDUIT. FOR ADJACENT CONDUIT WITH DIFFERENT DIAMETERS THE AVERAGE DIAMETER SHALL BE USED.
  - THE TOTAL CROSS SECTIONAL AREA OF VOIDED CONCRETE CREATED BY ALL THE CONDUITS IN A PILE CAP SHALL NOT EXCEED 64 SQUARE INCHES.

**SECTION PILE CAP CONDUIT ZONES**  
SCALE: 3/4"=1'-0"  
③  
S24.0

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 Tacoma, Washington 98402  
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**kpfi**  
 PORT OF TACOMA USA

APPROVED: *H. Adams*  
 CHIEF ENGINEER - DATE: 2/24/07  
 CHECKED BY: GGN - DATE: 05/2007  
 PROJECT ENGR. - DATE: 05/2007

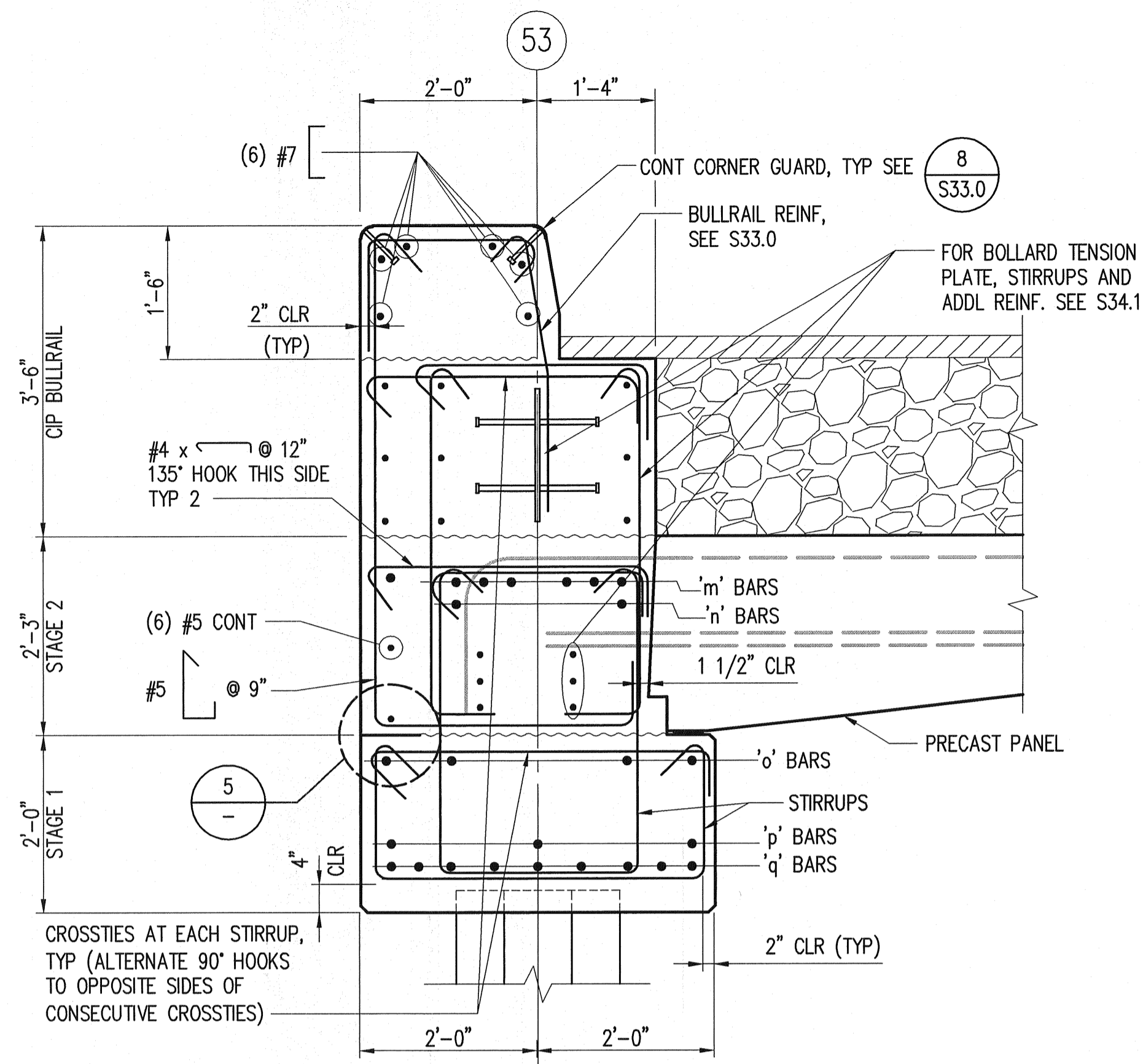
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 CONTRACT NUMBER: 068018  
 DRAWING NUMBER: E2603  
 DATUM: HORIZ. - VERT. -  
 PHASE: BID SET

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 PILE CAP SECTIONS 4

EP-6305  
**S24.3**  
 SHEET 114 OF 215

BIDDING SET

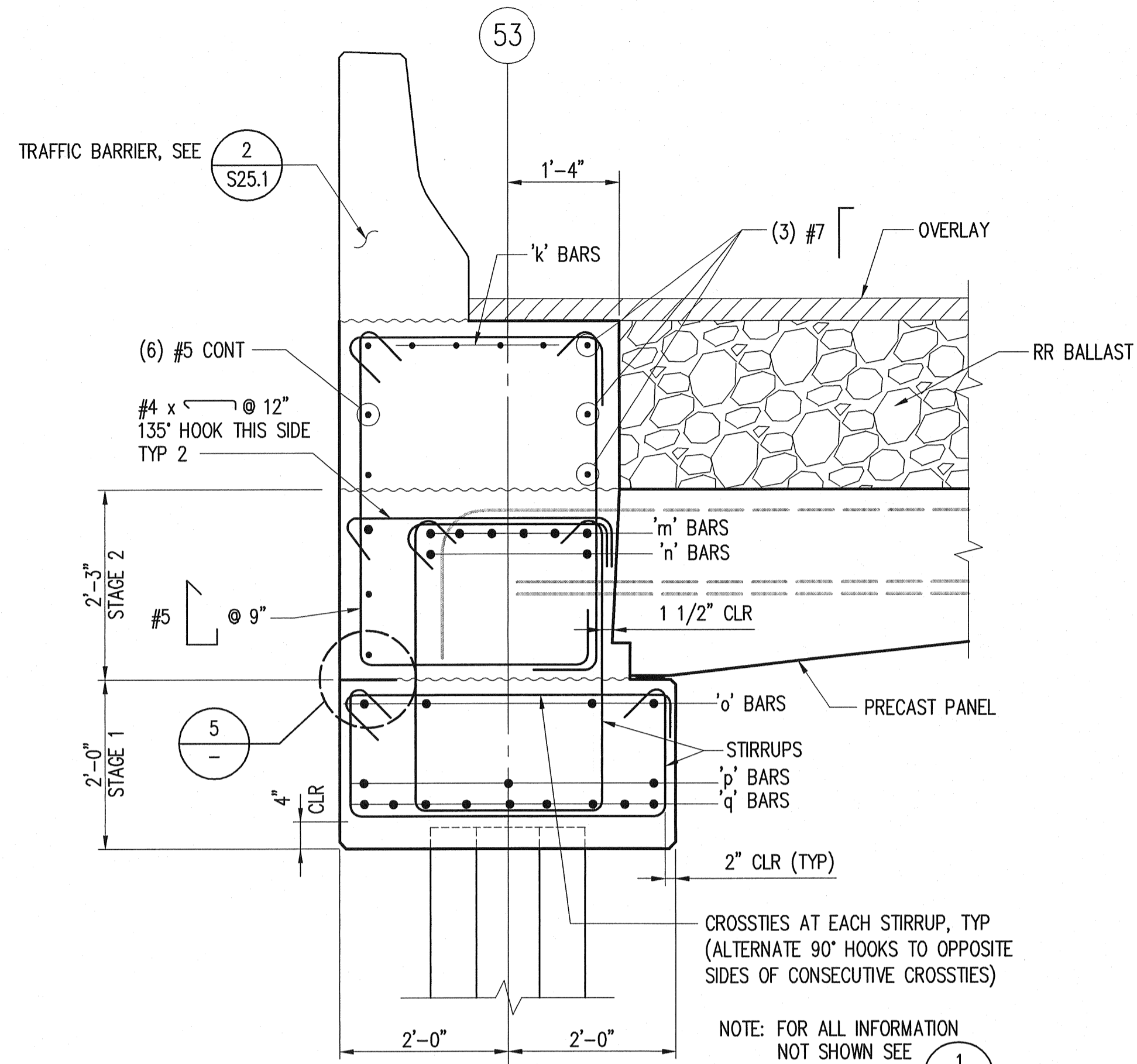
REVISION	MARK	BY:	DATE:



**SECTION PILE CAP AT BENT 53**

SCALE: 3/4"=1'-0"

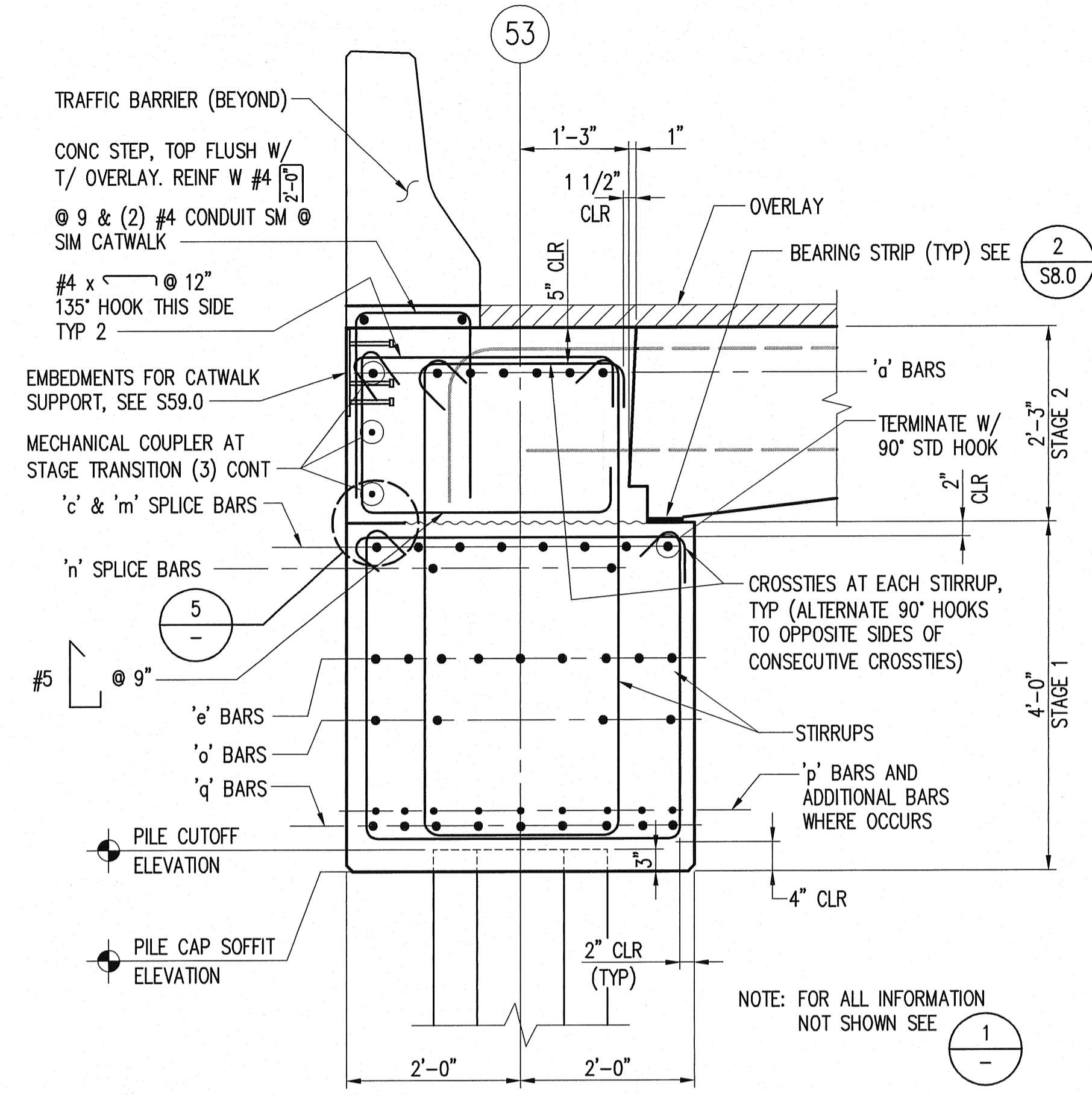
1  
S21.0



**SECTION PILE CAP AT BENT 53**

SCALE: 3/4"=1'-0"

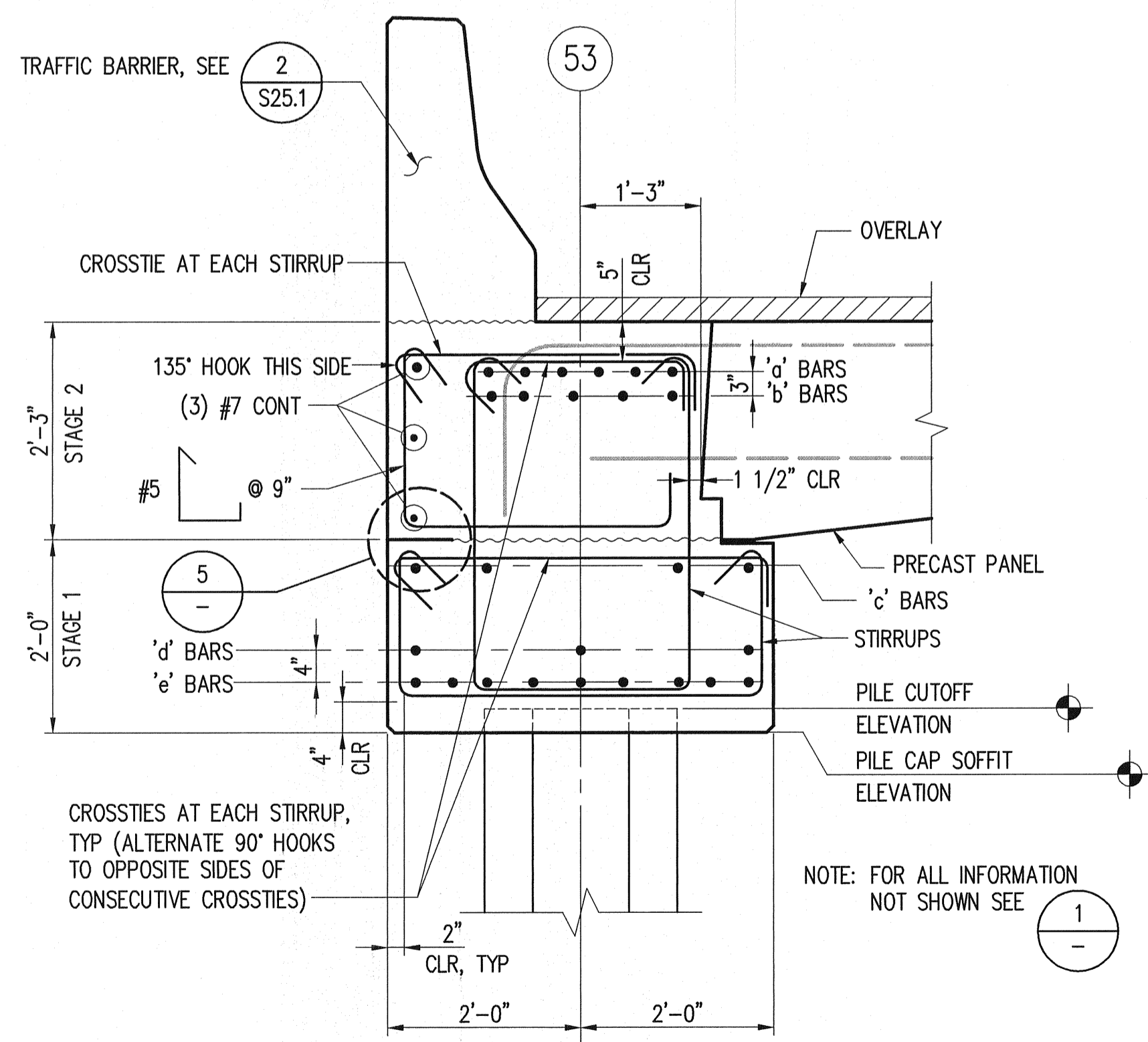
2  
S21.0



**SECTION PILE CAP AT BENT 53**

SCALE: 3/4"=1'-0"

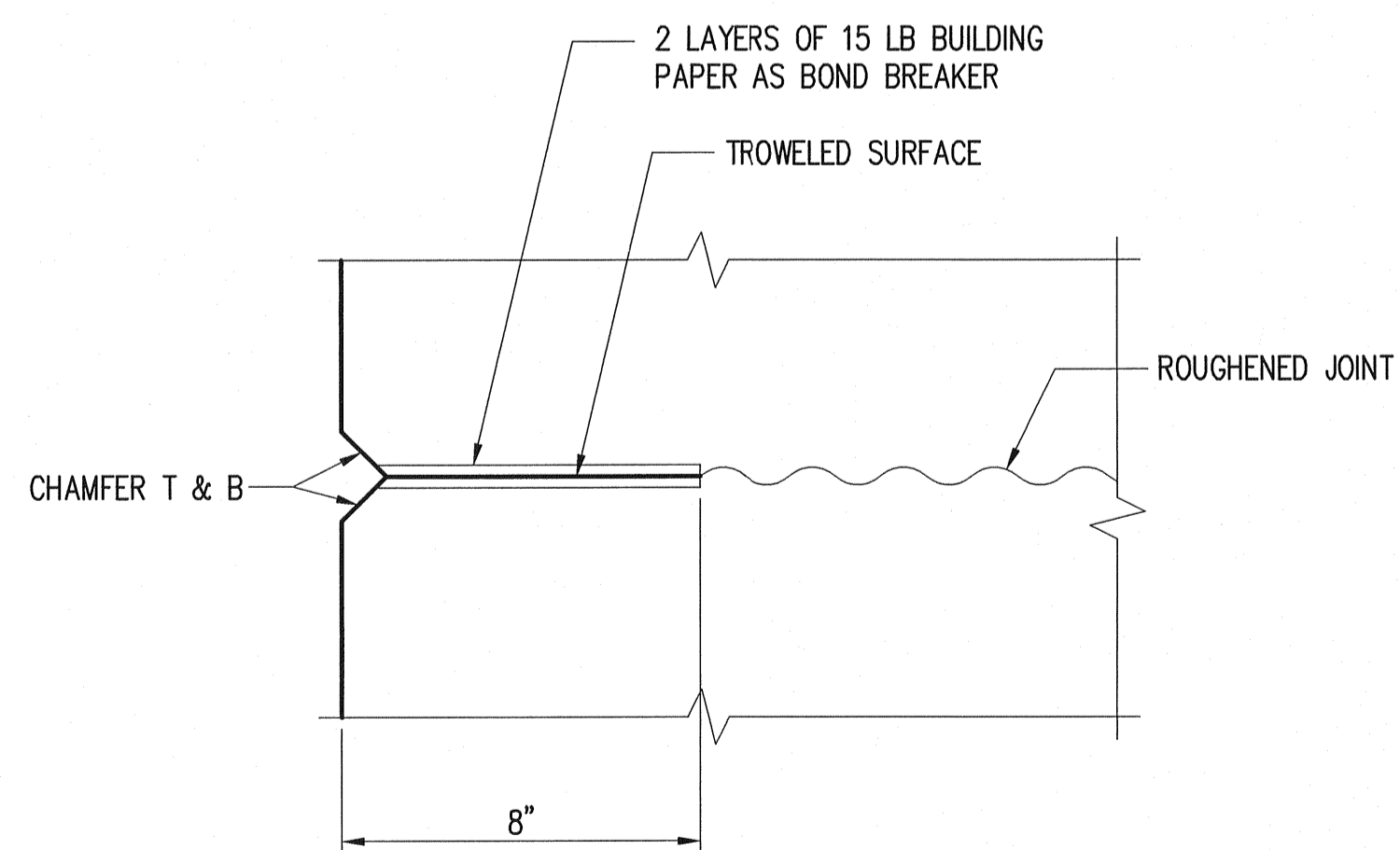
3  
S21.0



**SECTION PILE CAP AT BENT 53**

SCALE: 3/4"=1'-0"

4  
S21.0



**DETAIL**

SCALE: 3"=1'-0"

5  
S25.0

APPROVED: *H. Adams*  
 CHIEF ENGINEER - DATE: 05/21/2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

REVISION:   
 MARK:   
 BY:   
 APPROVED:   
 DATE:

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 1201 Pacific Avenue, Suite 800  
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**kprf**  
 PORT OF TACOMA U.S.A.

RJK 05/2007 - DATE  
 GGN 05/2007 - DATE  
 PROJECT ENGR. - DATE



EP-6305  
**S25.0**  
 SHEET 115 OF 215

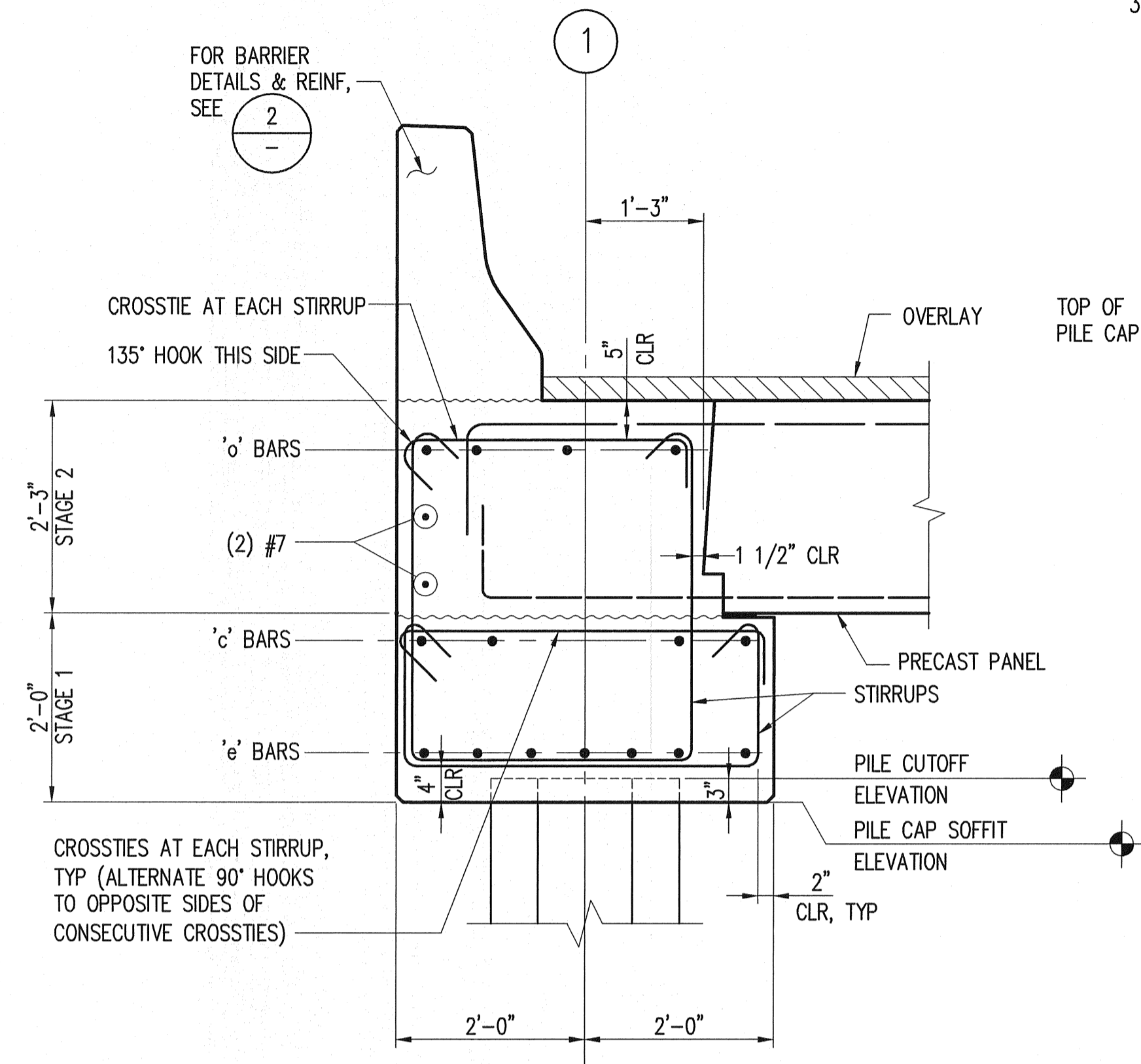
CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 PILE CAP SECTIONS 5

TOWNSHIP: 21N. RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

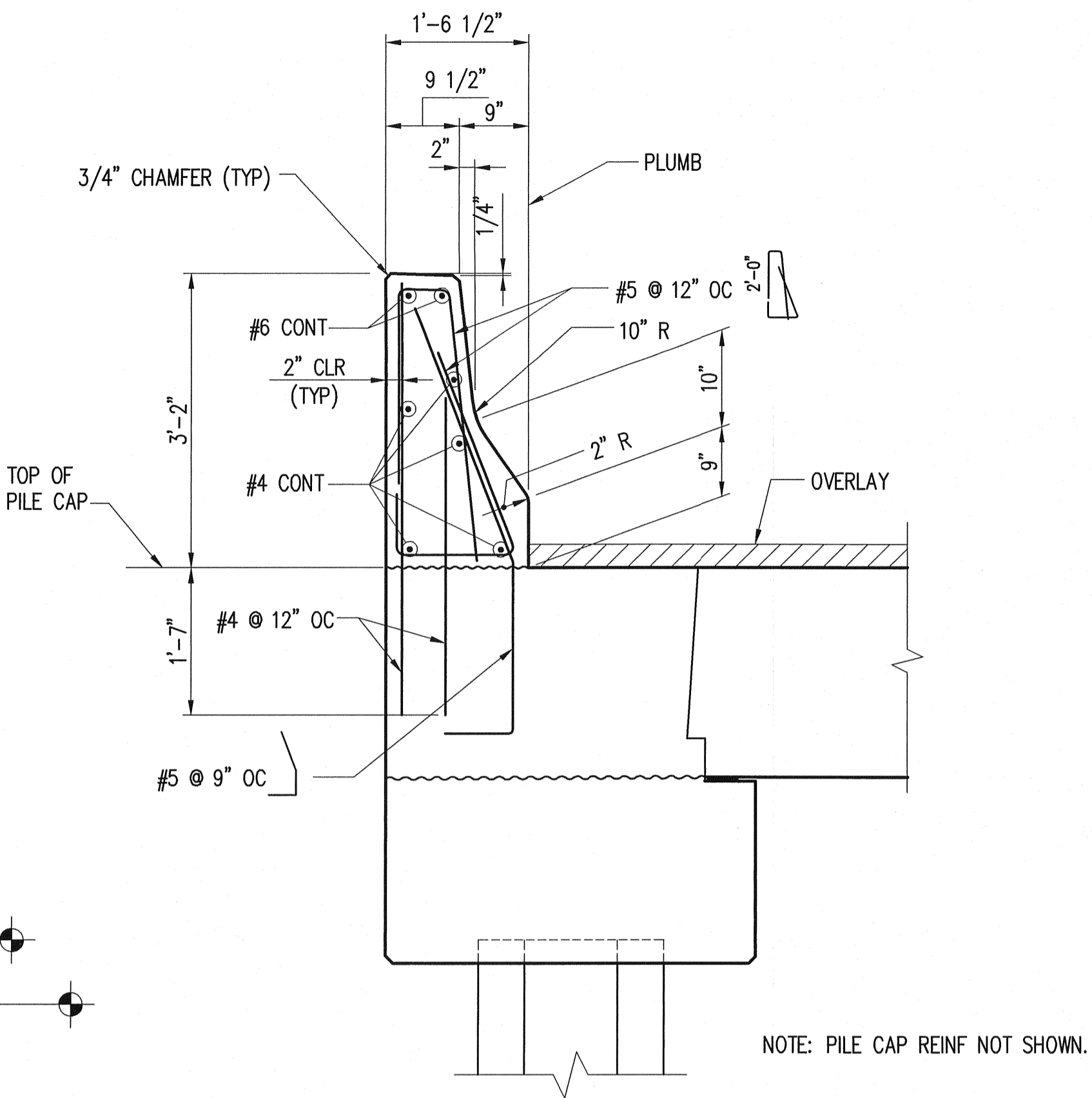
EXPIRES 9/30/08

**BID SET**



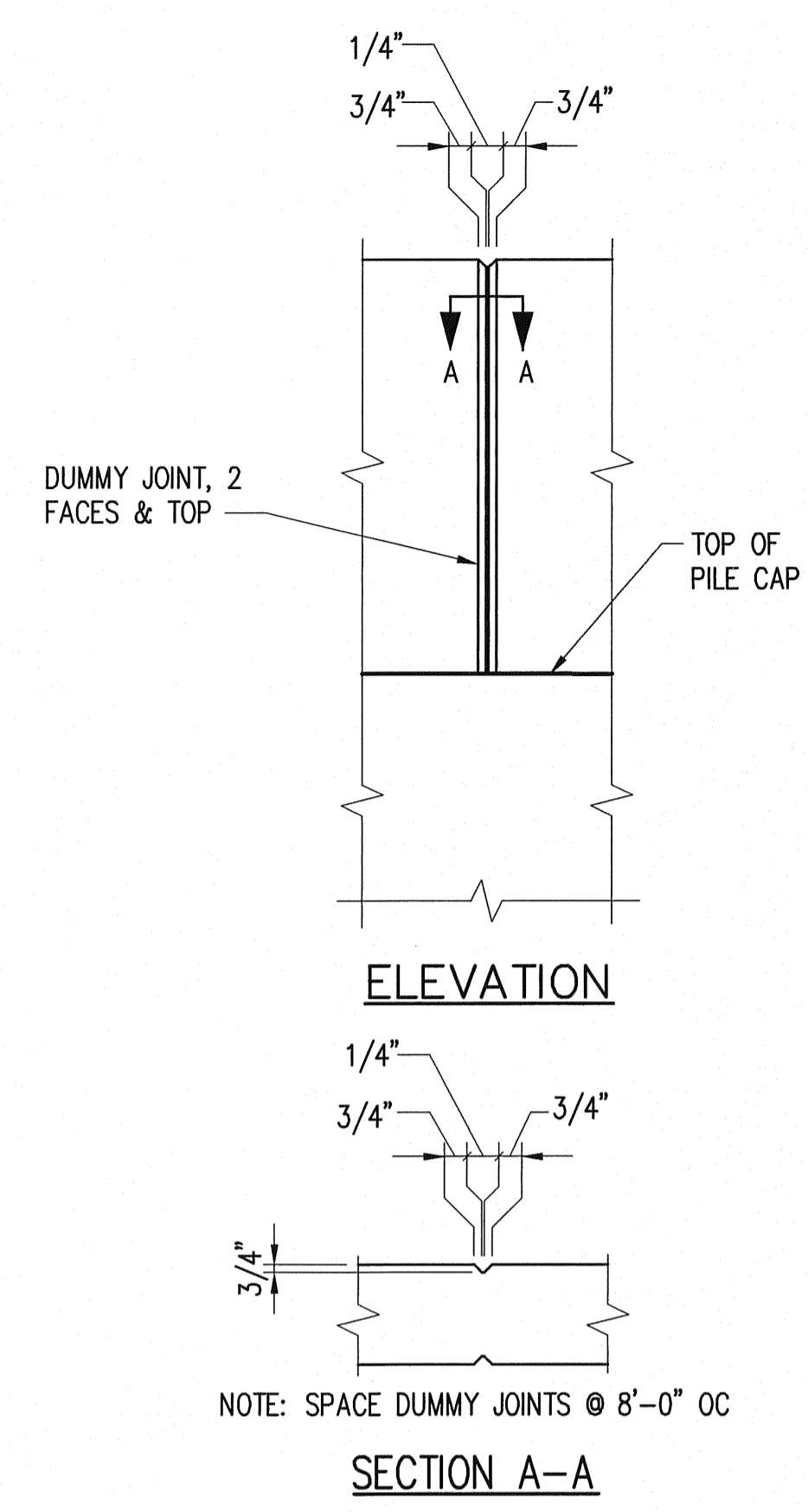
**SECTION PILE CAP AT BENT 1**  
SCALE: 3/4"=1'-0"

1  
S19.7



**SECTION - TRAFFIC BARRIER**  
SCALE: 3/4"=1'-0"

2  
S8.0, S22.0, S23.0, S25.0, S31.0

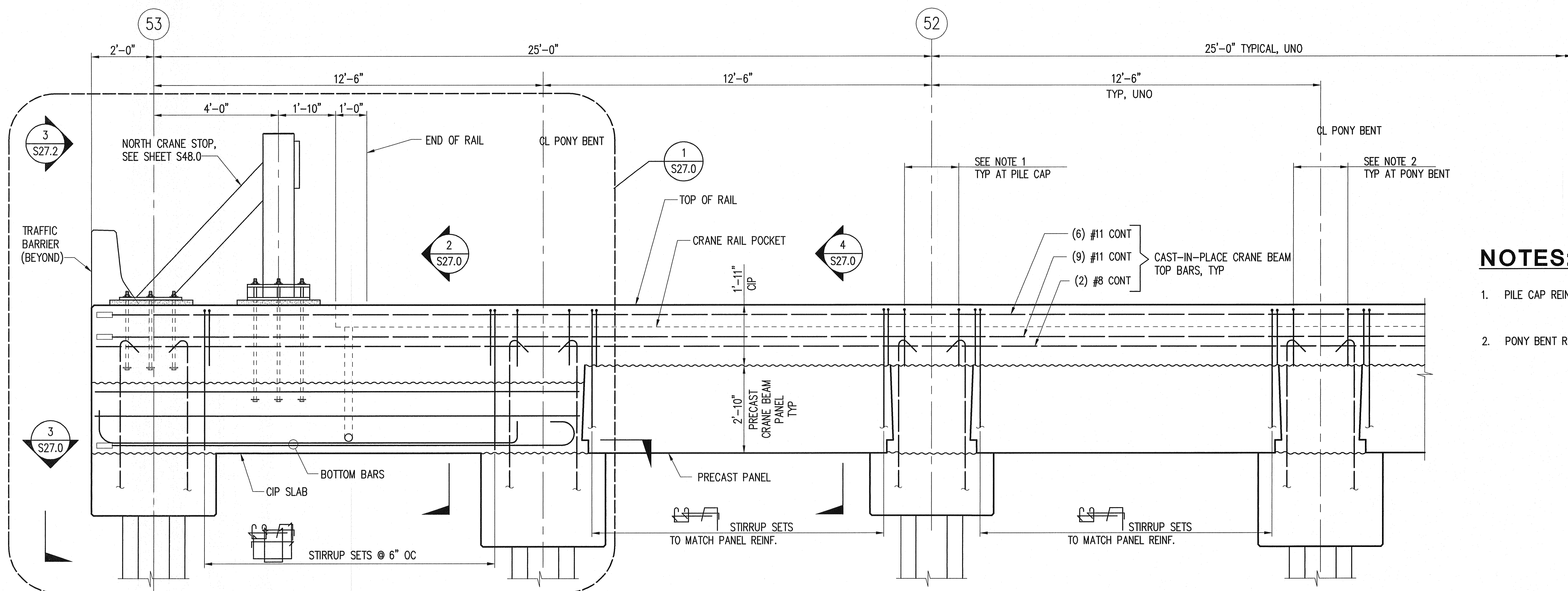


**DETAIL - TRAFFIC BARRIER JOINT**  
SCALE: 3/4"=1'-0"

3  
S31.0

<b>EP-6305</b> <b>S25.1</b> SHEET 116 OF 215 CONTRACT NUMBER: 068018 E NUMBER: E2603 PHASE: BID SET	<b>PORT OF TACOMA</b> <b>EAST BLAIR ONE WHARF</b> <b>PILE CAP SECTIONS 6</b>		TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT. DRAWING SCALE: AS SHOWN
	APPROVED 	CHIEF ENGINEER - DATE <i>H. J. Adams</i> 13 April 07	DEWANS DATE: 05-21-2007 PORT ADDRESS: 2340 F. ALEXANDER AVENUE PORT PARCEL: 17 & 18
RJK CHECKED BY - DATE GGN 05/20/07 PROJECT ENGR. - DATE PROJECT ENGR. - DATE	05/20/07 DATE 05/20/07 DATE	PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841	PORT OF TACOMA CONSULTING ENGINEERS 1201 PACIFIC AVENUE, SUITE 800 TACOMA, WASHINGTON 98402 (253) 396-0150 FAX (253) 396-082

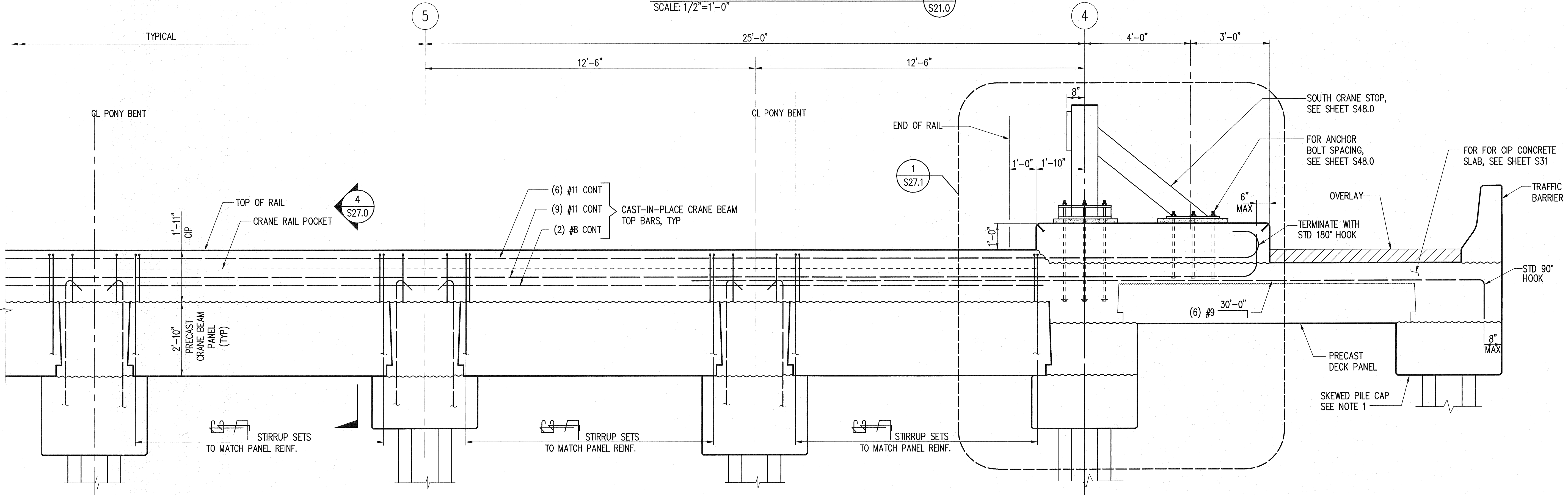
BID SET



**ELEVATION - NORTH END  
OUTBOARD CRANE BEAM**  
SCALE: 1/2"=1'-0"

**NOTES:**

- 1. PILE CAP REINFORCEMENT NOT SHOWN, SEE (2) S24.0
- 2. PONY BENT REINFORCEMENT NOT SHOWN, SEE (2) S20.0



**ELEVATION - SOUTH END  
OUTBOARD CRANE BEAM**  
SCALE: 1/2"=1'-0"

**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
OUTBOARD CRANE BEAM ELEVATION

**EP-6305**  
**S26.0**  
SHEET 117 OF 215

**BID SET**

APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 23 May 07

CONTRACT NUMBER: 068018  
E. NUMBER: E2629  
PHASE: BID SET

DATE: 05/2007  
CHECKED BY: GGN  
PROJECT ENGR. - DATE: 05/2007

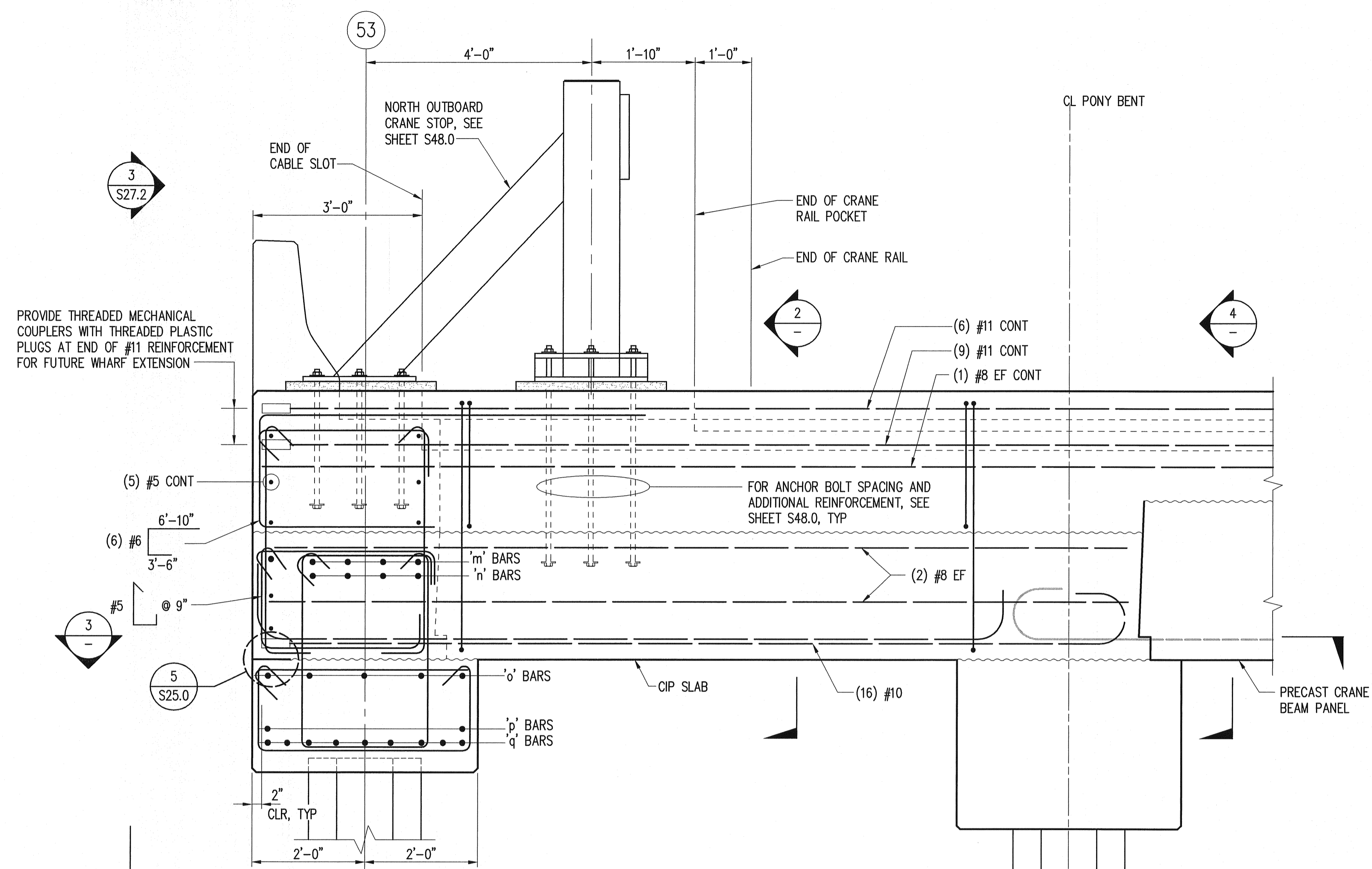
MARK: REVISION: 2  
DATE: 05/2007

PORT OF TACOMA  
PORT ADDRESS: 2340 E ALEXANDER AVENUE  
PORT PARCEL: 17 & 18

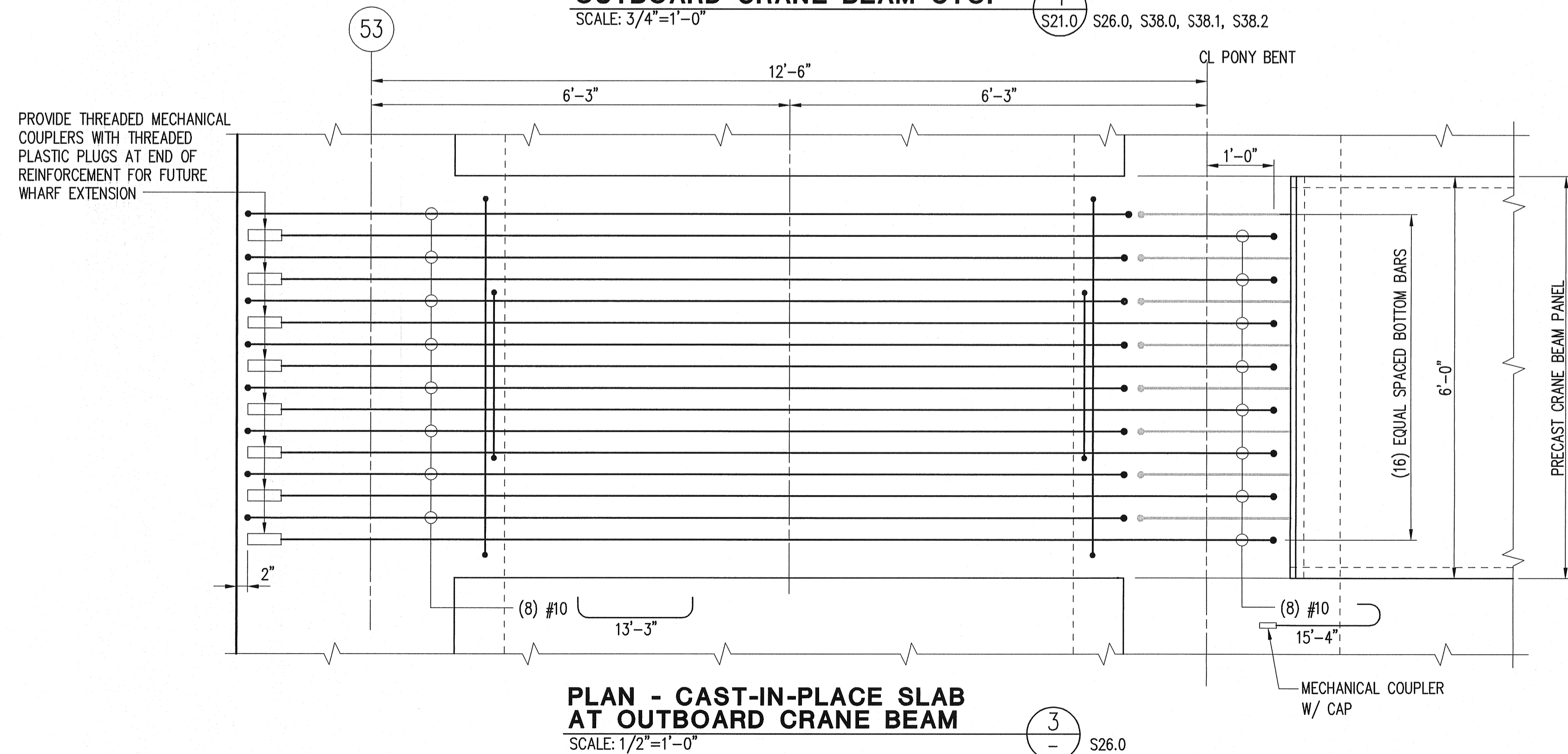
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TACOMA, WA 98401 253-383-5841

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1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-062

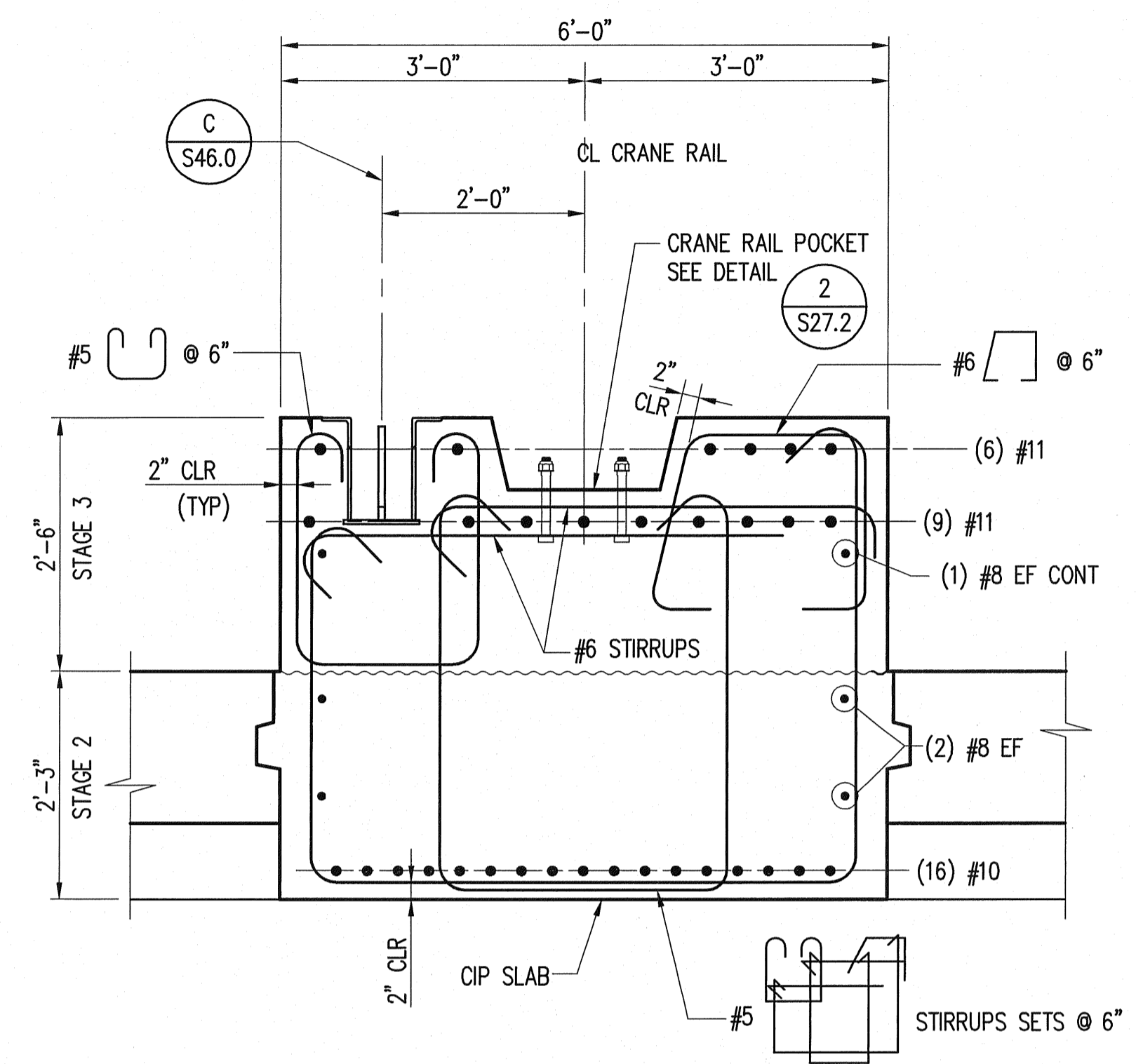
**kpfi**



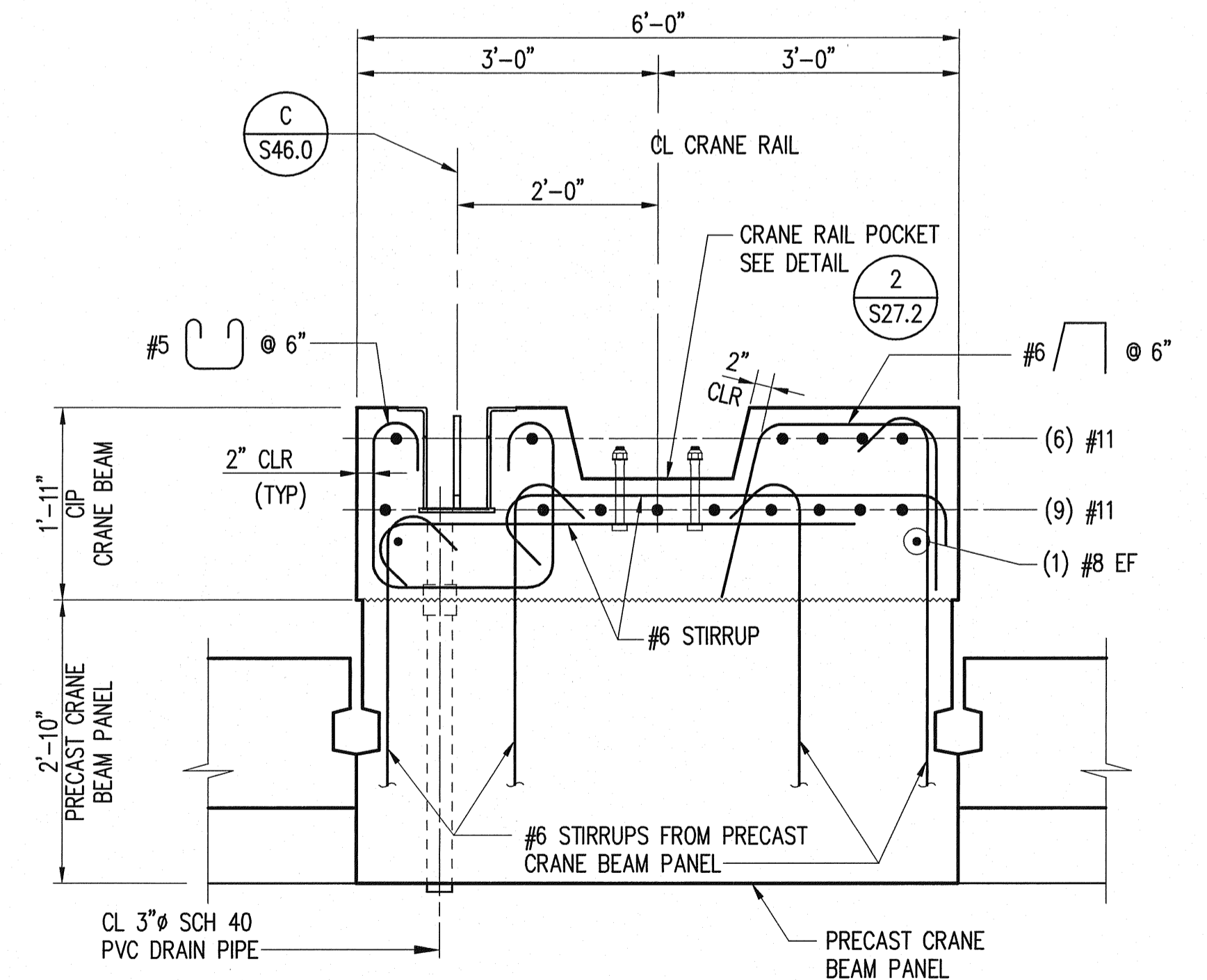
**DETAIL - NORTH END OUTBOARD CRANE BEAM STOP**  
 SCALE: 3/4"=1'-0"  
 S21.0 S26.0, S38.0, S38.1, S38.2



**PLAN - CAST-IN-PLACE SLAB AT OUTBOARD CRANE BEAM**  
 SCALE: 1/2"=1'-0"  
 S26.0



**SECTION - OUTBOARD CRANE BEAM AT CAST-IN-PLACE SLAB**  
 SCALE: 3/4"=1'-0"  
 S26.0



**SECTION - OUTBOARD CRANE BEAM AT PRECAST PANEL**  
 SCALE: 3/4"=1'-0"  
 S26.0, S27.1

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 USA

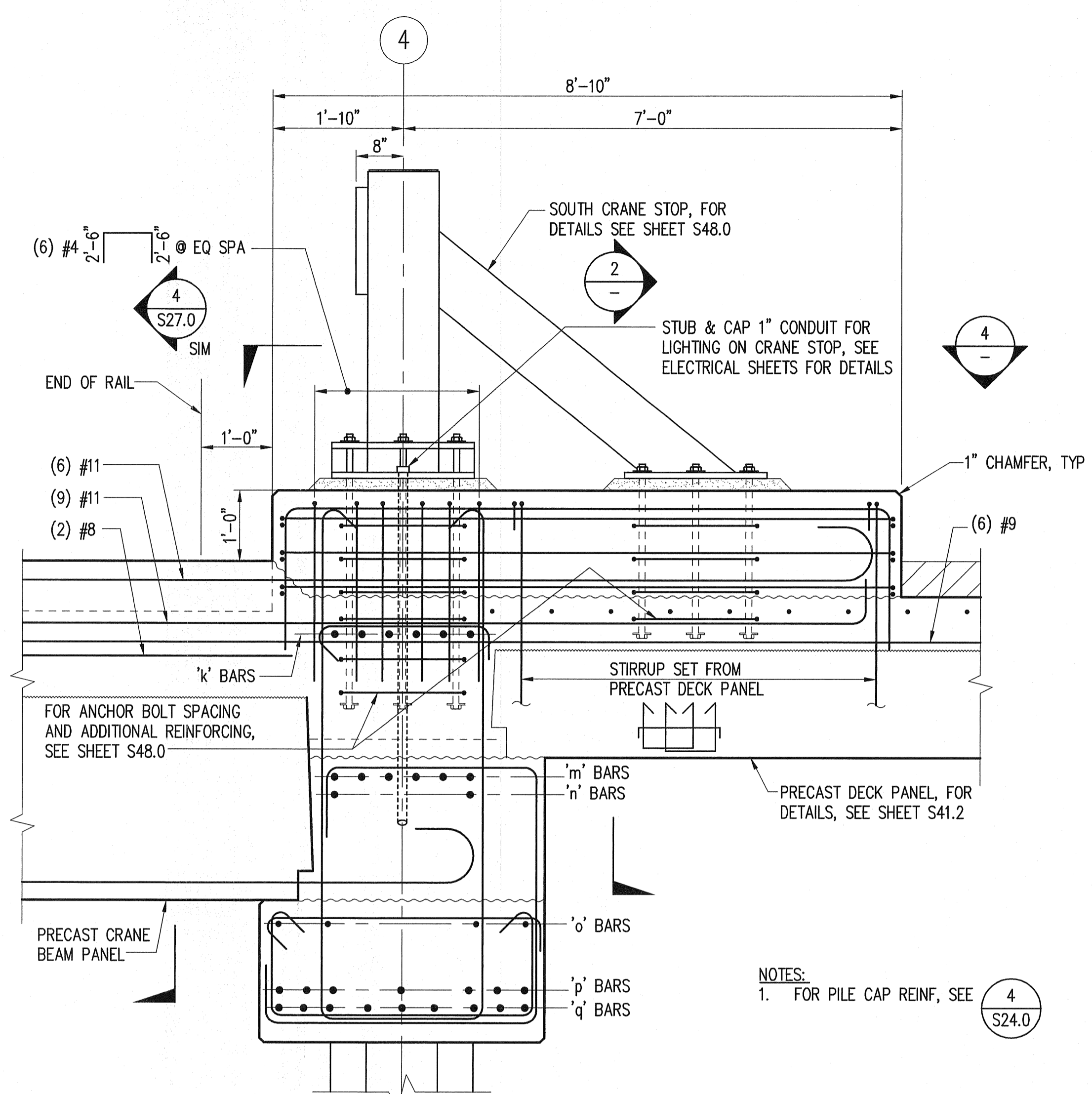
APPROVED: *H. [Signature]*  
 CHIEF ENGINEER - DATE: 23 Mar 07  
 DRAWING DATE: 05-21-2007  
 PROJECT ADDRESS: 2340 ALEXANDER AVENUE  
 PORT PARCEL 17 & 18

RJKJ 05/2007 - DATE  
 CHECKED BY - DATE  
 GGN 05/2007  
 PROJECT ENGR. - DATE

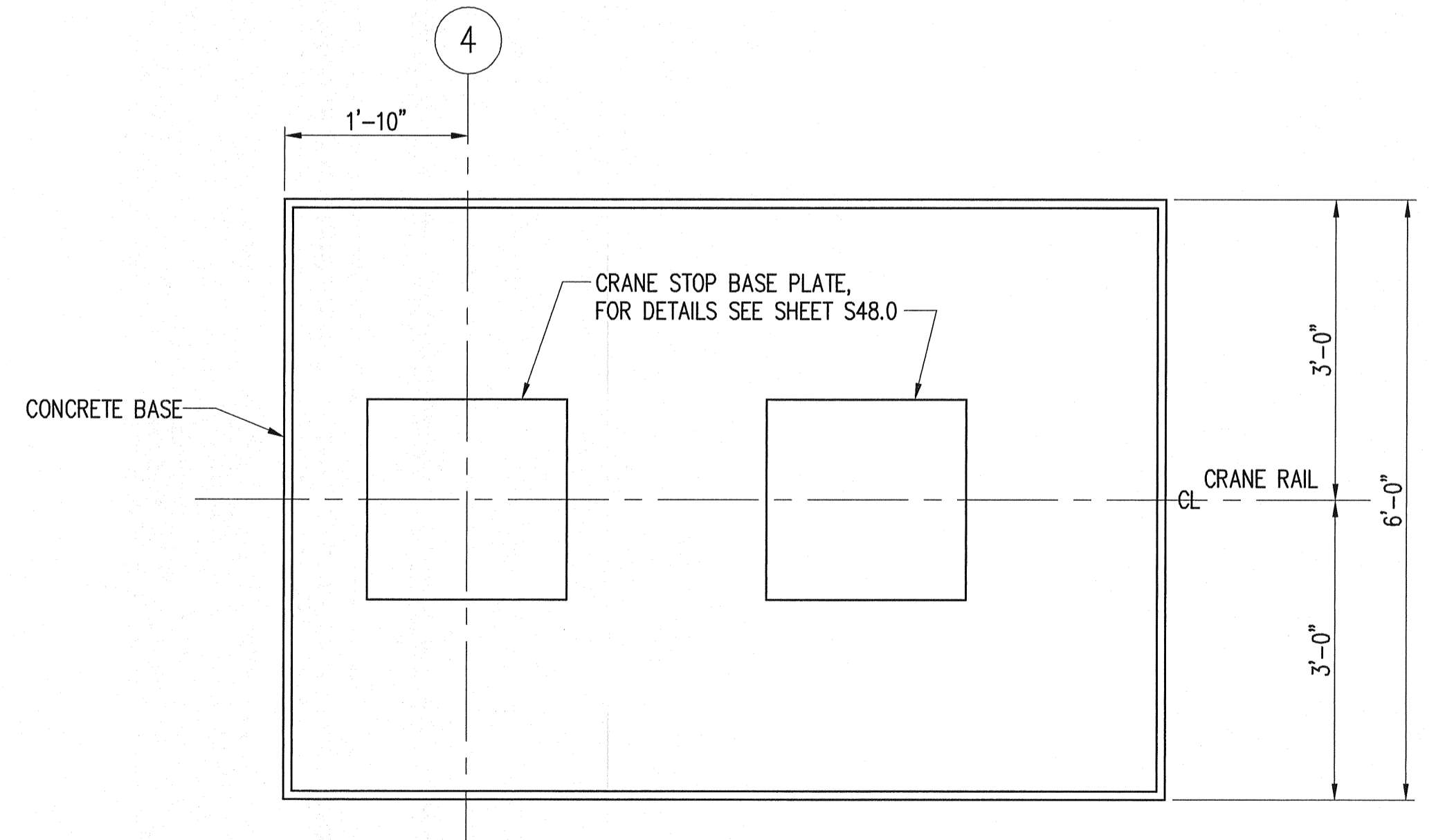
TOWNSHIP 21N, RANGE 3E, SECTION 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

EP-6305  
**S27.0**  
 SHEET 118 OF 215  
 CONTRACT NUMBER: 068018  
 E. NUMBER: E2823  
 PHASE: BID SET

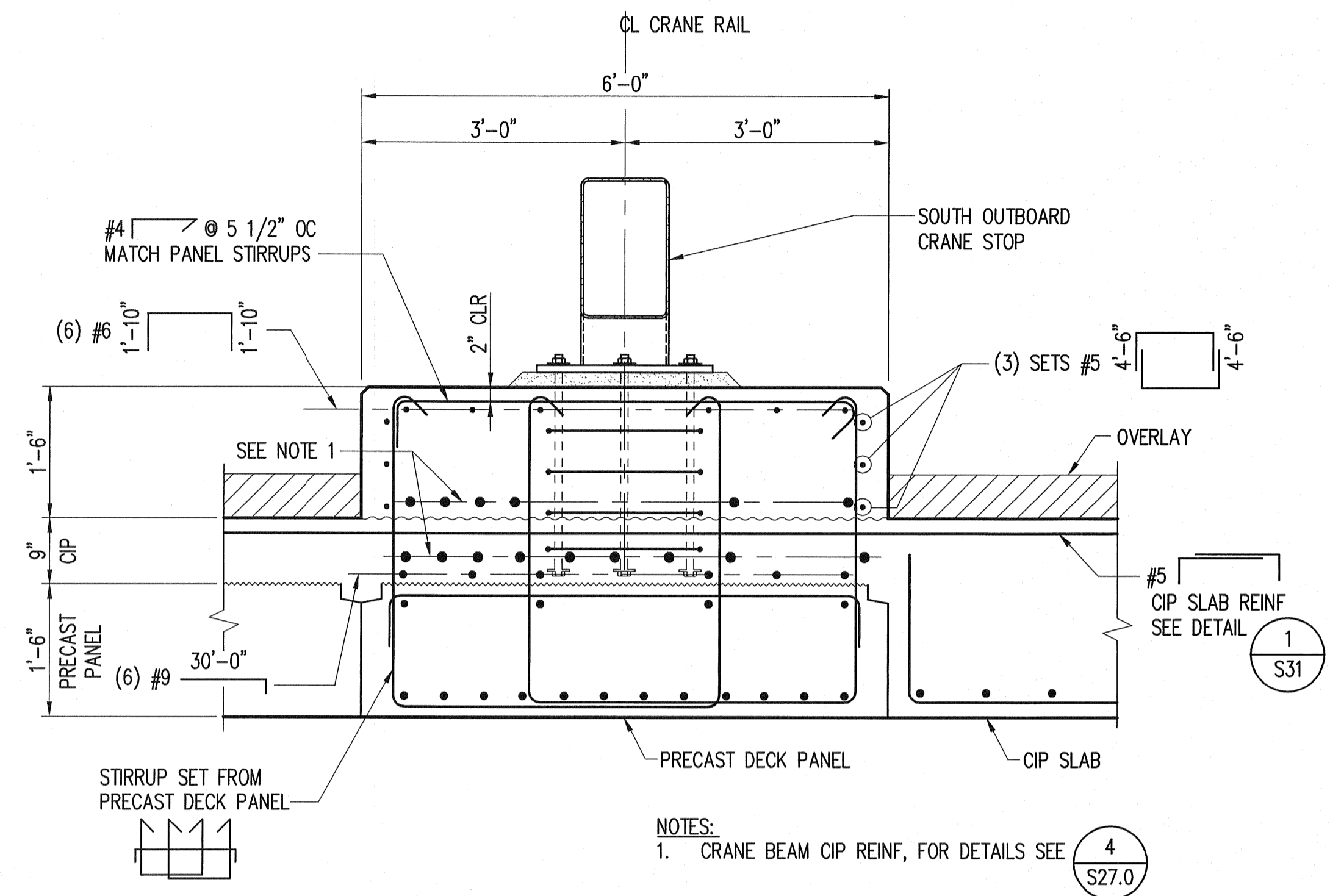
**BID SET**



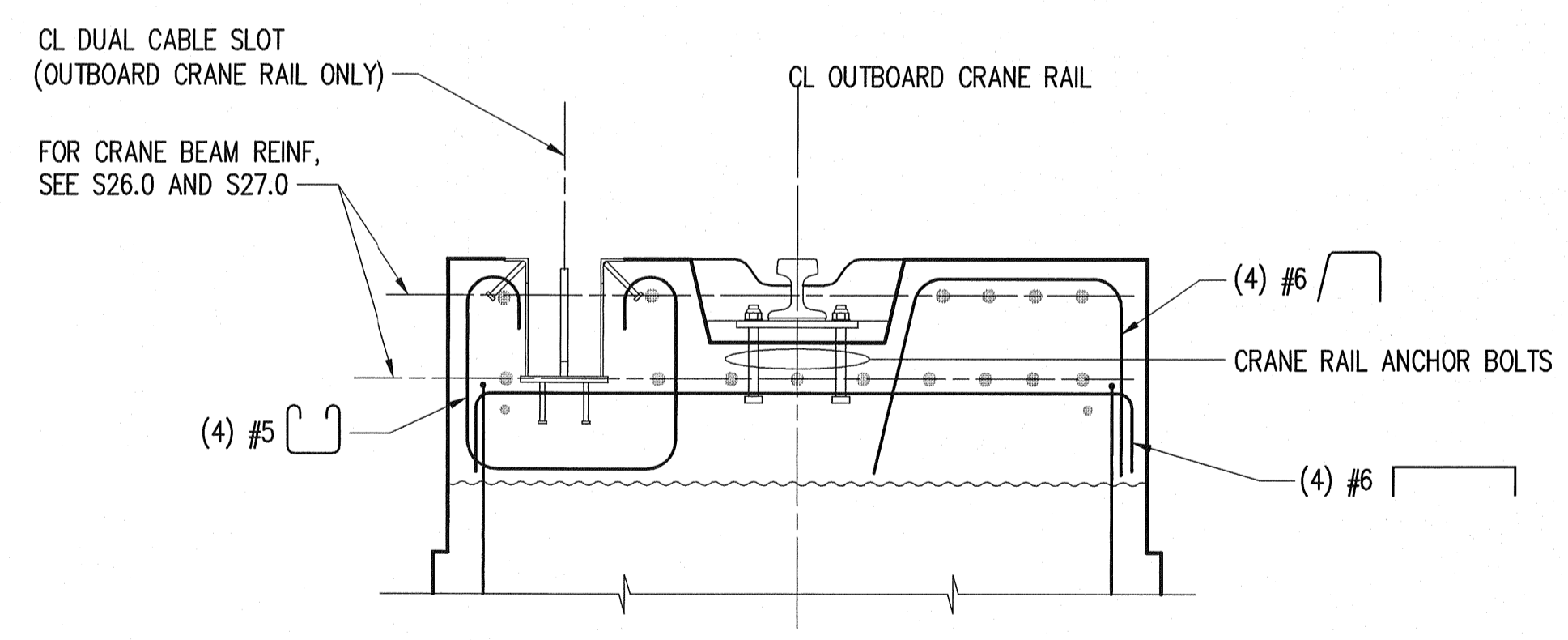
**OUTBOARD CRANE BEAM STOP SOUTH END DETAIL**  
 SCALE: 3/4"=1'-0" (1) S26.0 S31.0



**PLAN - SOUTH CRANE STOP BASE**  
 SCALE: 3/4"=1'-0" (4)



**OUTBOARD CRANE BEAM STOP SOUTH END SECTION**  
 SCALE: 3/4"=1'-0" (2)



**DETAIL**  
 SCALE: 3/4"=1'-0" (5) S19.0

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**PORT OF TACOMA USA** **kptfi**

APPROVED: *H. Johnson*  
 CHIEF ENGINEER - DATE: 2/24/07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

EP-6305  
**S27.1**  
 SHEET 119 OF 215  
 CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

**PORT OF TACOMA**  
 EAST BLAIR ONE WHARF  
 OUTBOARD CRANE BEAM  
 SECTIONS AND DETAILS 2

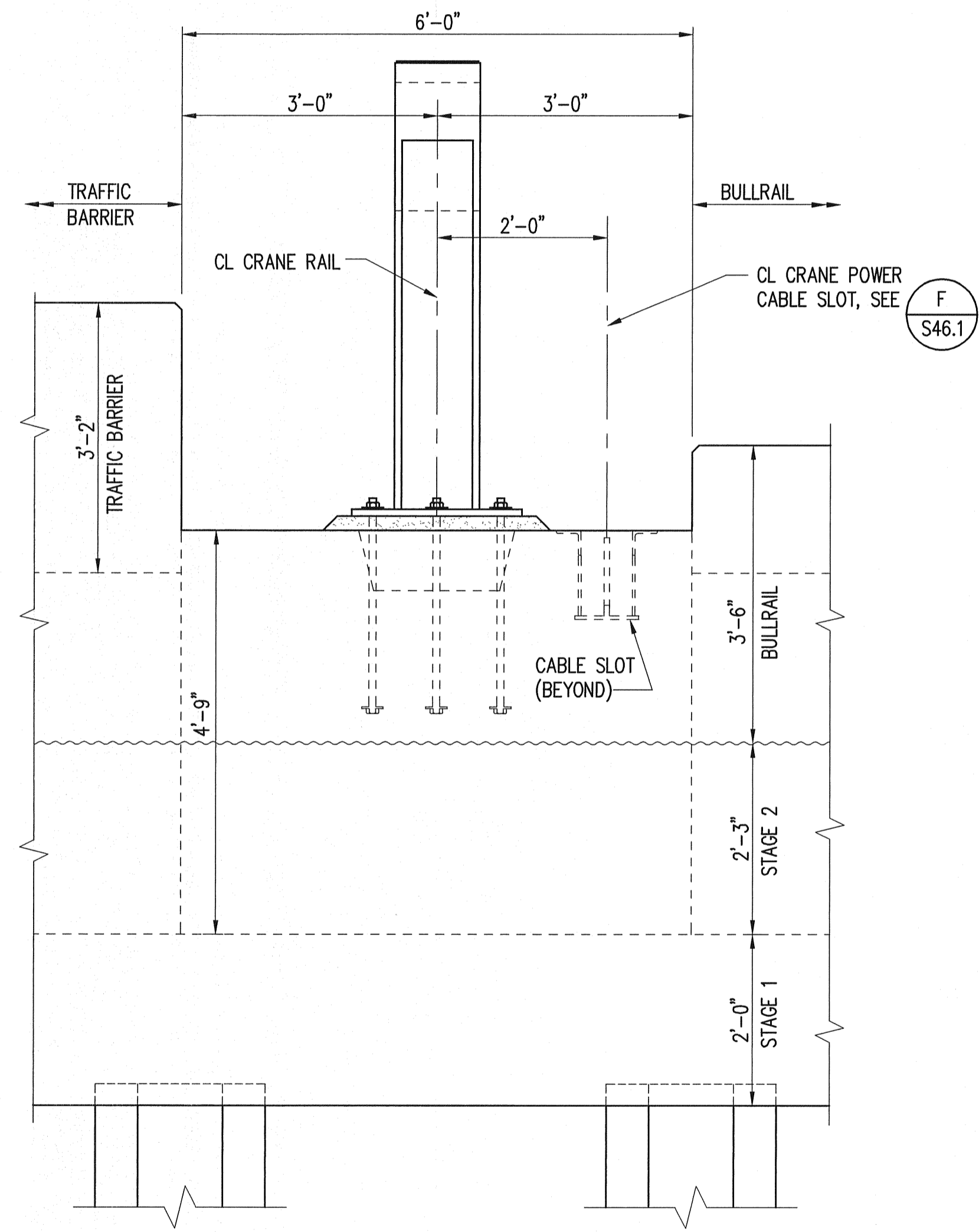
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

EXPIRES 9/10/08

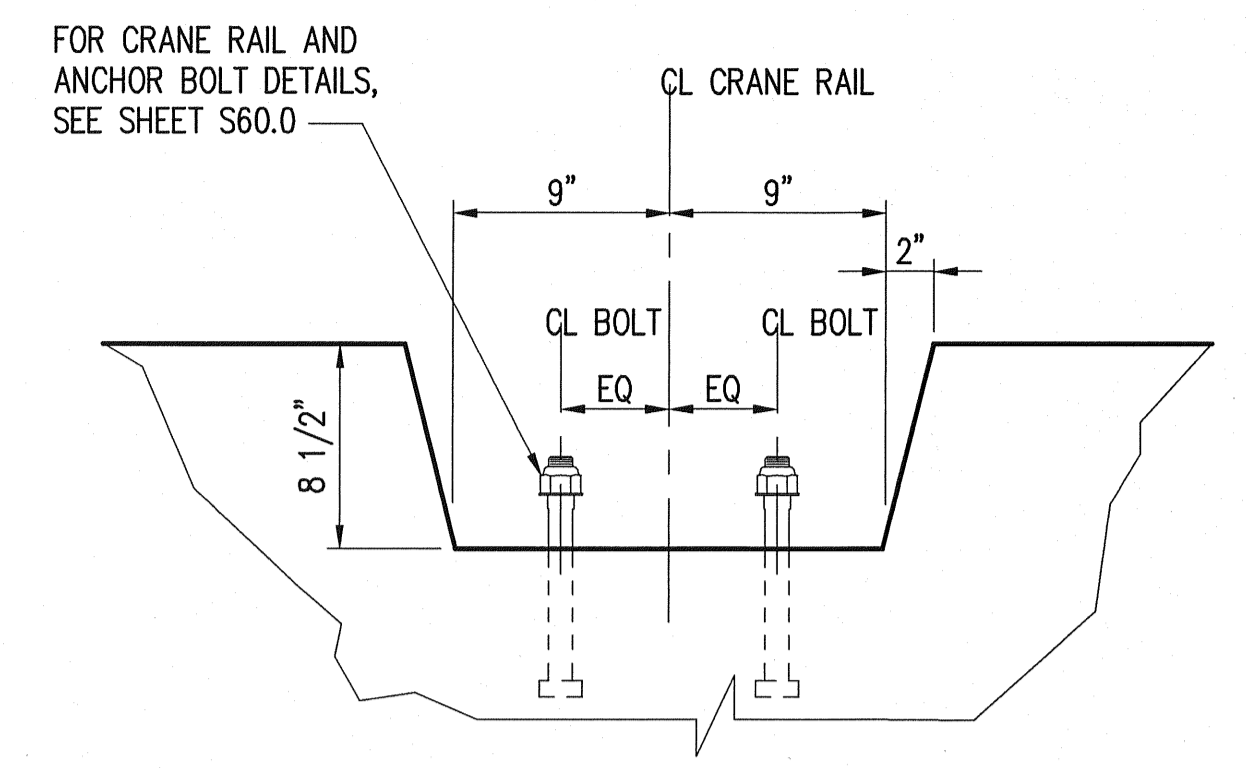
REVISION MARK  
 05/2007 - DATE  
 CHECKED BY: RJK  
 05/2007 - DATE  
 GSN PROJECT ENGR. - DATE

BY: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

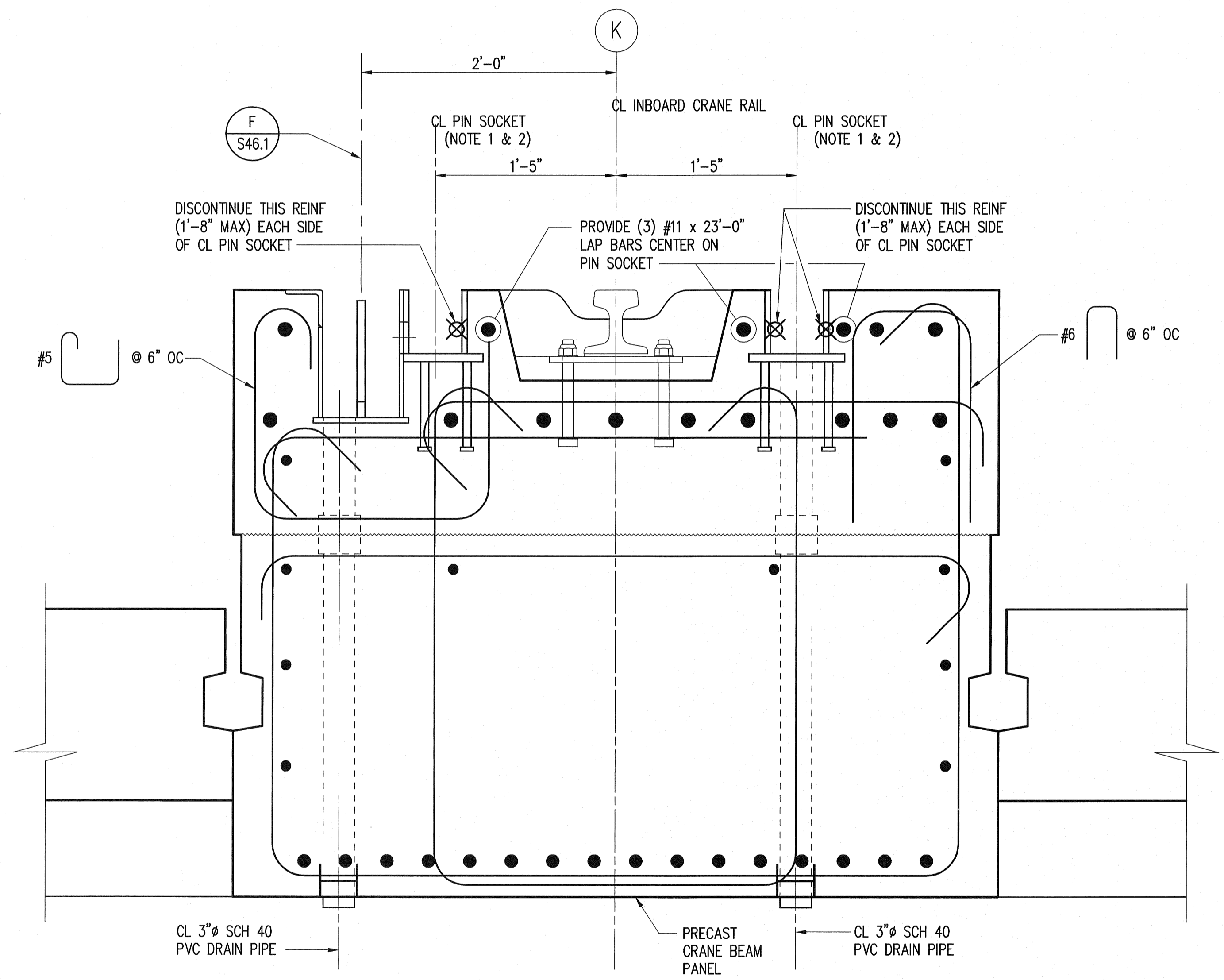
BID SET



**ELEVATION - NORTH END  
OUTBOARD CRANE BEAM STOP** 3  
SCALE: 3/4"=1'-0" S26.0 S27.0



**DETAIL - CRANE RAIL POCKET** 2  
SCALE: 1 1/2"=1'-0" S27.0 S29.0, S31.5

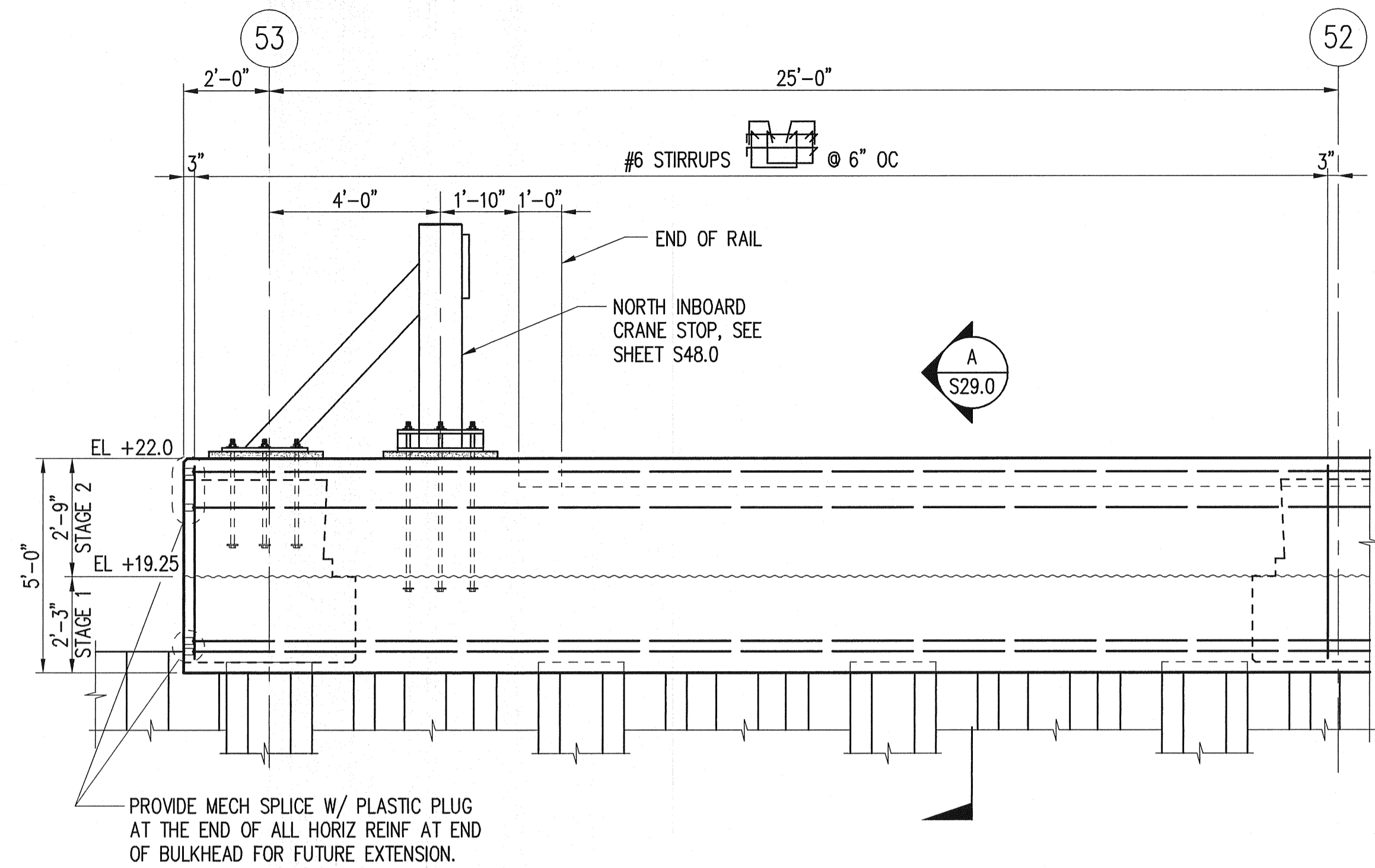


**SECTION - OUTBOARD CRANE  
BEAM AT PIN SOCKETS** 4  
SCALE: 1 1/2"=1'-0"

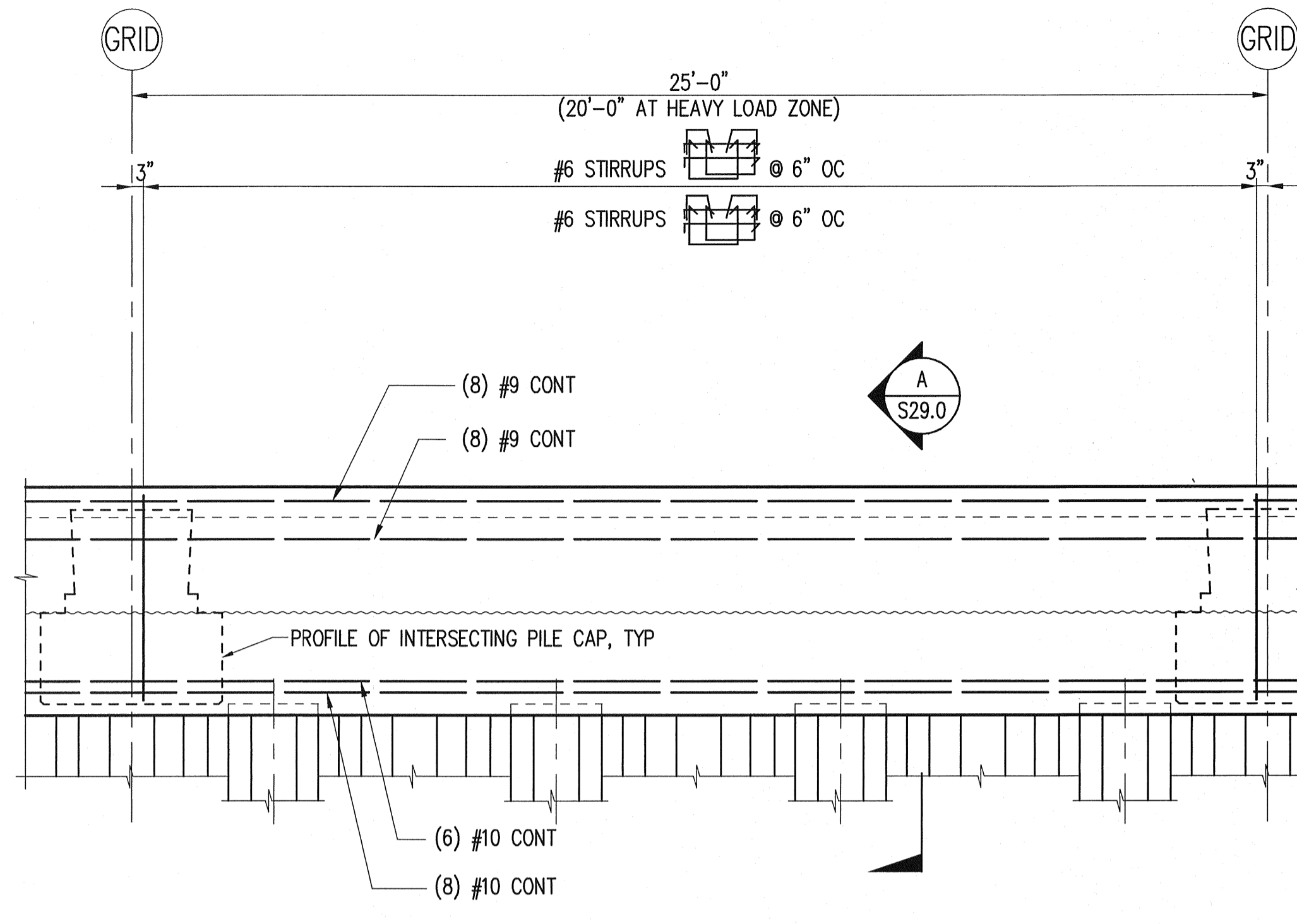
- NOTES:**
- FOR PIN SOCKET LOCATIONS SEE SHEETS S8.0 AND S11.0.
  - FOR PIN SOCKET DETAILS SEE SHEET S47.0.

	PORT OF TACOMA TACOMA, WA 98401 253-383-5841		Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-0162
	APPROVED <i>H. J. Adams</i> CHIEF ENGINEER 23447	CHECKED BY - DATE GSN 05/2007 PROJECT ENGR. - DATE	MARK REVISION RJK 05/2007 DATE GSN 05/2007 DATE PROJECT ENGR. - DATE
DRAWING DATE: 05-21-2007 PORT ADDRESS: 2340 E. ALEXANDER AVENUE PORT PARCEL: 17 & 18			
<b>PORT OF TACOMA</b> <b>EAST BLAIR ONE WHARF</b> <b>CRANE BEAM MISCELLANEOUS</b> <b>SECTIONS AND DETAILS</b>			
<b>EP-6305</b> <b>S27.2</b> SHEET 120 OF 215 CONTRACT NUMBER: 068018 E. NUMBER: E2623 PHASE: BID SET			
TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT.: DRAWING SCALE: AS SHOWN			

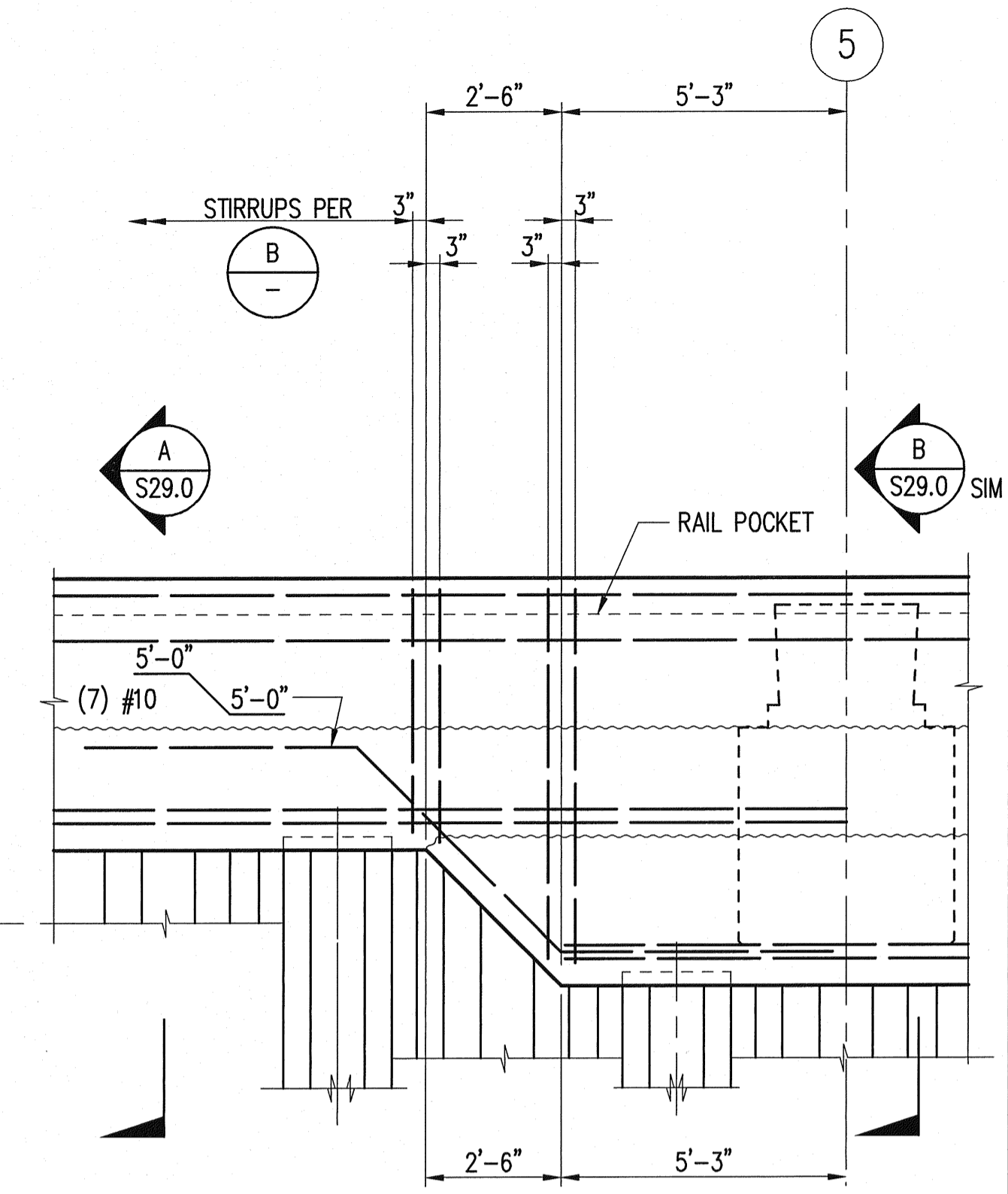
**BID SET**



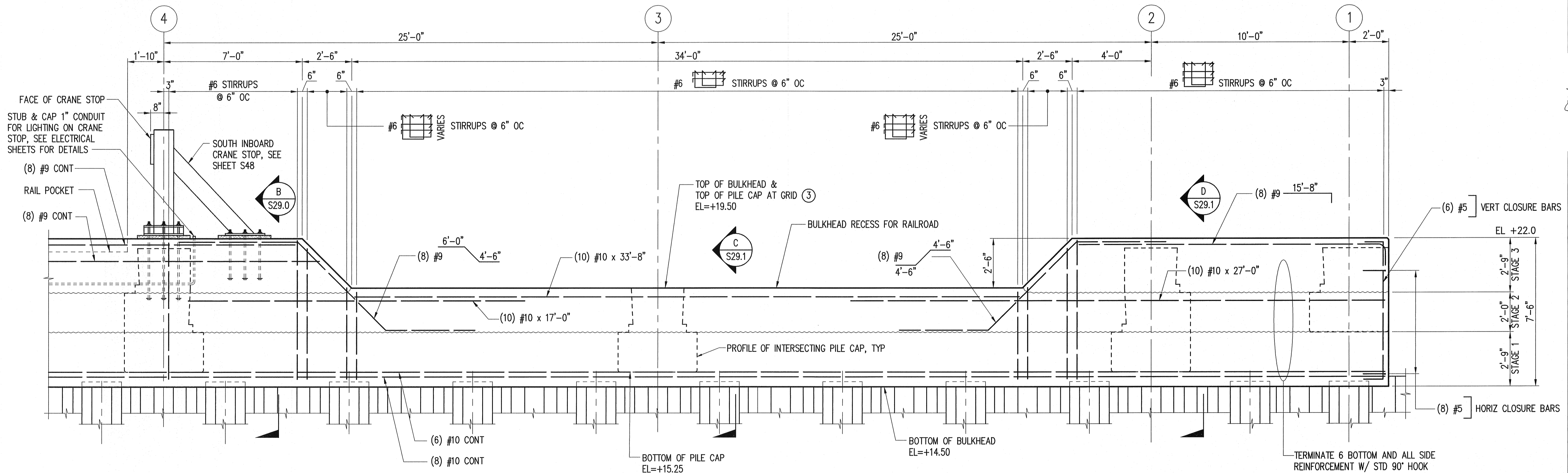
**BULKHEAD ELEVATION - NORTH END**  
SCALE: 3/8"=1'-0"



**TYPICAL BULKHEAD ELEVATION**  
SCALE: 3/8"=1'-0" S5.0, S6.0, S7.0



**BULKHEAD ELEVATION - TRANSITION**  
SCALE: 3/8"=1'-0"

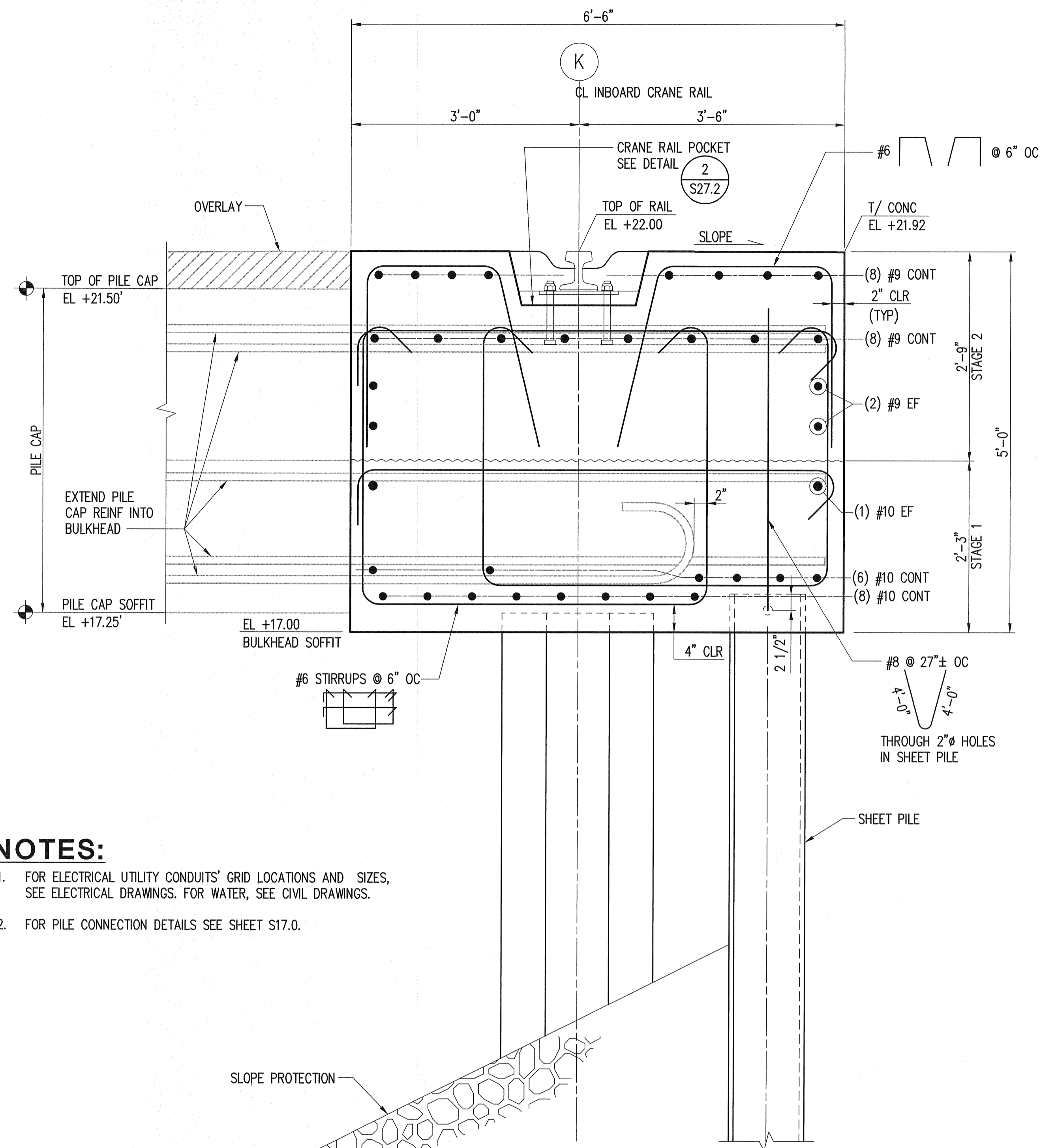


**BULKHEAD ELEVATION - SOUTH END**  
SCALE: 3/8"=1'-0"

**NOTES:**

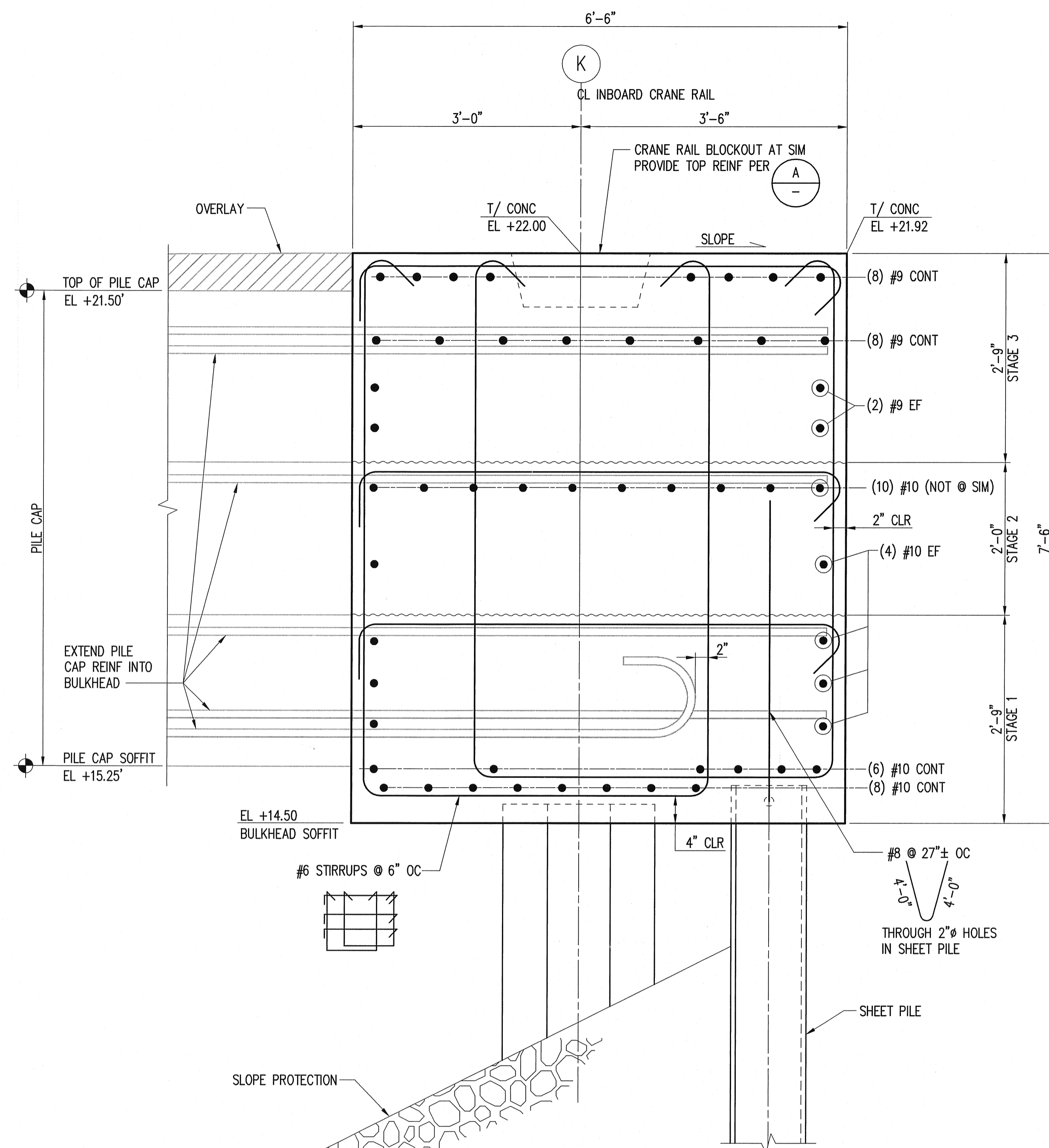
1. REINFORCEMENT ON SIDES OF BULKHEAD ARE NOT SHOWN FOR CLARITY. SEE SHEETS S29.0 AND S29.1 FOR SIDE REINFORCEMENT. LAP SIDE REINFORCEMENT WITH REINFORCING SHOWN ON ELEVATION.
2. FOR STIRRUP DETAILS SEE SHEET S29.0 AND S29.1
3. FOR REINFORCEMENT AT PIN SOCKETS SEE S29.2

APPROVED: *H. Adams* CHIEF ENGINEER - DATE: 23 Apr 07  
 PORT ADDRESS: 2340 E ALEXANDER AVENUE PORT PARCEL 17 & 18  
 TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT. DRAWING SCALE: AS SHOWN  
 CONTRACT NUMBER: 068018 E NUMBER: E2623 PHASE: BID SET  
 PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax: (253) 396-0162  
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 GGN - PROJECT ENGR.



**SECTION BULKHEAD REINFORCEMENT**  
SCALE: 1"=1'-0"

A  
S28.0



**SECTION BULKHEAD REINFORCEMENT**  
SCALE: 1"=1'-0"

B  
S28.0

**NOTES:**

1. FOR ELECTRICAL UTILITY CONDUITS' GRID LOCATIONS AND SIZES, SEE ELECTRICAL DRAWINGS. FOR WATER, SEE CIVIL DRAWINGS.
2. FOR PILE CONNECTION DETAILS SEE SHEET S17.0.

EP-6305  
**S29.0**  
SHEET 122 OF 215  
CONTRACT NUMBER: 068018  
E. NUMBER: E2623  
PHASE: BID SET

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
BULKHEAD SECTIONS AND DETAILS 1

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ.  
DRAWING SCALE: AS SHOWN

APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 2/24/07  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT PARCEL: 17 & 18

REVISION: MARK REVISION  
CHECKED BY: GGN - DATE: 05/20/07  
PROJECT ENGR. - DATE: 05/20/07

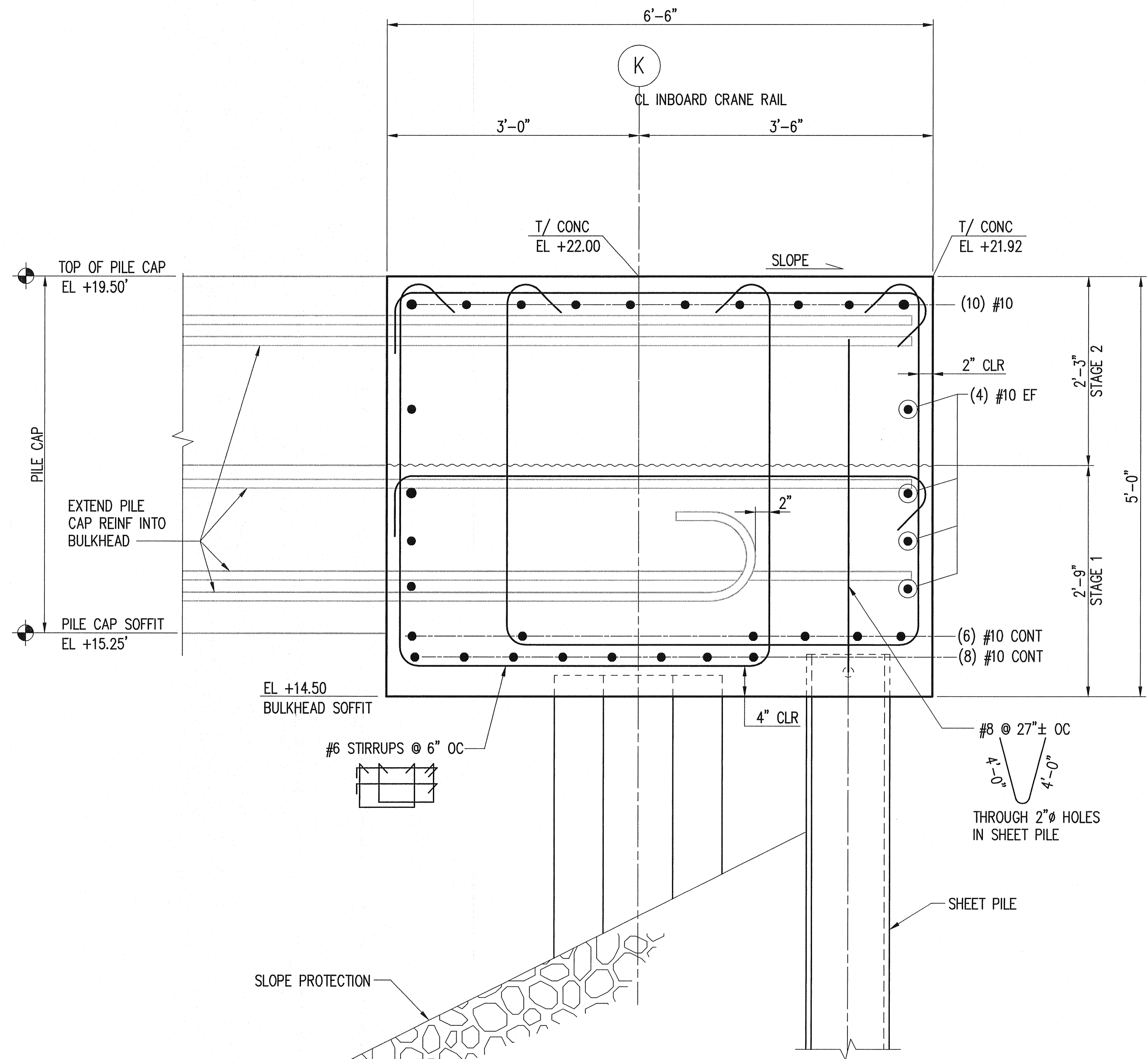
PORT OF TACOMA  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

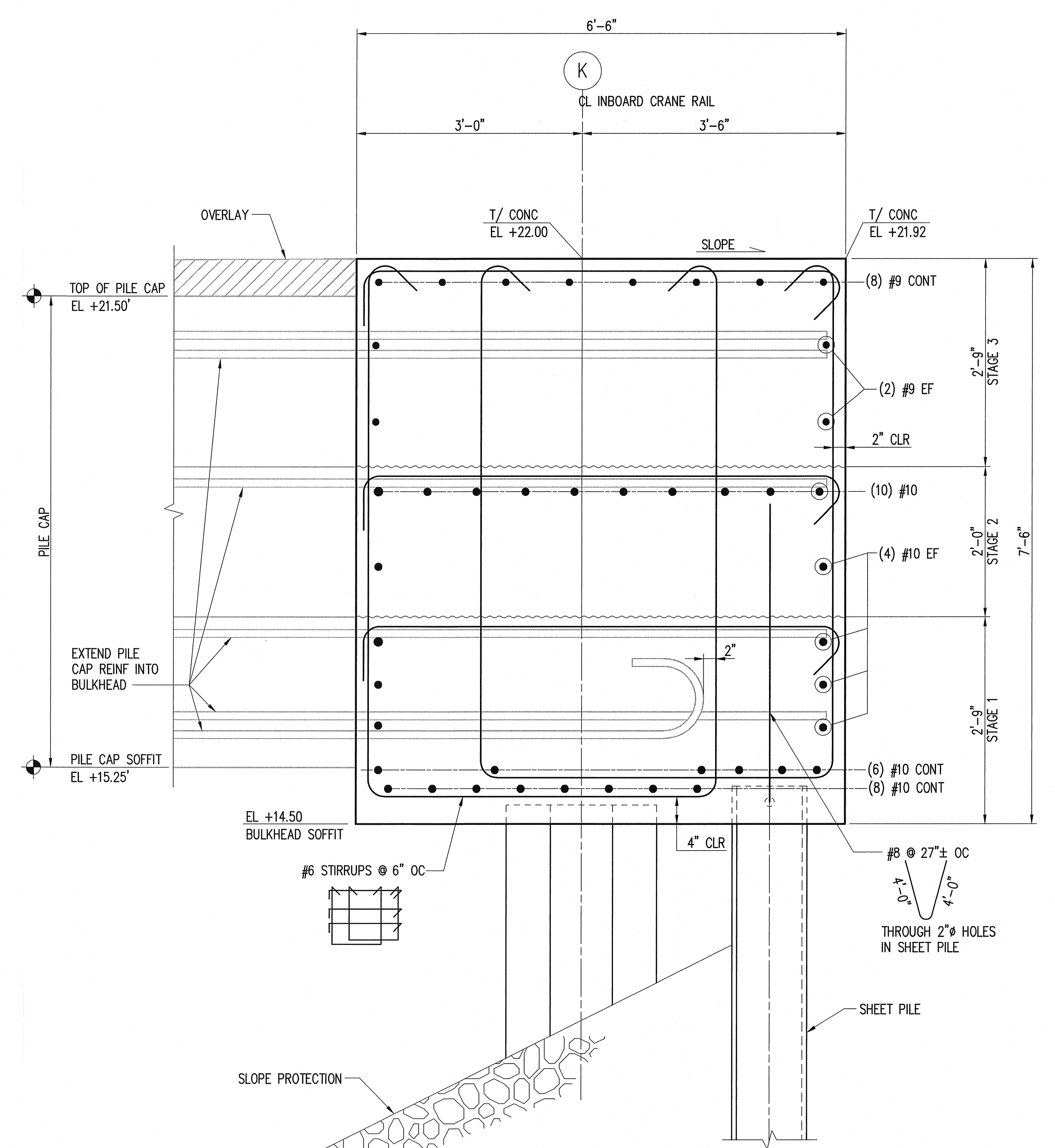
**k p f i**

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

BID SET



**SECTION BULKHEAD REINFORCEMENT**  
SCALE: 1"=1'-0"  
C  
S28.0



**SECTION BULKHEAD REINFORCEMENT**  
SCALE: 1"=1'-0"  
D  
S28.0

EP-6305  
**S29.1**  
SHEET 123 OF 215  
CONTRACT NUMBER: 068018  
NUMBER: E2623  
PHASE: BID SET

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
BULKHEAD SECTIONS AND DETAILS 2

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
COUNTY: DULWICH HORIZ.  
DRAWING SCALE: AS SHOWN

APPROVED: *H. Adams*  
DATE: 05/21/2007  
DRAWING PASS: 23 MAY 07  
PROJECT: PARCEL 17 & 18

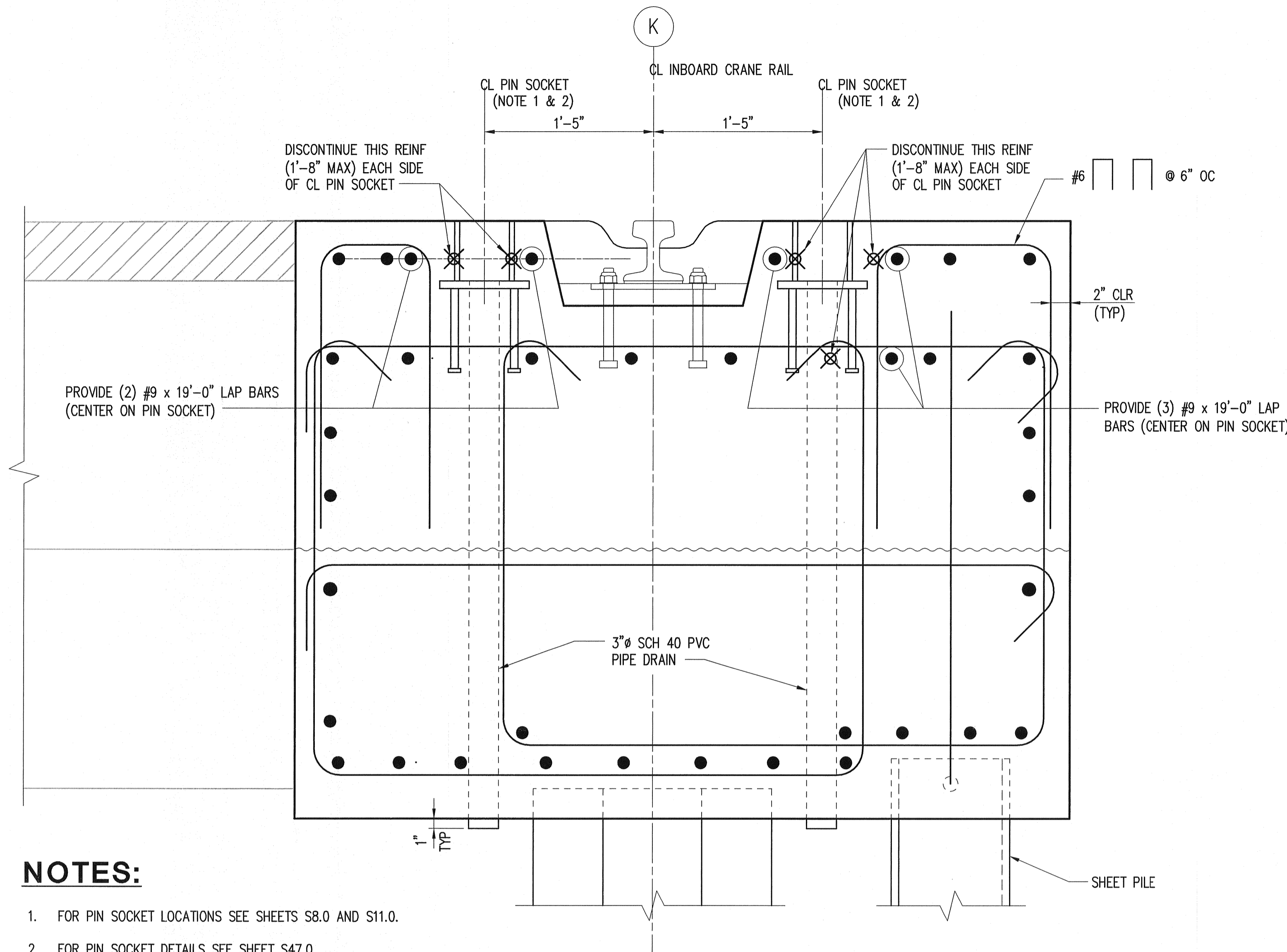
CHIEF ENGINEER - DATE: 05/21/2007  
PROJECT ENGR. - DATE: 05/2007

REVISION: MARK REVISION  
BY: DATE: APPROVED: DATE:

PORT OF TACOMA U.S.A.  
PORT OF TACOMA P.O. BOX 1837  
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**kpif**

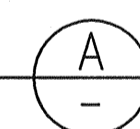
BID SET



**NOTES:**

1. FOR PIN SOCKET LOCATIONS SEE SHEETS S8.0 AND S11.0.
2. FOR PIN SOCKET DETAILS SEE SHEET S47.0.
3. FOR TYPICAL PILE CAP REINFORCEMENT NOT SHOWN, SEE SHEET S29.0.

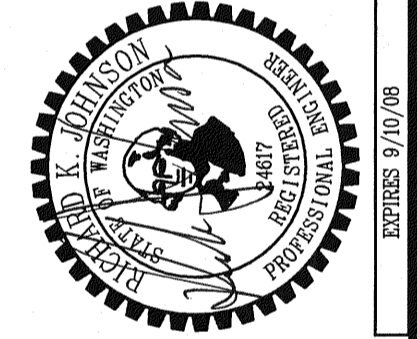
**BULKHEAD REINFORCEMENT SECTION AT PIN SOCKETS**  
SCALE: 1 1/2"=1'-0"



**BID SET**

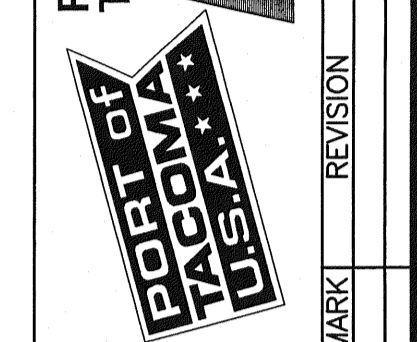
EP-6305  
**S29.2**  
 SHEET 124 OF 215  
 CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 BULKHEAD SECTIONS AND DETAILS 3

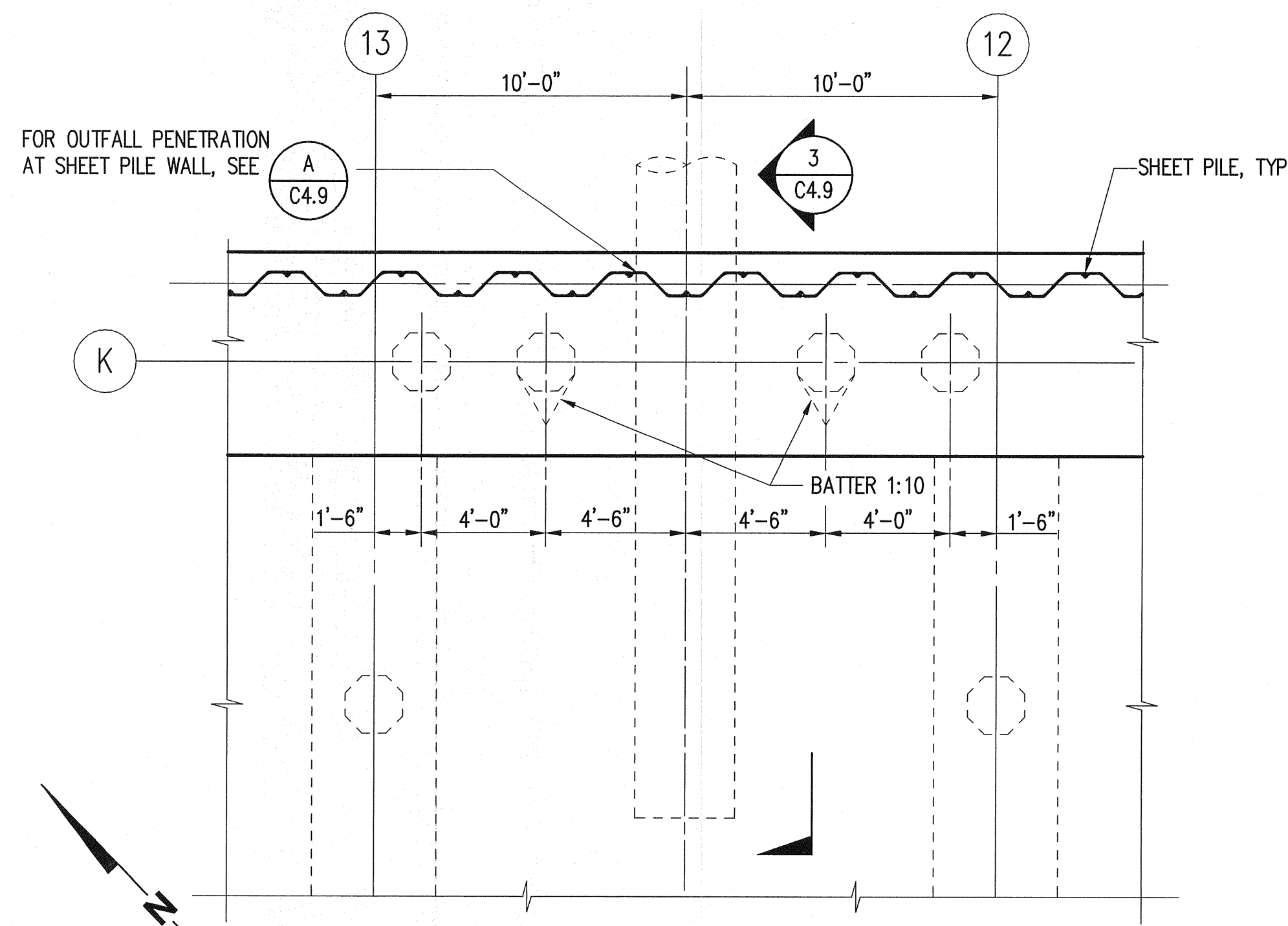


APPROVED  
*H. H. H. H.*  
 CHIEF ENGINEER - DATE  
 23.440.07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

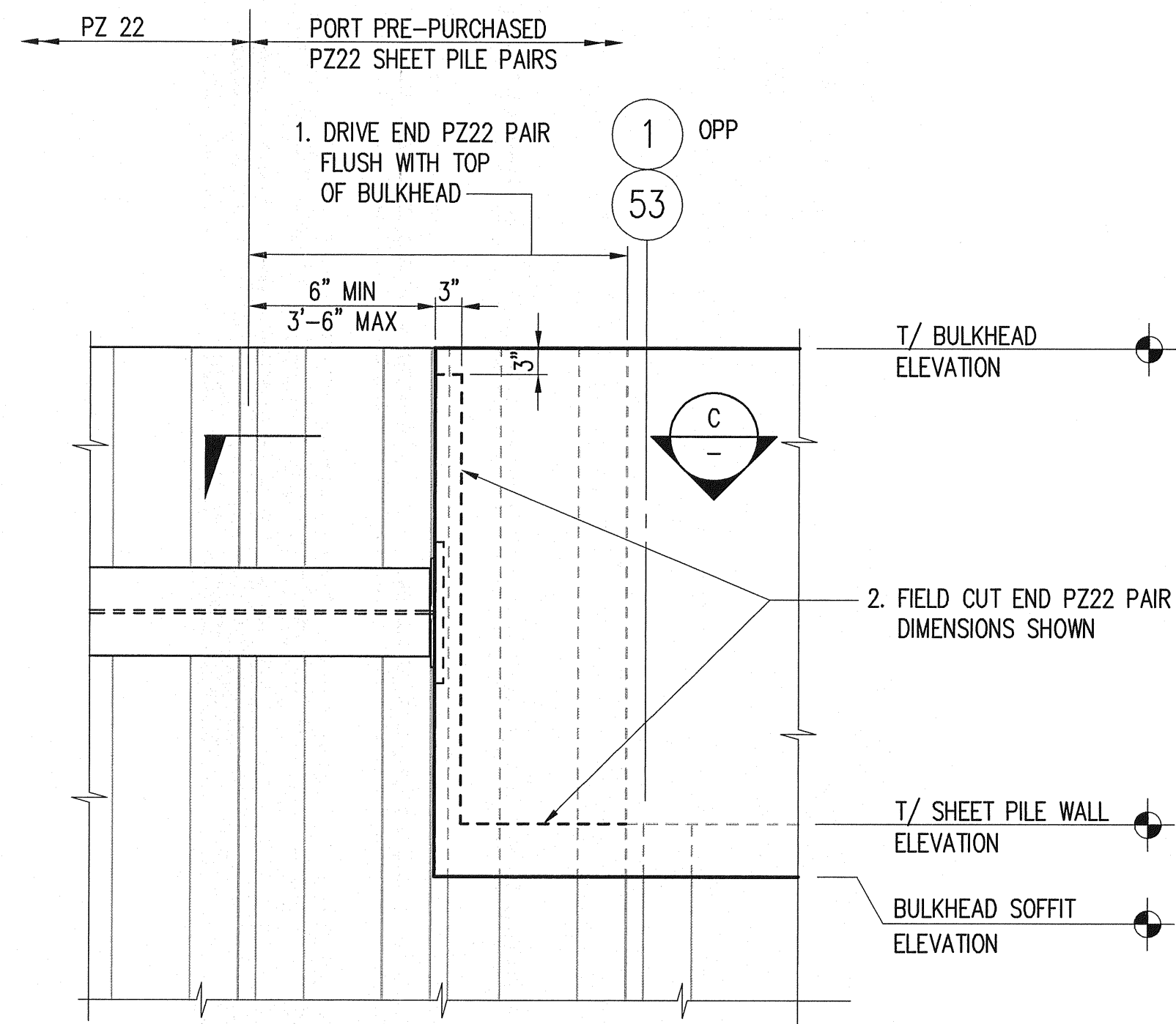
RKJ 05/2007 - DATE  
 CHECKED BY - DATE  
 GSN 05/2007 - DATE  
 PROJECT ENGR. - DATE



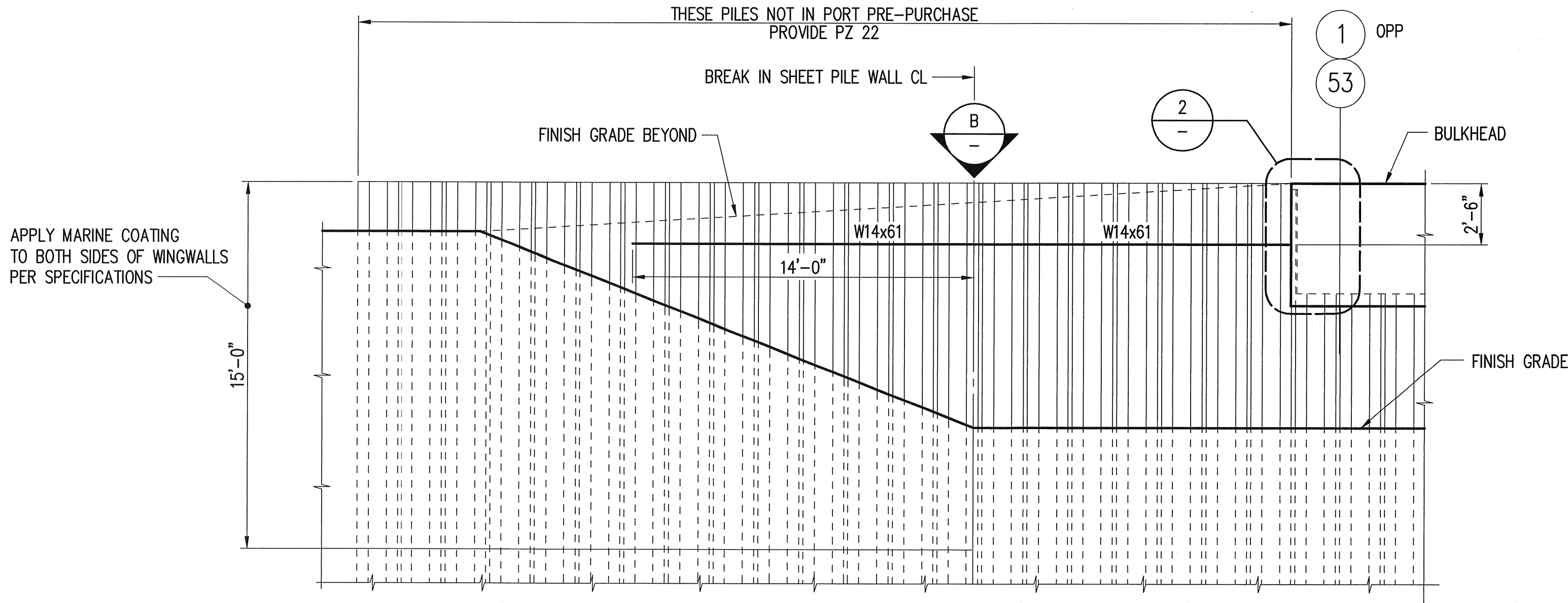
PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162  
**k p f i**  
 REVISION  
 MARKI  
 BY: APPROVED: DATE:



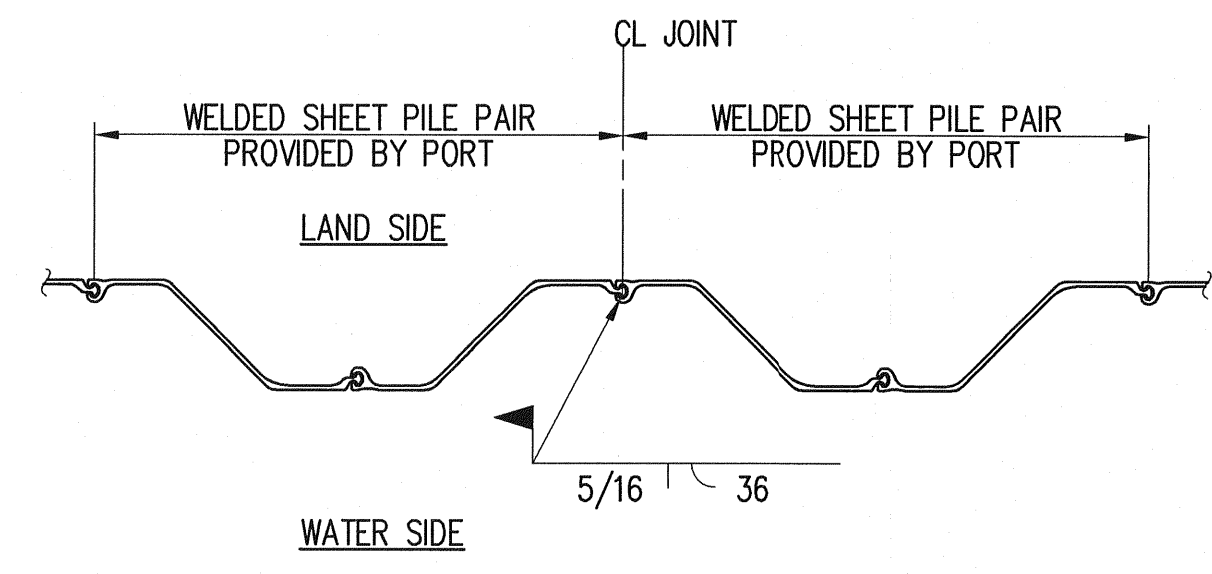
**PARTIAL PLAN BULKHEAD AT OUTFALL**  
SCALE: 1/4"=1'-0" (1) S7.0



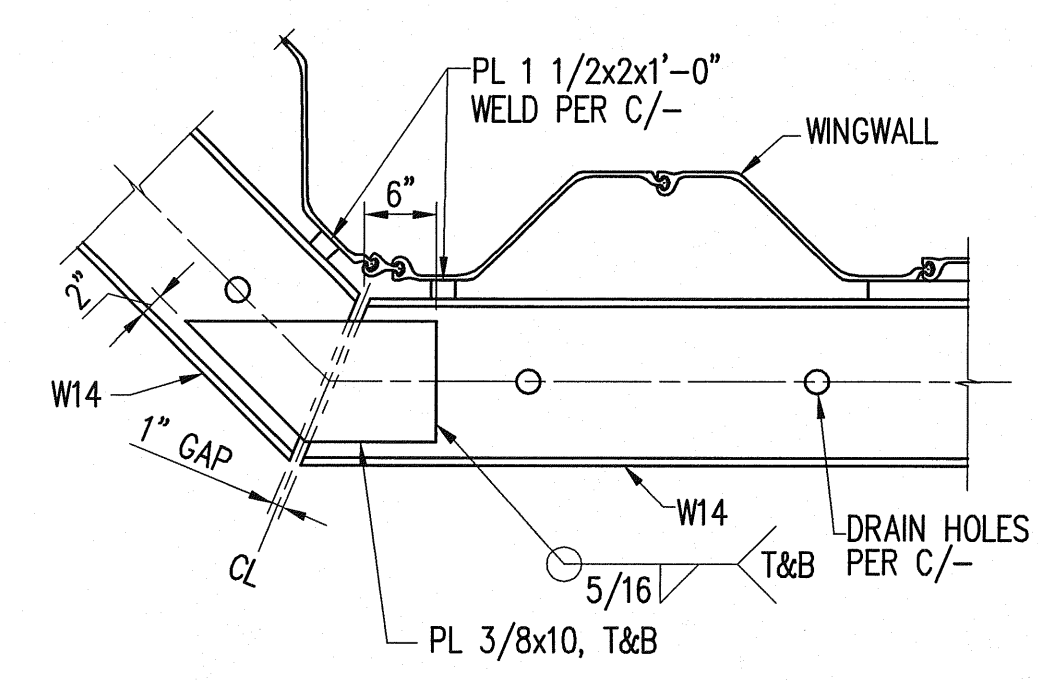
**DETAIL**  
SCALE: 3/4"=1'-0" (2)



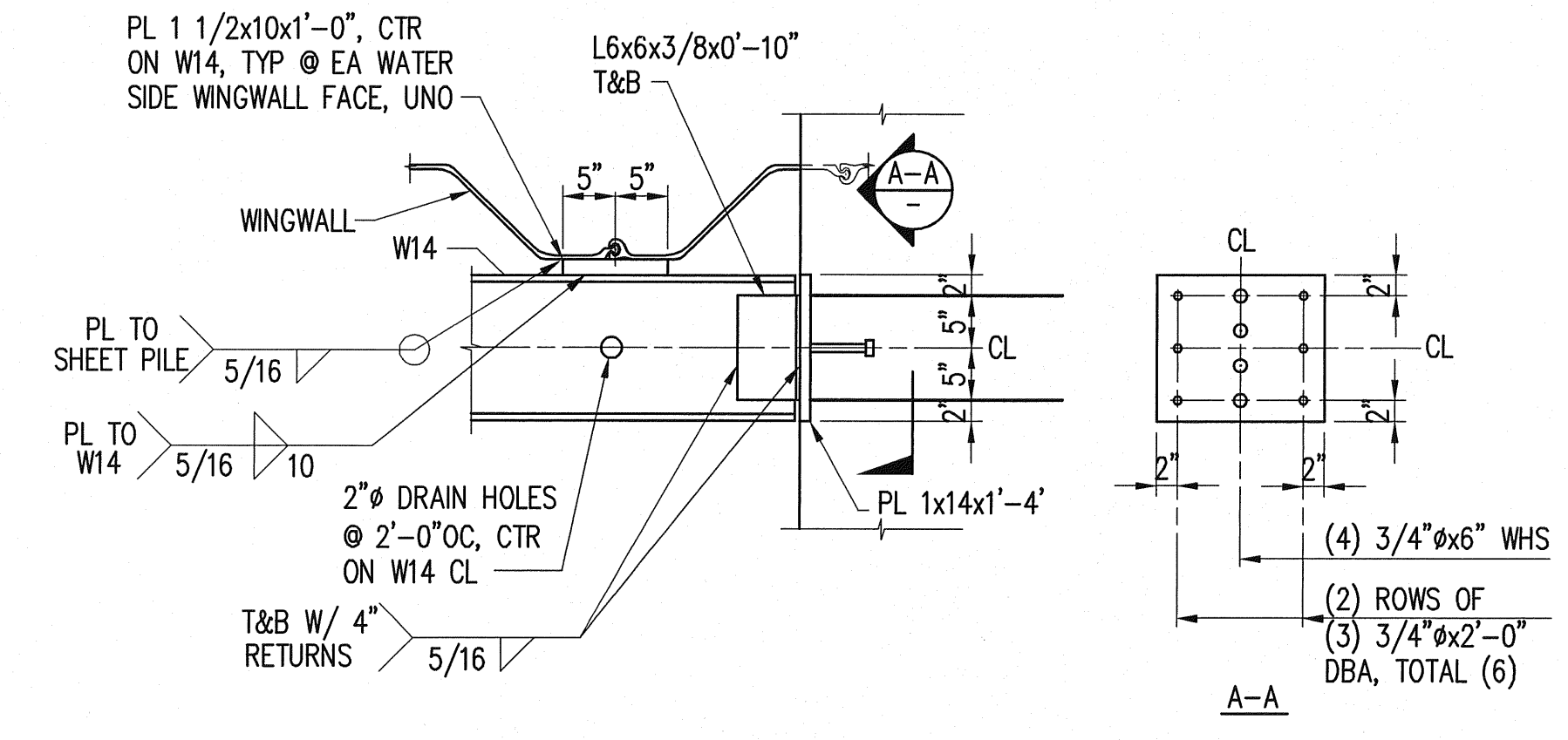
**TYPICAL SHEET PILE WINGWALL DEVELOPED ELEVATION**  
SCALE: 1/4"=1'-0" (A) S4.0 / S7.0



**PZ22 SHEET PILE PAIR-TO-PAIR CONNECTION**  
SCALE: NONE (3) S14.0



**DETAIL**  
SCALE: 3/4"=1'-0" (B)



**DETAIL**  
SCALE: 3/4"=1'-0" (C)

- NOTES:**
- SEE S7.0 FOR SHEET PILE TIP ELEVATIONS AT BENT 1.
  - SEE S4.0 FOR SHEET PILE TIP ELEVATIONS AT BENT 53.
  - SEE CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.

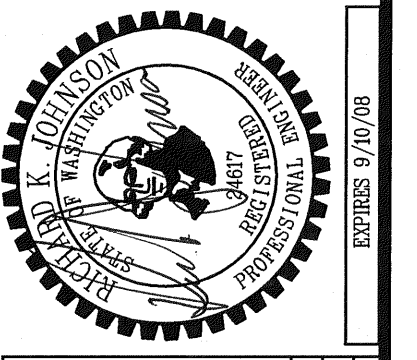
PORT OF TACOMA P. O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162

**kprf**

APPROVED: *H. Adams*  
 CHIEF ENGINEER - DATE: 05-21-2007  
 23 Apr 07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

RJK CHECKED BY - DATE: 05/2007  
 GGN PROJECT ENGR. - DATE: 05/2007

MARK REVISION  
 BY: APPROVED: DATE:

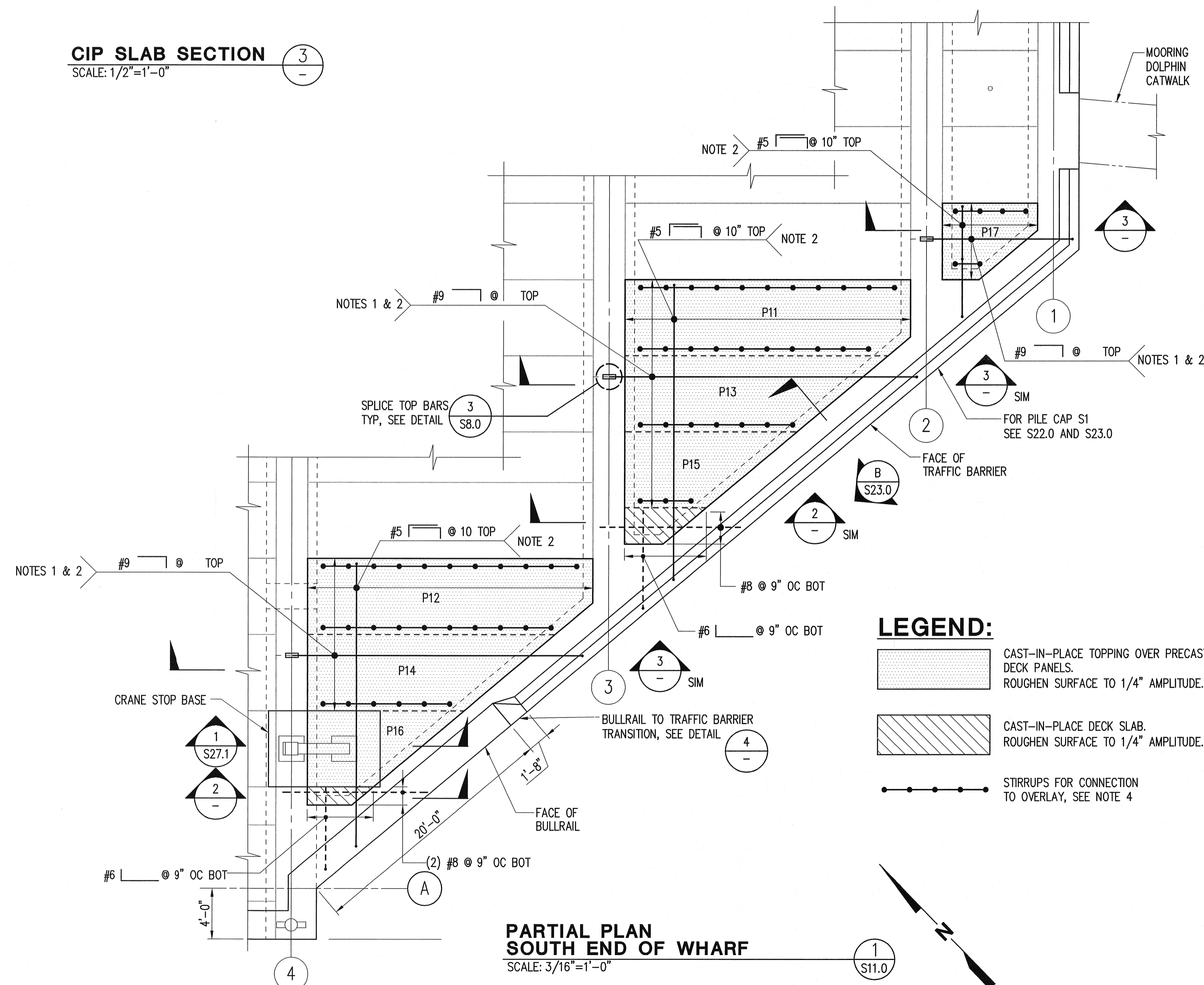
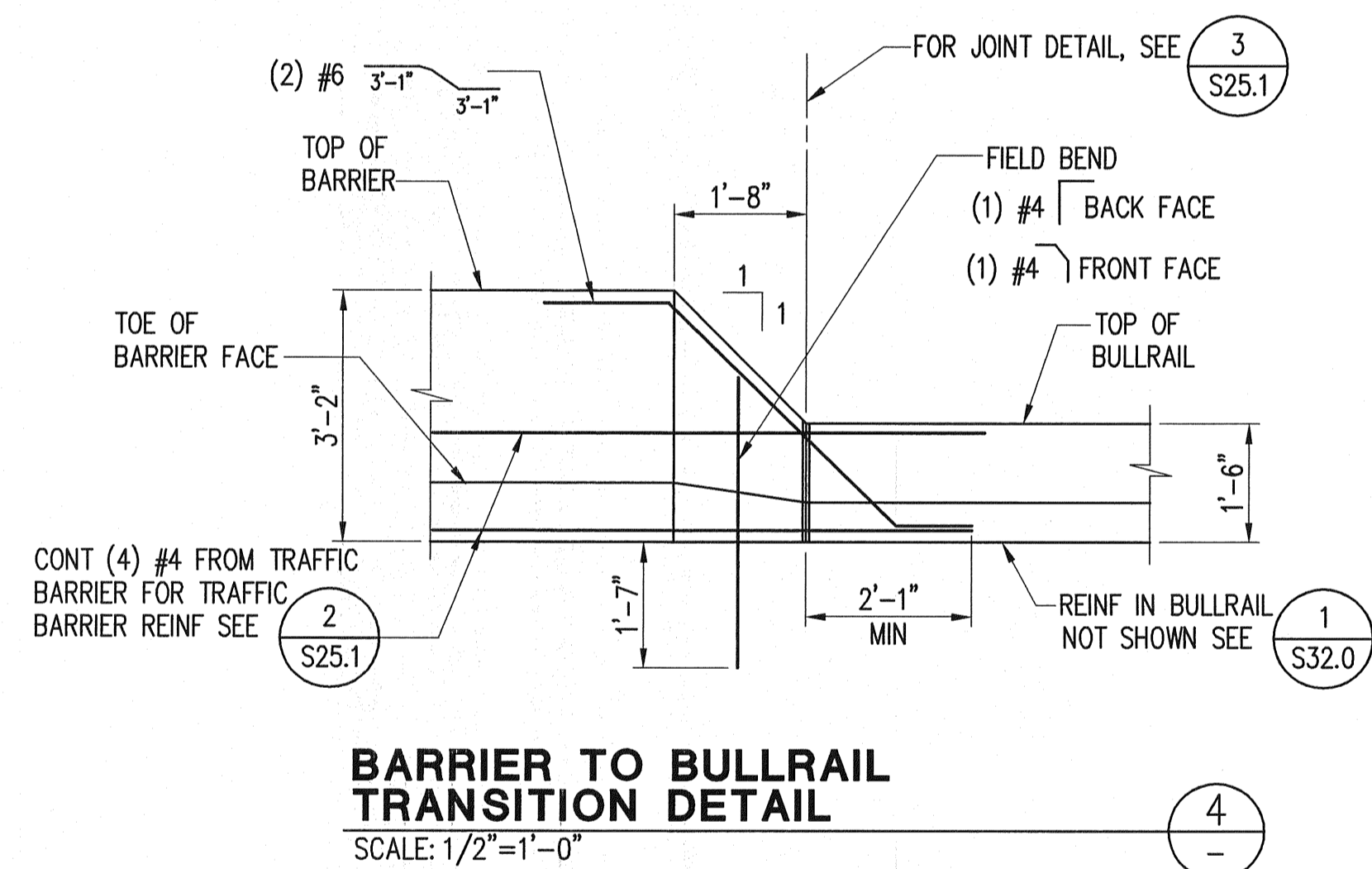
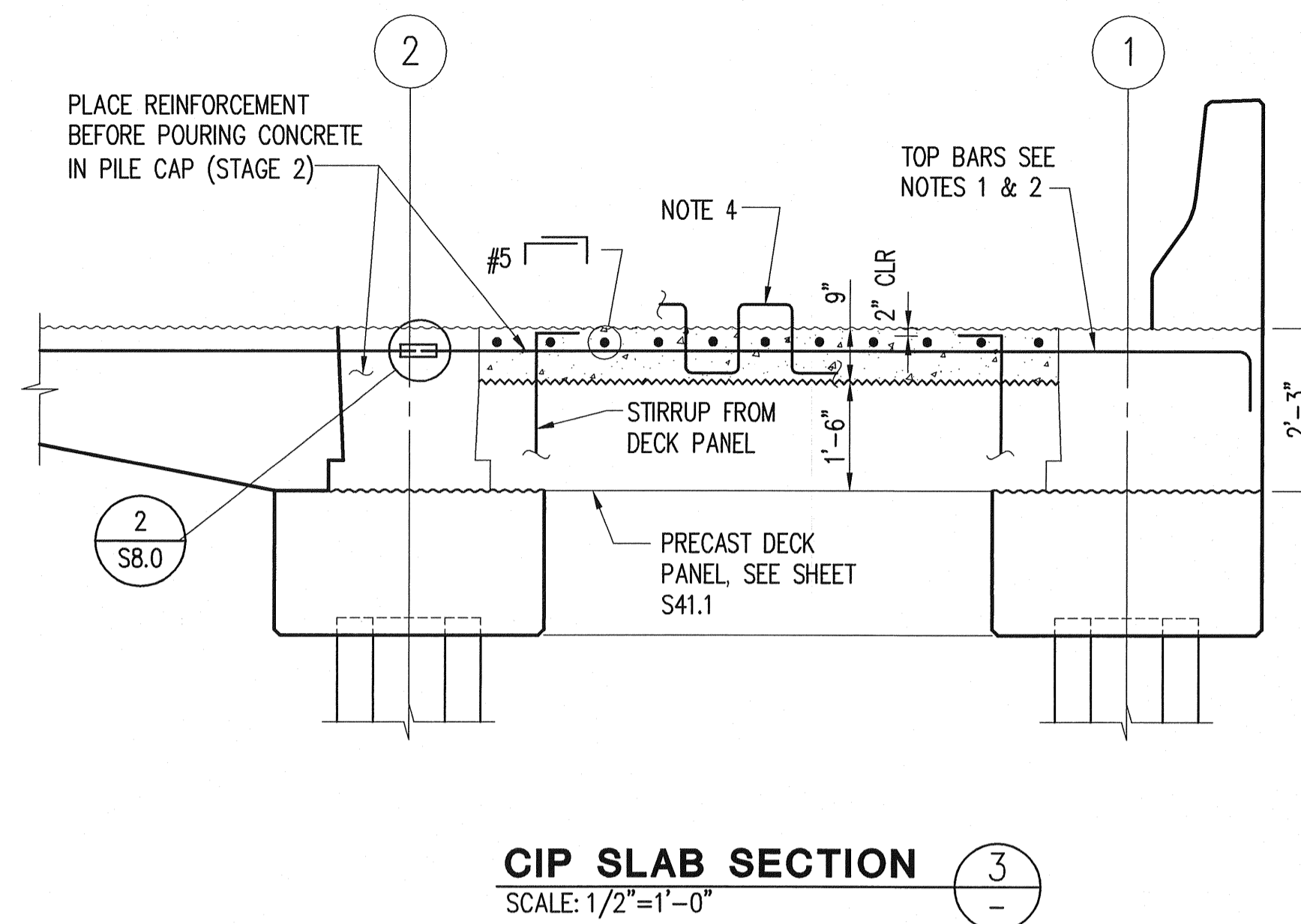
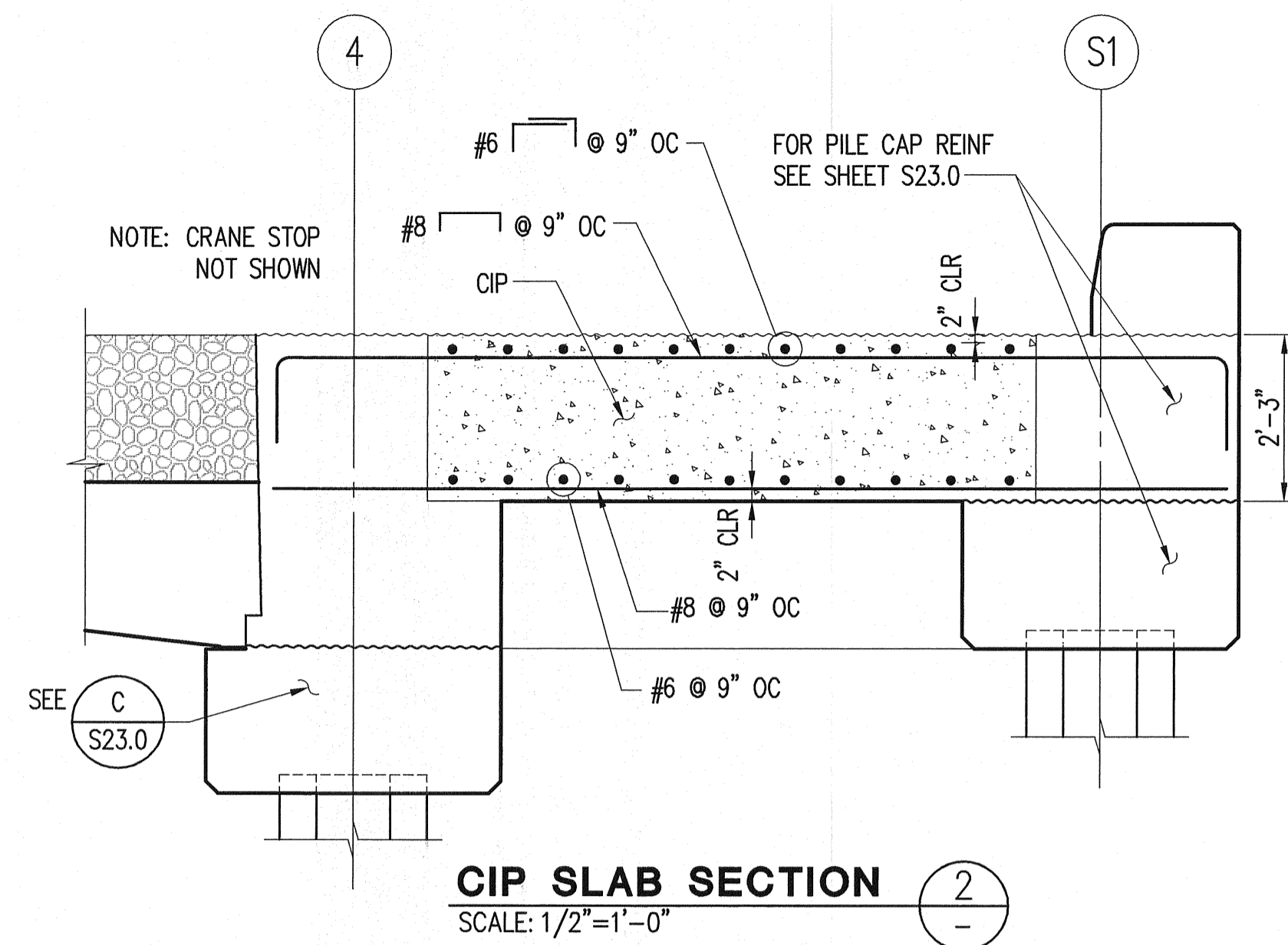


PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 SHEET PILE WALL DETAILS

EP-6305  
**S30.0**  
 SHEET 125 OF 215  
 CONTRACT NUMBER: 068018  
 E. NUMBER: E2623  
 PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ: VERT:  
 DRAWING SCALE: AS SHOWN

**BID SET**



**NOTES:**

1. TOP BARS TO BE WELDABLE (GR 60) AND TO MATCH THE ADJACENT DECK PANELS TOP BARS. THE BAR LENGTHS VARY.
2. CANT OR ORIENT HOOKS AS REQUIRED TO ELIMINATE INTERFERENCES AND MAINTAIN MINIMUM CLEARANCE.
3. FOR REINFORCING IN CAST-IN-PLACE SLAB AT THE CRANE STOP BASE, SEE S48.0.
4. PROVIDE STIRRUPS IN CAST-IN-PLACE DECK FOR CONNECTION TO OVERLAY. MATCH TYPICAL SIZE AND SPACING SHOWN ON C3.12.

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**kpfi**

APPROVED: *M. Adams*  
 CHIEF ENGINEER - DATE: 23/04/07  
 CHECKED BY: GGN 05/2007  
 PROJECT ENGR. - DATE: 05/2007

TOWNSHIP: 21N. RANGE: 3E. SECTION: 27  
 DATUM: HORIZ. SEVERTY  
 DRAWING SCALE: AS SHOWN

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 CAST-IN-PLACE DECK  
 SOUTH END

EP-6305  
**S31.0**  
 SHEET 126 OF 215  
 CONTRACT NUMBER: 068018  
 E. NUMBER: E2623  
 PHASE: BID SET

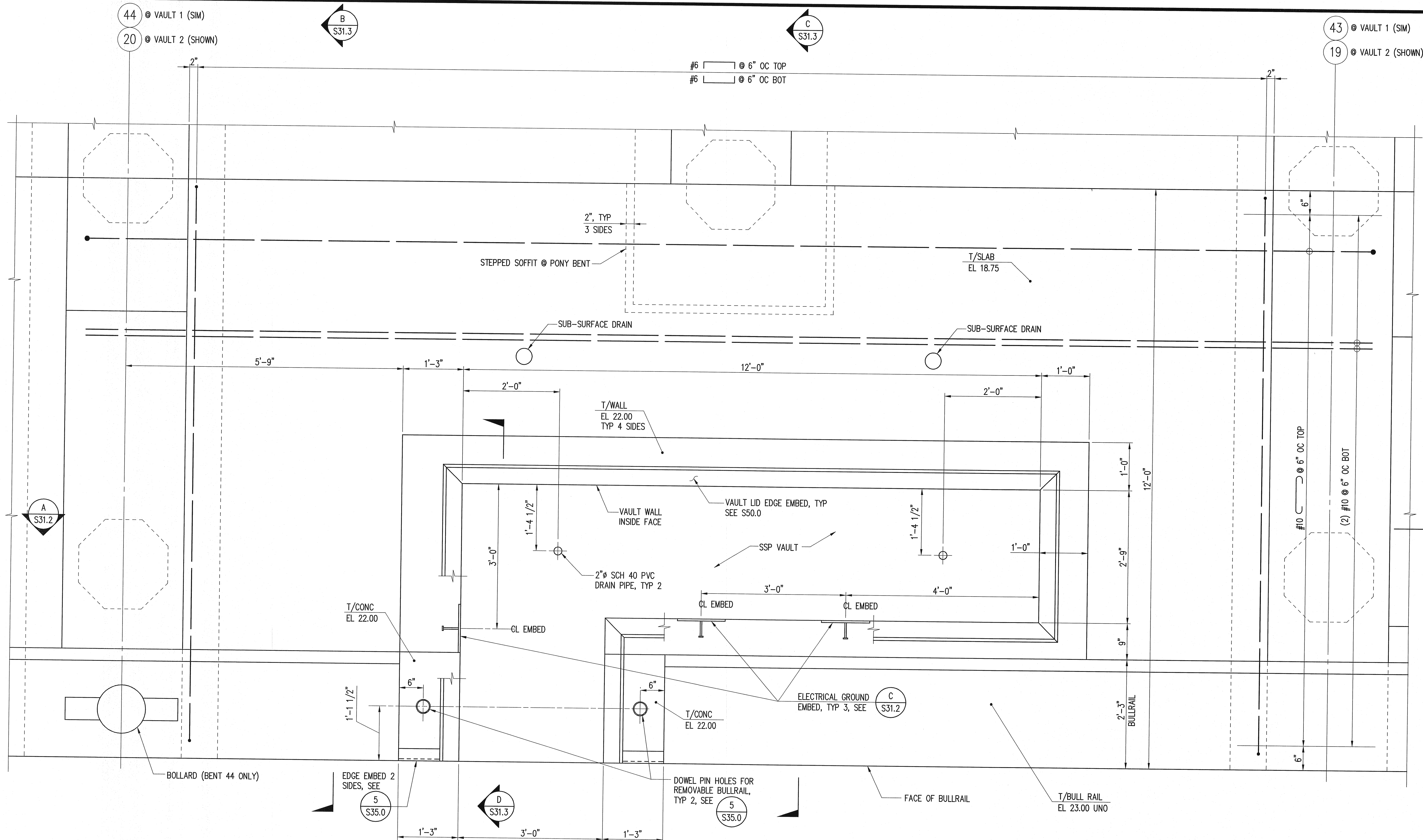
TOWNSHIP: 21N. RANGE: 3E. SECTION: 27  
 DATUM: HORIZ. SEVERTY  
 DRAWING SCALE: AS SHOWN

APPROVED: 05/2007  
 CHECKED BY: GGN 05/2007  
 PROJECT ENGR. - DATE: 05/2007

MARK: REVISION  
 BY: APPROVED: DATE:

EXPIRES 9/10/08

**BID SET**



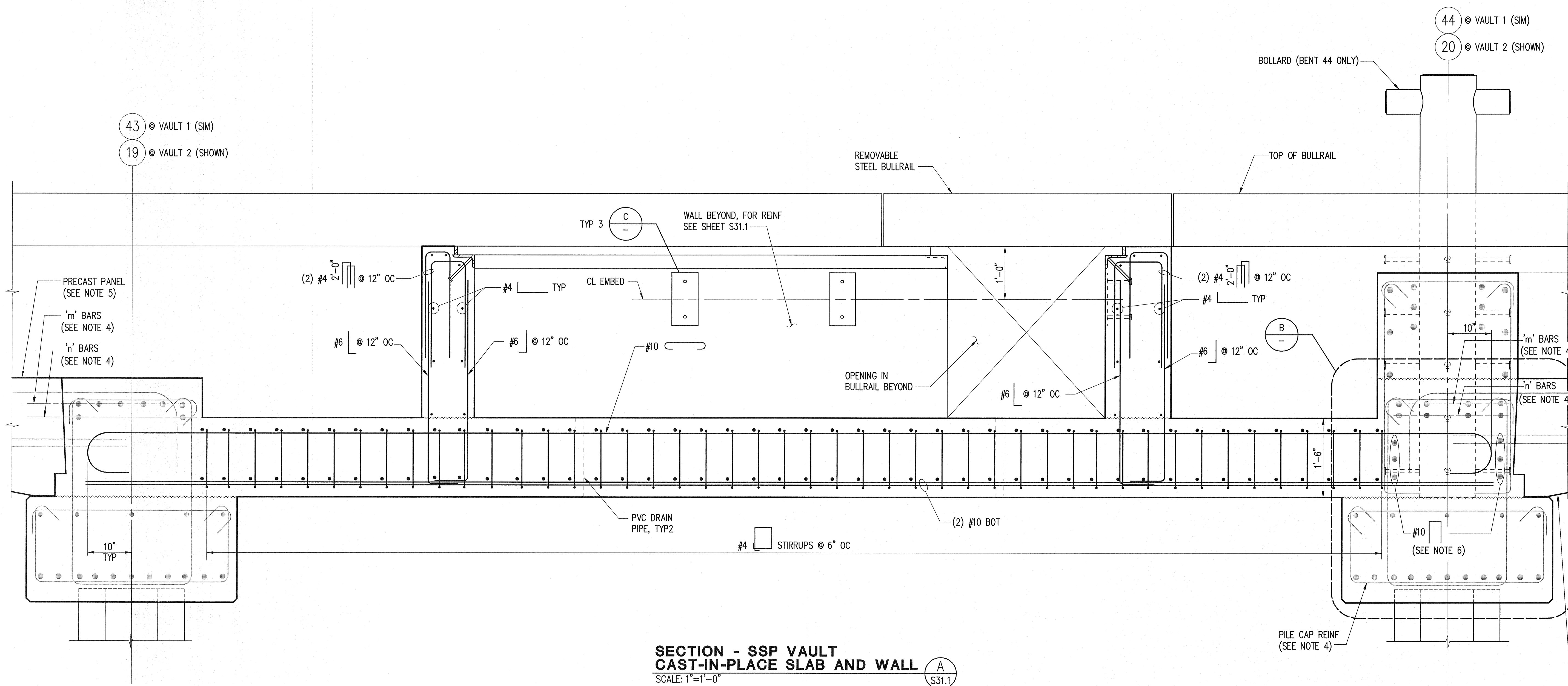
**PARTIAL PLAN - SSP VAULT  
CAST-IN-PLACE SLAB AND WALL**  
SCALE: 1"=1'-0"

**NOTES:**

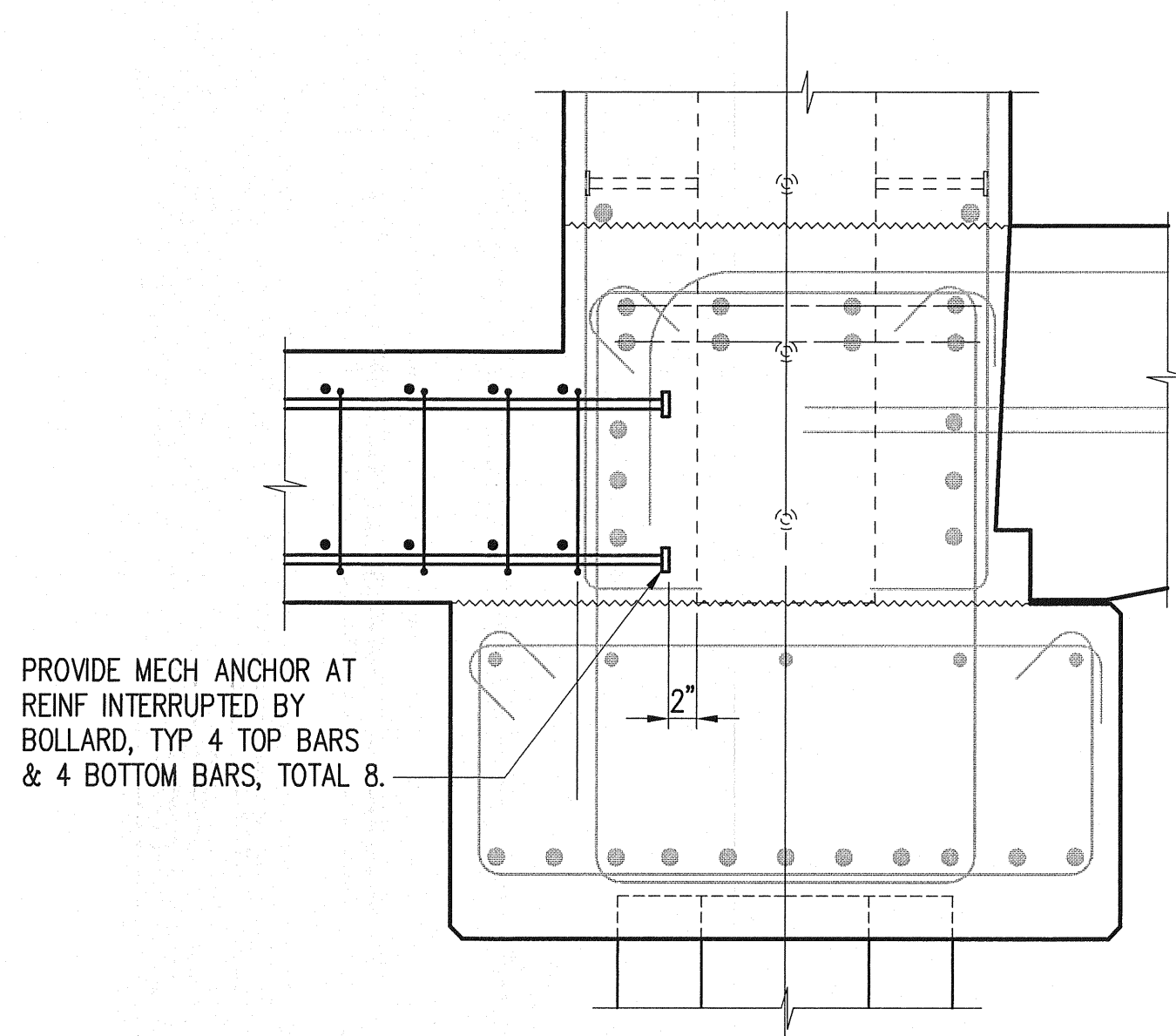
1. FOR VAULT LID ASSEMBLY AND REMOVABLE STEEL BULLRAIL. SEE SHEETS S50.0 THRU S51.2.
2. FOR REINFORCEMENT IN BULLRAIL, SEE SHEETS S32.0 THRU S34.0.
3. FOR TYPICAL PILE CAP REINFORCEMENT SEE SHEETS S19.0 AND S24.0.
4. FOR TYPICAL PRECAST PANEL REINFORCEMENT, SEE SHEETS S36.0, S40.0 AND S42.0.
5. FOR BOLLARD DETAILS, SEE SHEETS S34.0 AND S52.0.
6. ORIENT REINFORCEMENT AND HOOKS AS REQ'D TO ELIMINATE INTERFERENCES AND MAINTAIN MINIMUM CLEARANCES.

EP-6305 <b>S31.1</b> SHEET 127 OF 215 CONTRACT NUMBER: 068018 E NUMBER: E2623 PHASE: BID SET	PORT OF TACOMA EAST BLAIR ONE WHARF SSP VAULT PLAN	TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT. DRAWING SCALE: AS SHOWN	APPROVED  H. Adams CHIEF ENGINEER - DATE 23 MAY 07	PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841 Consulting Engineers 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax (253) 396-0162
	CHECKED BY: RKJ DATE: 05/2007 PROJECT ENGR.: CGN DATE: 05/2007	REVISION MARK REVISION BY:	APPROVED: DATE:	PORT PARCH: 17 & 18 EXHIBIT 9/10/08

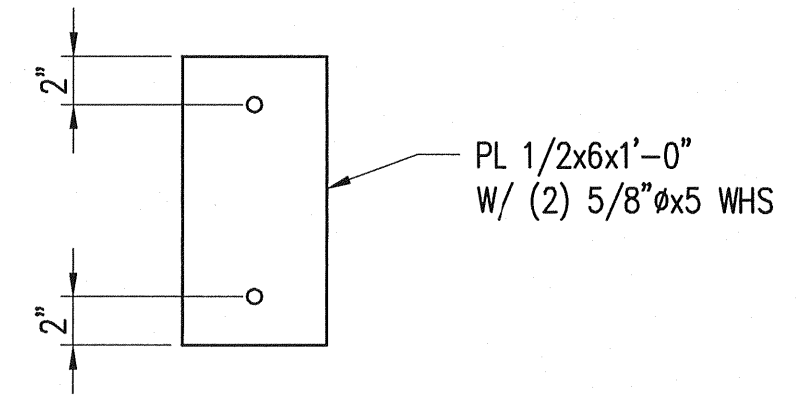
**BID SET**



**SECTION - SSP VAULT  
CAST-IN-PLACE SLAB AND WALL**  
SCALE: 1"=1'-0" A  
S31.1



**SECTION**  
SCALE: 1"=1'-0" B  
-



**DETAIL**  
SCALE: 1 1/2"=1'-0" C  
-

**NOTES:**  
FOR NOTES, SEE SHEET S31.1.

43 @ VAULT 1 (SIM)  
19 @ VAULT 2 (SHOWN)

44 @ VAULT 1 (SIM)  
20 @ VAULT 2 (SHOWN)

PORT OF TACOMA P.O. BOX 1837  
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**kprf**

APPROVED

CHIEF ENGINEER - DATE  
*H. Babay* 05/21/2007

PROJECT ENGR. - DATE  
05/2007

REVISION

MARK

DATE

CONTRACT NUMBER: 068018

TOWNSHIP: 21N RANGE: 3E SECTION: 27

DATE: HORIZ.

VERT.

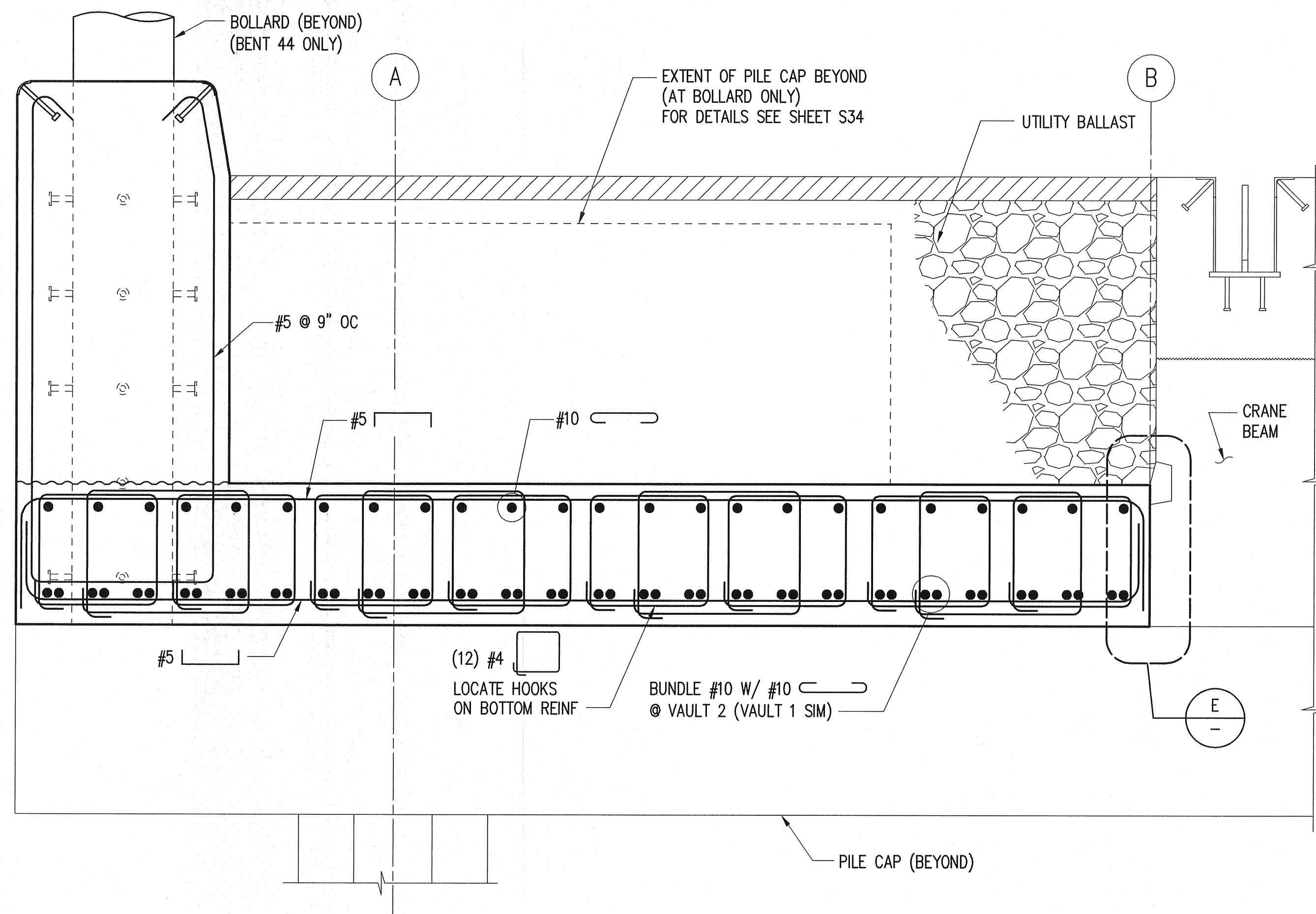
PHASE: BID SET

DRAWING SCALE: AS SHOWN

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
SSP VAULT  
SECTIONS AND DETAILS 1

EP-6305  
**S31.2**  
SHEET 128 OF 215

**BID SET**

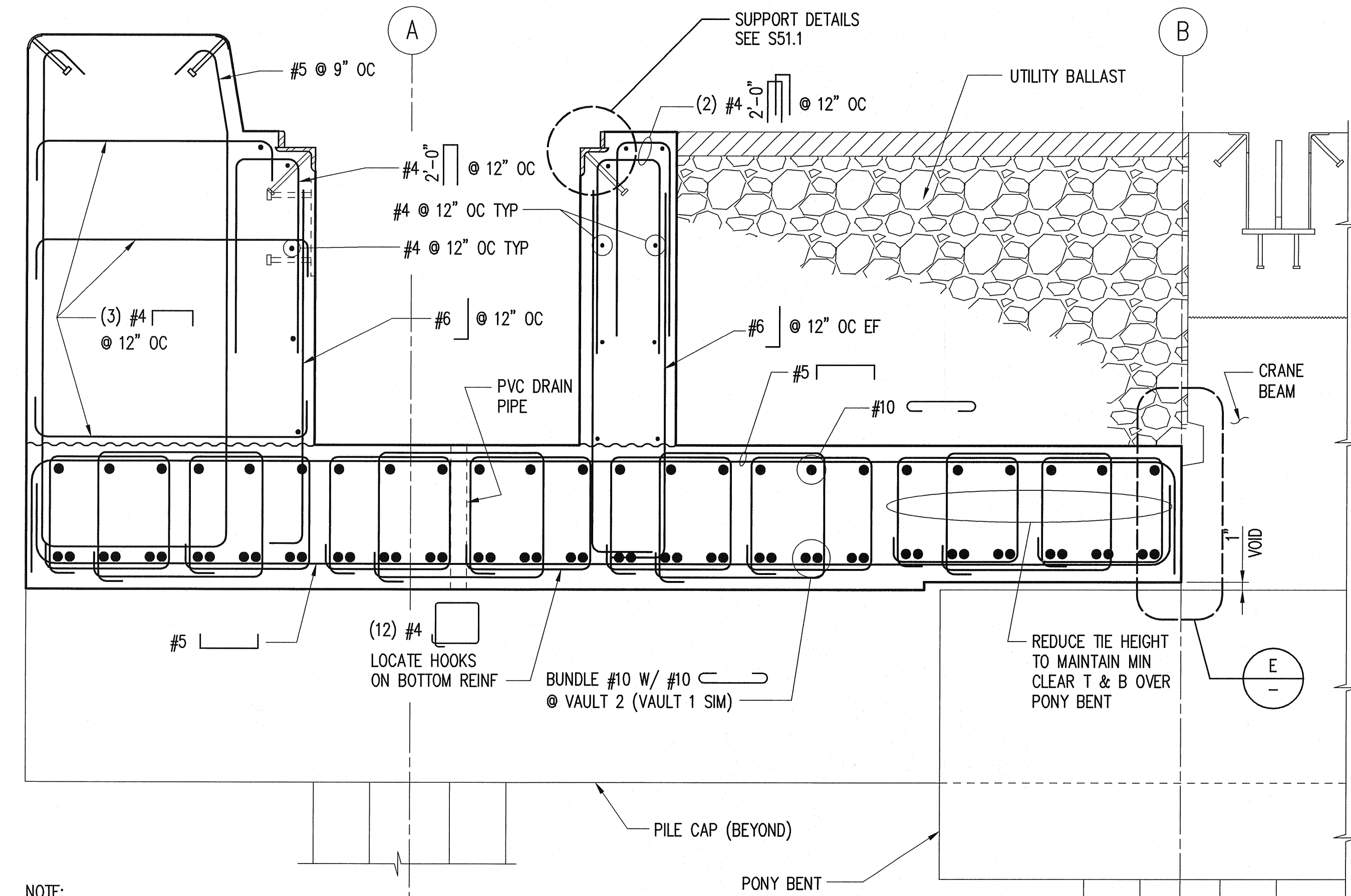


NOTE:  
FOR TYPICAL REINFORCEMENT IN BULLRAIL,  
SEE SHEETS S32 THRU S35.

**SECTION - AMP VAULT  
CAST-IN-PLACE SLAB**

SCALE: 1"=1'-0"

B  
S31.1

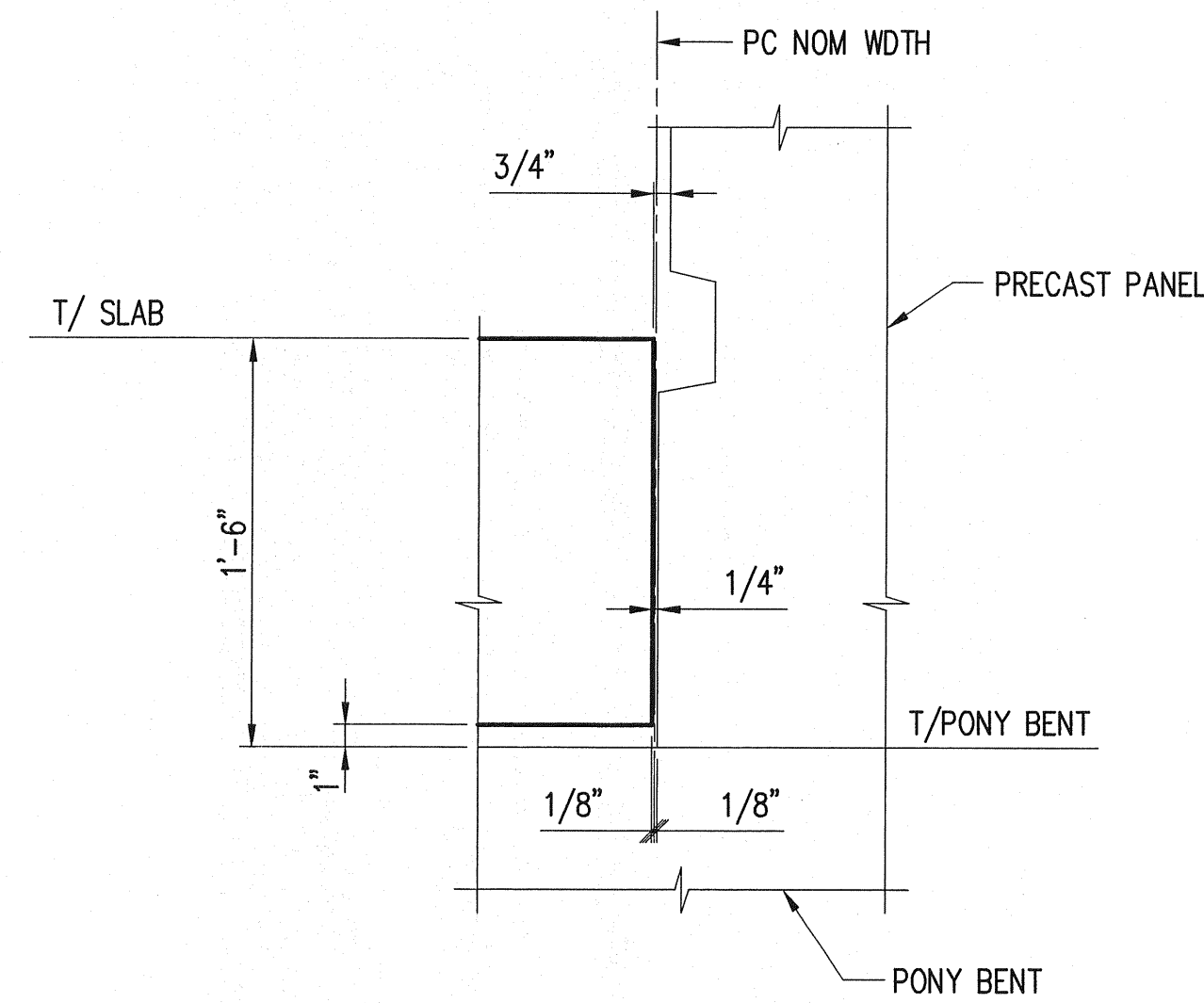


NOTE:  
FOR TYPICAL REINFORCEMENT IN BULLRAIL,  
SEE SHEETS S32 THRU S35.

**SECTION - AMP VAULT  
CAST-IN-PLACE SLAB AND WALL**

SCALE: 1"=1'-0"

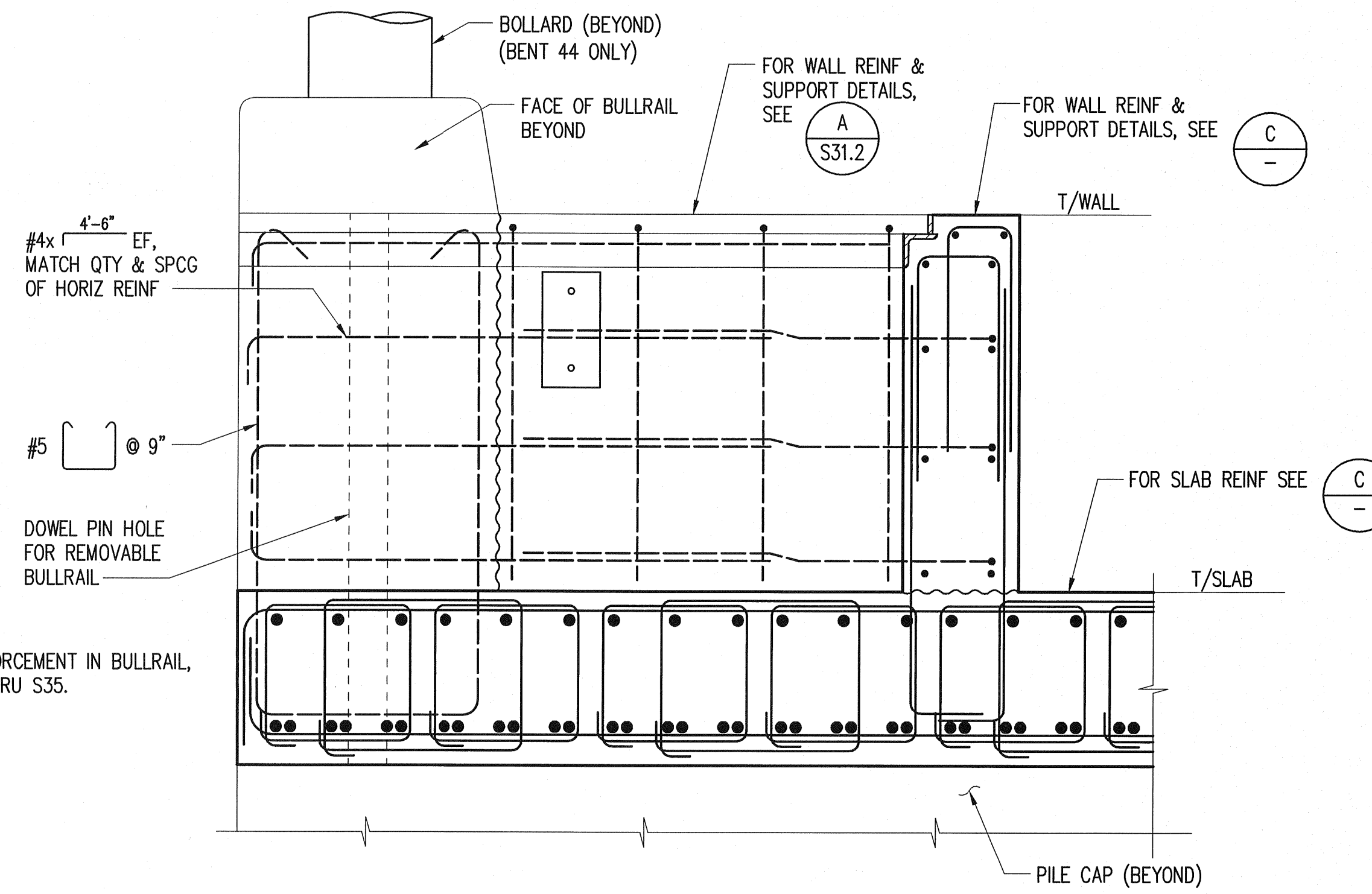
C  
S31.1



**DETAIL**

SCALE: 1 1/2"=1'-0"

E  
-



NOTE:  
FOR TYPICAL REINFORCEMENT IN BULLRAIL,  
SEE SHEETS S32 THRU S35.

**SECTION - AMP VAULT  
CAST-IN-PLACE WALL**

SCALE: 1"=1'-0"

D  
S31.1

**NOTES:**

FOR NOTES, SEE SHEET S31.1.

PORT OF TACOMA P.O. BOX 1837  
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1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0160 Fax (253) 396-0162

**kpfi**

PORT OF TACOMA  
TACOMA, WA

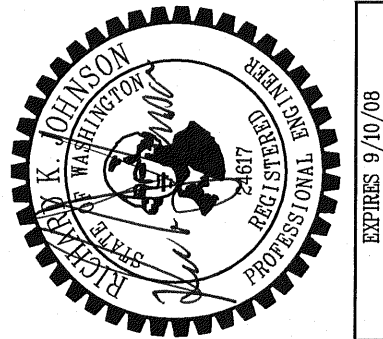
APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 23/04/07

REVISION: \_\_\_\_\_  
MARK: \_\_\_\_\_  
DATE: \_\_\_\_\_

05/2007 - DATE  
RKJ - CHECKED BY  
GGN - PROJECT ENGR.

05/2007 - DATE  
PROJECT ENGR.

APPROVED: \_\_\_\_\_  
DATE: 05-21-2007  
ADDRESS: 2344 S. B  
PORT PACIFIC AVENUE  
TACOMA, WA 98401



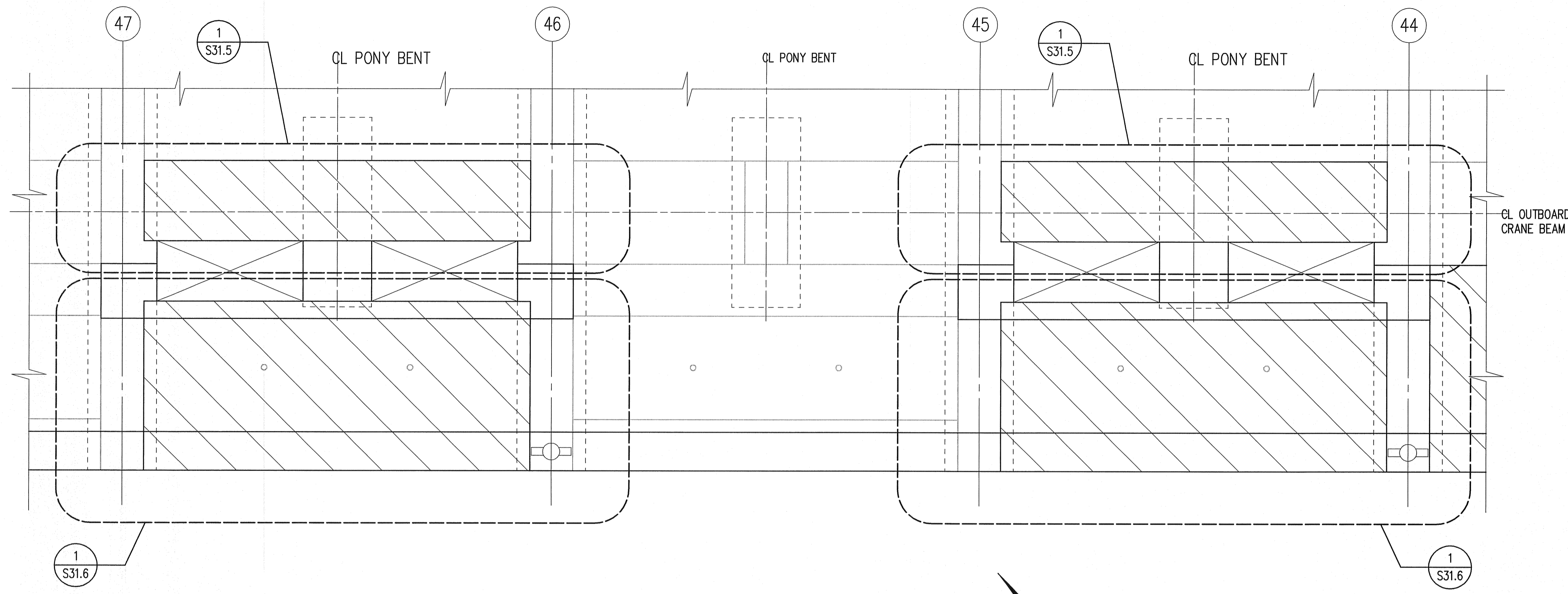
PORT OF TACOMA  
EAST BLAIR ONE WHARF  
SSP VAULT  
SECTIONS AND DETAILS 2

EP-6305  
**S31.3**  
SHEET 129 OF 215

CONTRACT NUMBER: 068018  
DATE: 05/21/07  
DRAWING SCALE: AS SHOWN

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ.  
DRAWING SCALE: AS SHOWN

**BID SET**



**PARTIAL PLAN AT  
CRANE POWER CABLE VAULT**  
SCALE: 3/16"=1'-0"

1  
S8.0

BID SET

EP-6305  
**S31.4**  
SHEET 130 OF 215

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
CRANE POWER CABLE VAULT  
PLAN

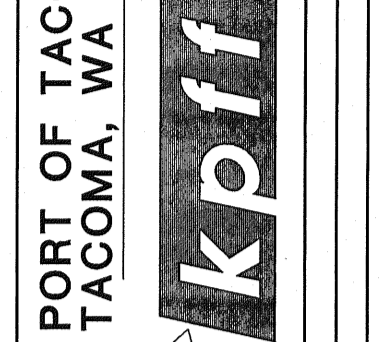
CONTRACT NUMBER: 068018  
DRAWING NUMBER: EP6305  
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
COUNTY: TACOMA  
DRAWING SCALE: AS SHOWN



APPROVED  
*H. Alexander*  
CHIEF ENGINEER - DATE  
23 MAY 07

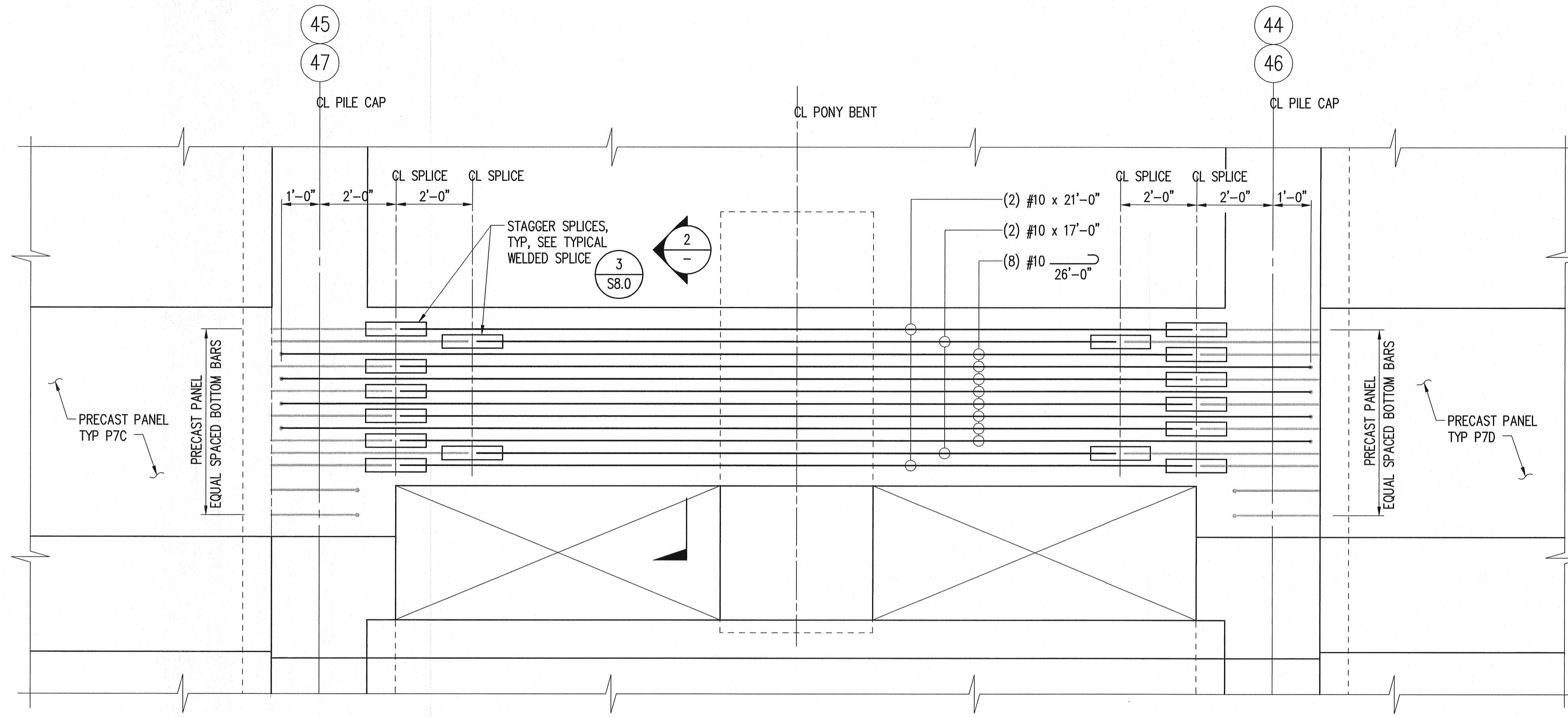
RKJ 05/2007  
CHECKED BY - DATE  
CGN 05/2007  
PROJECT ENGR. - DATE

MARK REVISION

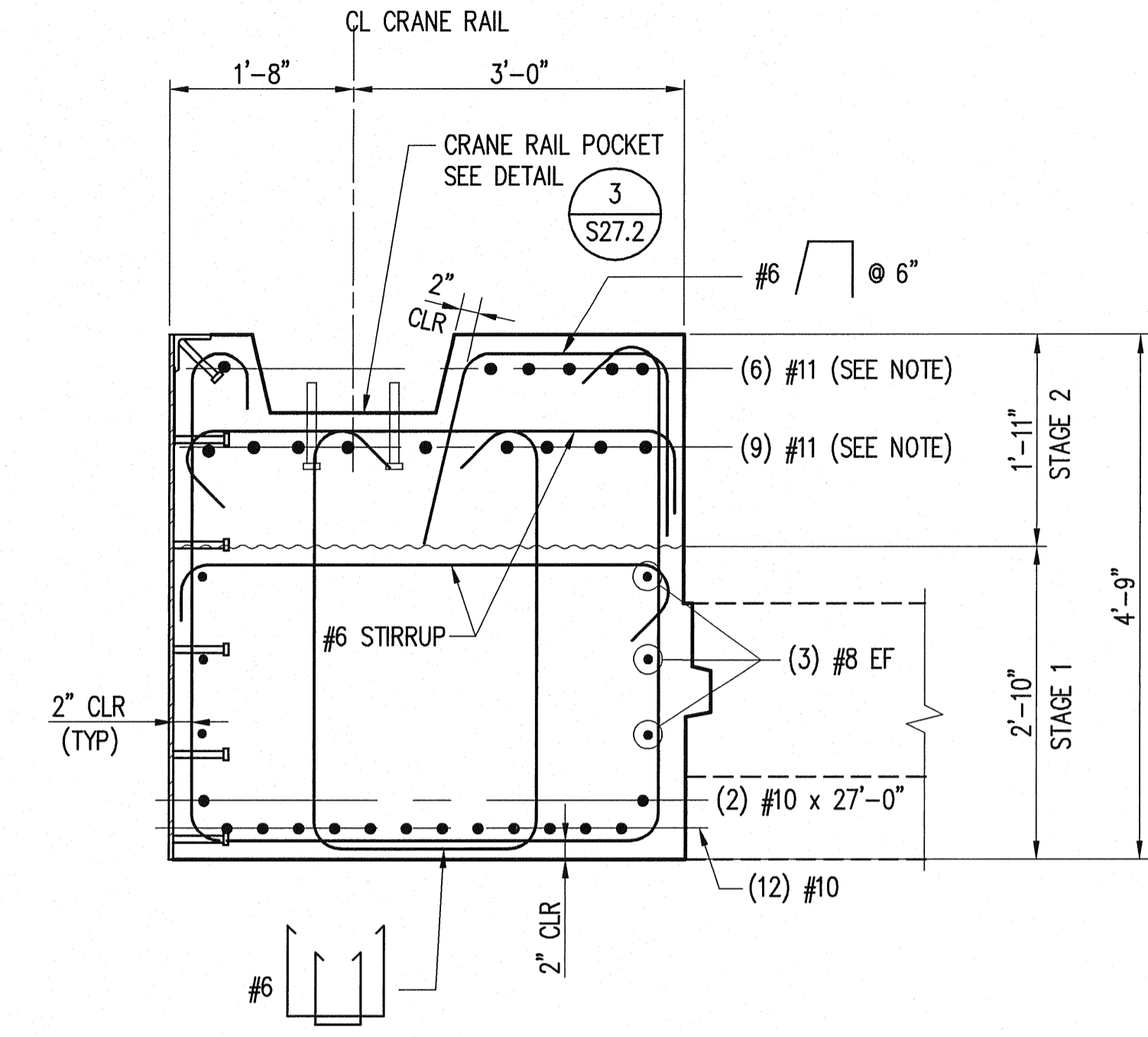


PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841  
Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0160 Fax (253) 396-0162

BY: APPROVED: DATE:



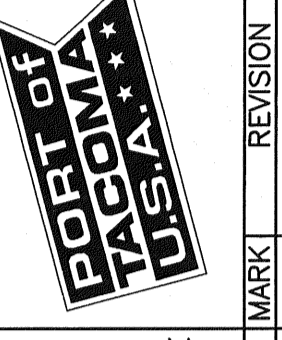
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S31.4



**CAST-IN-PLACE SECTION  
AT CRANE POWER CABLE VAULT**  
SCALE: 3/4"=1'-0"

2  
-

PORT OF TACOMA P. O. BOX 1837  
TACOMA, WA 98401 253-383-5841



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1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 05-21-2007  
DRAWING DATE: 05-21-2007  
PROJECT ENGR. - DATE: 05/2007  
PROJECT ENGR. - DATE: 05/2007

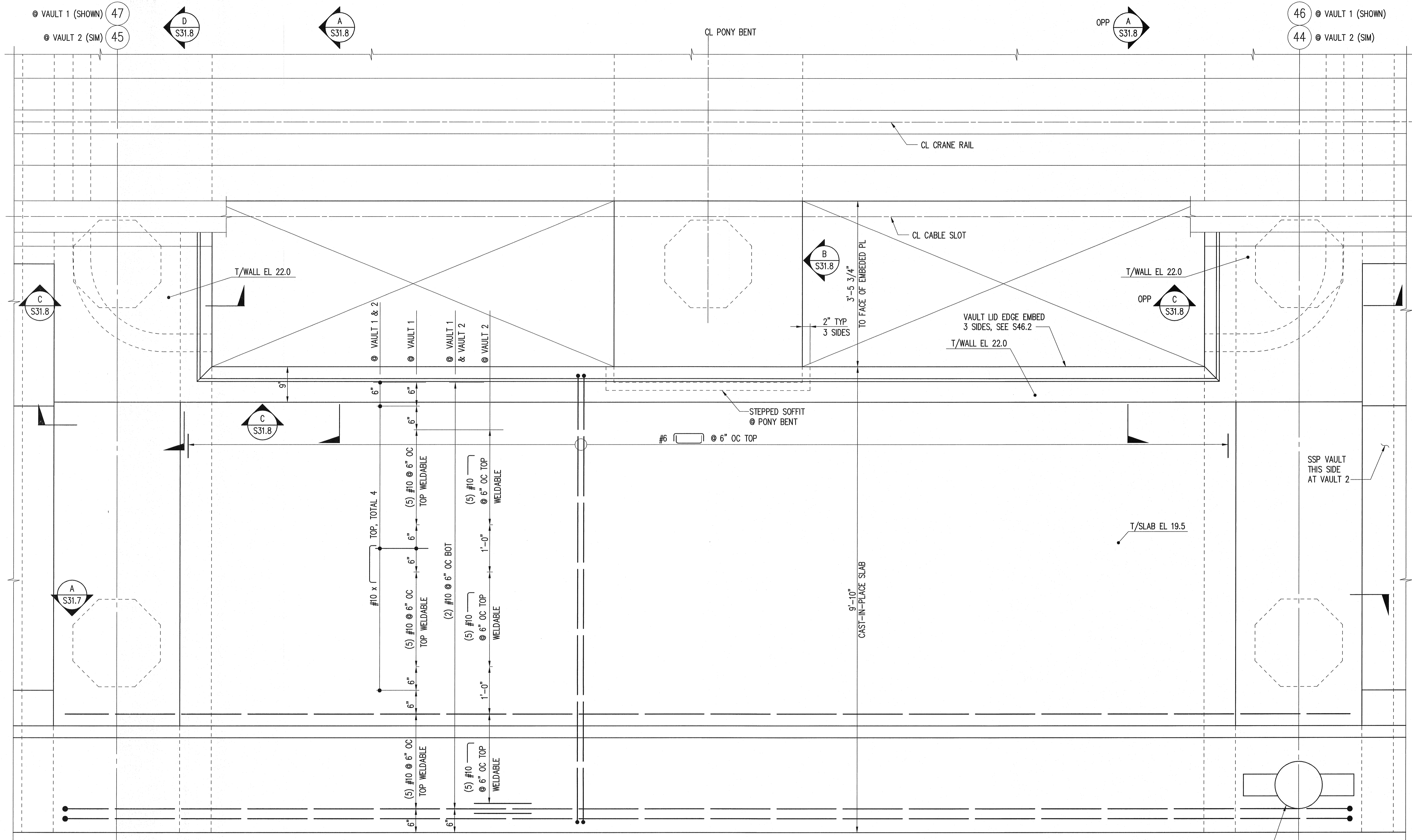


PORT OF TACOMA  
EAST BLAIR ONE WHARF  
CRANE POWER CABLE VAULT  
PLAN AND SECTIONS

EP-6305  
**S31.5**  
SHEET 131 OF 215  
CONTRACT NUMBER: 08801B  
E. NUMBER: E2223  
PHASE: BID SET

NO.	REVISION	DATE	BY	DATE

**BID SET**



**NOTES:**

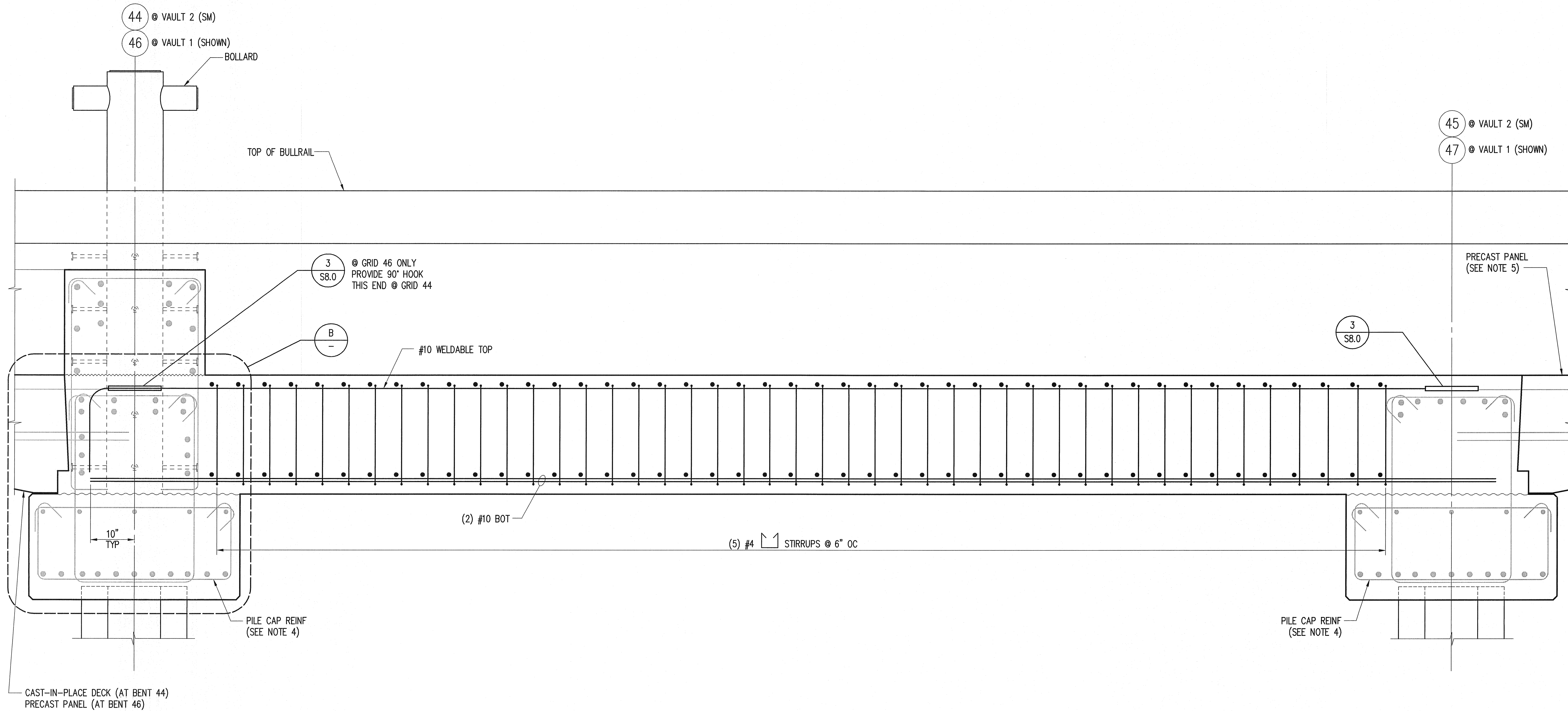
1. FOR SECTIONS AND ADDITIONAL DETAILS, SEE SHEETS S31.7 AND S31.8.
2. VAULT LID ASSEMBLY IS NOT SHOWN. FOR VAULT LID DETAILS AND ADDITIONAL INFORMATION SEE SHEETS S45 THRU S46.3.
3. FOR REINFORCEMENT IN BULLRAIL (NOT SHOWN), SEE SHEETS S32.0 TO S34.0.
4. FOR TYPICAL PILE CAP REINFORCEMENT SEE SHEETS S19 AND S24.
5. FOR TYPICAL PRECAST PANEL REINFORCEMENT (NOT SHOWN), SEE SHEETS S36, S40 AND S42.
6. FOR BOLLARD DETAILS, SEE SHEETS S34 AND S52.
7. FOR CAST-IN-PLACE CRANE BEAM REINFORCEMENT, SEE SHEET S26.
8. ORIENT REINFORCEMENT AND HOOKS AS REQ'D TO ELIMINATE INTERFERENCES AND MAINTAIN MINIMUM CLEARANCES.
9. REINFORCEMENT SHALL USE STANDARD HOOKS UNLESS OTHERWISE NOTED.

**PARTIAL PLAN -  
CAST-IN-PLACE SLAB AND WALL  
AT CRANE POWER CABLE VAULT**  
SCALE: 1"=1'-0"

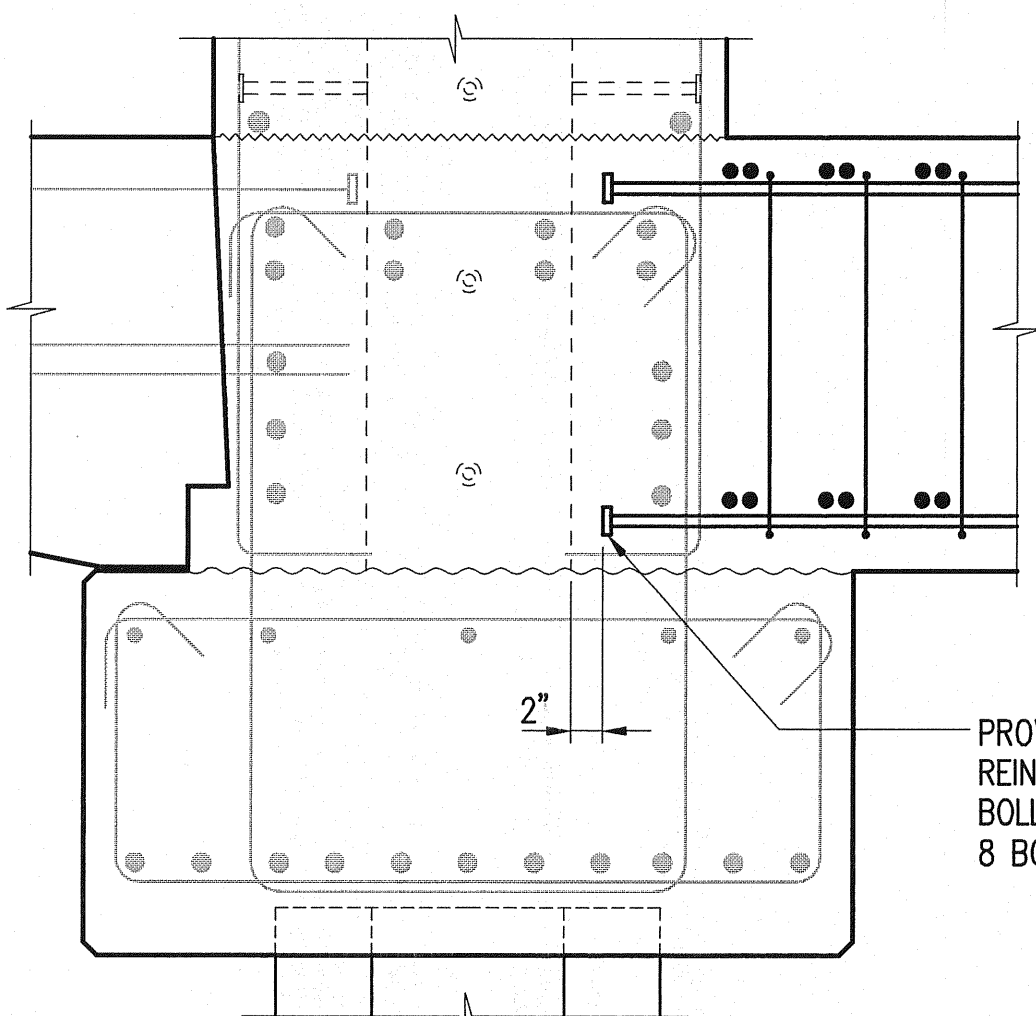
1  
S31.6

<p>EP-6305 <b>S31.6</b> SHEET 132 OF 215</p>	<p><b>PORT OF TACOMA EAST BLAIR ONE WHARF CRANE POWER CABLE VAULT PLAN</b></p>	<p>CONTRACT NUMBER: 088018 DRAWING NUMBER: 0823 DATE: 05/08</p>
<p>TOWNSHIP: 21N RANGE: 3E SECTION: 27 DRAWING NUMBER: 0823 DATE: 05/08</p>	<p>APPROVED: <i>H. Adams</i> CHIEF ENGINEER - DATE: 23 MAR 07</p>	<p>APPROVED: <i>[Signature]</i> DATE: 05/21-2007</p>
<p>PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841</p>	<p>Consulting Engineers 1201 Pacific Avenue, Suite 600 Tacoma, Washington 98402 (253) 398-0150 Fax: (253) 398-0162</p>	<p>REVISION MARK DATE</p>

**BID SET**



CAST-IN-PLACE DECK (AT BENT 44)  
PRECAST PANEL (AT BENT 46)



**SECTION**  
SCALE: 1"=1'-0"

B  
-

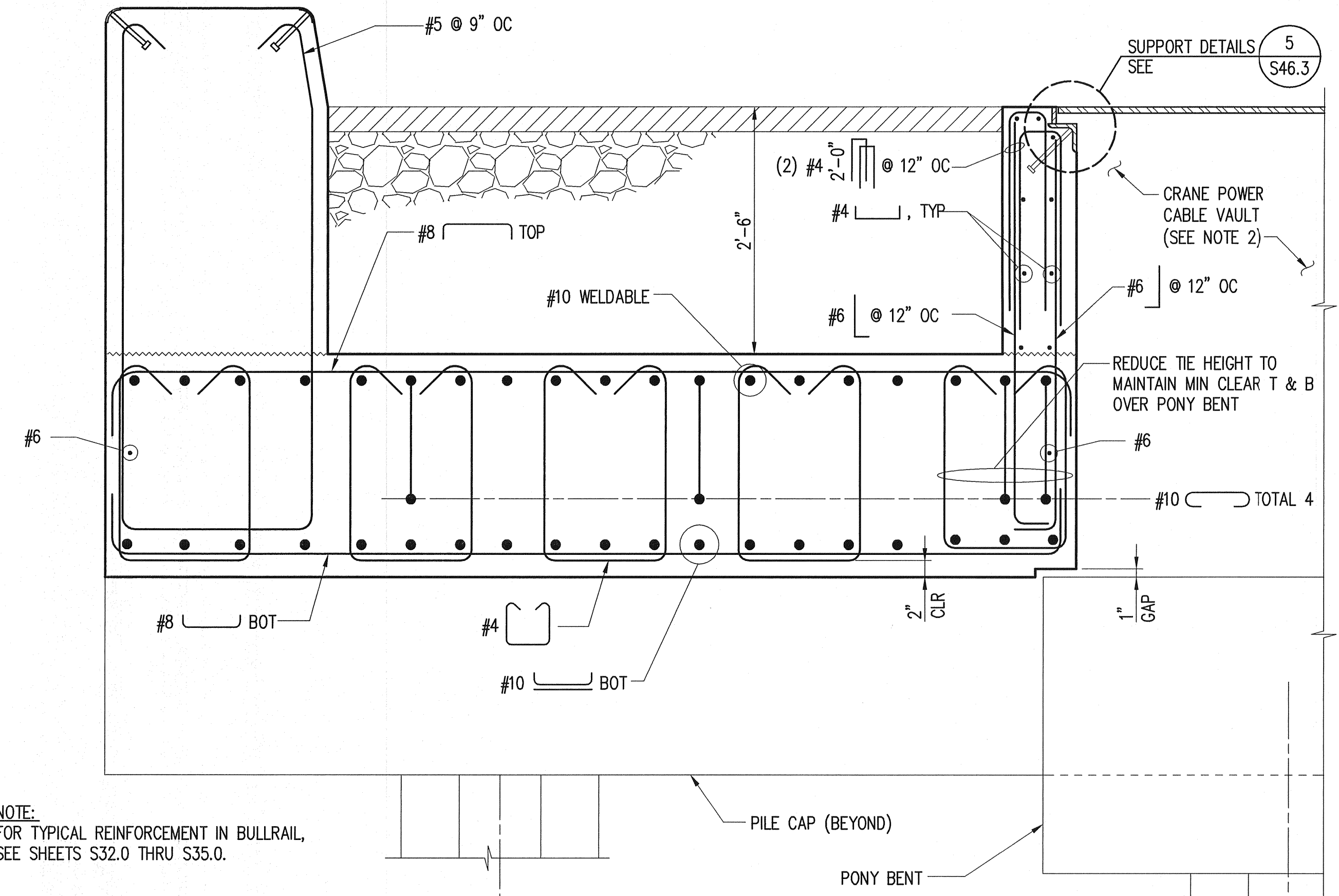
**SECTION -**  
**CAST-IN-PLACE SLAB AND WALL**  
**AT CRANE POWER CABLE VAULT**  
SCALE: 1"=1'-0"

A  
S31.6

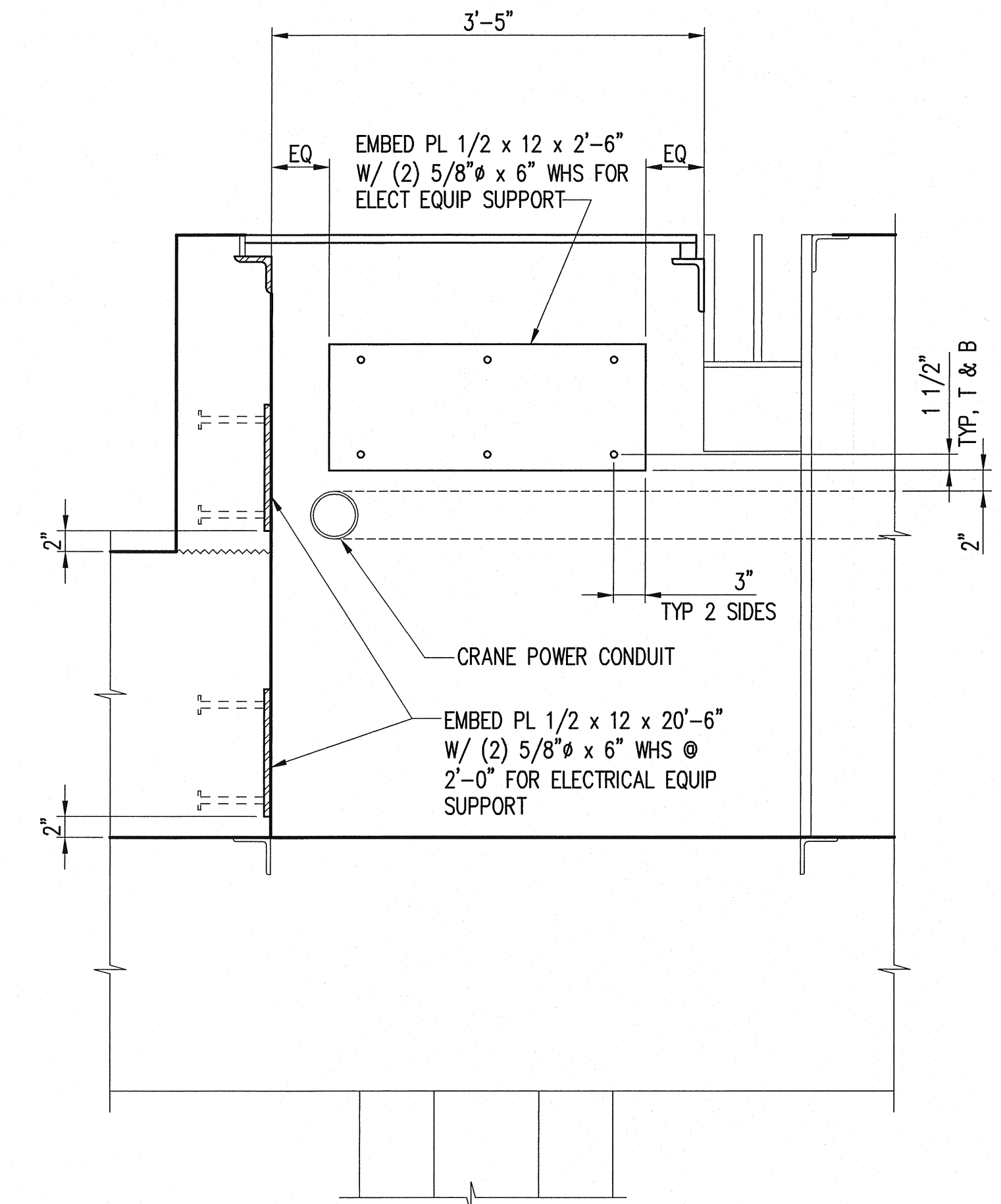
**NOTES:**  
FOR NOTES, SEE SHEET S31.6.

PORT OF TACOMA EAST BLAIR ONE WHARF CRANE POWER CABLE VAULT SECTIONS 1	EP-6305 <b>S31.7</b> SHEET 133 OF 215	TOWNSHIP: 21N RANGE: 3E SECTION: 27 DATUM: HORIZ. VERT: DRAWING SCALE: AS SHOWN	APPROVED H. J. Jones CHIEF ENGINEER - DATE 23 MAY 07	RJK CHECKED BY - DATE 05/2007	GSN PROJECT ENGR. - DATE 05/2007	PORT OF TACOMA CONSULTING ENGINEERS 1201 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 386-0160 Fax (253) 396-0162	PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841
		REVISION MARK REVISION	BY:	DATE:			

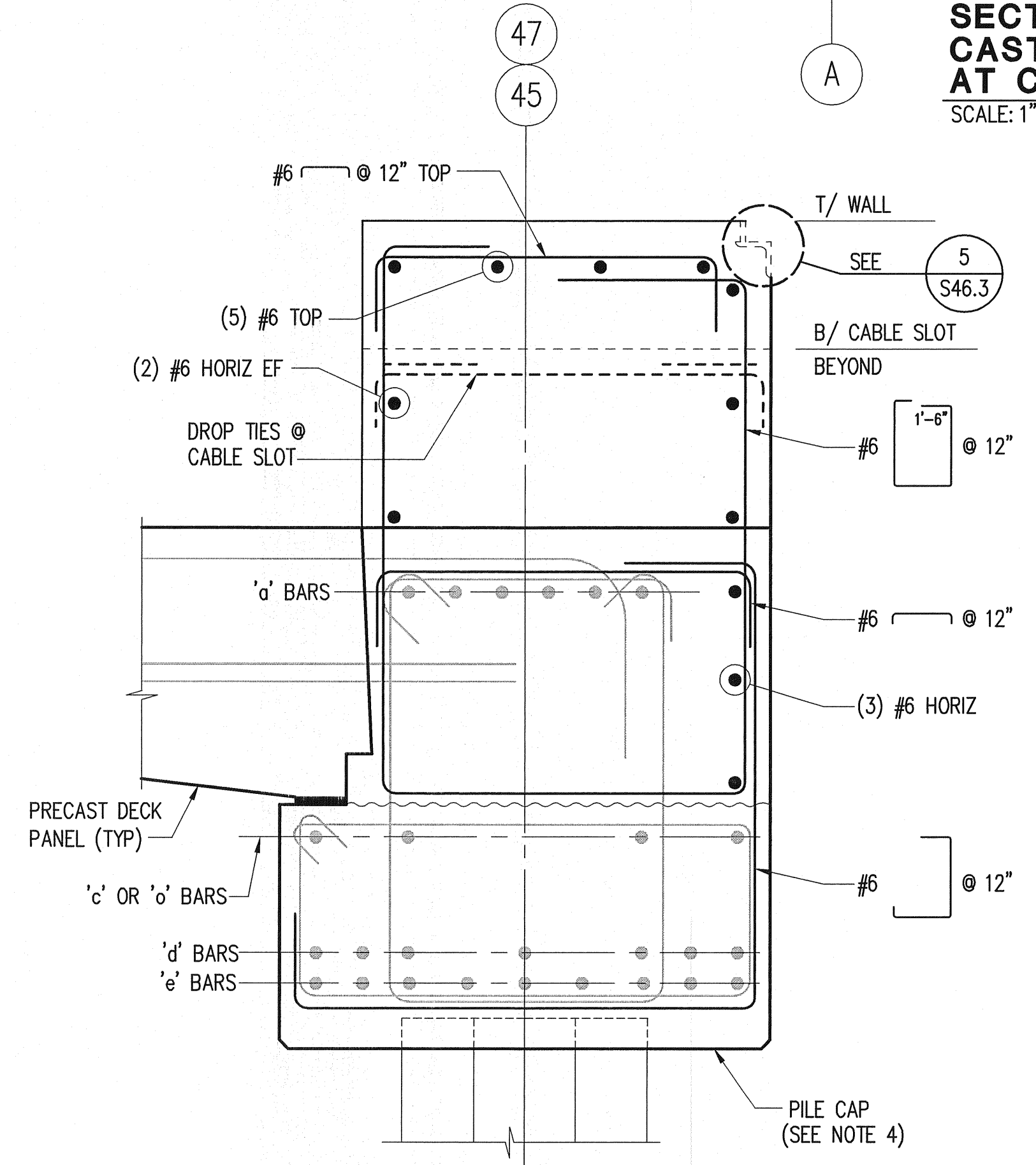
**BID SET**



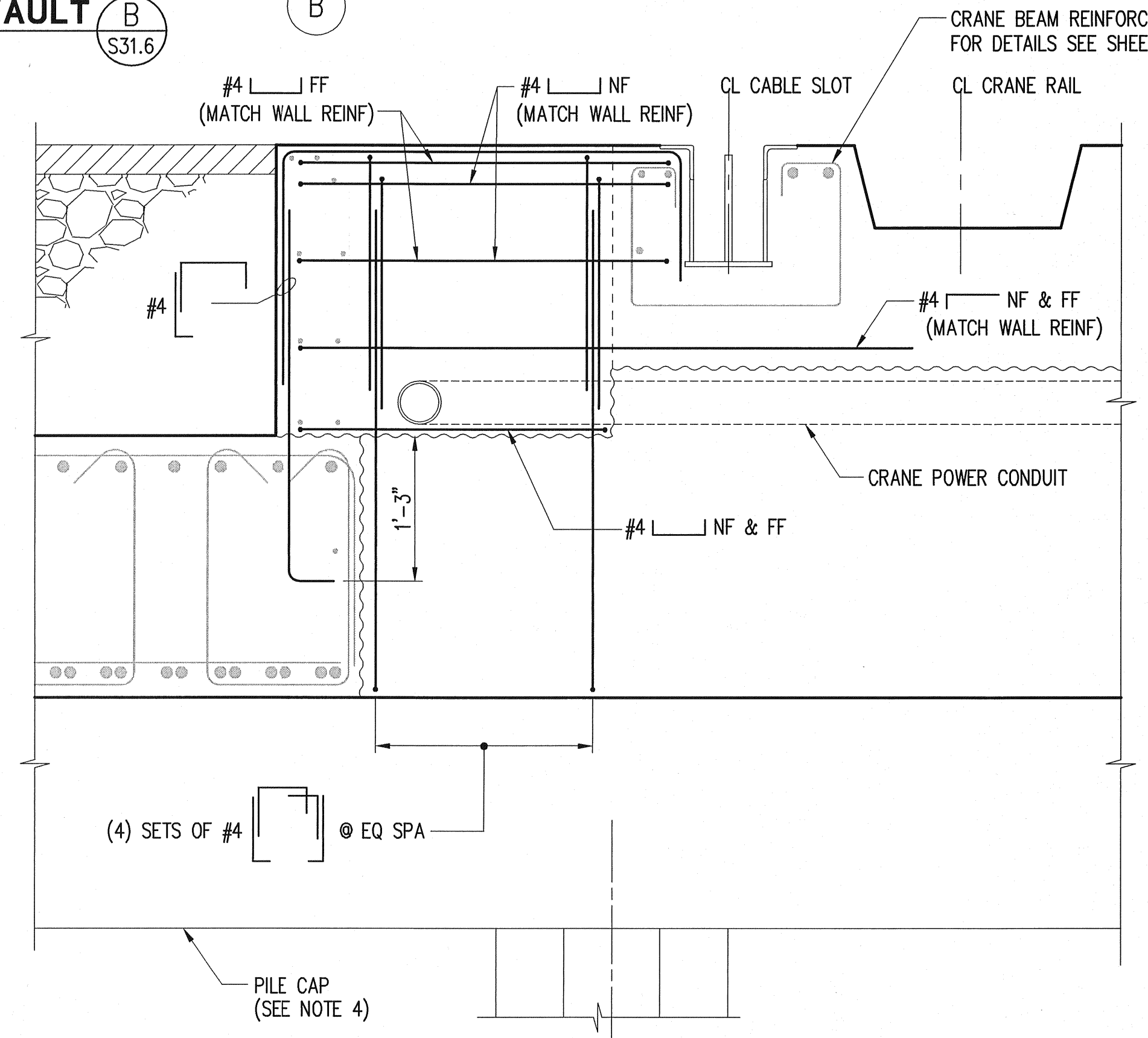
**SECTION -  
CAST-IN-PLACE SLAB AND WALL  
AT CRANE POWER CABLE VAULT**  
SCALE: 1"=1'-0"



**SECTION**  
SCALE: 1"=1'-0"



**SECTION - WALL  
AT CRANE POWER CABLE VAULT**  
SCALE: 1"=1'-0"



**SECTION - WALL  
AT CRANE POWER CABLE VAULT**  
SCALE: 1"=1'-0"

**NOTES:**  
FOR NOTES, SEE SHEET S31.6.

NOTE:  
FOR TYPICAL REINFORCEMENT IN BULLRAIL,  
SEE SHEETS S32.0 THRU S35.0.

PORT OF TACOMA P.O. BOX 1837  
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**kpfi**

PORT OF TACOMA U.S.A.

APPROVED: *H. Adams* CHIEF ENGINEER - DATE: 05/21/2007  
DRAWING DATE: 05/21/2007  
PROJECT: EAST BLAIR ONE WHARF CRANE POWER CABLE VAULT SECTIONS 2  
PORT PARCEL: 17 & 18

REVISION: MARK REVISION DATE

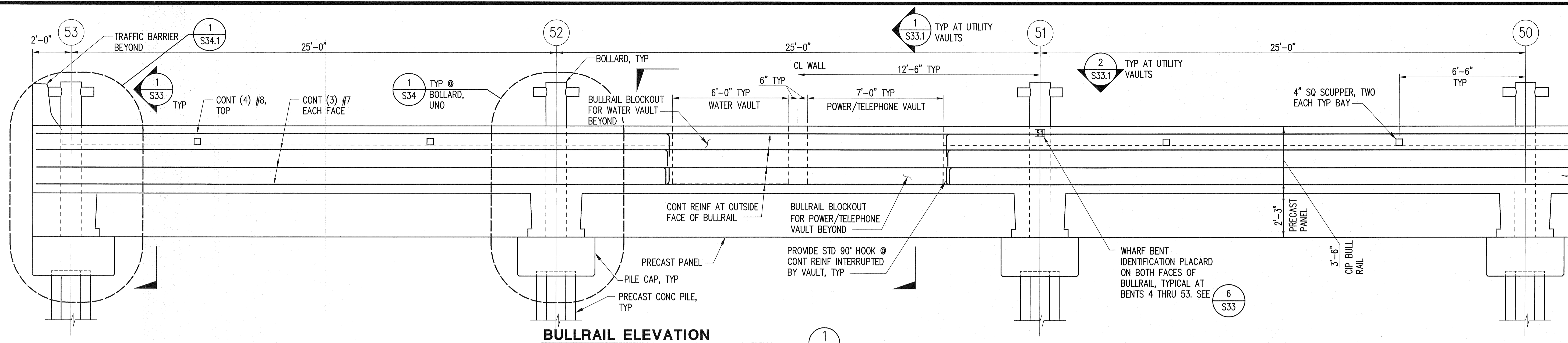
BY: APPROVED DATE

EP-6305  
**S31.8**  
SHEET 134 OF 215  
CONTRACT NUMBER: 068018  
DRAWING NUMBER: EP623  
PHASE: BID SET

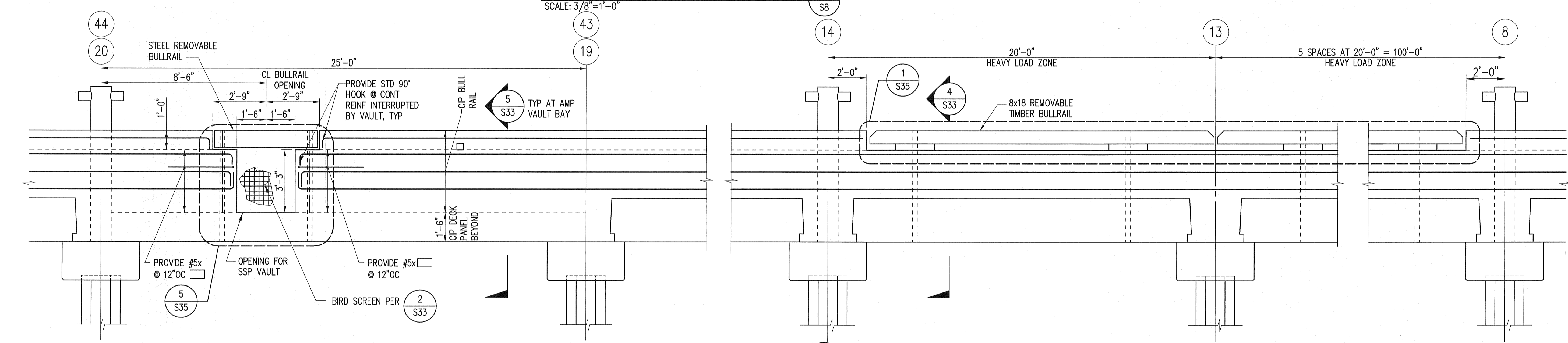
PORT OF TACOMA  
EAST BLAIR ONE WHARF  
CRANE POWER CABLE VAULT  
SECTIONS 2

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DALLIN: HORIZ. AS SHOWN  
DRAWING SCALE: AS SHOWN

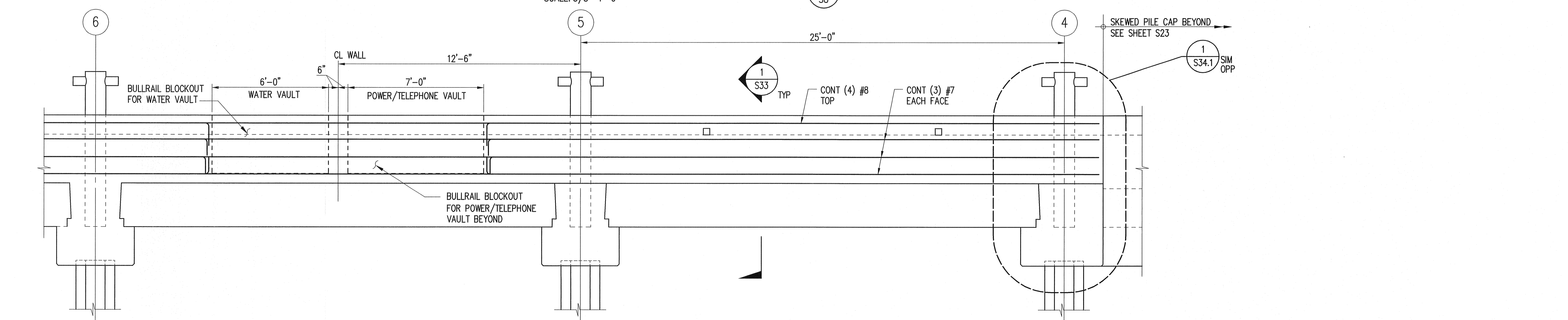
BID SET



**BULLRAIL ELEVATION**  
SCALE: 3/8"=1'-0"



**BULLRAIL ELEVATION**  
SCALE: 3/8"=1'-0"



**BULLRAIL ELEVATION**  
SCALE: 3/8"=1'-0"

**PORT OF TACOMA**  
P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

**Consulting Engineers**  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

**kprf**

**PORT OF TACOMA**  
USA

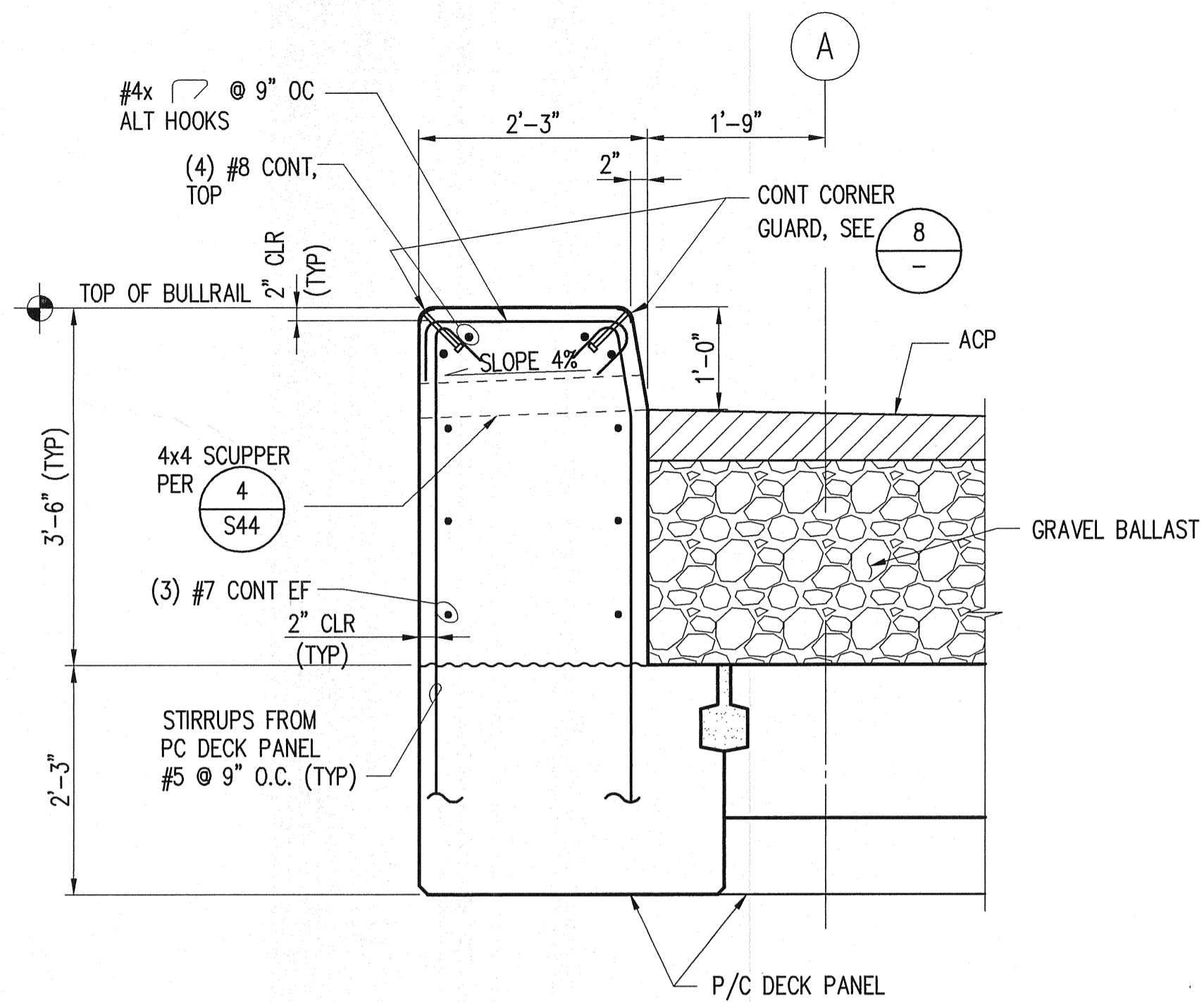
RKJ	05/2007	- DATE	- DATE	- DATE
CHECKED BY	GGN	05/2007	05/2007	05/2007
PROJECT ENGR.	PROJECT ENGR.			

APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 13 May 07  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT PARCEL: 17 & 18  
EXPIRES: 9/30/08

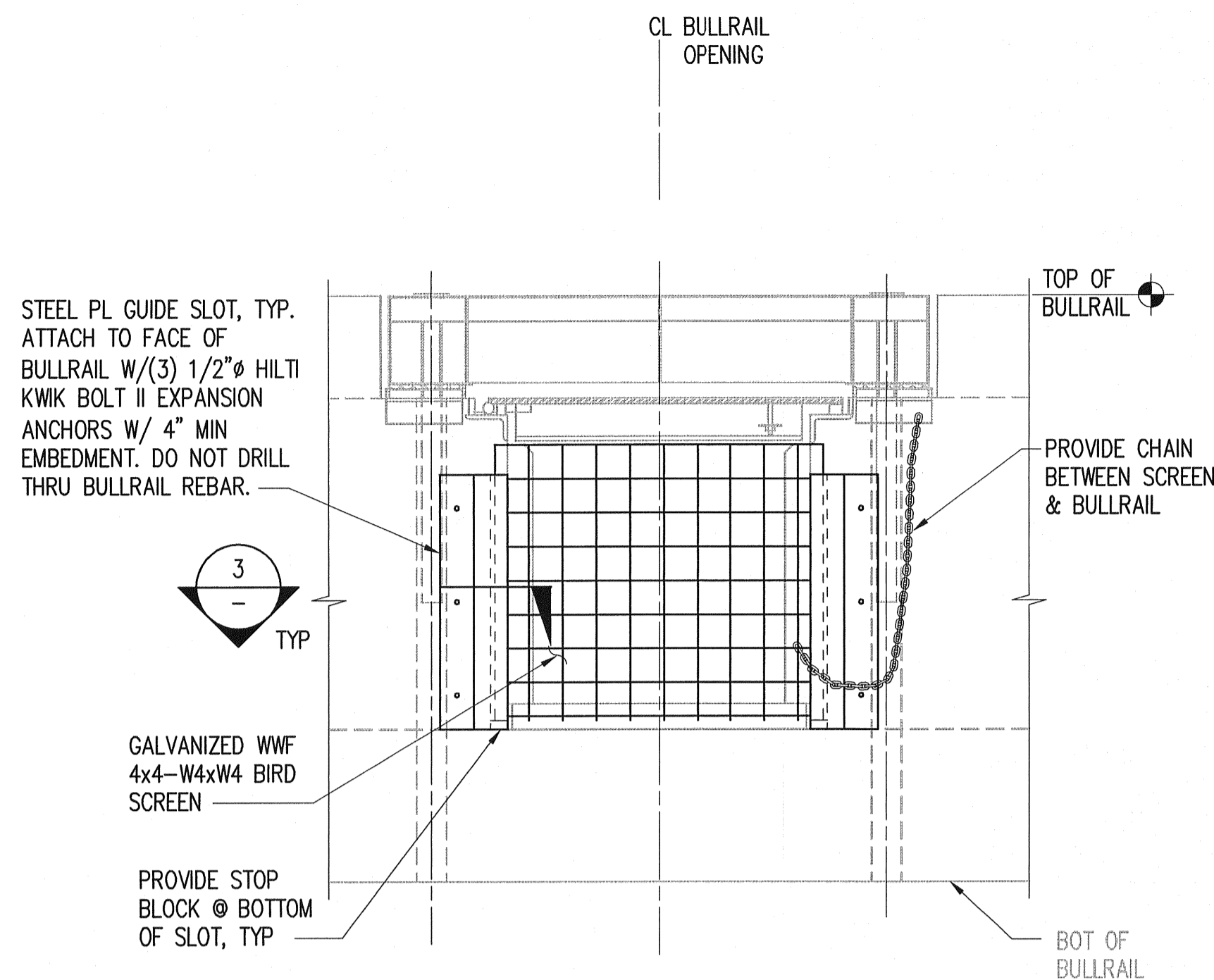
**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
BULLRAIL ELEVATION

**EP-6305**  
**S32.0**  
SHEET 135 OF 215  
CONTRACT NUMBER: 068018  
E NUMBER: E2623  
PHASE: BID SET

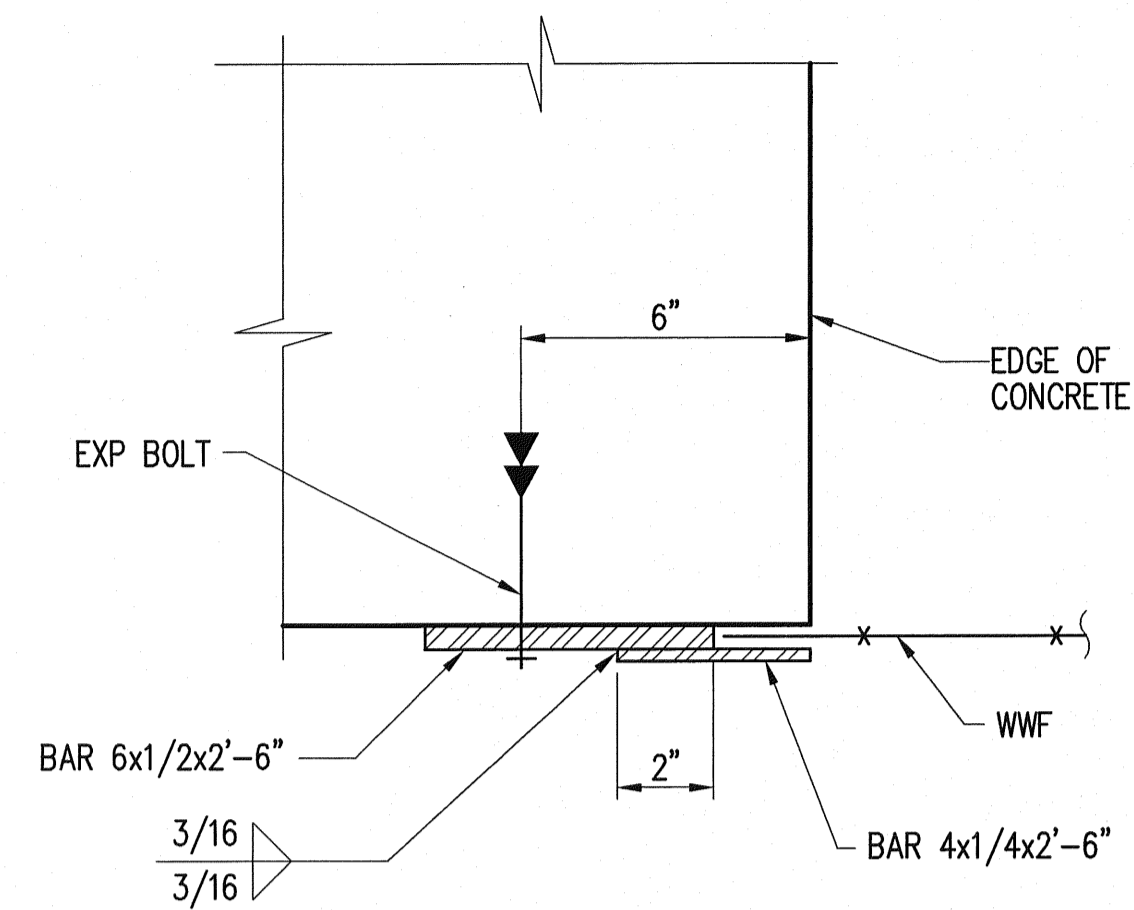
**BID SET**



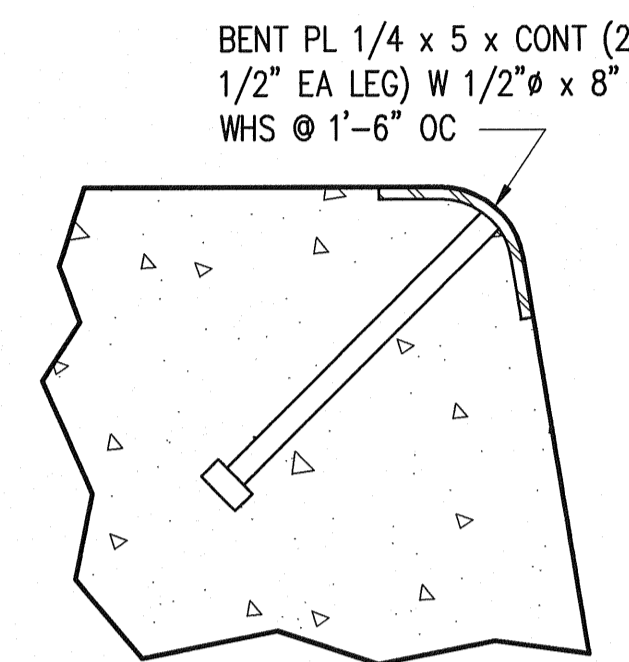
**SECTION - TYPICAL BULLRAIL**  
SCALE: 3/4"=1'-0"  
1  
S32, S34.1



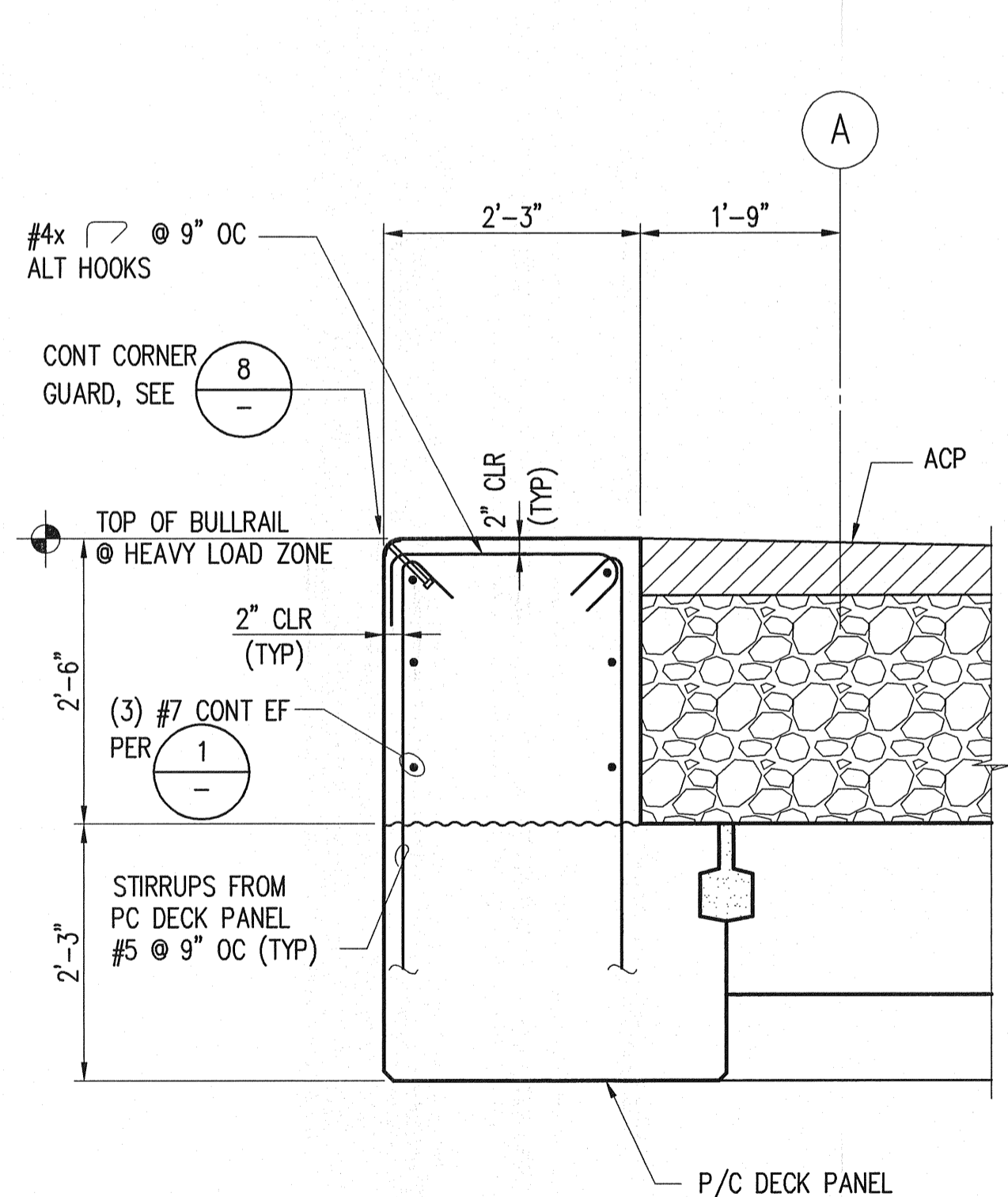
**ELEVATION - BIRD SCREEN AT SSP VAULT OPENING**  
SCALE: 3/4"=1'-0"  
2  
S32



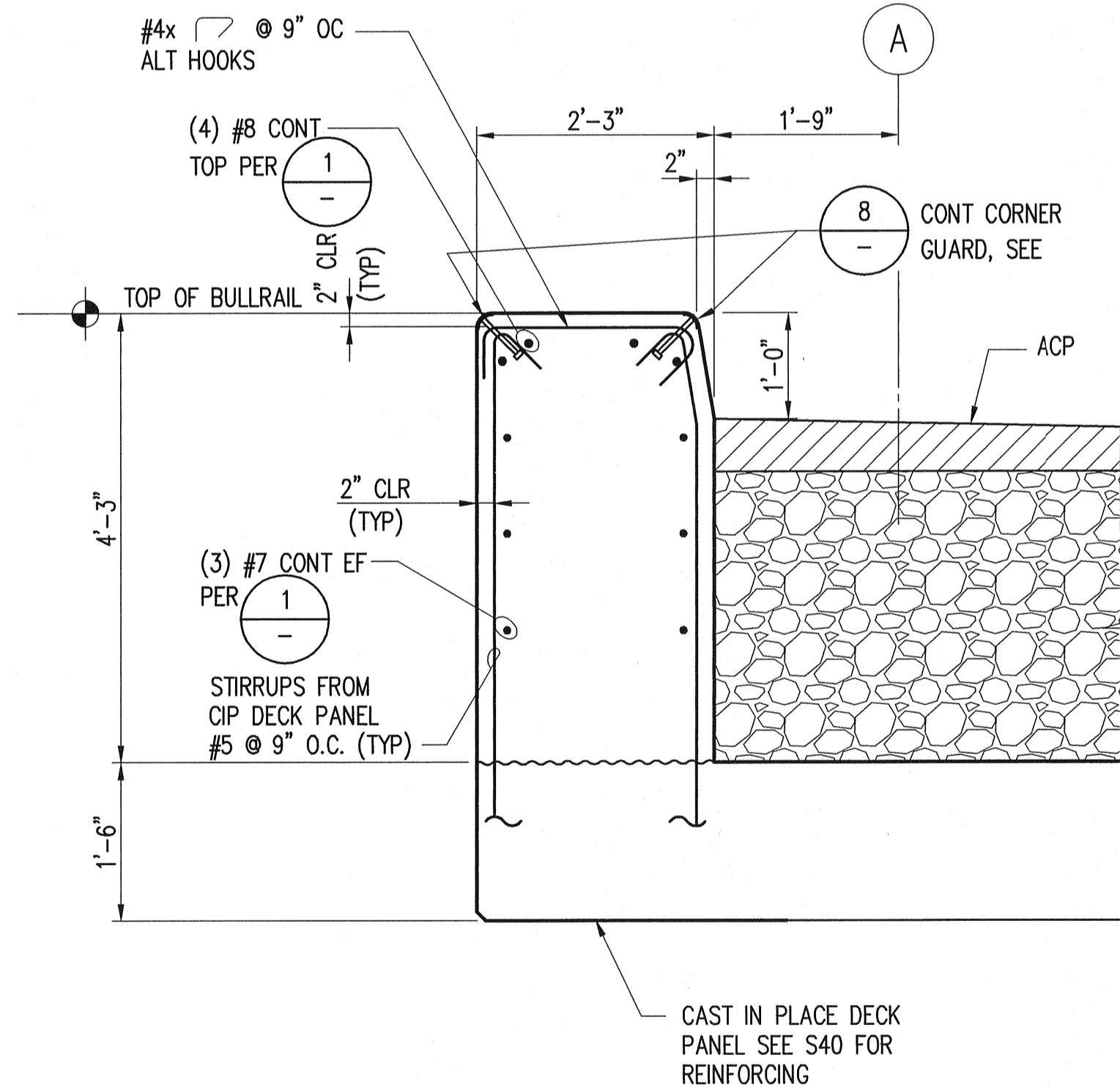
**SECTION**  
SCALE: 3"=1'-0"  
3



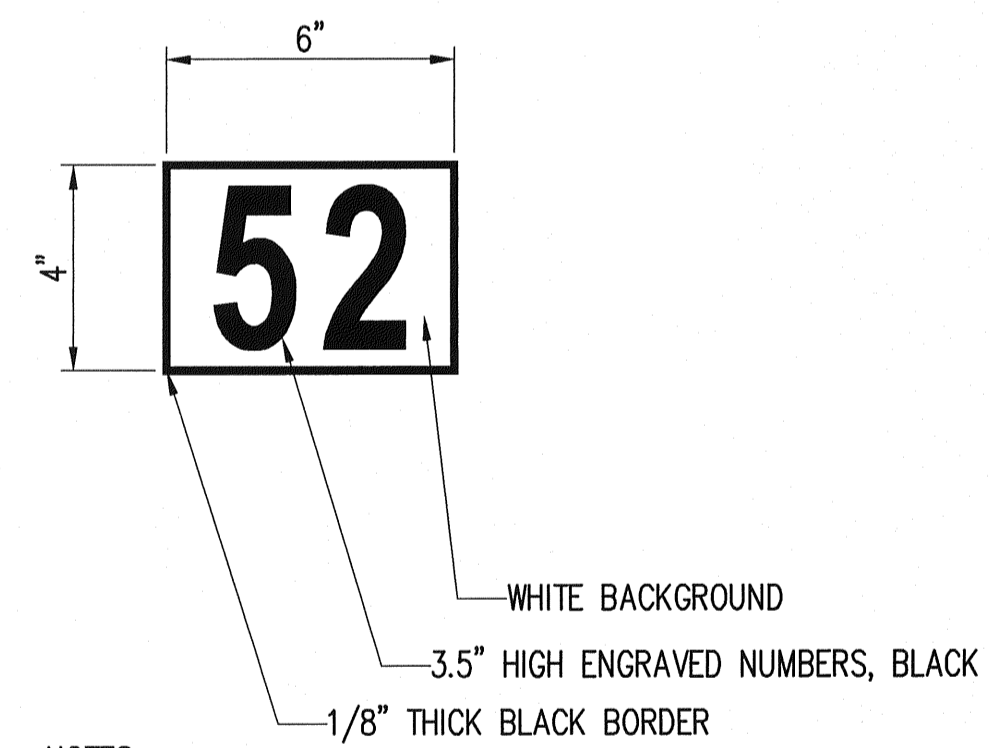
**DETAIL CORNER GUARD**  
SCALE: 3"=1'-0"  
8  
S35



**SECTION - BULLRAIL AT HEAVY LOAD ZONE**  
SCALE: 3/4"=1'-0"  
4  
S32, S35



**SECTION - AMP VAULT BAYS**  
SCALE: 3/4"=1'-0"  
5  
S32



**NOTES:**

1. PROVIDE NUMBER PLATE ON WATER SIDE AND LANDSIDE FACE OF BULLRAIL AT BENT LINES 4 THROUGH 53. (100 PLATES TOTAL)
2. MANUFACTURE SIGN FROM PHENOLIC PLASTIC WITH ENGRAVED PERMANENT CHARACTERS.
3. ATTACH PLATE TO BULL RAIL WITH EPOXY ADHESIVE.
4. WHEN OBSTRUCTED FROM VIEW, LOCATE AS DIRECTED BY ENGINEER

**DETAIL - WHARF BENT IDENTIFICATION PLACARD**  
SCALE: NTS  
6  
S32

PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax: (253) 396-0162

**kpfi**  
 PORT OF TACOMA  
 CONSULTING ENGINEERS

APPROVED: *H. Adams*  
 CHIEF ENGINEER - DATE: 23 Mar 07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

RJK 05/2007 - DATE  
 CGN 05/2007 - DATE  
 PROJECT ENGR. - DATE

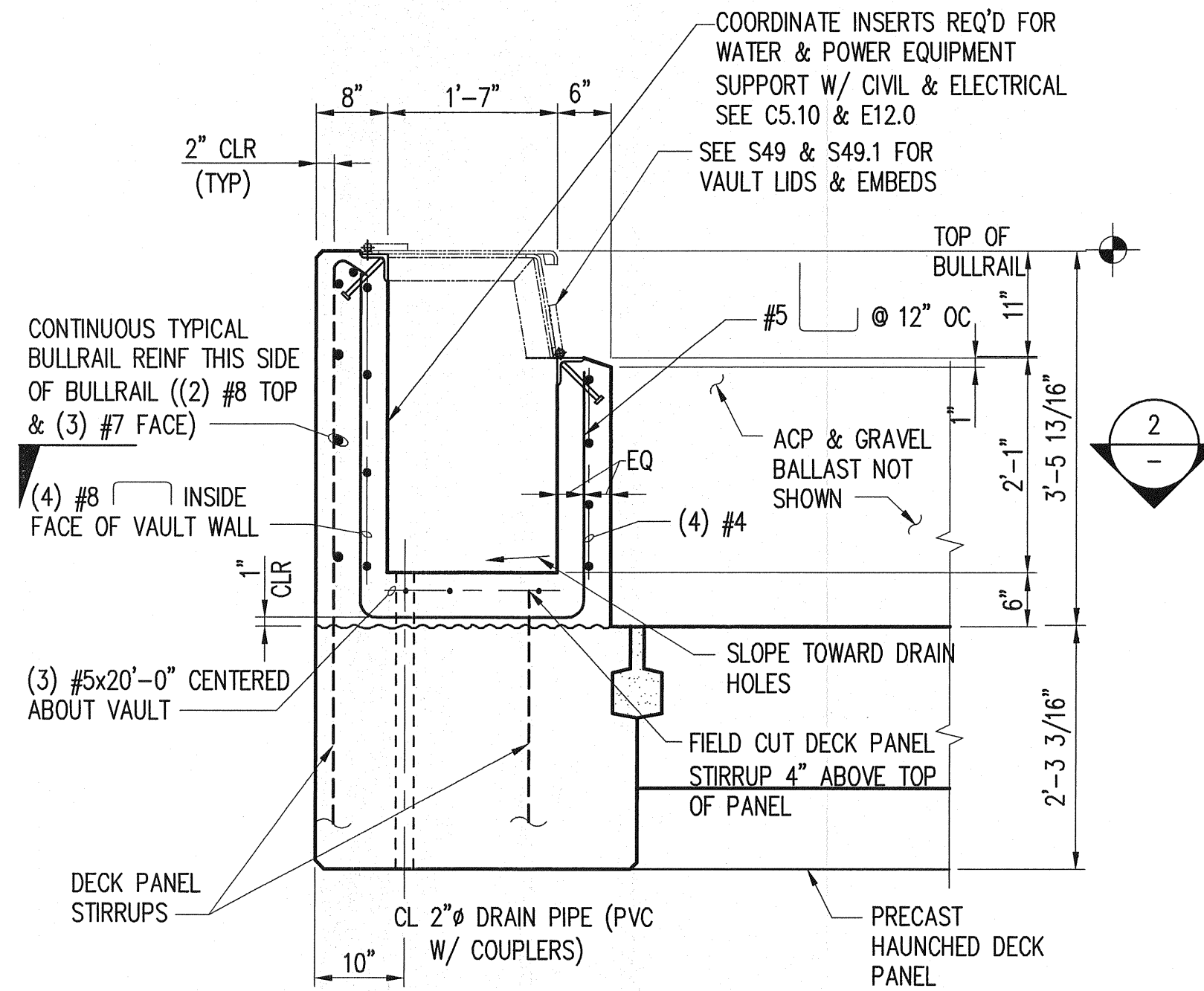
TOWNSHIP: 21N. RANGE: 3E. SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

EP-6305  
**S33.0**  
 SHEET 136 OF 215  
 CONTRACT NUMBER: 068018  
 E. NUMBER: E2823  
 PHASE: BID SET

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 BULLRAIL SECTIONS AND DETAILS

EXPIRES 9/10/08

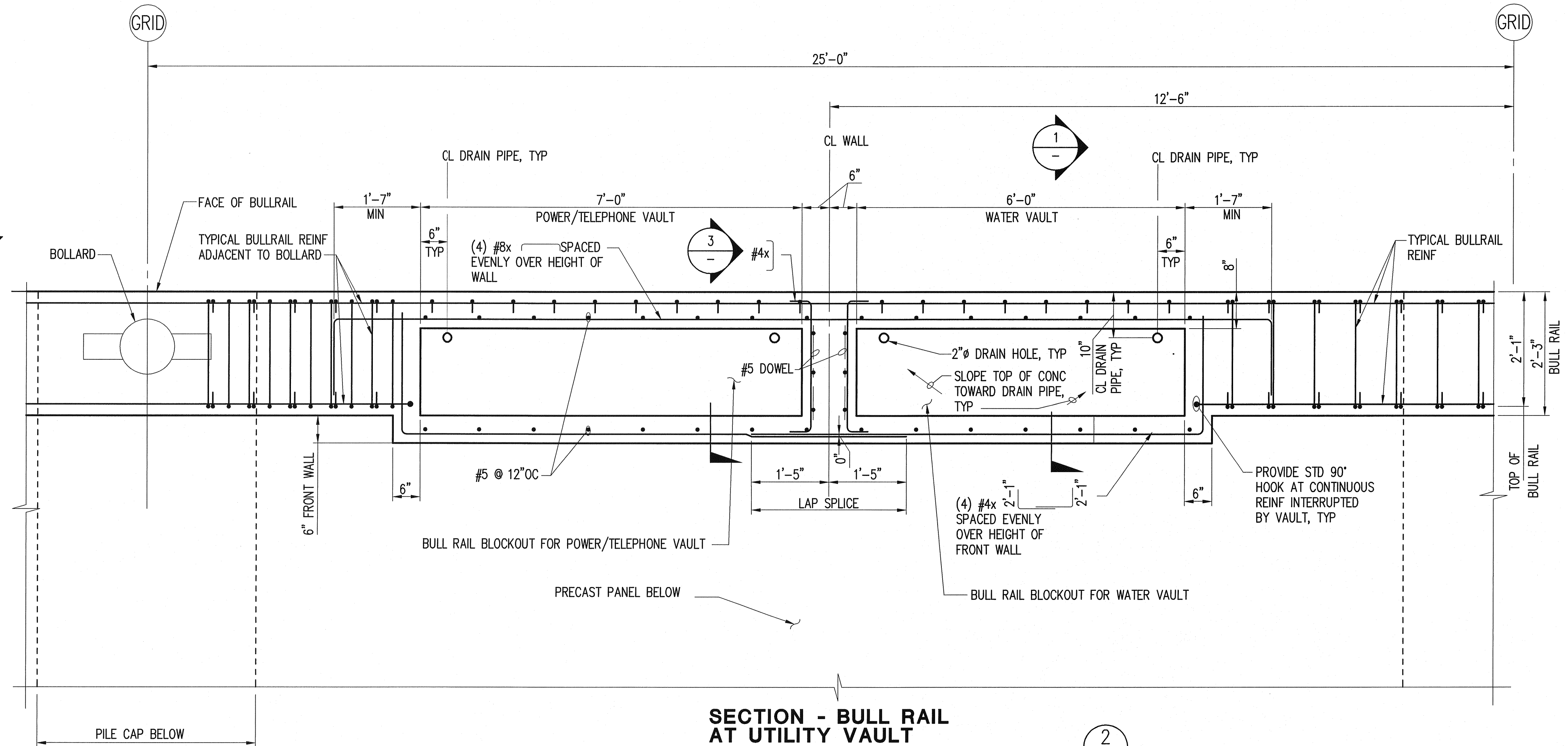
**BID SET**



**TYPICAL SECTION - BULLRAIL AT UTILITY VAULTS**

SCALE: 3/4"=1'-0"

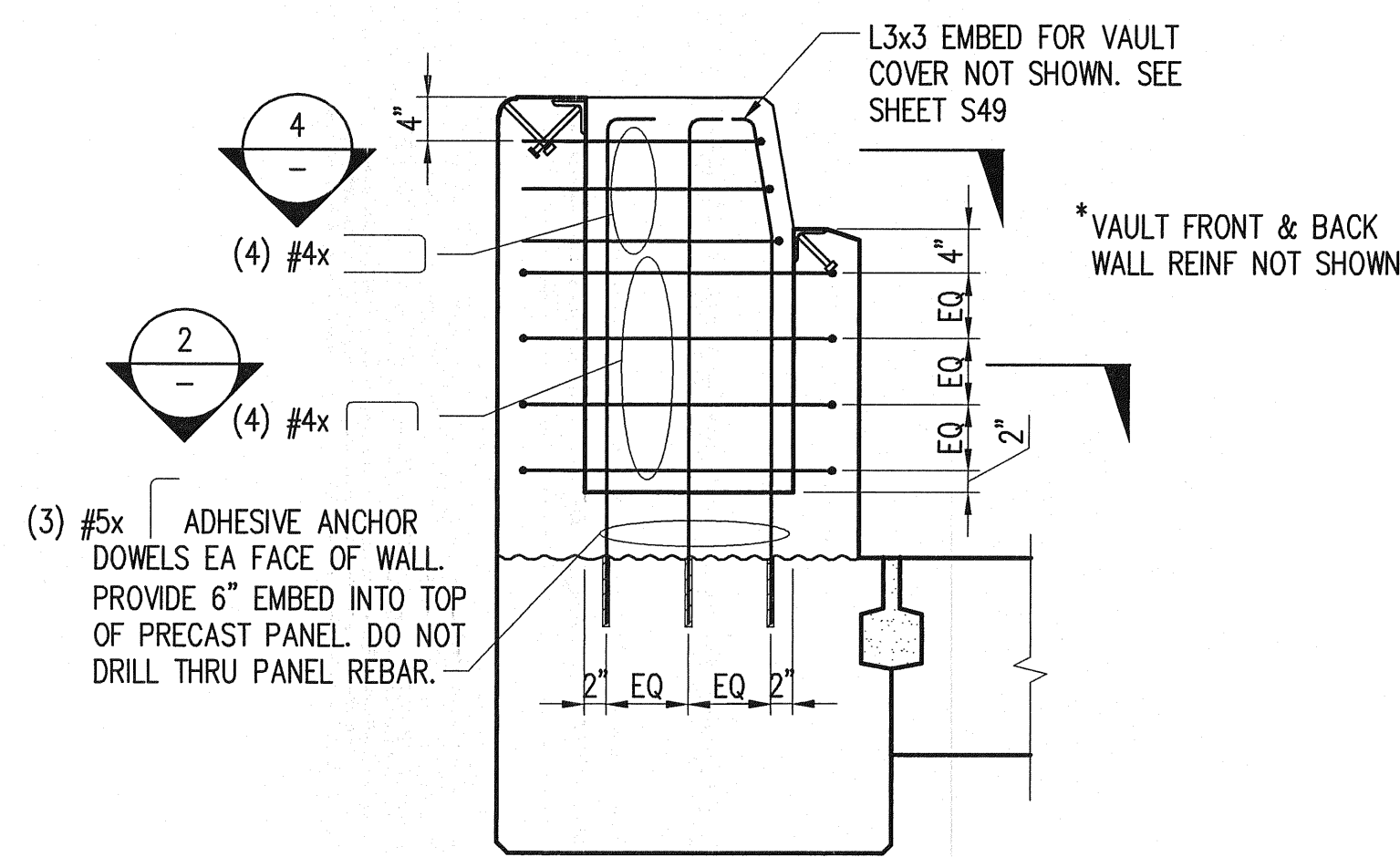
1  
-  
S32



**SECTION - BULL RAIL AT UTILITY VAULT**

SCALE: 3/4"=1'-0"

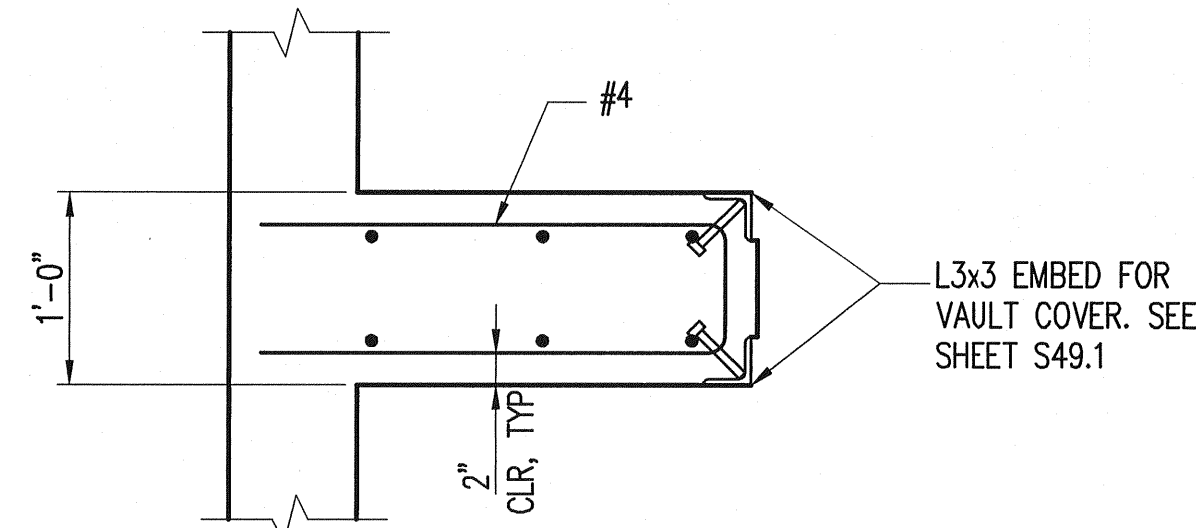
2  
-  
S32



**SECTION**

SCALE: 3/4"=1'-0"

3  
-  
S32



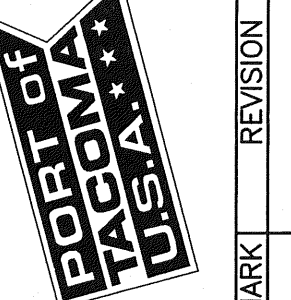
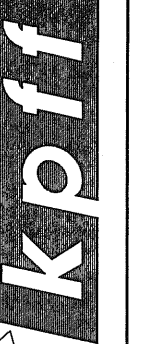
**SECTION**

SCALE: 1"=1'-0"

4  
-  
S32

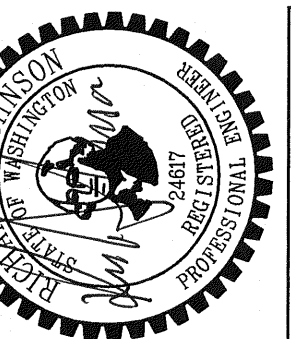
PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162



APPROVED  
M. Adams  
23 Feb 07  
CHIEF ENGINEER - DATE  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 E ALEXANDER AVENUE  
PORT PARCEL: 17 & 18

APPROVED  
M. Adams  
23 Feb 07  
CHIEF ENGINEER - DATE  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 E ALEXANDER AVENUE  
PORT PARCEL: 17 & 18



PORT OF TACOMA  
EAST BLAIR ONE WHARF  
BULLRAIL SECTIONS AND DETAILS

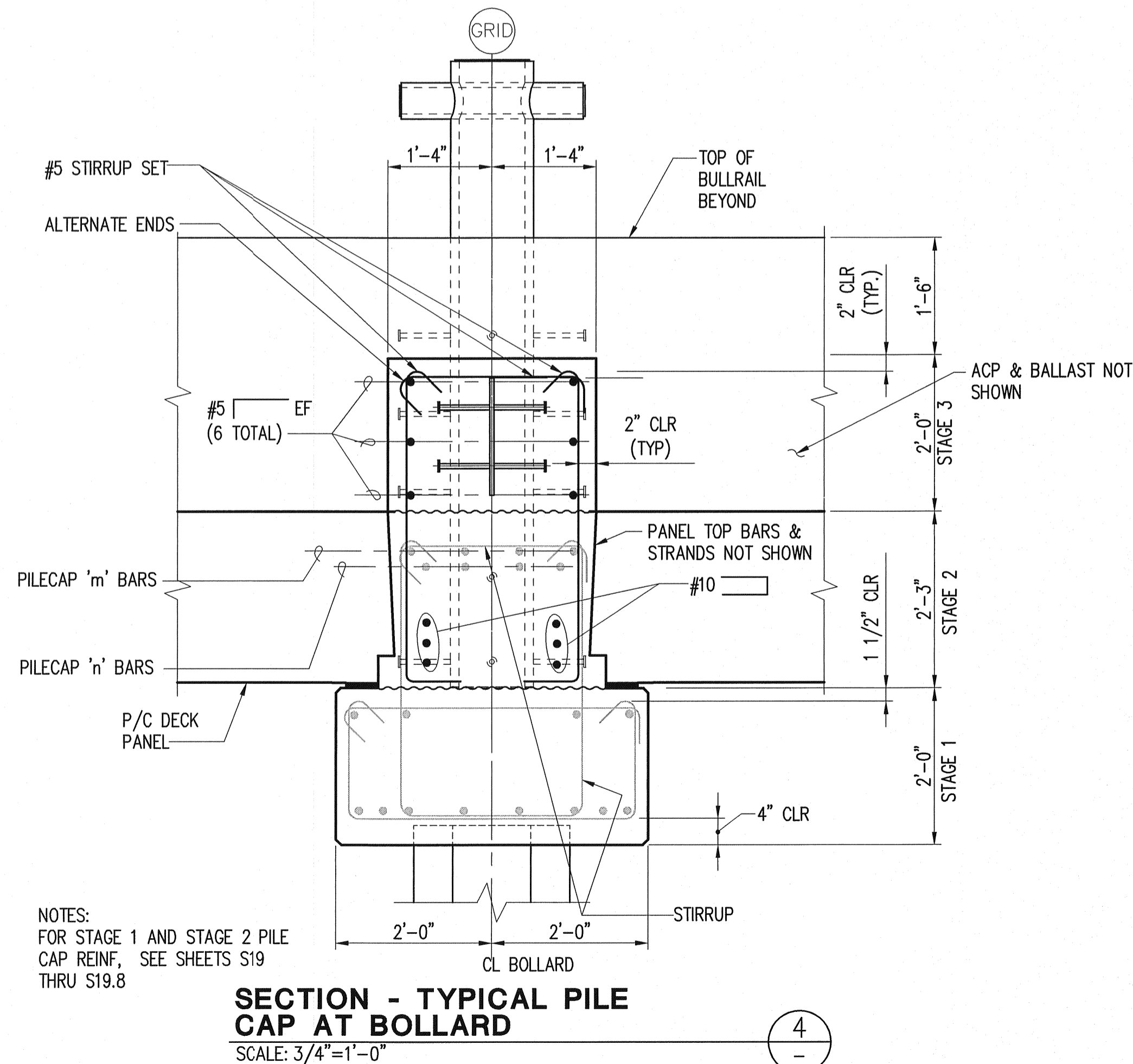
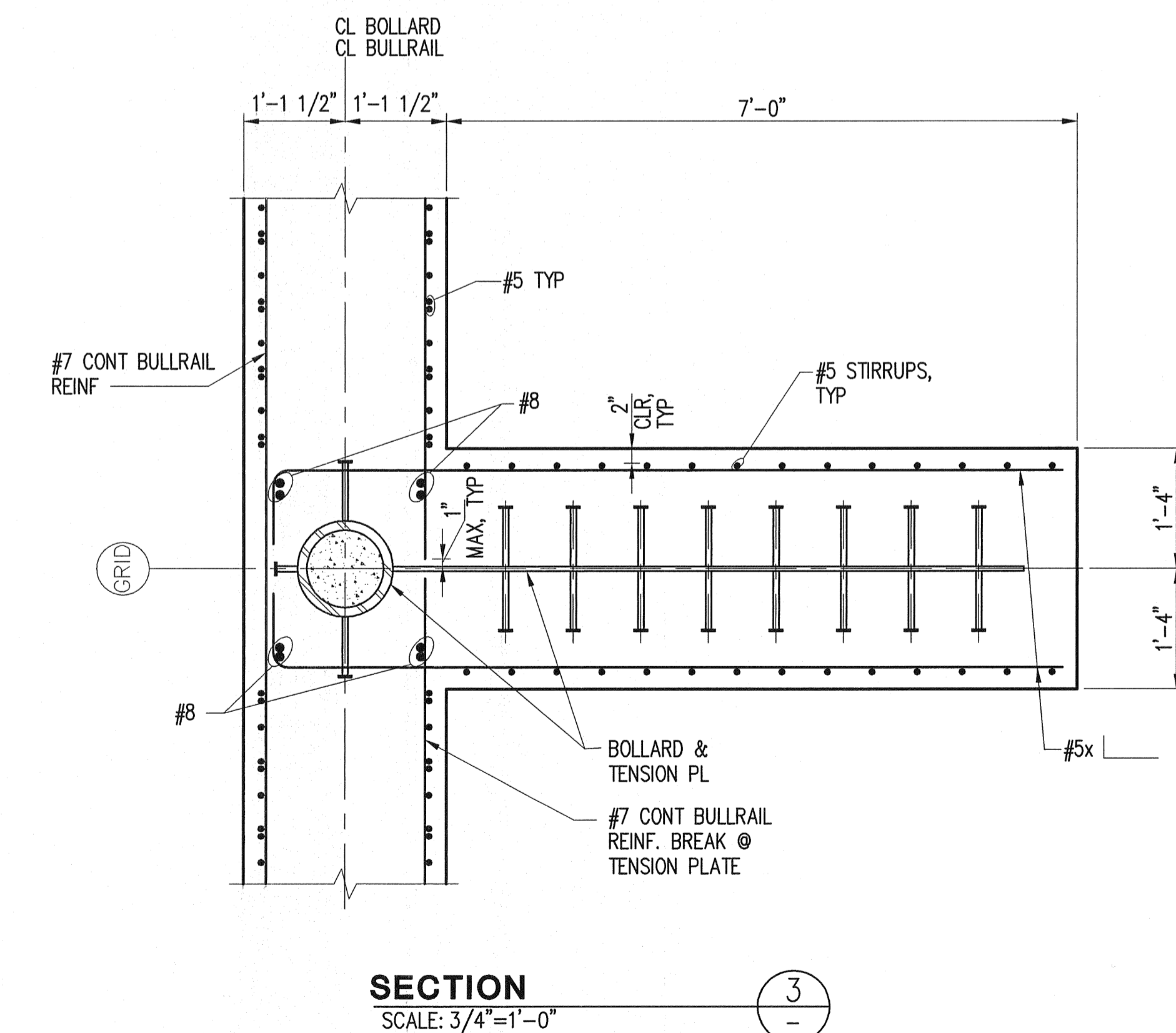
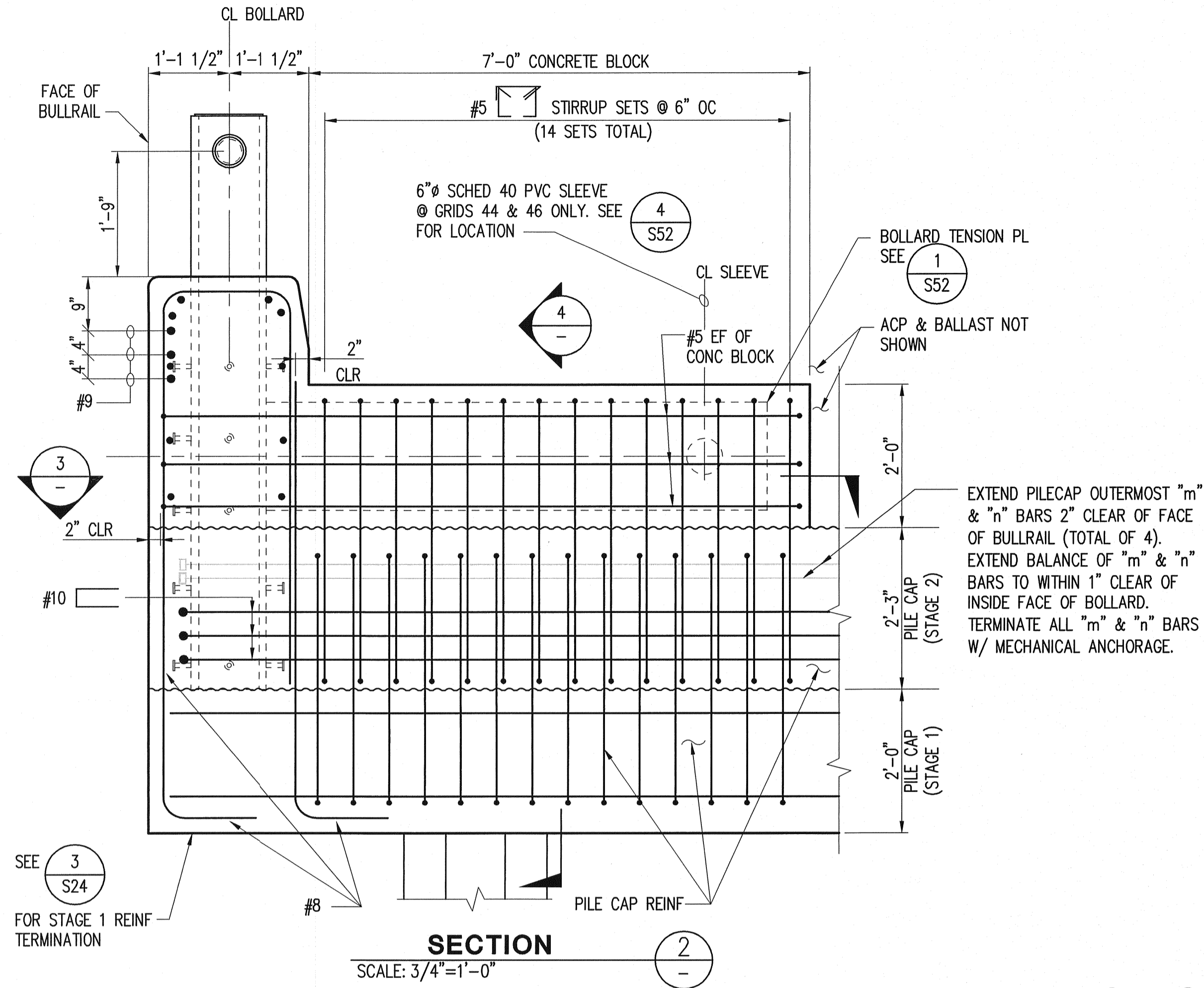
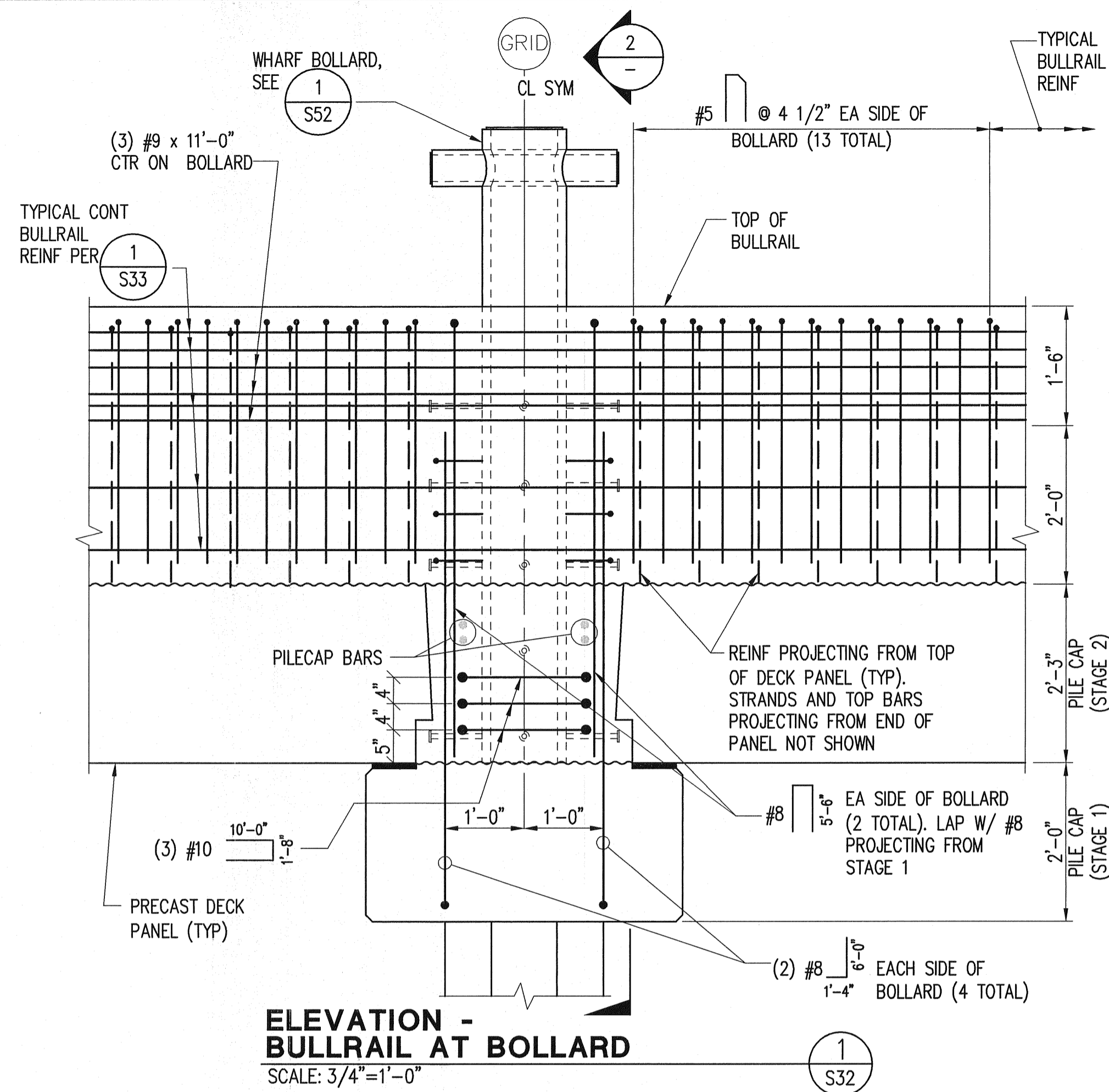
EP-6305  
**S33.1**  
SHEET 137 OF 215

CONTRACT NUMBER: 088018  
E NUMBER: E2823  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ: VERT:  
DRAWING SCALE: AS SHOWN

EXPIRES 9/30/08

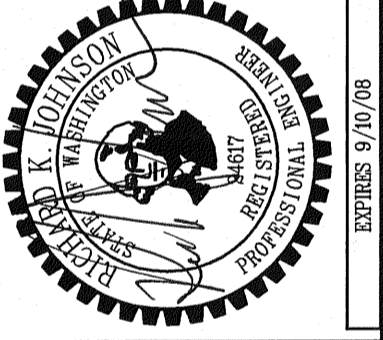
**BID SET**



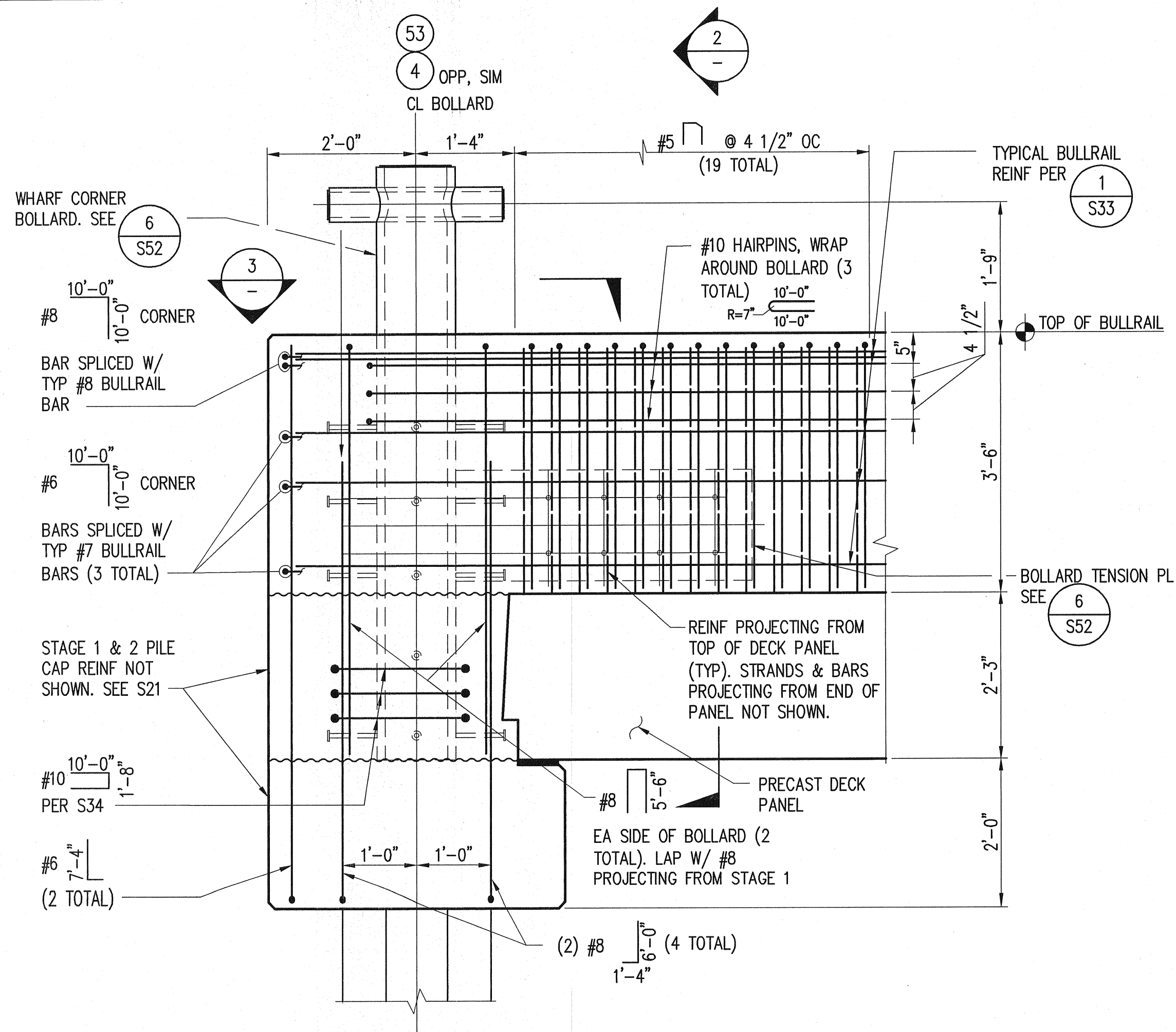
**NOTES:**

1. REINFORCEMENT SHOWN ON THIS SHEET IS TYPICAL AT BOLLARDS AND IS ADDITIONAL TO THE BULLRAIL, PILE CAP AND PRECAST PANEL REINFORCEMENT.
2. FOR REINF IN BULLRAIL (NOT SHOWN), SEE SHEET S33.
3. FOR BOLLARD DETAILS, SEE SHEET S52.
4. CONT CORNER GUARD NOT SHOWN. FOR CORNER GUARD DETAILS, SEE 8 S33

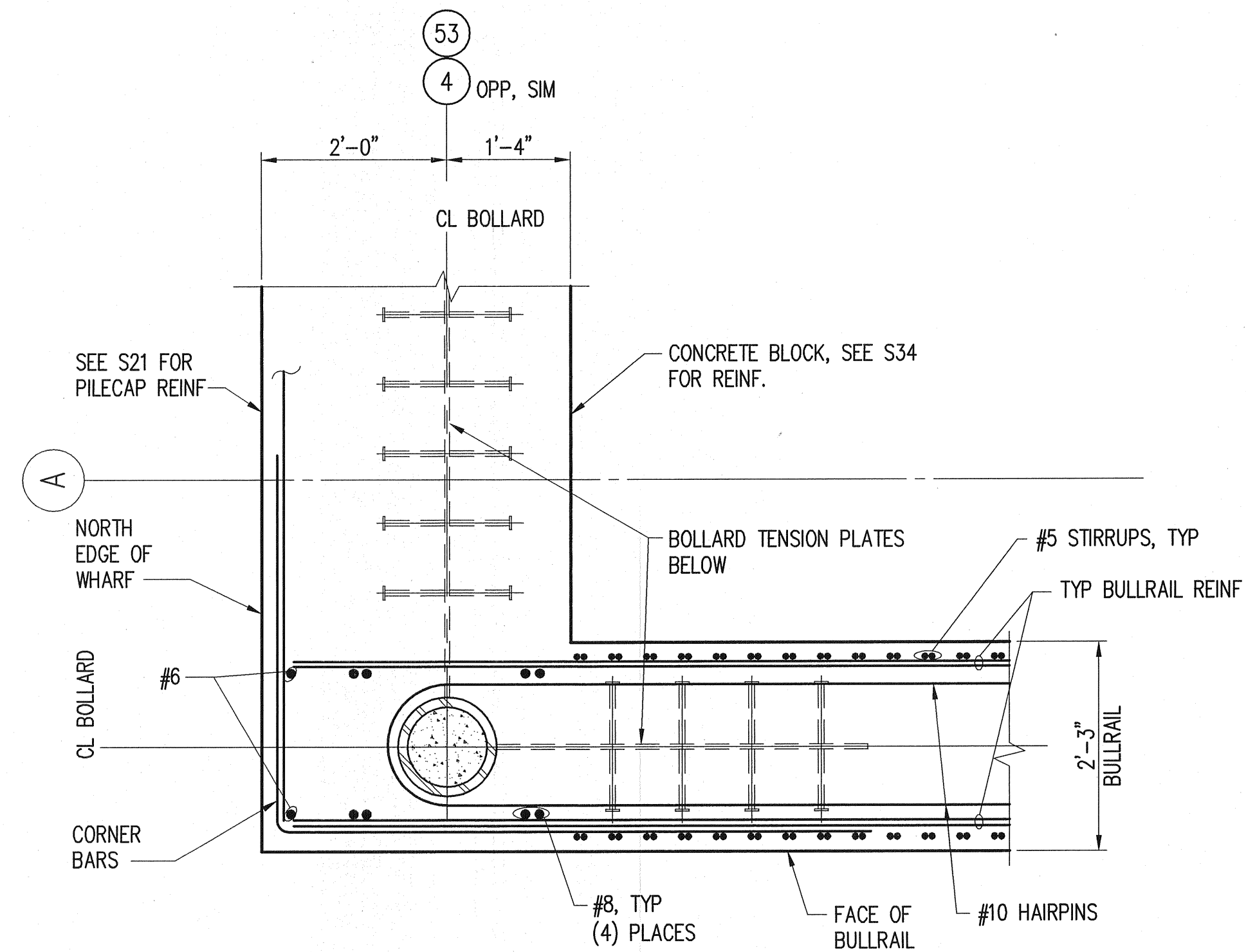
APPROVED: *M. Johnson*  
 CHIEF ENGINEER - DATE: 05/21/2007  
 PROJECT ENGR. - DATE: 05/2007  
 CHECKED BY - DATE: 05/2007  
 RJK  
 PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax: (253) 396-0162  
**kpf**  
 PORT OF TACOMA U.S.A.  
 REVISION: MARK 17 & 18  
 BY: APPROVED: DATE:



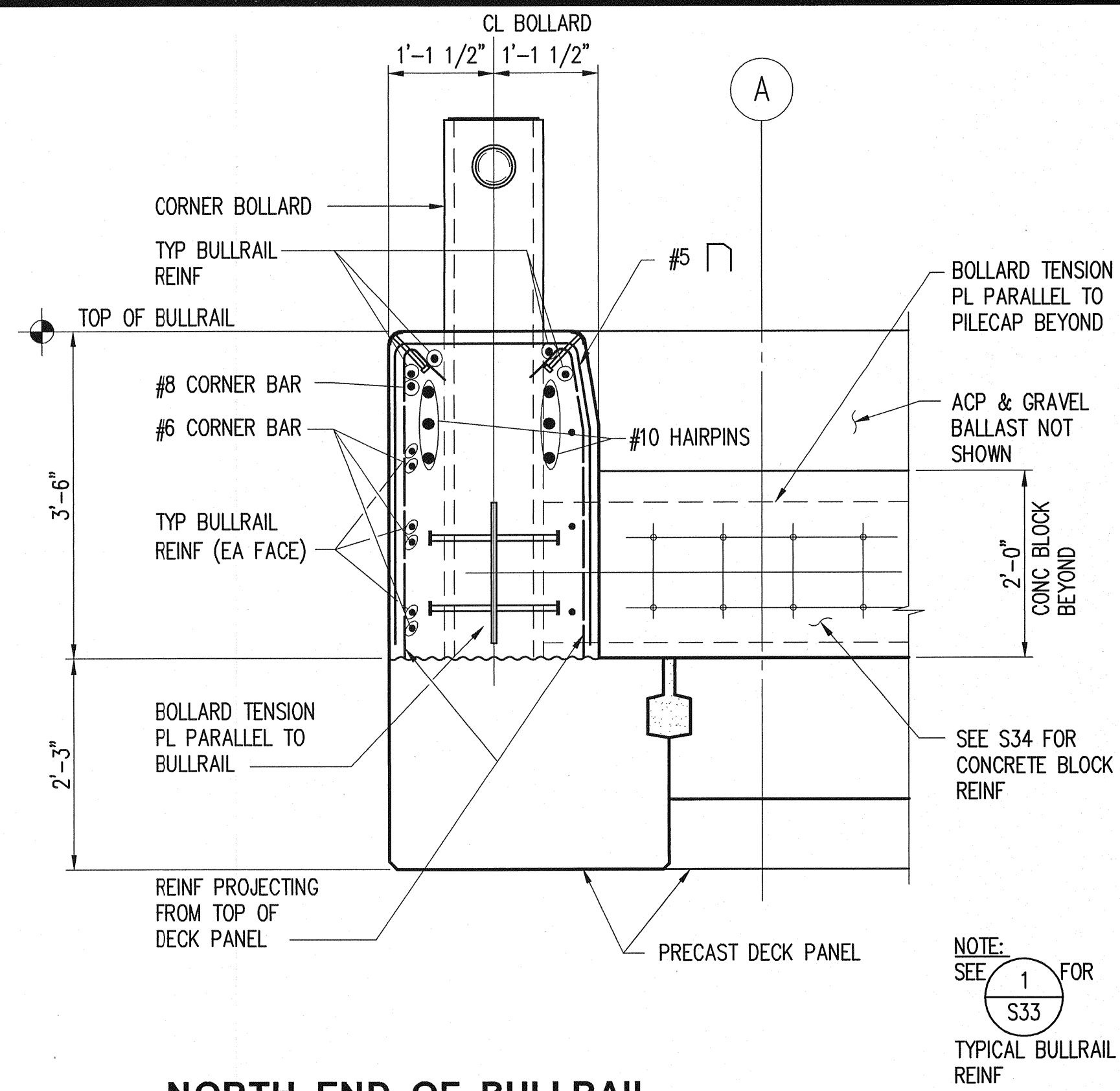
EP-6305  
**S34.0**  
 SHEET 138 OF 215  
 CONTRACT NUMBER: 068018  
 E. NUMBER: E2623  
 PHASE: BID SET  
 TOWNSHIP: 21N, RANGE: 3E, SECTION: 27  
 DATUM: HORIZ.  
 DRAWING SCALE: AS SHOWN  
**PORT OF TACOMA**  
**EAST BLAIR ONE WHARF**  
**BULLRAIL SECTIONS AND DETAILS**  
**BID SET**



**ELEVATION - NORTH END OF BULLRAIL  
(SIM @ SOUTH END OF BULLRAIL)** 1  
SCALE: 3/4"=1'-0" S32



**SECTION - NORTH END OF BULLRAIL  
(SIM @ SOUTH END OF BULLRAIL)** 3  
SCALE: 3/4"=1'-0" S33



**NORTH END OF BULLRAIL  
(SIM @ SOUTH END OF BULLRAIL)** 2  
SCALE: 3/4"=1'-0" S33

**NOTES:**

1. REINFORCEMENT SHOWN ON THIS SHEET IS TYPICAL AT CORNER BOLLARDS AND IS ADDITIONAL TO THE BULLRAIL, PILE CAP AND PRECAST PANEL REINFORCEMENT.
2. FOR REINF IN BULLRAIL (NOT SHOWN), SEE SHEET S33.
3. FOR BOLLARD DETAILS, SEE SHEET S52.
4. CONT CORNER GUARD NOT SHOWN. FOR CORNER GUARD DETAILS, SEE 8 S33

**PORT OF TACOMA**  
**EAST BLAIR ONE WHARF**  
**BULLRAIL SECTIONS AND DETAILS**

**EP-6305**  
**S34.1**  
**SHEET 139 OF 215**

CONTRACT NUMBER: 088018  
 E NUMBER: E2623  
 PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ.  
 DRAWING SCALE: AS SHOWN

APPROVED: *M. Adams*  
 CHIEF ENGINEER - DATE: 23 May 07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E ALEXANDER AVENUE  
 PORT PARCELS: 17 & 18

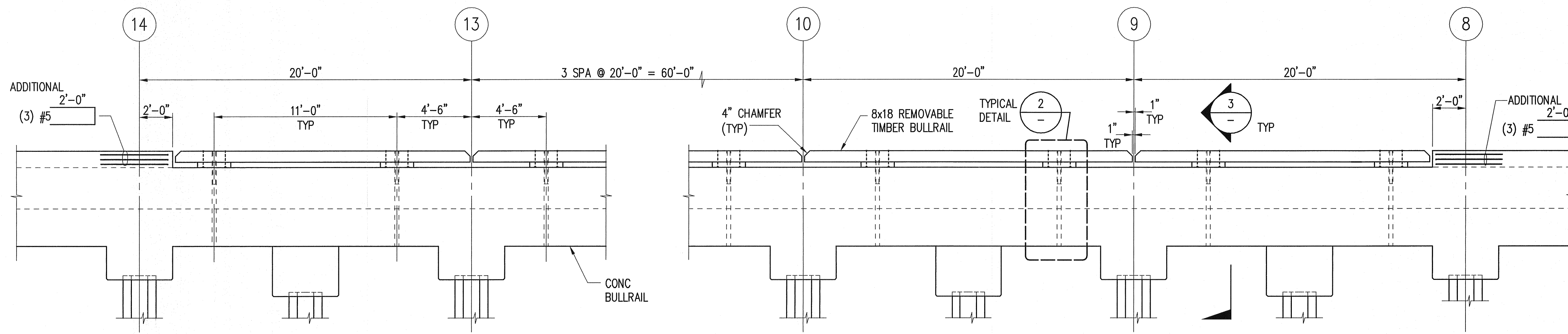
CHECKED BY: RKJ 05/2007  
 CGN 05/2007  
 PROJECT ENGR. - DATE: 05/2007

PORT OF TACOMA  
 Consulting Engineers  
 201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0100 Fax: (253) 396-0162

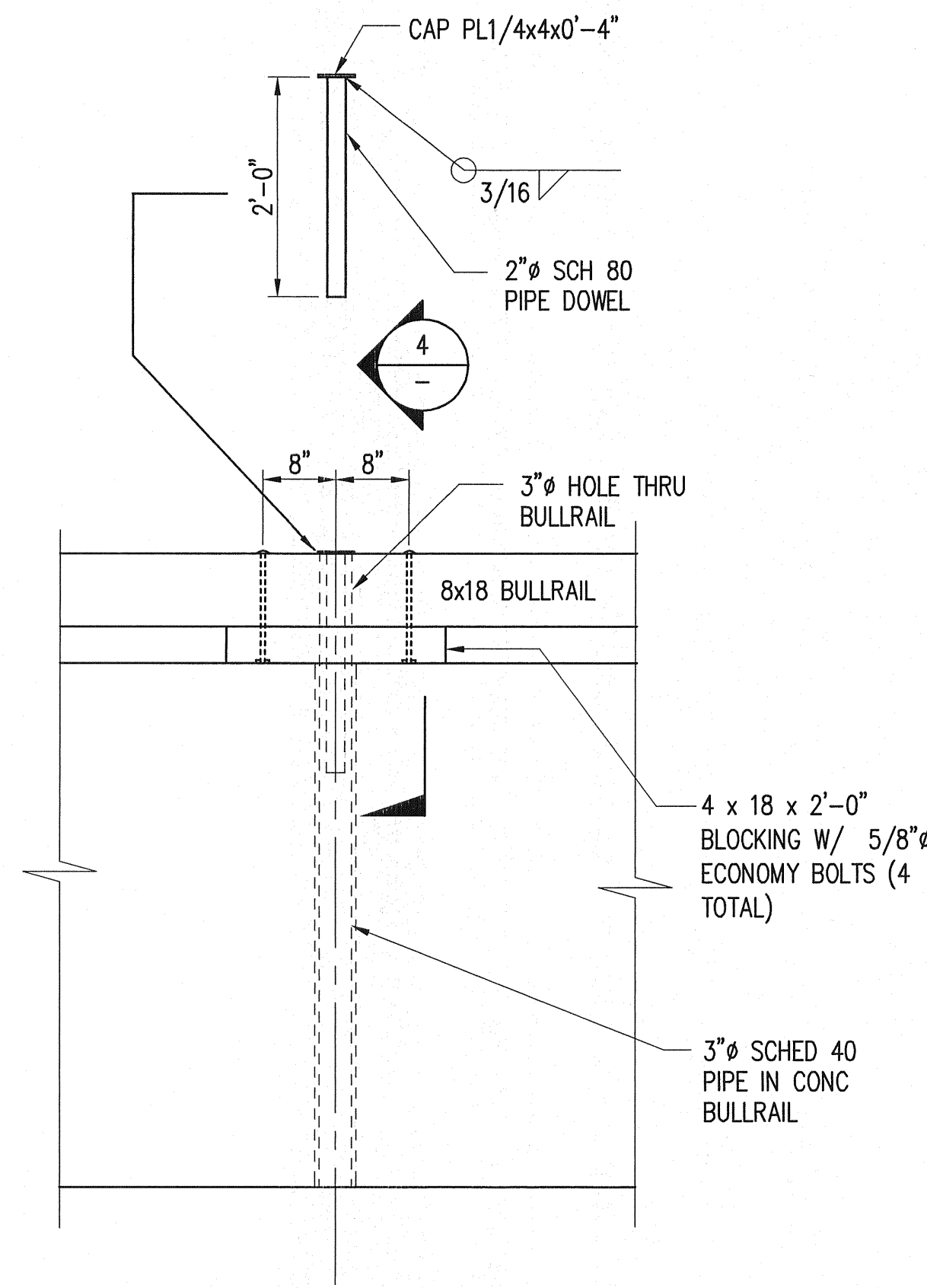
**kptf**  
 PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841

REVISION: MARK REVISION  
 DATE:

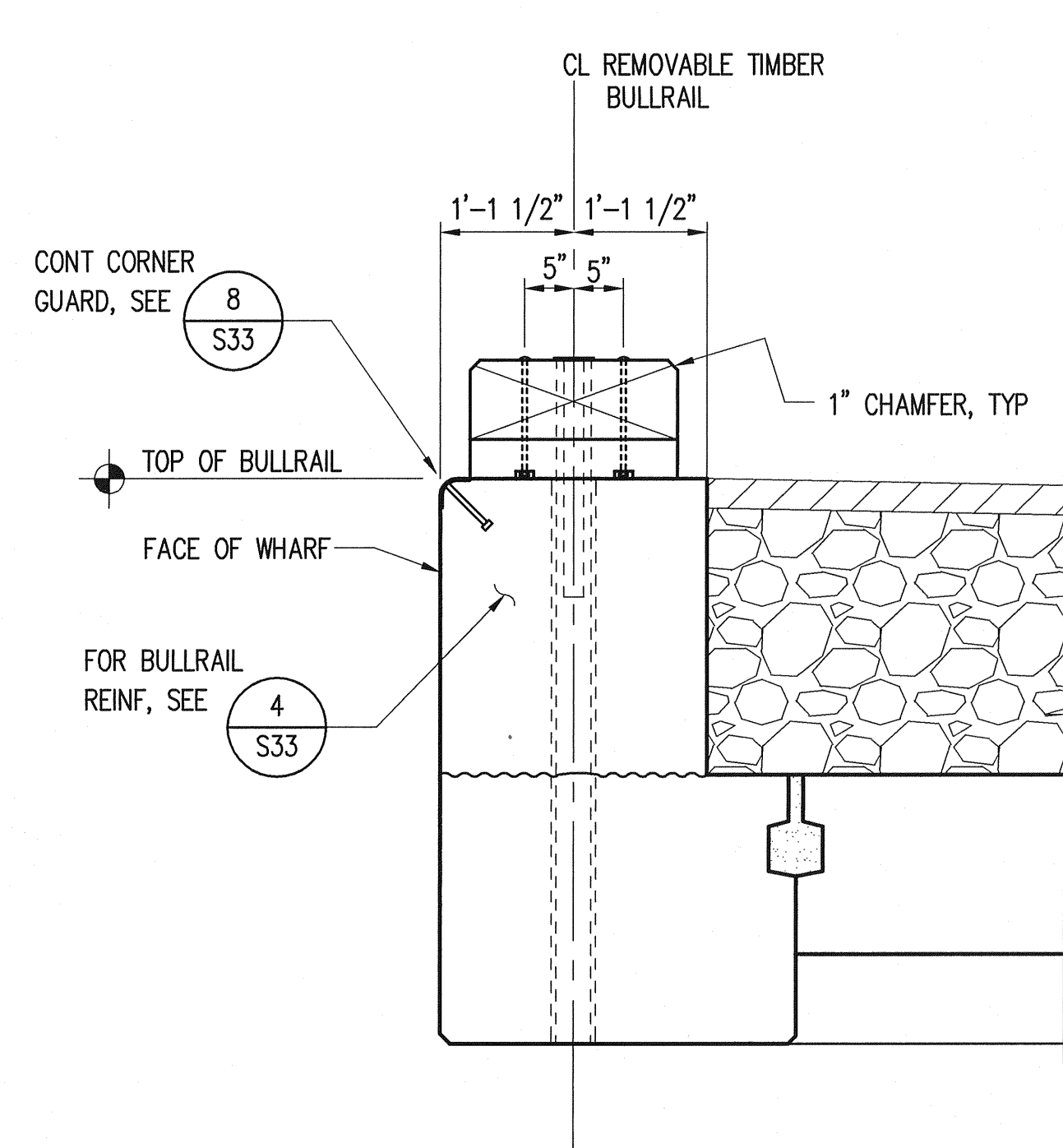
**BID SET**



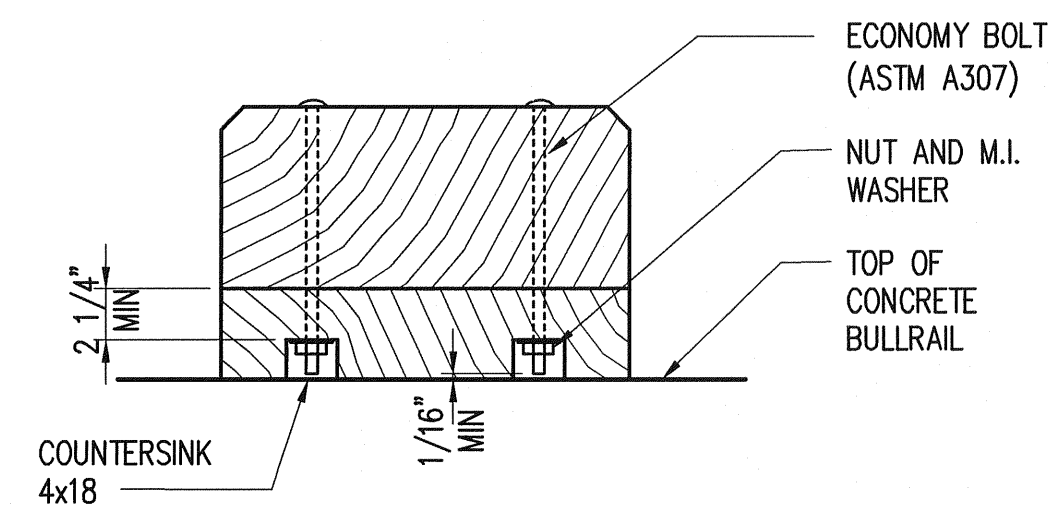
**ELEVATION - REMOVABLE BULLRAIL AT HEAVY LOAD ZONE**  
SCALE: 1/4"=1'-0" (1) S32



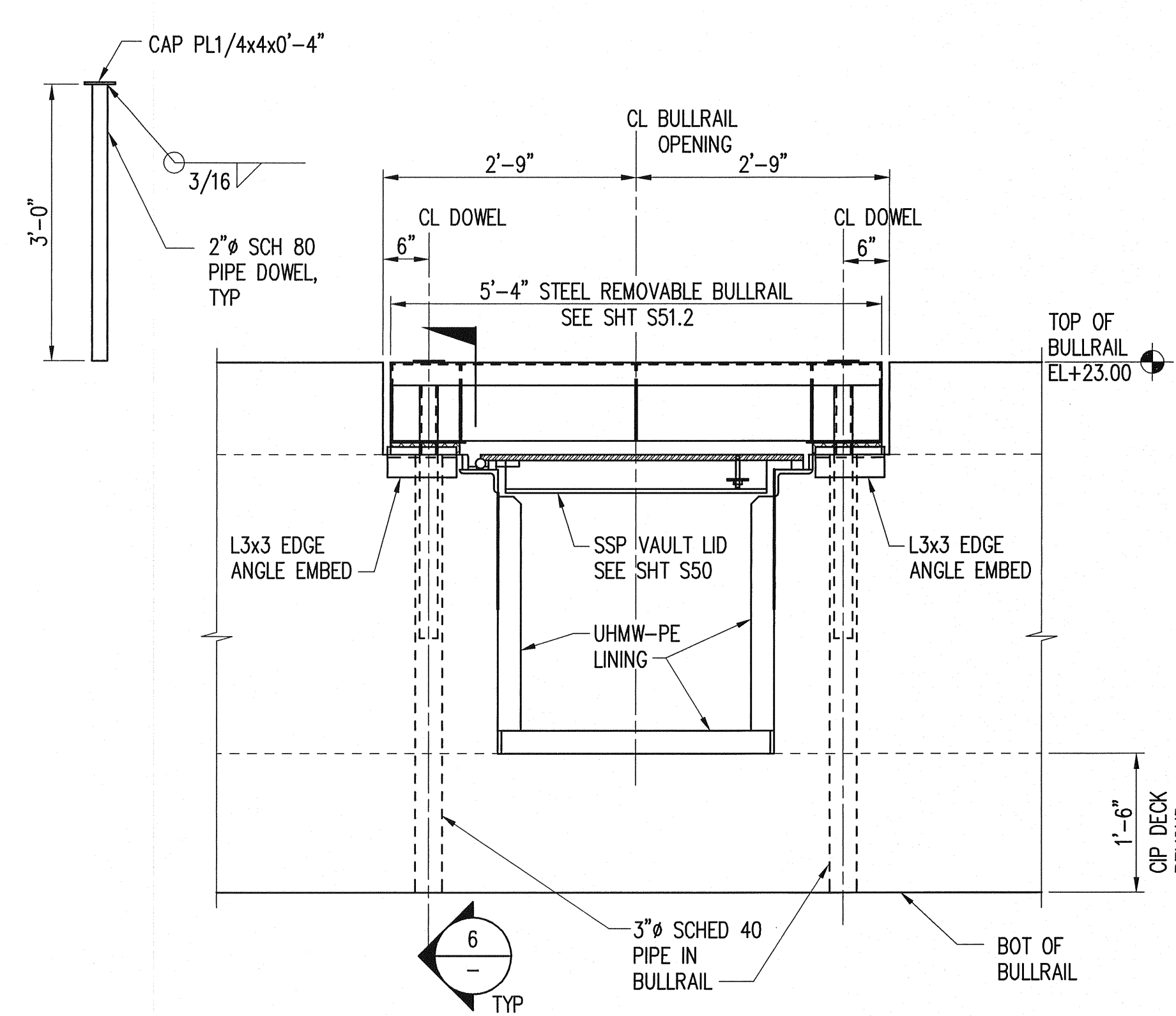
**TYPICAL DETAIL**  
SCALE: 3/4"=1'-0" (2)



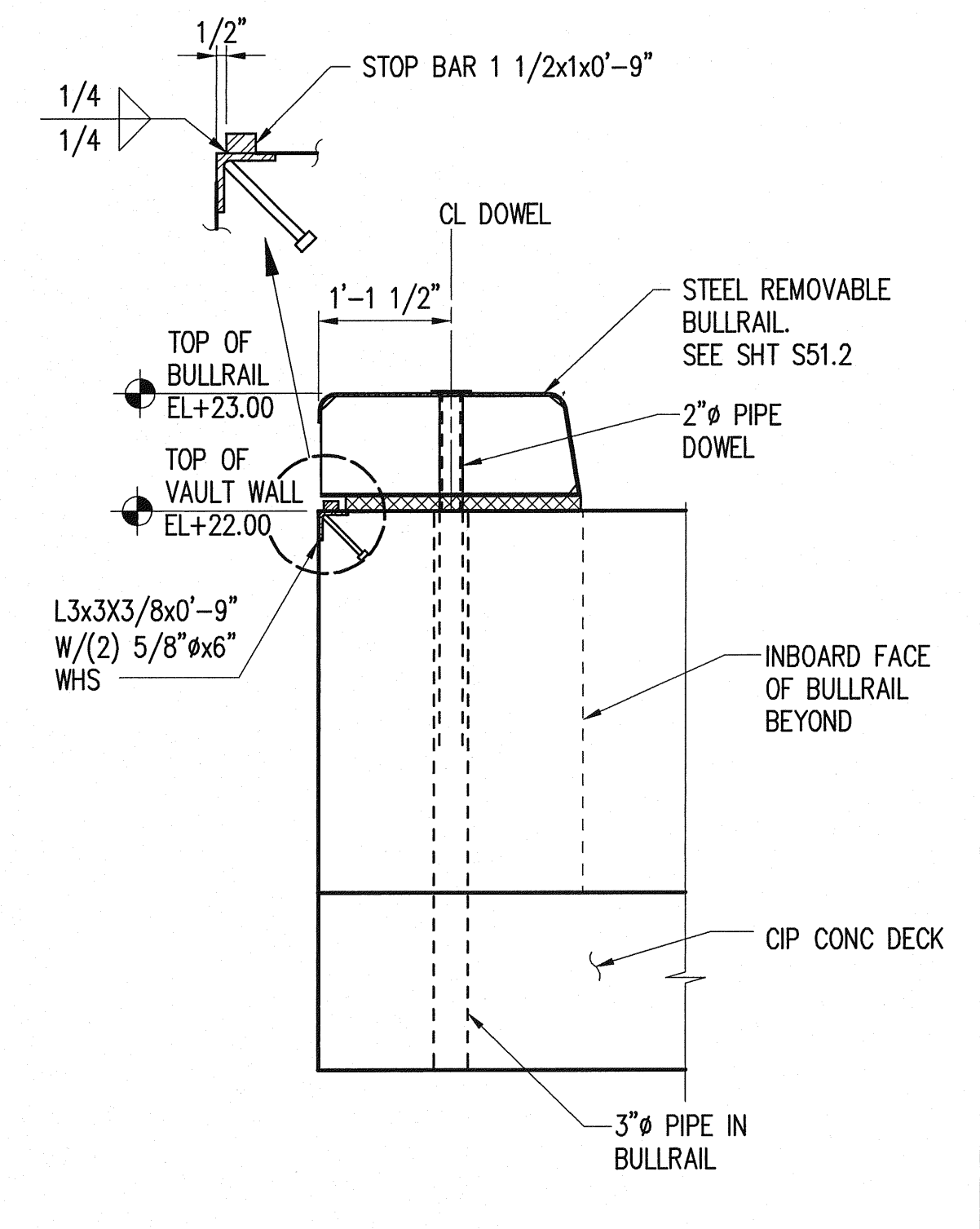
**SECTION**  
SCALE: 3/4"=1'-0" (3)



**SECTION**  
SCALE: 1 1/2"=1'-0" (4)

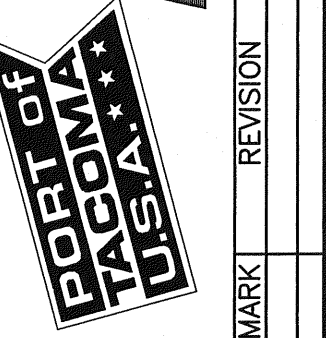


**ELEVATION - REMOVABLE BULLRAIL AT SSP VAULTS**  
SCALE: 3/4"=1'-0" (5) S32



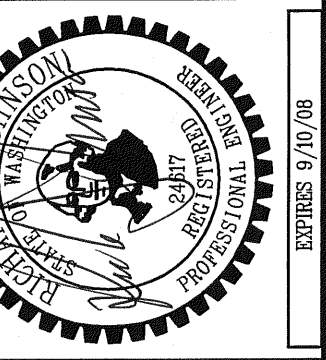
**SECTION**  
SCALE: 3/4"=1'-0" (6)

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841  
Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162



APPROVED: *[Signature]*  
DATE: 05/20/07  
CHECKED BY: GGN  
PROJECT ENGR.: DATE: 05/20/07

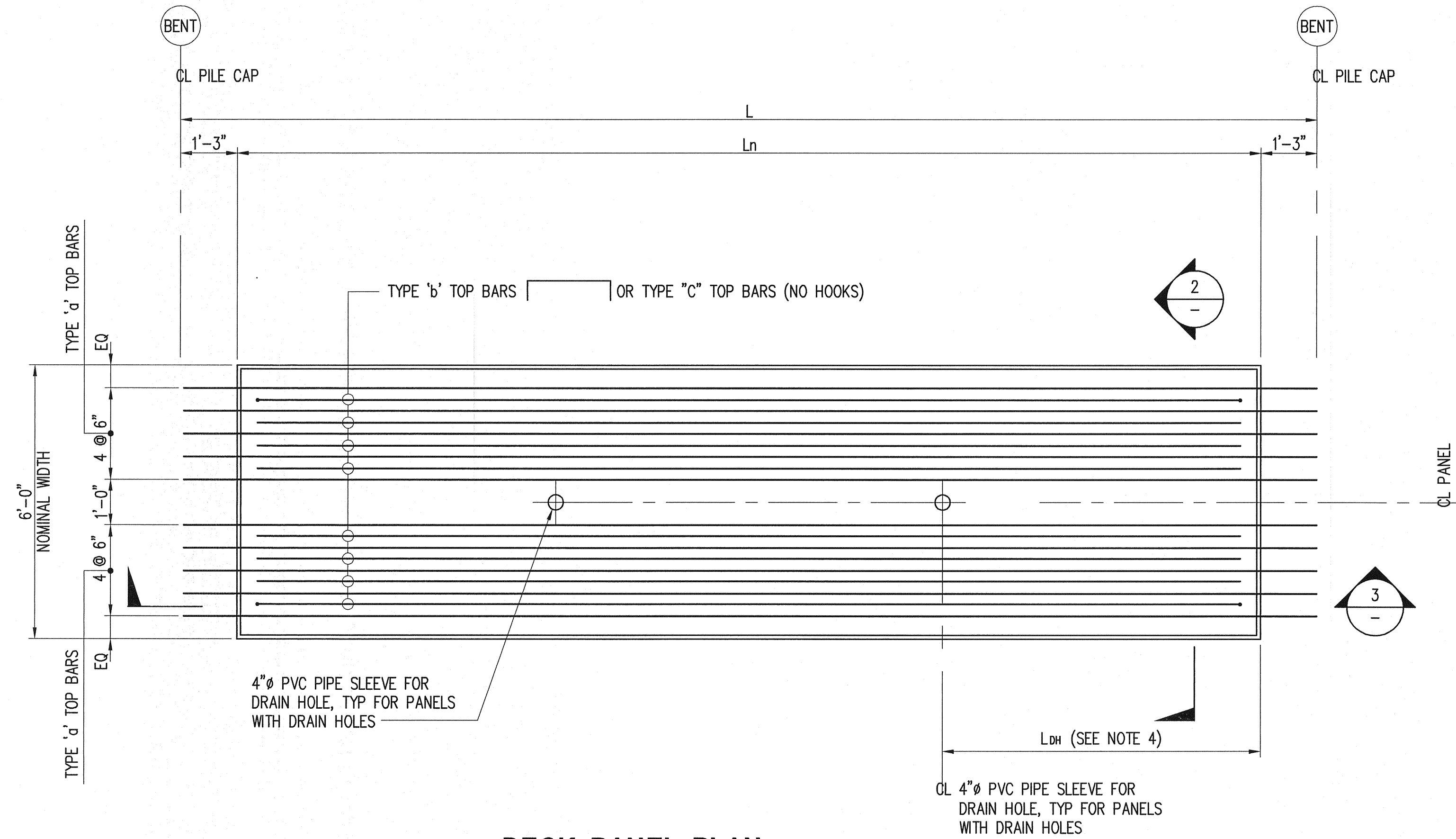
APPROVED: *[Signature]*  
DATE: 05-21-2007  
CHIEF ENGINEER: DATE: 23 May 07  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT PARCEL: 17 & 18



PORT OF TACOMA  
EAST BLAIR ONE WHARF  
REMOVABLE BULLRAIL DETAILS

EP-6305  
S35.0  
SHEET 140 OF 215  
CONTRACT NUMBER: 068018  
E NUMBER: E2623  
PHASE: BID SET

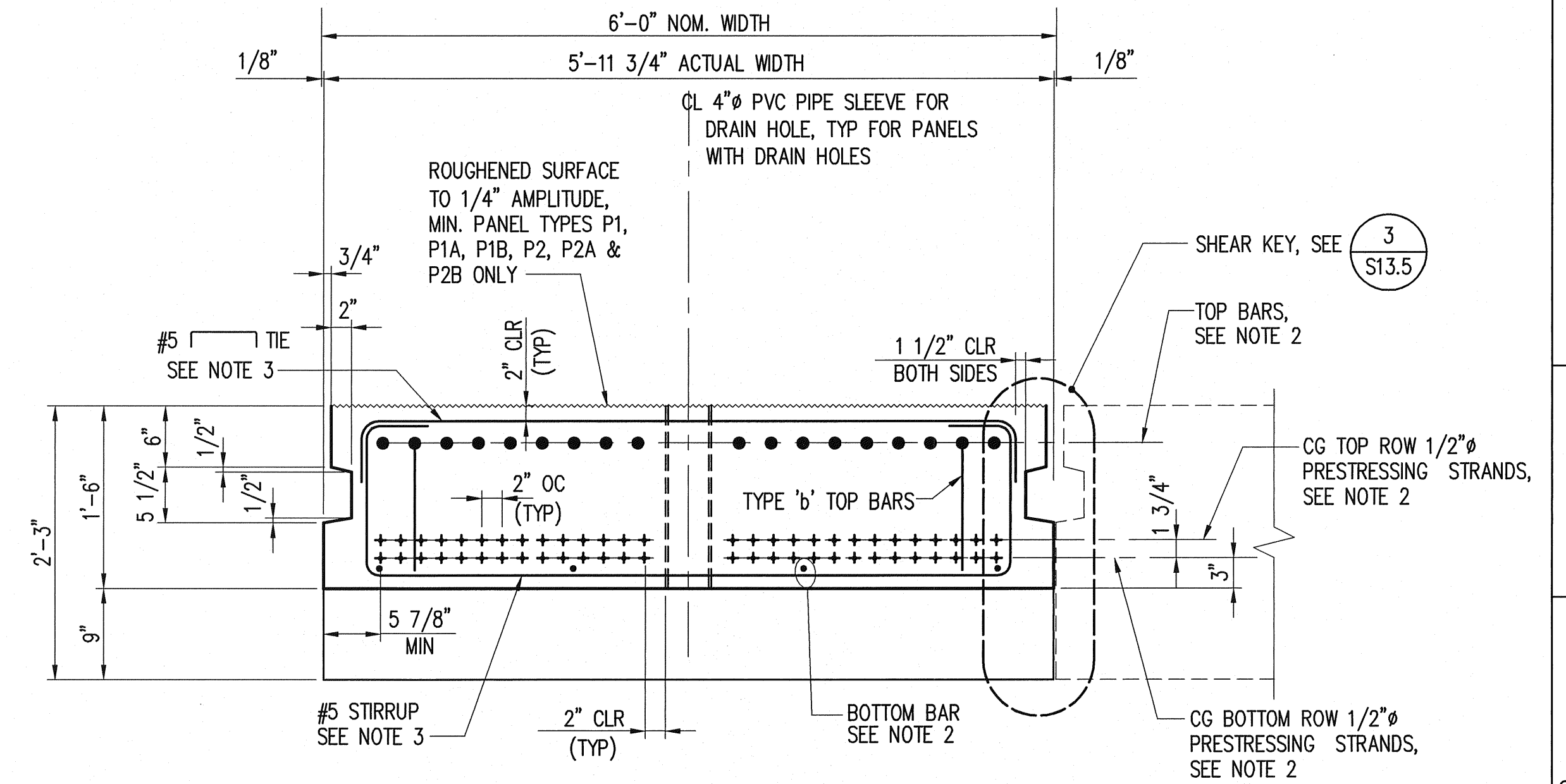
BID SET



**DECK PANEL PLAN FOR TYPE (SEE NOTE 1)**

SCALE: 1/2"=1'-0"

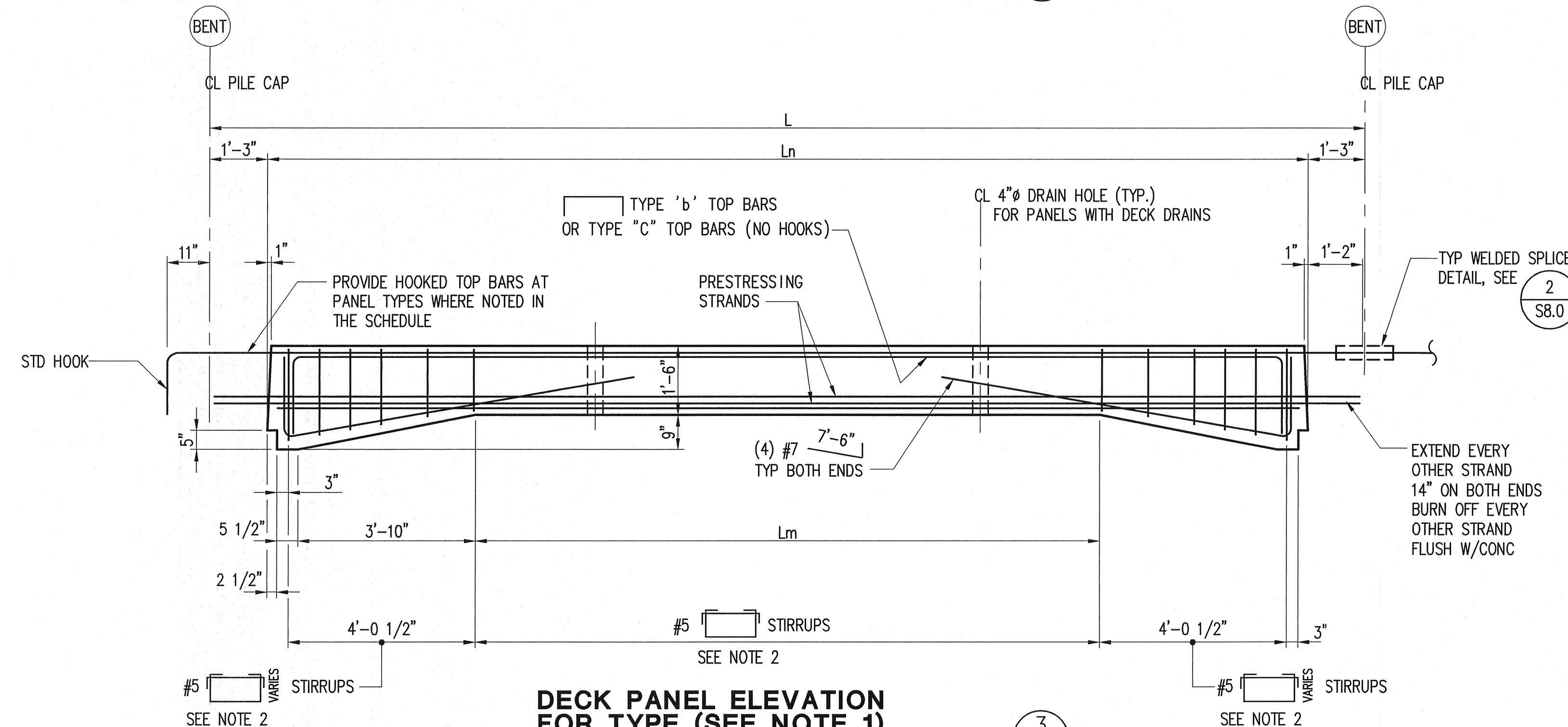
1  
S8.0 S9.0, S10.0, S11.0



**DECK PANEL SECTION FOR TYPE (SEE NOTE 1)**

SCALE: 1"=1'-0"

2  
-



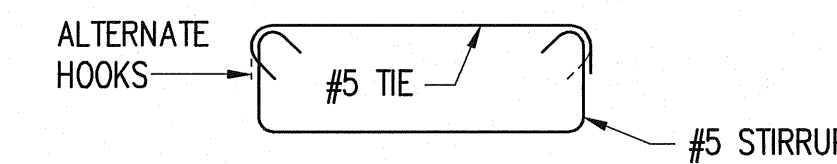
**DECK PANEL ELEVATION FOR TYPE (SEE NOTE 1)**

SCALE: 1/2"=1'-0"

3  
-

**NOTES:**

- USE THIS SHEET FOR DECK PANEL TYPES:  
P1, P2, P4, P5, P9,  
P1A, P2A, P4A, P5A, P9A,  
P1B, P2B, P4B, P5B, P9B,  
P4C, P5C.
- SEE DECK PANEL SCHEDULE, S42.0 THRU S43.1.
- PROVIDE 135° HOOKS ON STIRRUPS AND TIES FOR PANEL TYPES P4, P4A, P4B, P4C, P5, P5A, P5B AND P5C.



- LDH = 7' (L=25')  
LDH = 5' (L=20')

APPROVED

CHIEF ENGINEER - DATE  
25 May 07

PROJECT ENGR. - DATE  
05/2007

CHECKED BY - DATE  
GKN 05/2007

RKJ 05/2007

PORT OF TACOMA  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0160 Fax (253) 396-0162

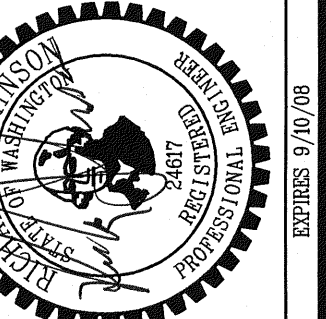
**kprf**

MARK REVISION

DATE

BY

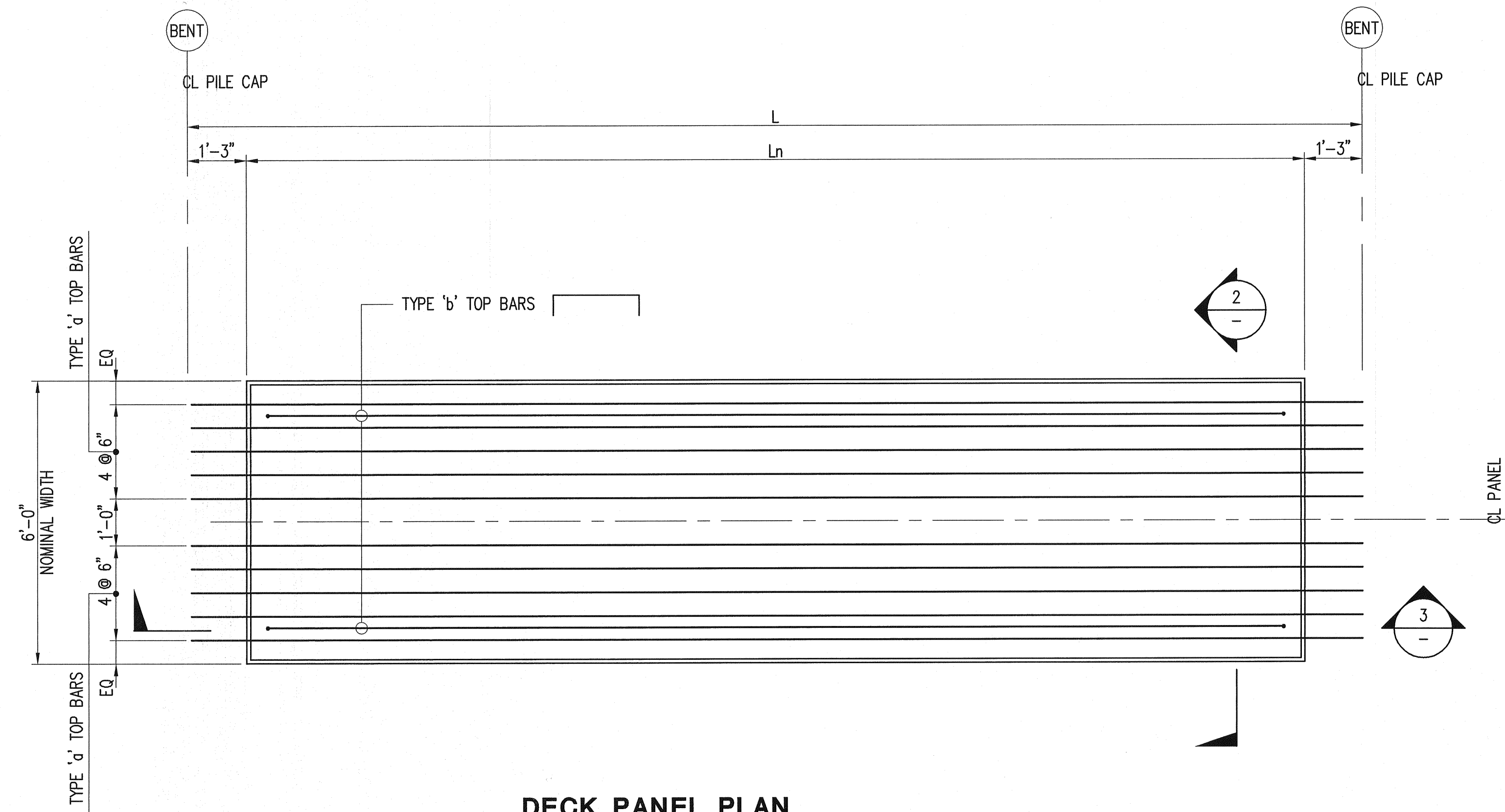
APPROVED



PORT OF TACOMA  
EAST BLAIR ONE WHARF  
DECK PANEL DETAILS 1

EP-6305  
S36.0  
SHEET 141 OF 215

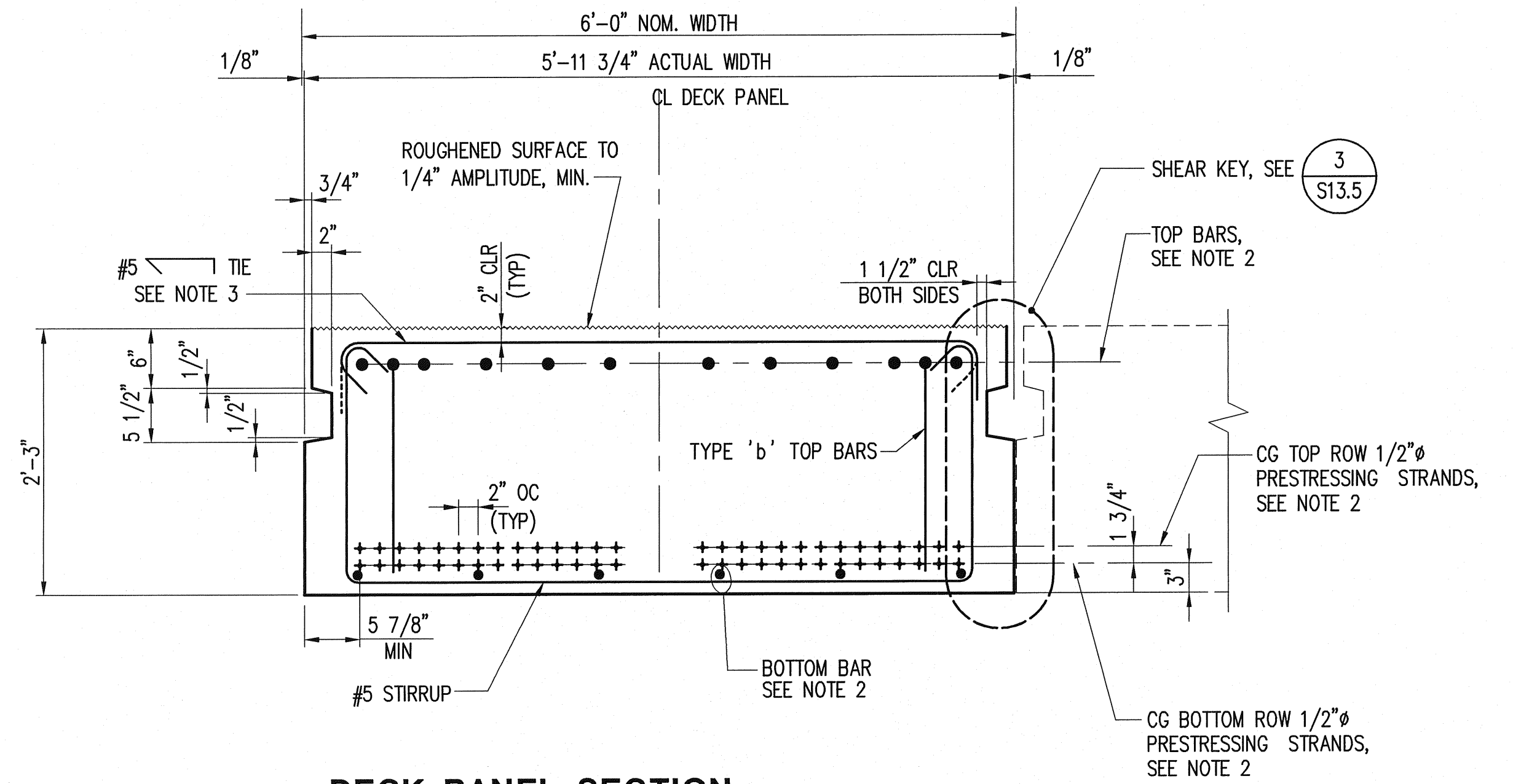
BID SET



**DECK PANEL PLAN FOR TYPE (SEE NOTE 1)**

SCALE: 1/2"=1'-0"

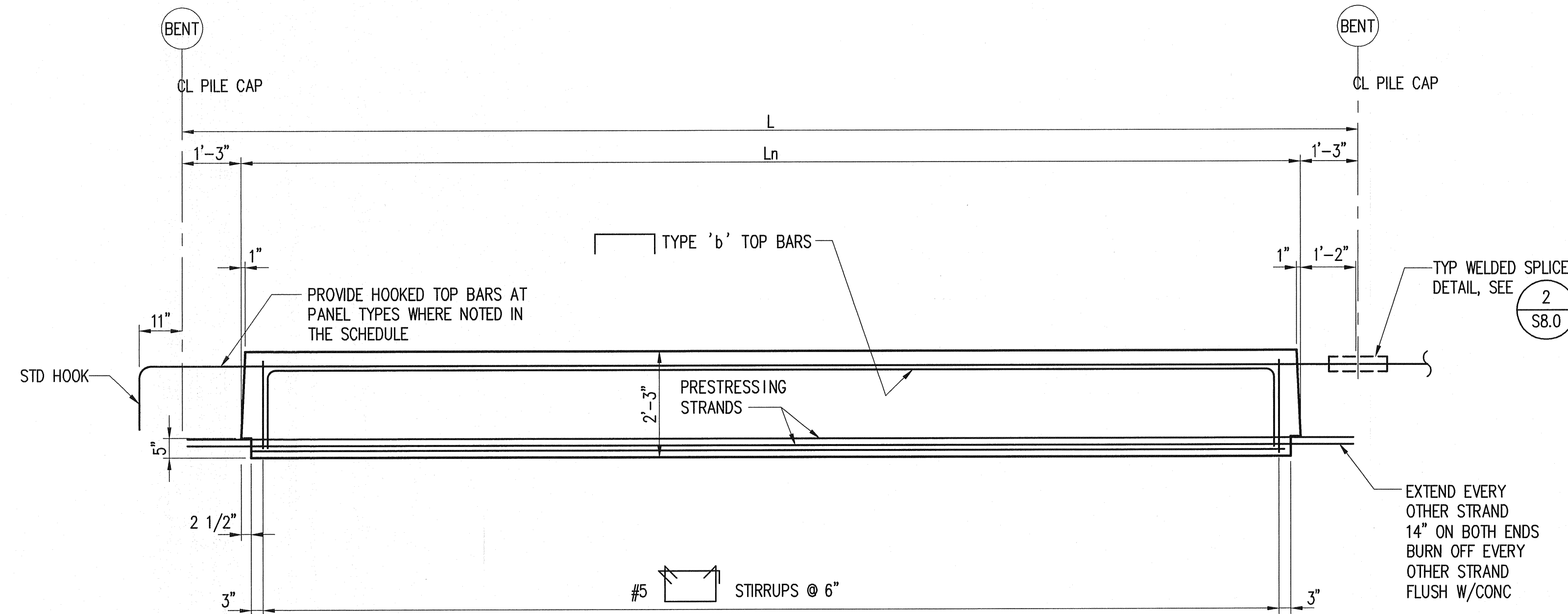
1  
S10.0 S11.0



**DECK PANEL SECTION FOR TYPE (SEE NOTE 1)**

SCALE: 1"=1'-0"

2  
-



**DECK PANEL ELEVATION FOR TYPE (SEE NOTE 1)**

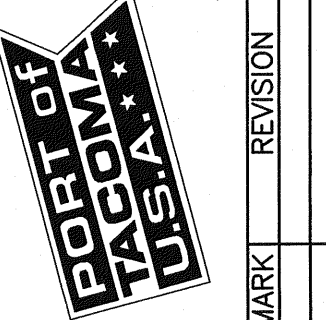
SCALE: 1/2"=1'-0"

3  
-

**NOTES:**

1. USE THIS SHEET FOR DECK PANEL TYPES: P6, P6A, P6B, P6C, P6D
2. SEE DECK PANEL SCHEDULE, S42.0 THRU S43.1.
3. PROVIDE 135° HOOKS ON STIRRUPS AND TIES. ALTERNATE HOOKS.

PORT OF TACOMA P. O. BOX 1837  
TACOMA, WA 98401 253-383-5841

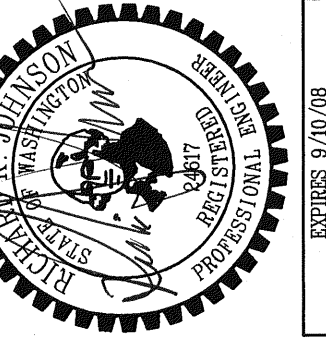


APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 23 MAR 07

REVISION: MARK REVISION

DATE: 05/2007  
CHECKED BY: - DATE: 05/2007  
PROJECT ENGR. - DATE: 05/2007

PORT ADDRESS: 2340 E ALEXANDER AVENUE  
TACOMA, WA 98401  
PHONE: 253-383-5841  
FAX: 253-383-5842

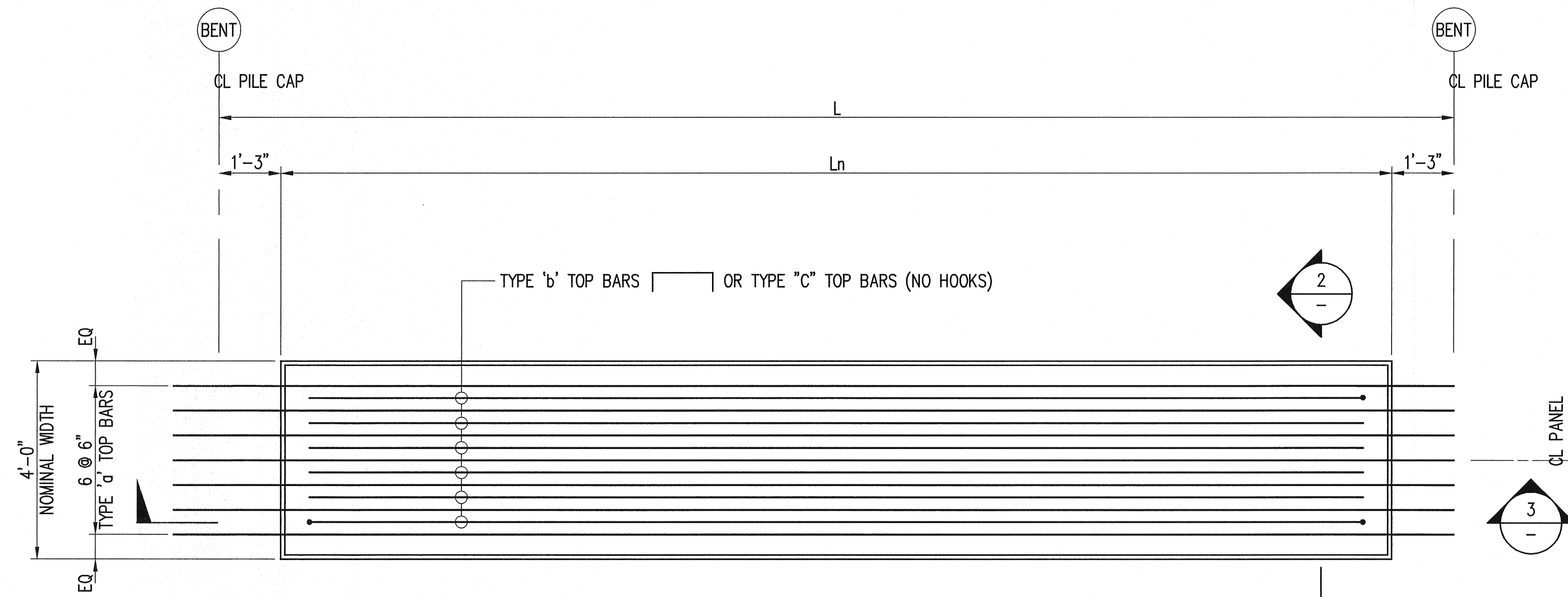


PORT OF TACOMA  
EAST BLAIR ONE WHARF  
DECK PANEL DETAILS 2

EP-6305  
**S36.1**  
SHEET 142 OF 215

CONTRACT NUMBER: 068018  
DATE: 02/23  
E. NUMBER: E2623  
PHASE: BID SET

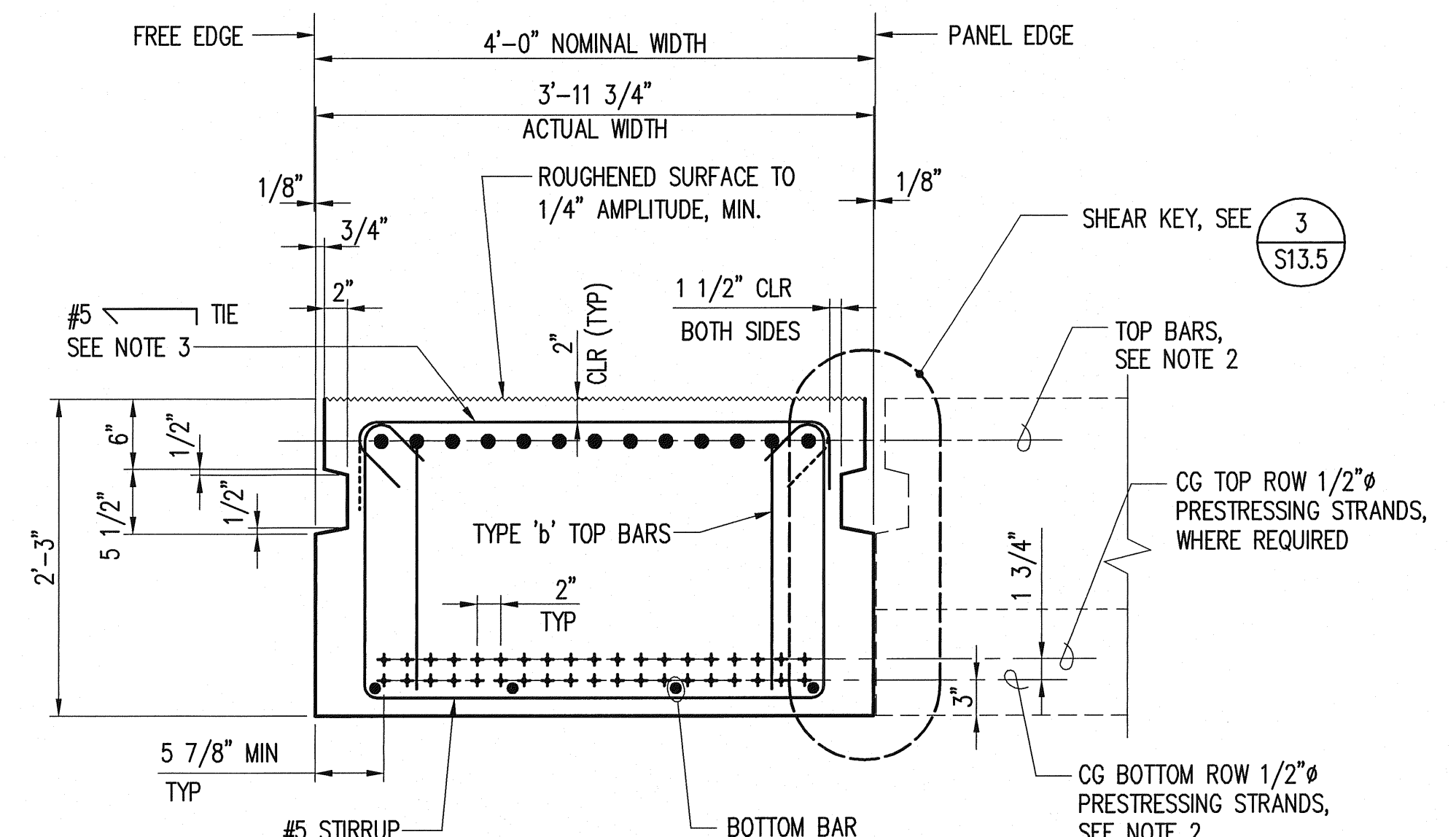
**BID SET**



**DECK PANEL PLAN FOR TYPE (SEE NOTE 1)**

SCALE: 1/2"=1'-0"

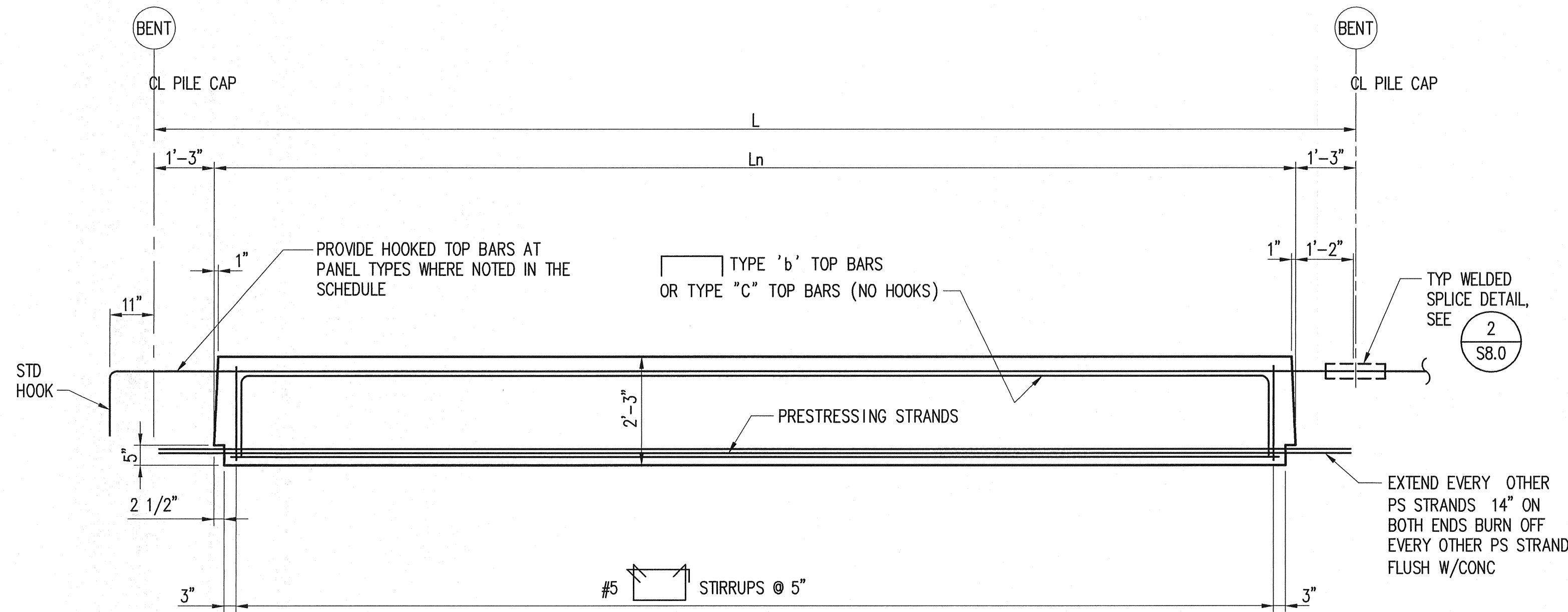
1  
S8.0



**DECK PANEL SECTION FOR TYPE (SEE NOTE 1)**

SCALE: 1"=1'-0"

2  
-



**DECK PANEL ELEVATION FOR TYPE (SEE NOTE 1)**

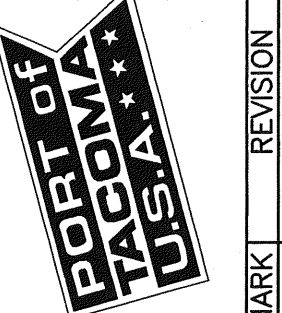
SCALE: 1/2"=1'-0"

3  
-

**NOTES:**

1. USE THIS SHEET FOR DECK PANEL TYPES: P3, P3A, P3C
2. SEE DECK PANEL SCHEDULE, S42.0 THRU S43.1.
3. PROVIDE 135° HOOKS ON STIRRUPS AND TIES, ALTERNATE HOOKS.

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841



05/2007 - DATE  
05/2007 - DATE  
PROJECT ENGR. - DATE

APPROVED  
H. A. [Signature]  
23 MAR 07  
CHIEF ENGINEER - DATE



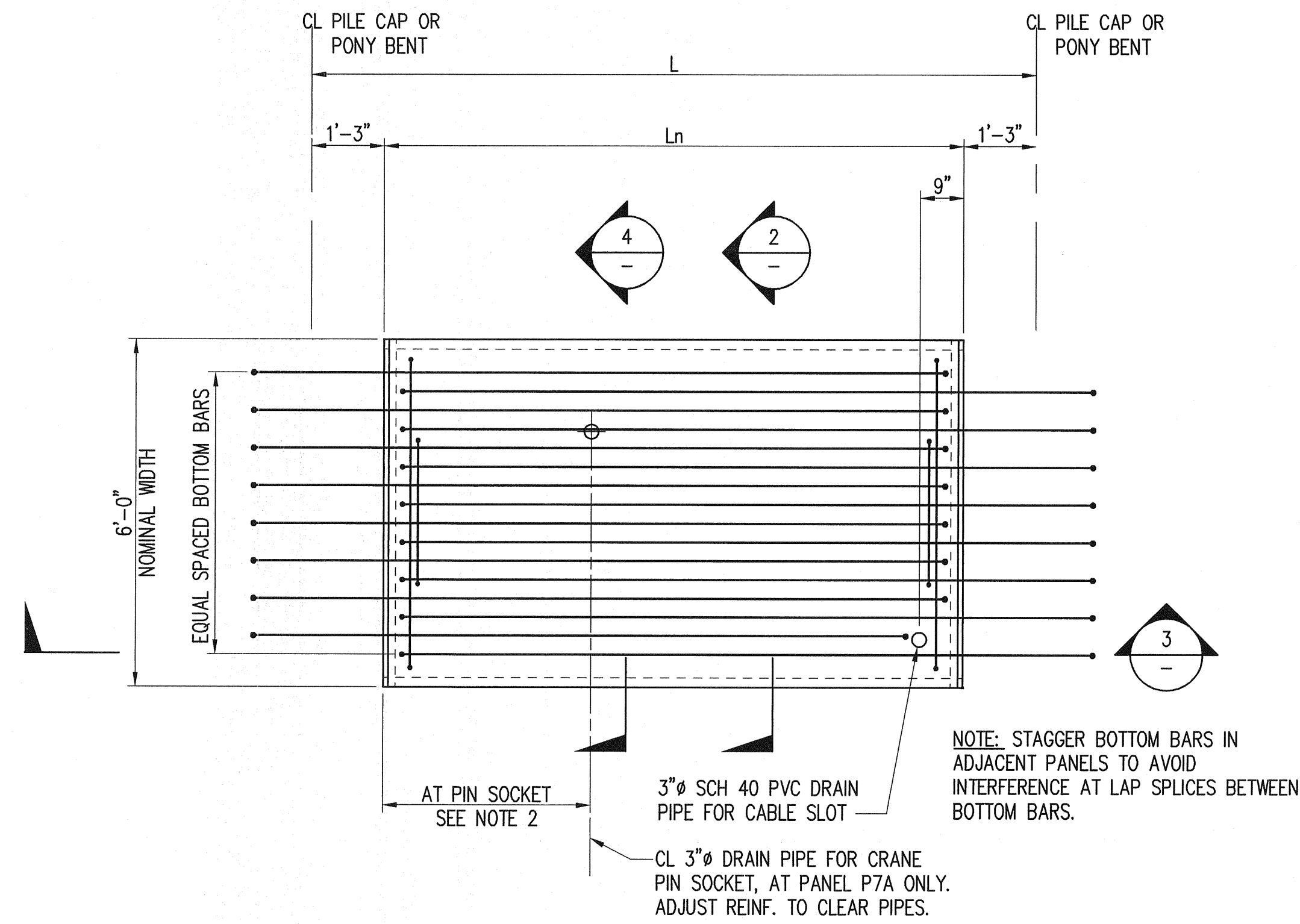
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 23401  
PORT PHONE: 253-383-5841  
PORT FAX: 253-383-5841

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
DECK PANEL DETAILS 3

EP-6305  
SHEET 143 OF 215  
S37.0

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
CONTRACT NUMBER: 068018  
DATE: 05/23  
DRAWING SCALE: AS SHOWN

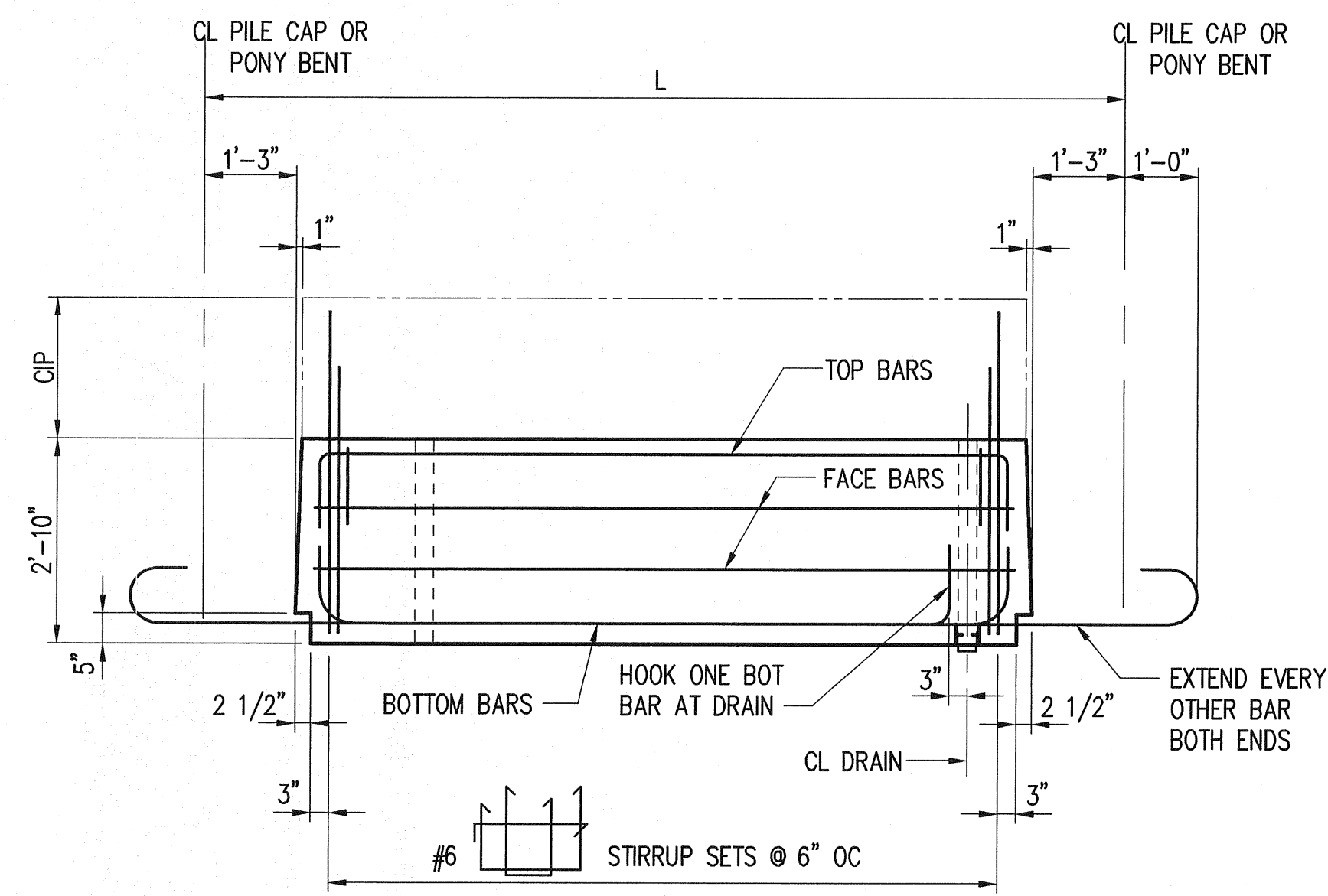
BID SET



**DECK PANEL PLAN  
TYPE P7, P7A & P7B**

SCALE: 1/2"=1'-0"

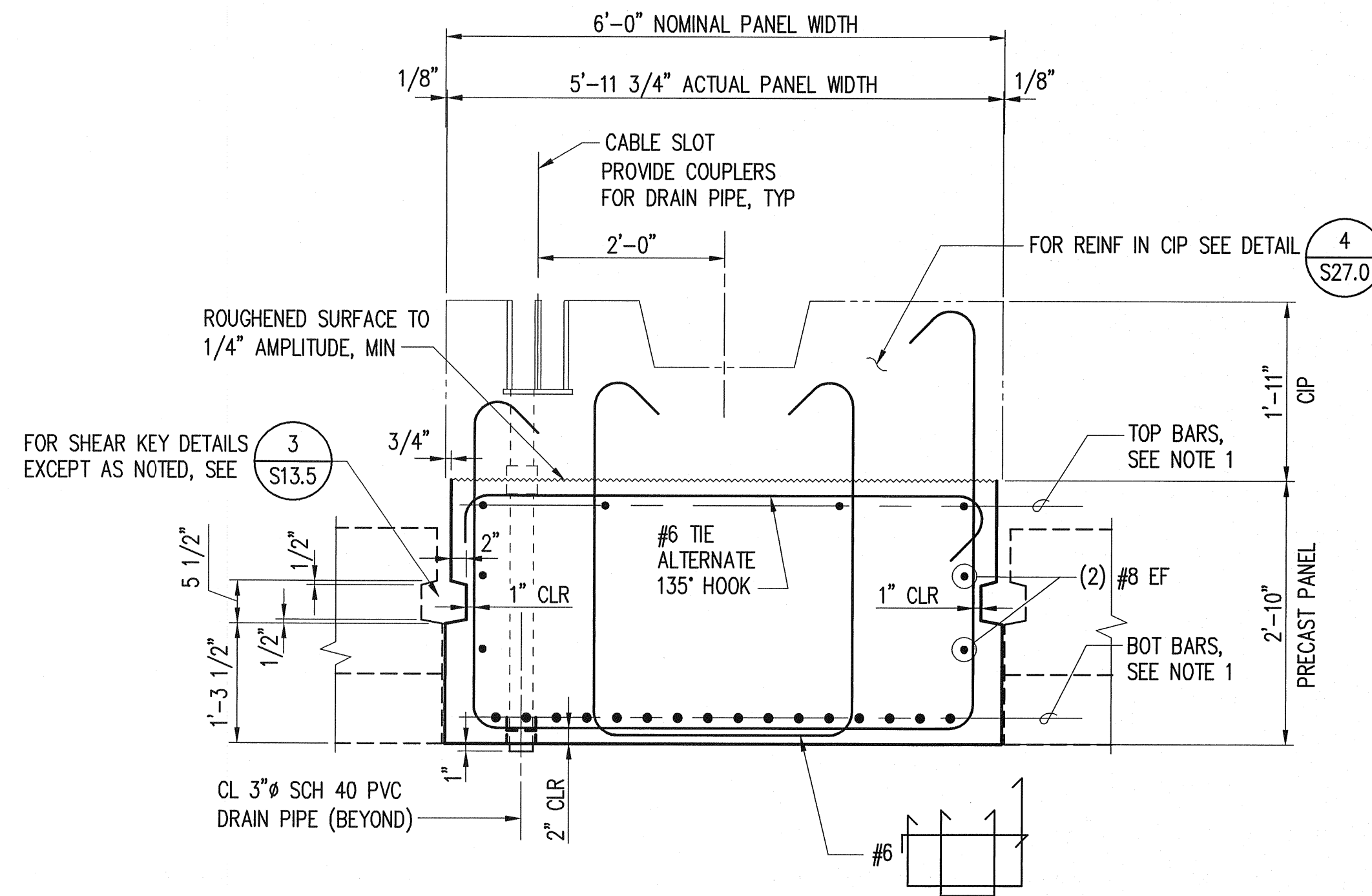
1  
S8 S9, S10, S11



**DECK PANEL ELEVATION  
TYPE P7, P7A & P7B**

SCALE: 1/2"=1'-0"

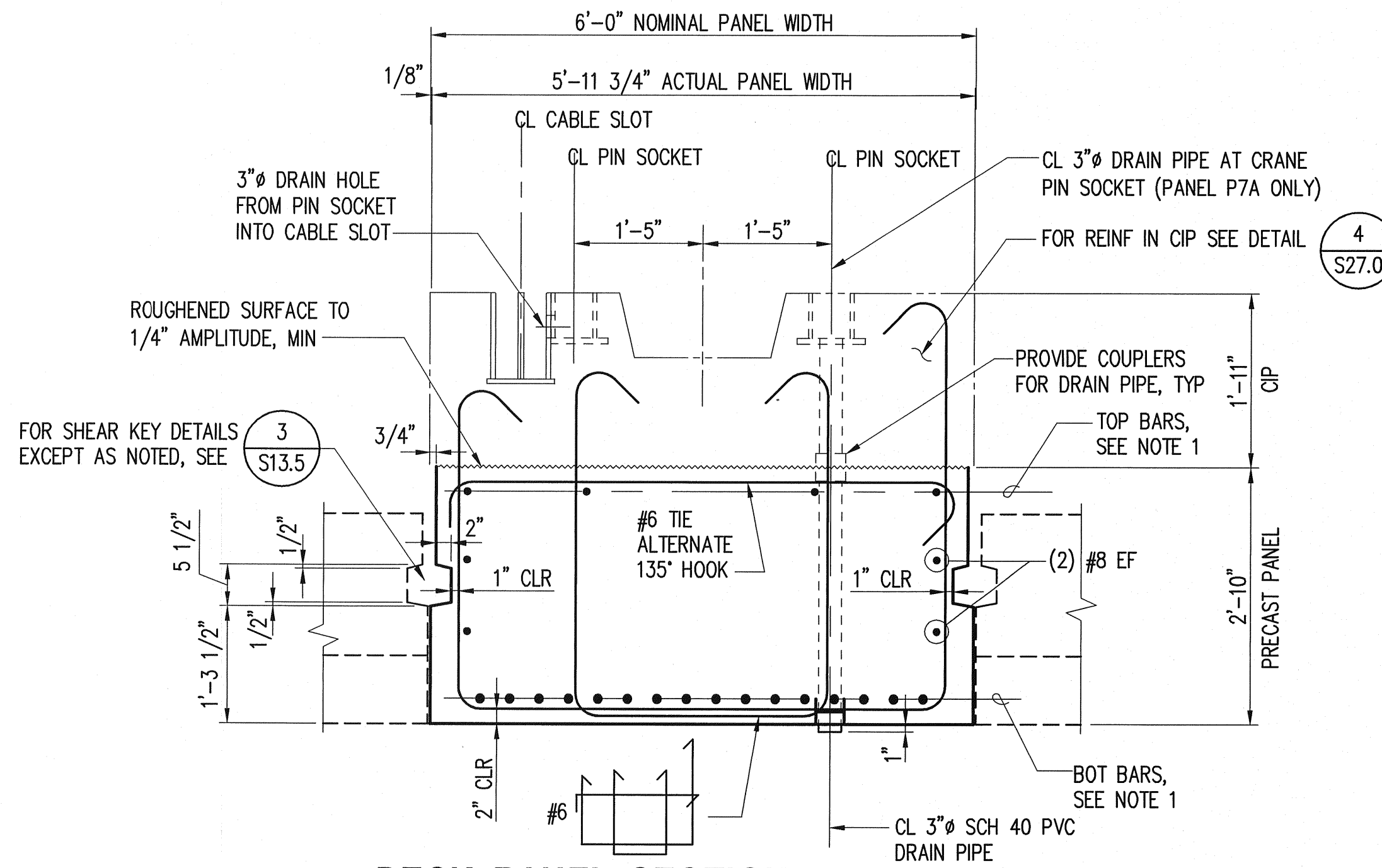
3



**DECK PANEL SECTION  
TYPE P7 & P7B**

SCALE: 3/4"=1'-0"

2



**DECK PANEL SECTION  
TYPE P7A**

SCALE: 3/4"=1'-0"

4

**NOTES:**

- SEE DECK PANEL SCHEDULE, SHEET S42.0 AND S43.0.
- FOR THE LOCATION OF CRANE PIN SOCKETS, SEE SHEETS S8.0 AND S11.0.

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-983-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0560 Fax (253) 396-0182

**kp11**

PORT OF TACOMA  
USA

APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 23 Apr 07

05/2007 - DATE  
RKH  
05/2007 - DATE  
GGN  
PROJECT ENGR. - DATE

DRAWING DATE: 05-21-2007  
PROJECT NO.: 23401E  
PORT PANEL: P7 & P7A

MARK REVISION  
BY: APPROVED: DATE:

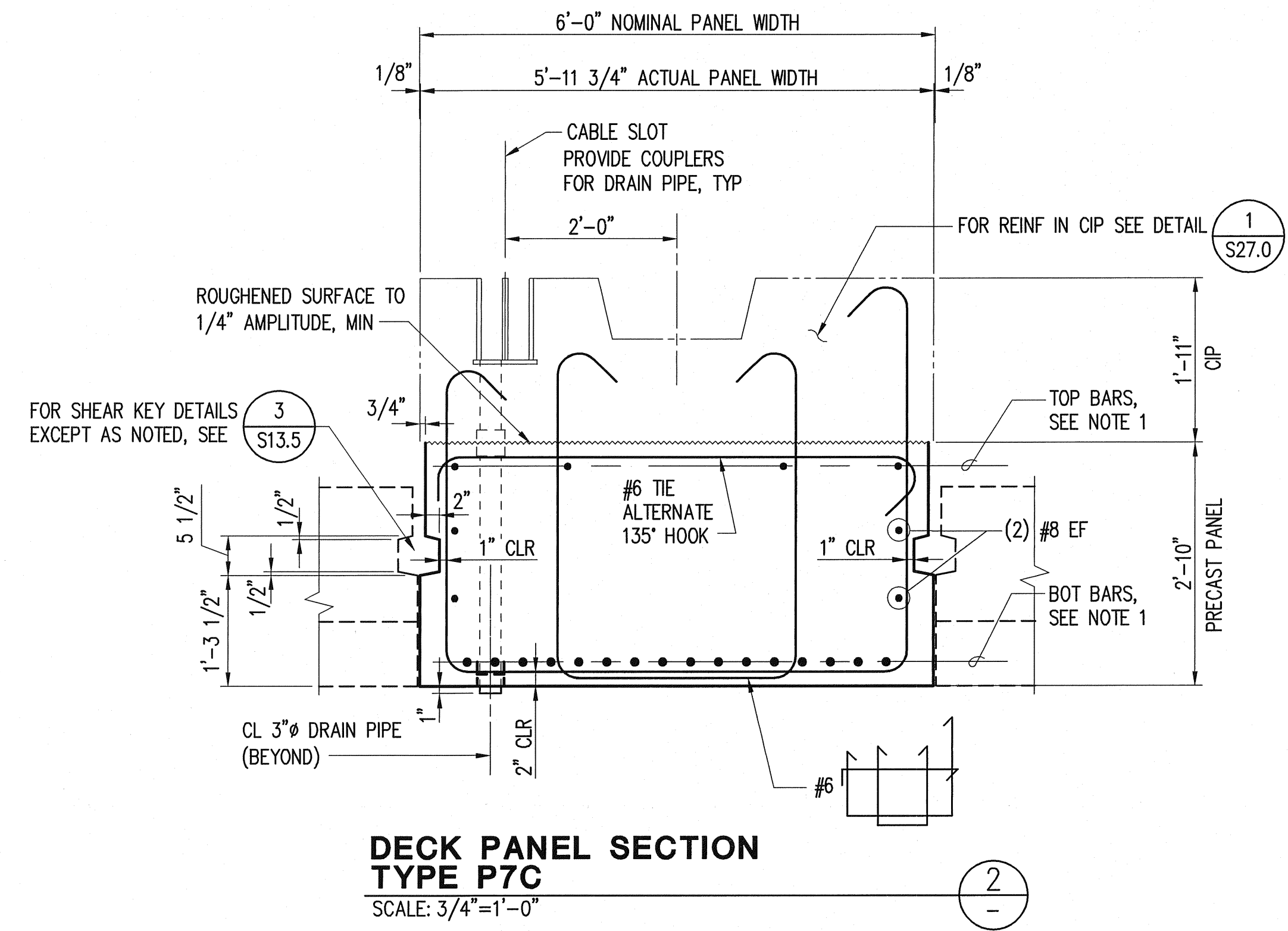
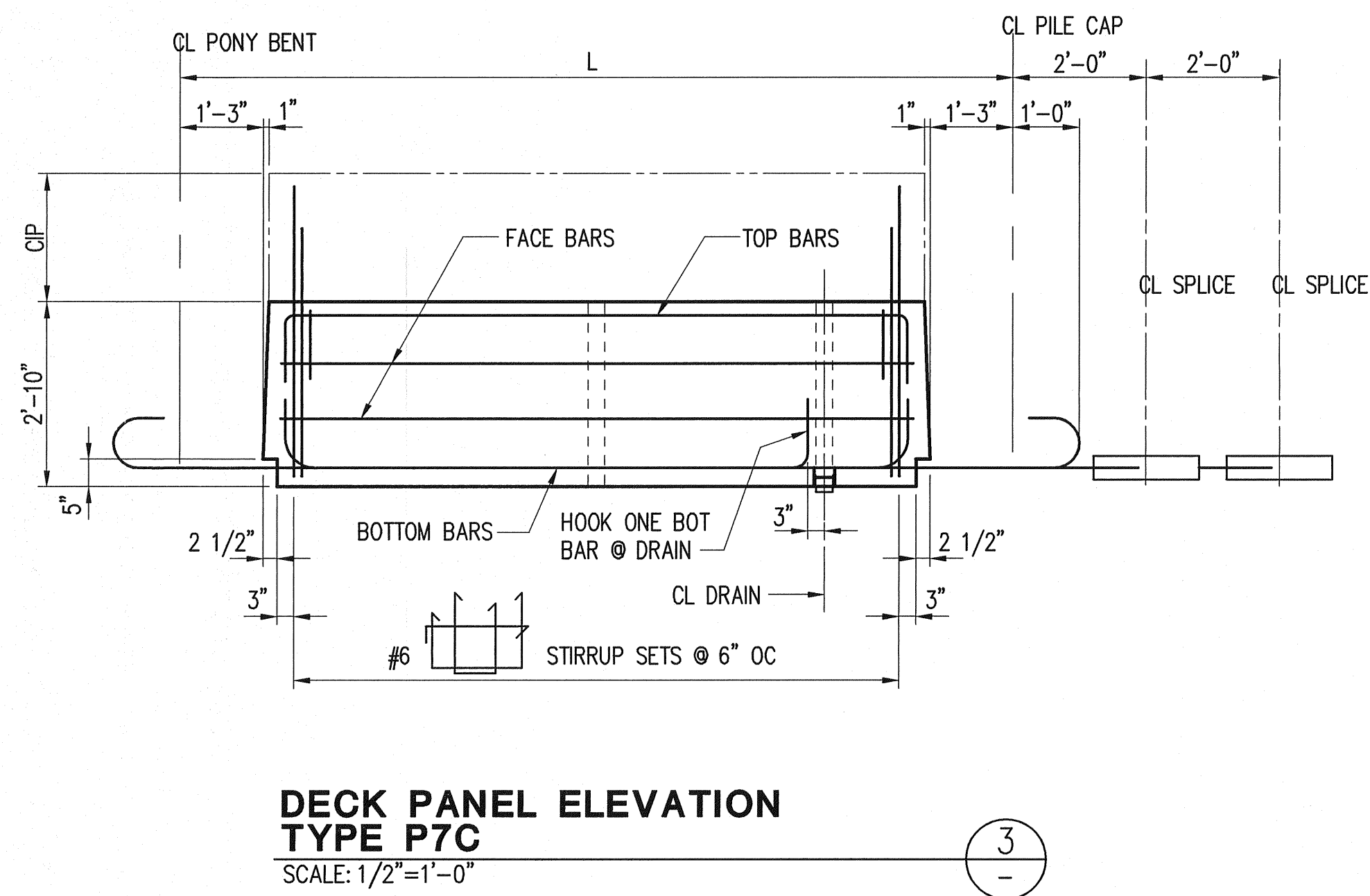
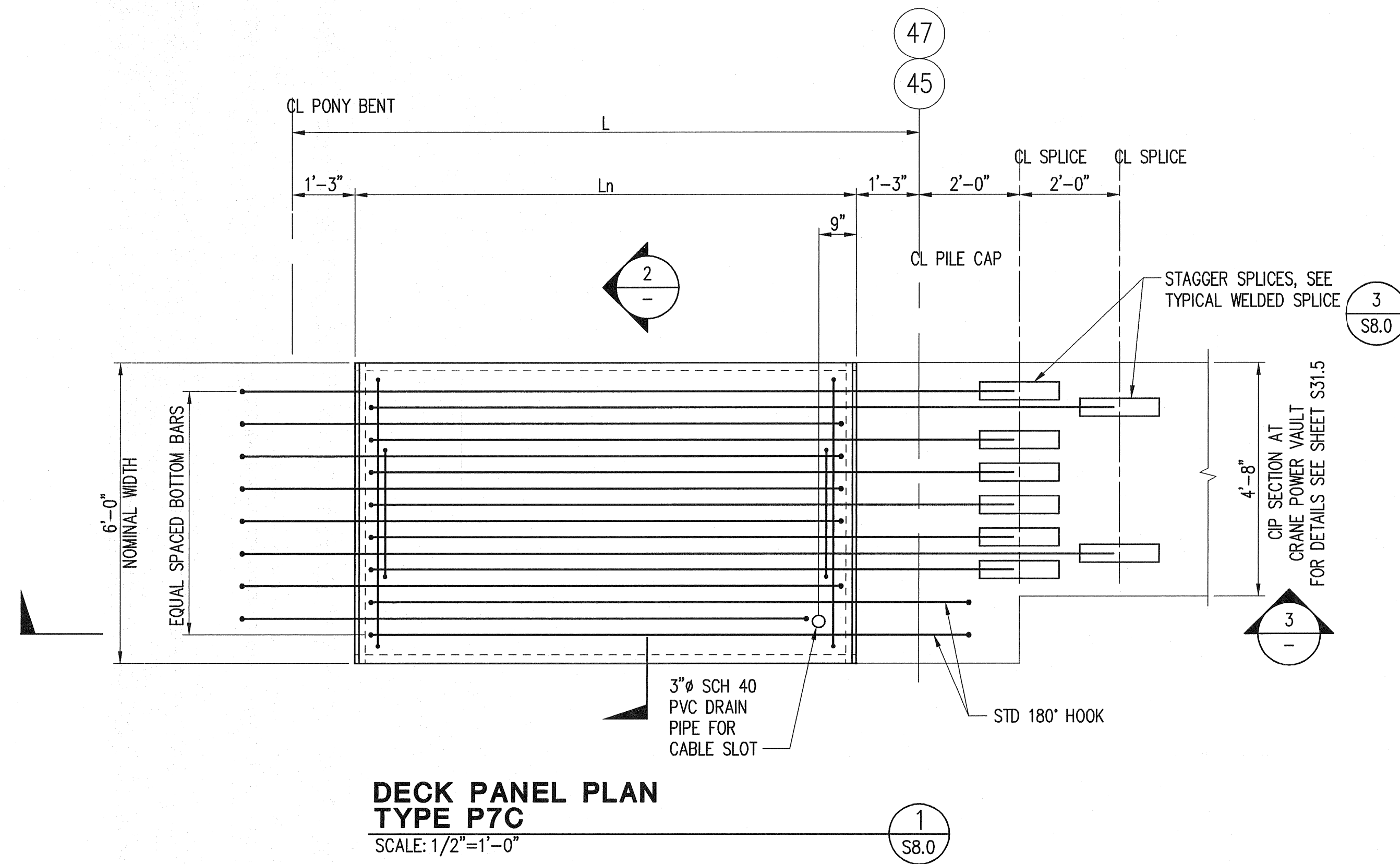
EP-6305  
PORT OF TACOMA  
EAST BLAIR ONE WHARF  
DECK PANEL DETAILS 4

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ.  
DRAWING SCALE: AS SHOWN

CONTRACT NUMBER: 06801B  
SHEET 144 OF 215  
E NUMBER: E2623  
PHASE: BID SET

**S38.0**

**BID SET**

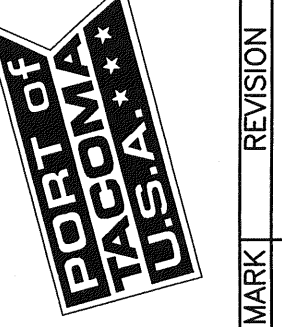


**NOTES:**

- SEE DECK PANEL SCHEDULE, SHEET S42.0 AND S43.0.
- FOR THE LOCATION OF CRANE PIN SOCKETS, SEE SHEETS S8.0 AND S11.0.

**BID SET**

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841



Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 05-21-2007  
DRAWING DATE: 05-21-2007  
PROJECT ENGR. - DATE: 05/2007  
FOR ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT PARCEL: 1, 2 & 18

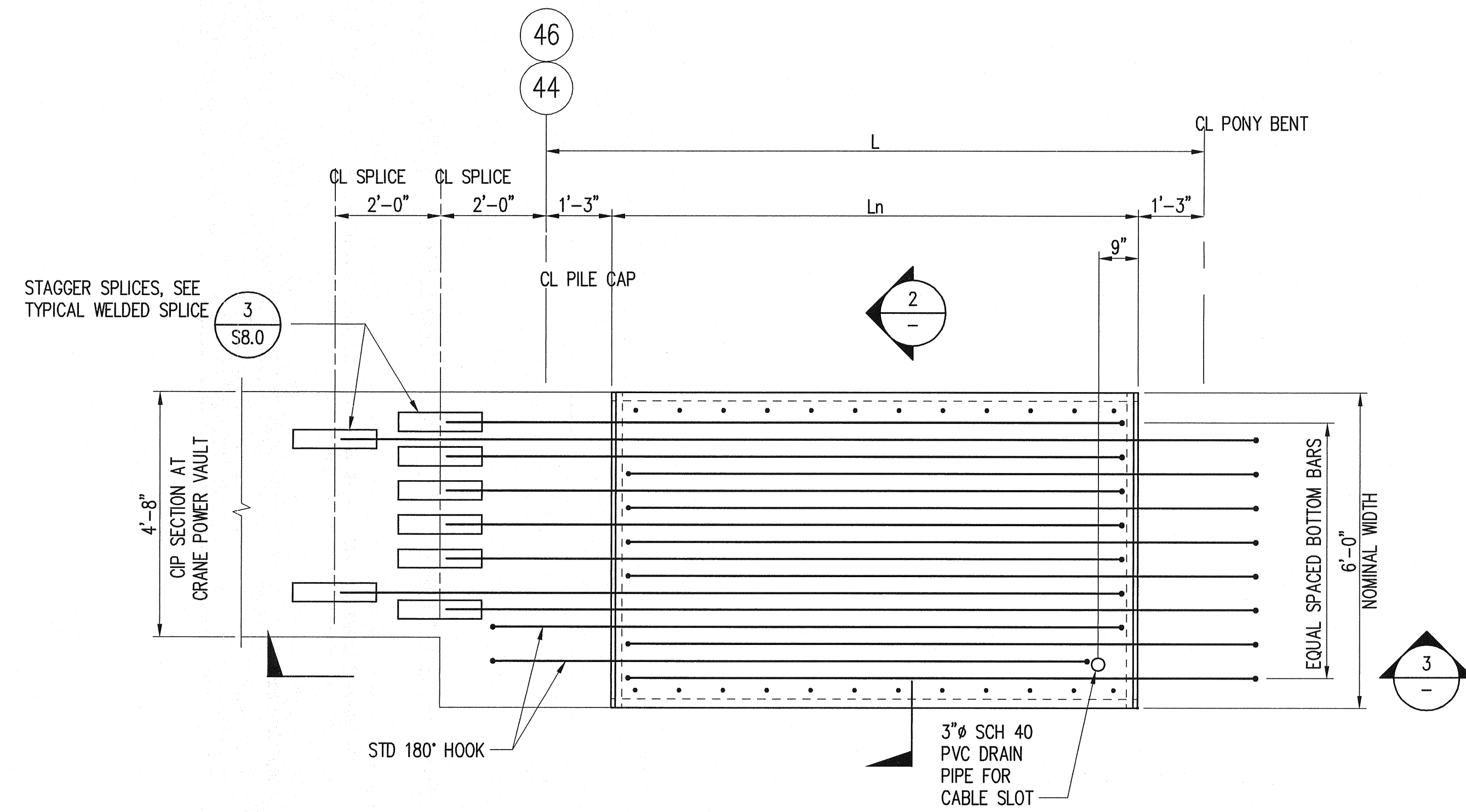


PORT OF TACOMA  
EAST BLAIR ONE WHARF  
DECK PANEL DETAILS 5

EP-6305  
**S38.1**  
SHEET 145 OF 215  
CONTRACT NUMBER: 068018  
E. NUMBER: E2823  
PHASE: BID SET

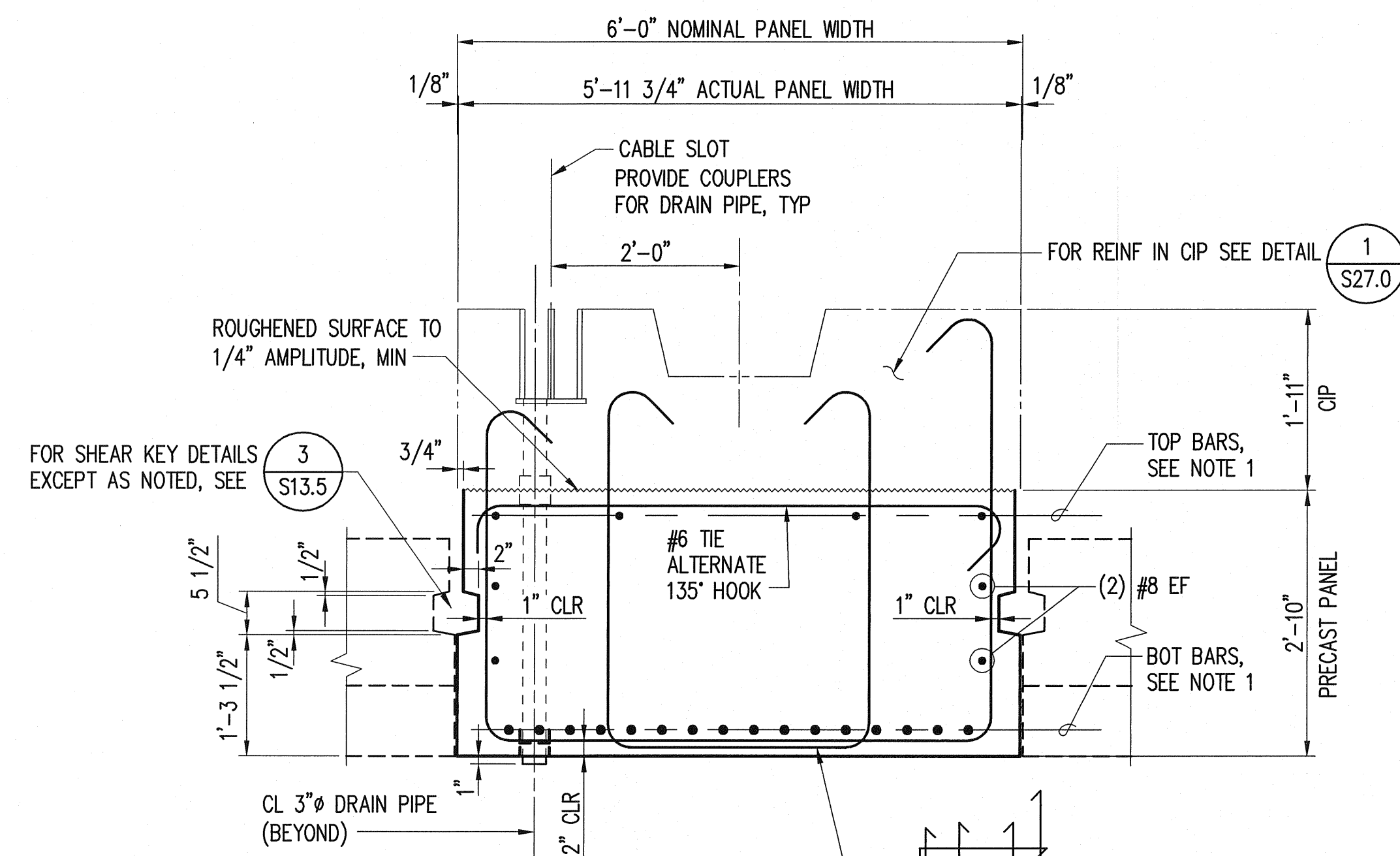
TOWNSHIP: 21N RANGE: 35E SECTION: 27  
DATUM: HORIZ. VERT:  
DRAWING SCALE: AS SHOWN

REVISION  
MARK  
BY: DATE:  
APPROVED: DATE:



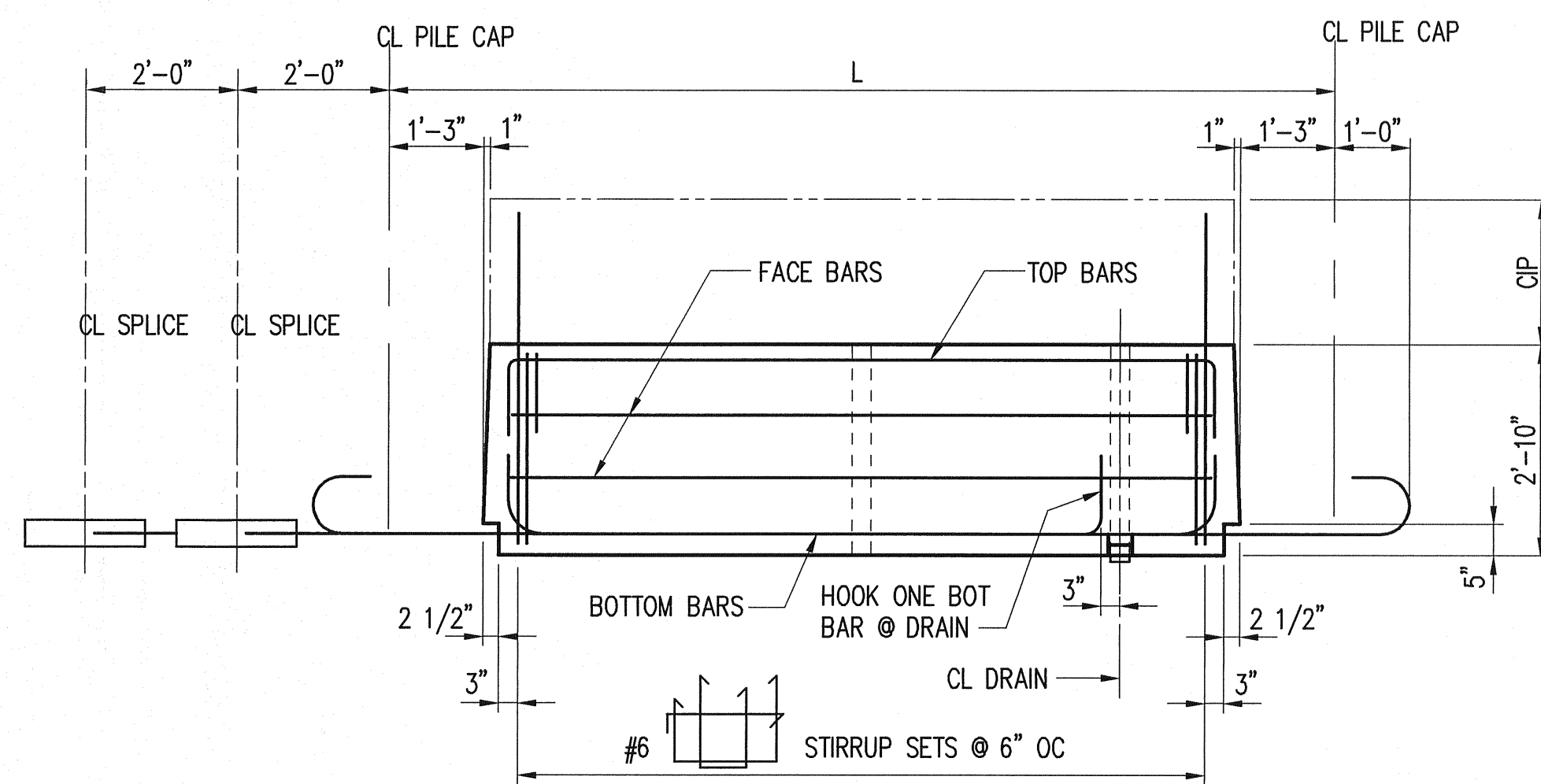
**DECK PANEL PLAN  
TYPE P7D**  
SCALE: 1/2"=1'-0"

1  
SB.0



**DECK PANEL SECTION  
TYPE P7D**  
SCALE: 3/4"=1'-0"

2  
-



**DECK PANEL ELEVATION  
TYPE P7D**  
SCALE: 1/2"=1'-0"

3  
-

**NOTES:**

1. SEE DECK PANEL SCHEDULE, SHEETS S42.0 AND S43.0.
2. FOR THE LOCATION OF CRANE PIN SOCKETS, SEE SHEETS S8.0 AND S11.0.

EP-6305  
**S38.2**  
 SHEET 146 OF 215  
 CONTRACT NUMBER: 066018  
 E. NUMBER: E2823  
 PHASE: BID SET

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 DECK PANEL DETAILS 6

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ.  
 DRAWING SCALE: AS SHOWN

APPROVED: *H. Adams*  
 CHIEF ENGINEER - DATE: 23 Apr 07  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

RJK 05/2007  
 CHECKED BY - DATE  
 GGN 05/2007  
 PROJECT ENGR. - DATE

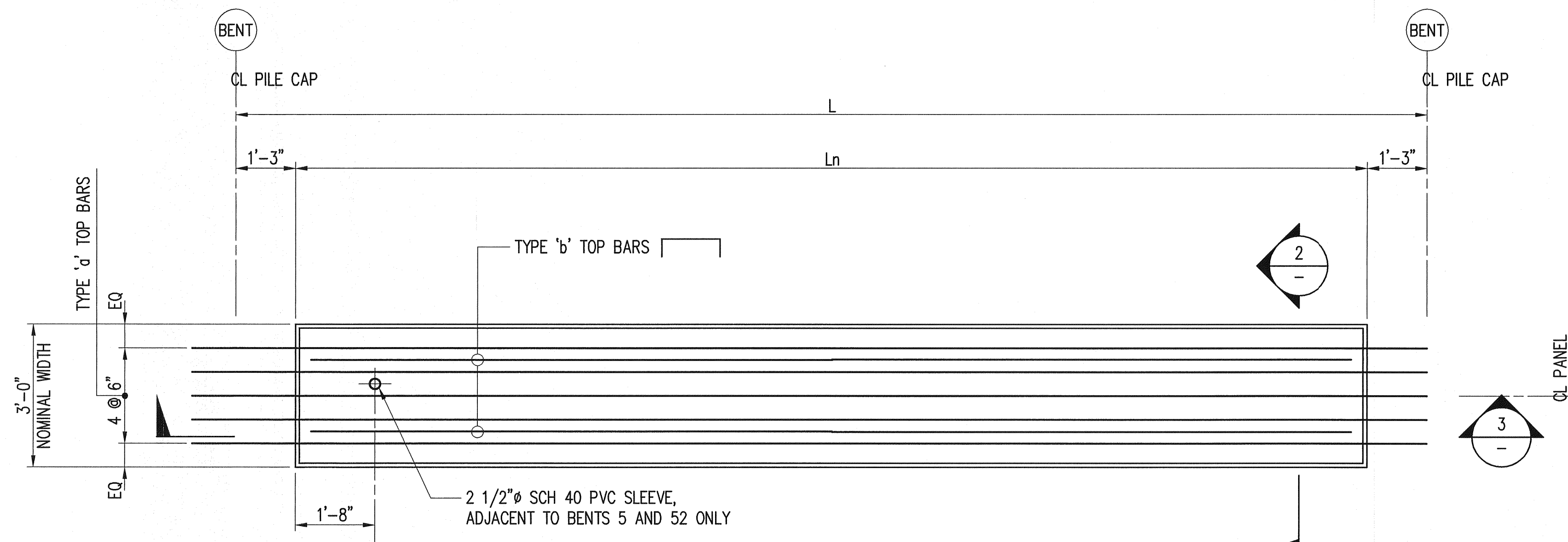
PORT OF TACOMA  
 CONSULTING ENGINEERS  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0650 Fax (253) 396-0162

**k p r i**  
 PORT OF TACOMA P. O. BOX 1837  
 TACOMA, WA 98401 253-383-5841

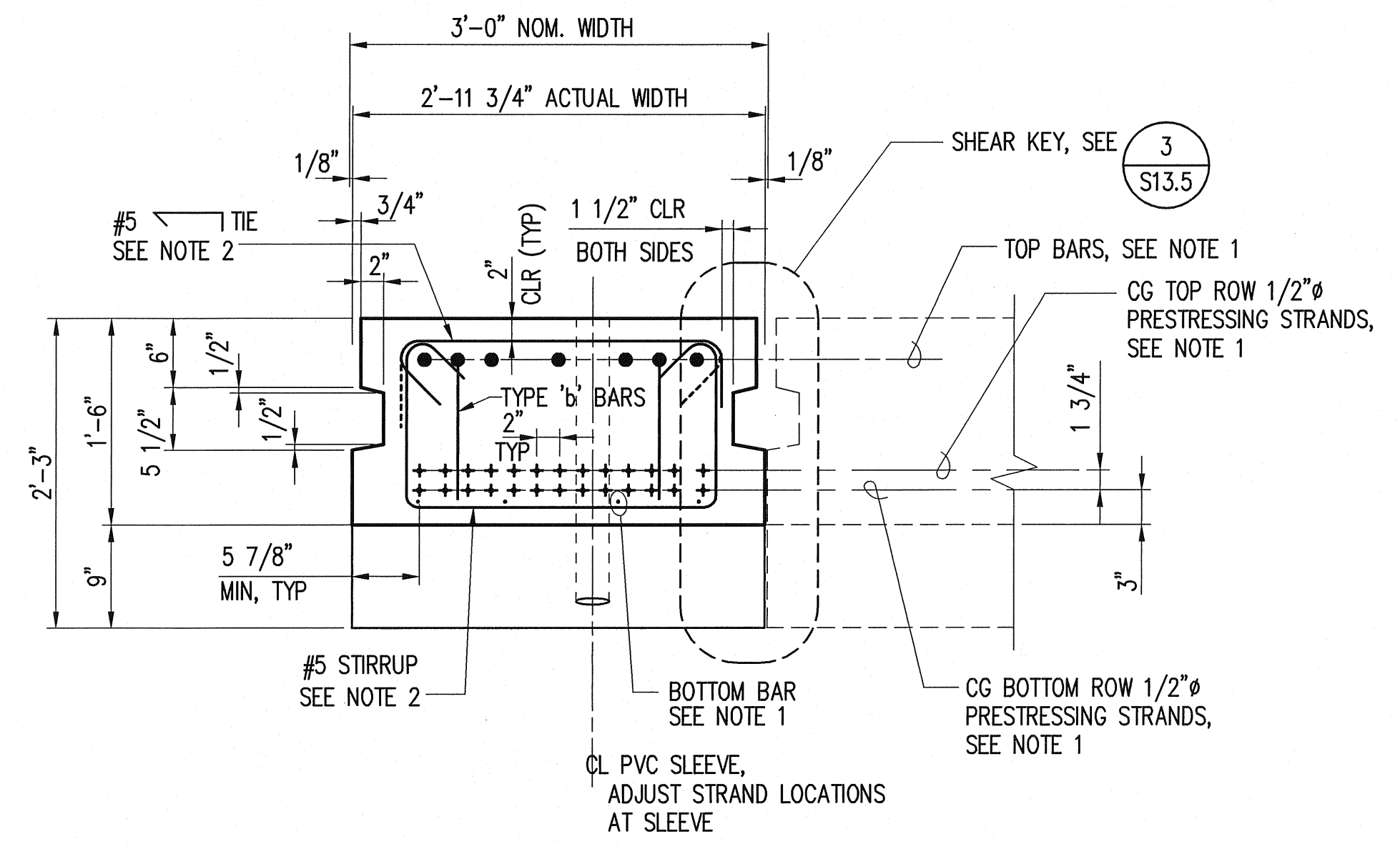
MARK REVISION  
 DATE: 05/2007  
 REVISION: 1

BY: APPROVED: DATE:

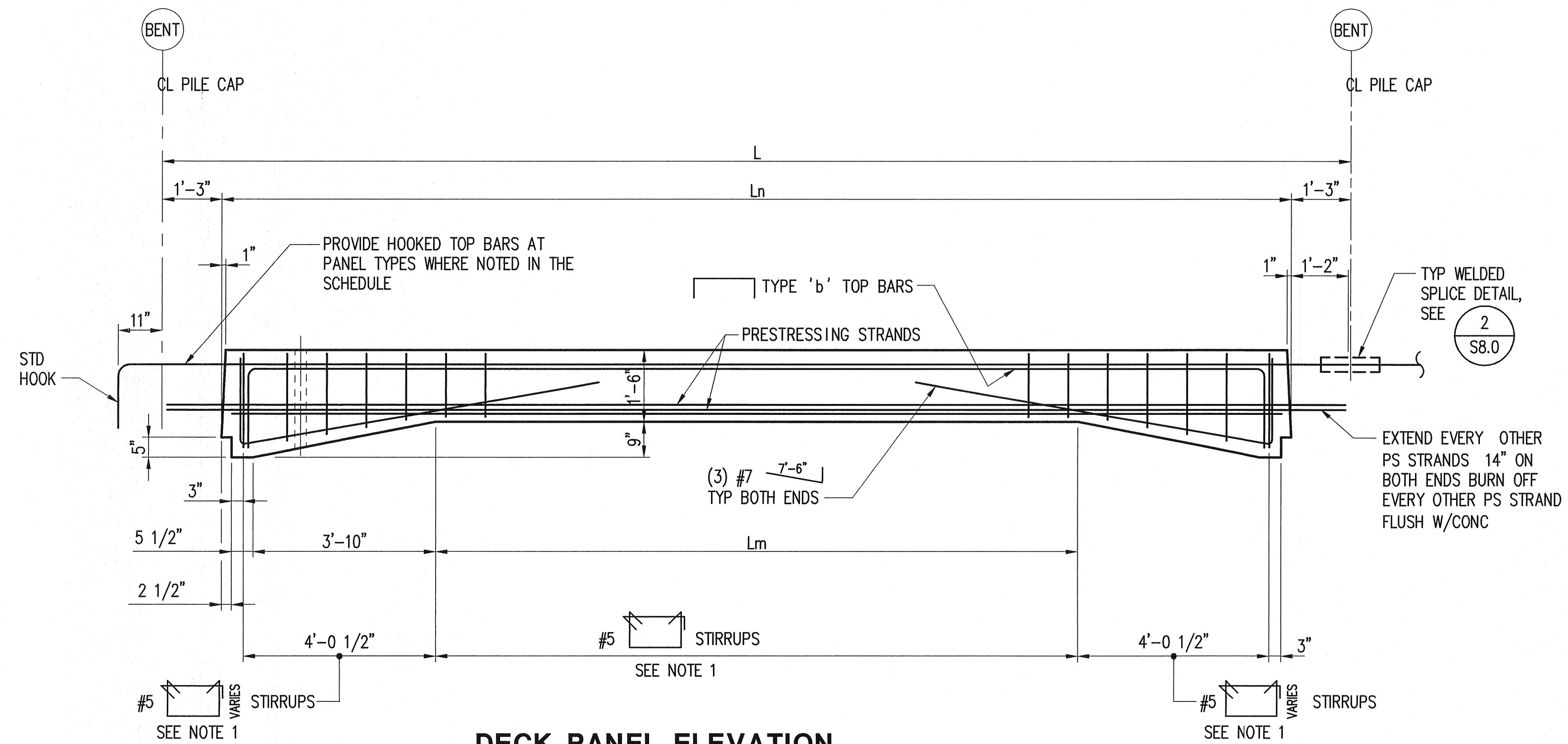
**BID SET**



**DECK PANEL PLAN FOR TYPE (SEE NOTE 1)**  
SCALE: 1/2"=1'-0" 1  
S8.0



**DECK PANEL SECTION FOR TYPE (SEE NOTE 1)**  
SCALE: 1"=1'-0" 2  
-



**DECK PANEL ELEVATION FOR TYPE (SEE NOTE 1)**  
SCALE: 1/2"=1'-0" 3  
-

**NOTES:**

1. USE THIS SHEET FOR DECK PANEL TYPES: P8, P8A, P8B, P8C
2. SEE DECK PANEL SCHEDULE, S42.0 THRU S43.1.
3. PROVIDE 135° HOOKS ON STIRRUPS AND TIES. ALTERNATE HOOKS.

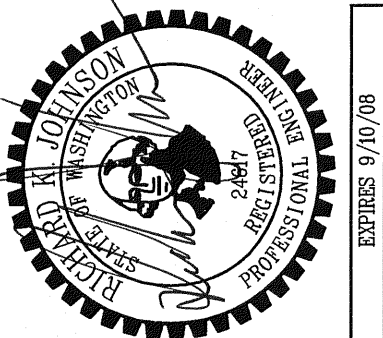
**PORT OF TACOMA**  
P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

**Consulting Engineers**  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0650 Fax (253) 396-0162

**kpfi**

APPROVED	<i>H. Adams</i> CHIEF ENGINEER - DATE 23 Apr 07	DRAWING DATE: 05-21-2007	PROJECT ENGR. - DATE GGN 05/2007
CHECKED BY - DATE RKJ 05/2007		MARK REVISION	

PORT PARCEL: 1, 7 & 18  
ALEXANDER AVENUE  
340 F  
253-396-0162



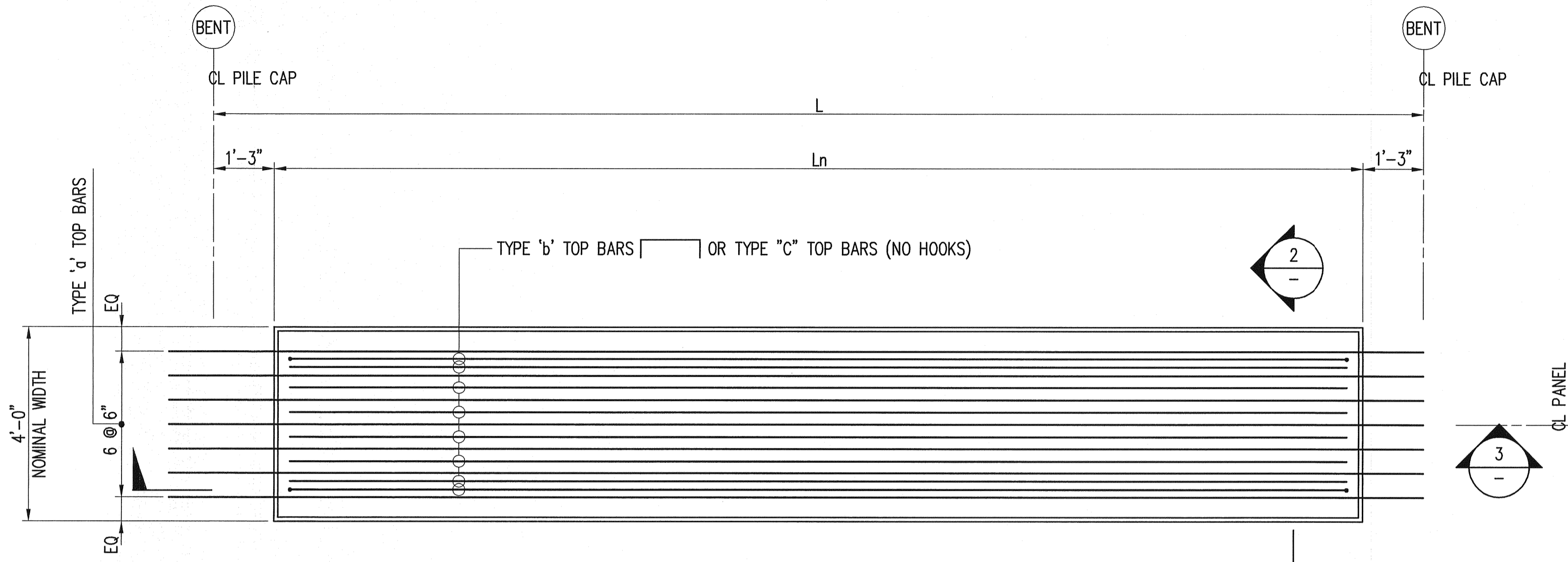
**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
DECK PANEL DETAILS 7

**EP-6305**  
**S339.0**  
SHEET 147 OF 215

CONTRACT NUMBER: 068018  
E. NUMBER: E2823  
PHASE: BID SET

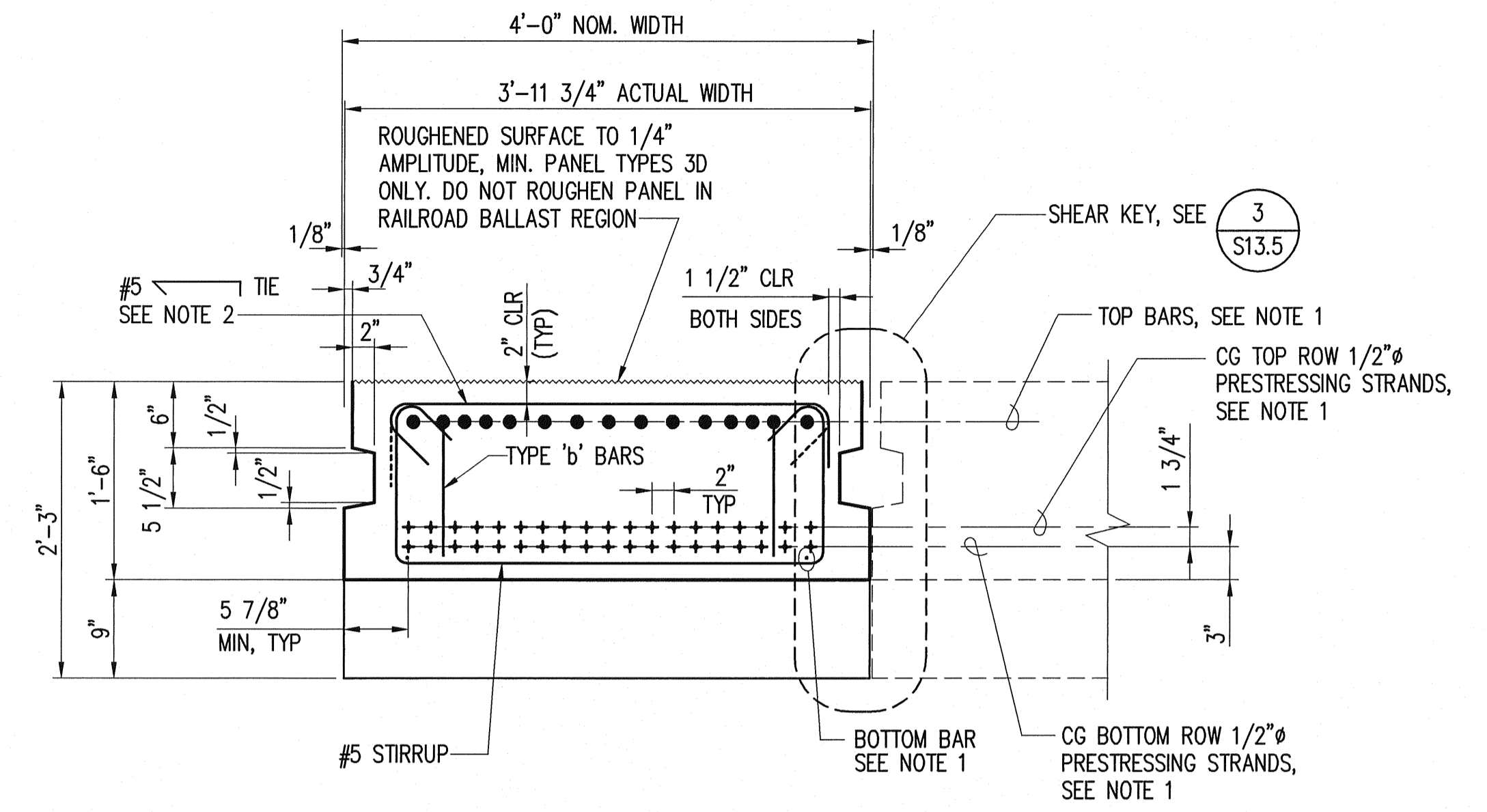
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATALIN: HORIZ. VERT.  
DRAWING SCALE: AS SHOWN

**BID SET**



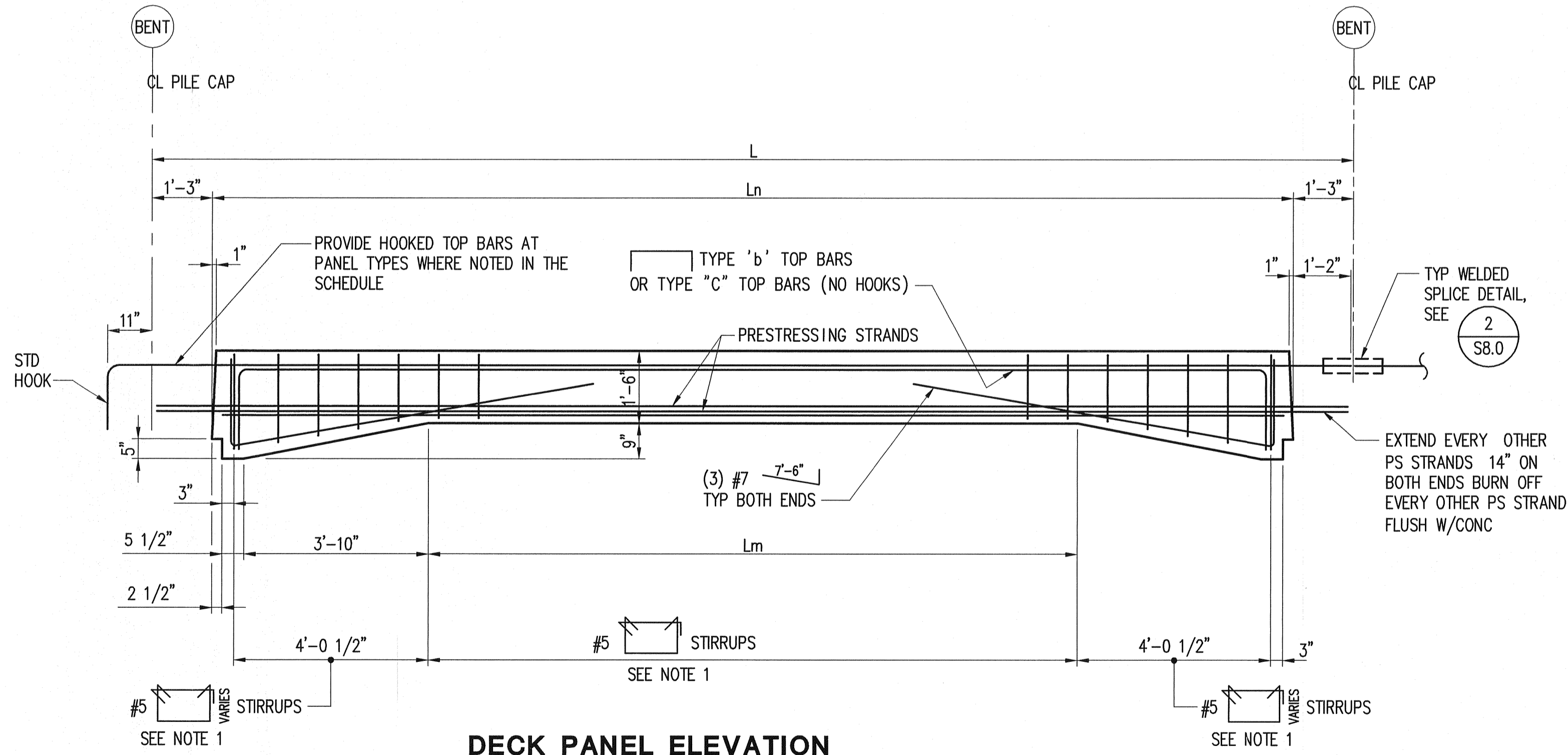
**DECK PANEL PLAN  
FOR TYPE (SEE NOTE 1)**  
SCALE: 1/2"=1'-0"

1  
S8



**DECK PANEL SECTION  
FOR TYPE (SEE NOTE 1)**  
SCALE: 1/2"=1'-0"

2  
-



**DECK PANEL ELEVATION  
FOR TYPE (SEE NOTE 1)**  
SCALE: 1/2"=1'-0"

3  
-

**NOTES:**

1. USE THIS SHEET FOR DECK PANEL TYPES: P3B, P3D, P3E, P3F
2. SEE DECK PANEL SCHEDULE, SHEET S42.0 AND S43.0.
3. PROVIDE 135° HOOKS ON STIRRUPS AND TIES. ALTERNATE HOOKS.

**PORT OF TACOMA**

**EAST BLAIR ONE WHARF**

**DECK PANEL DETAILS 8**

**EP-6305**

**S339.1**

**SHEET 148 OF 215**

CONTRACT NUMBER: 068018  
E NUMBER: E2623  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ: VERT:  
DRAWING SCALE: AS SHOWN

APPROVED: *M. J. [Signature]*  
CHIEF ENGINEER - DATE: 05-21-2007  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 F. ALEXANDER AVENUE  
PORT PARCEL: 17 & 18

RJK  
CHECKED BY - DATE: 05/2007  
GGN  
PROJECT ENGR. - DATE: 05/2007

PORT OF TACOMA  
P.O. BOX 1837  
TACOMA, WA 98401 253-3833-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

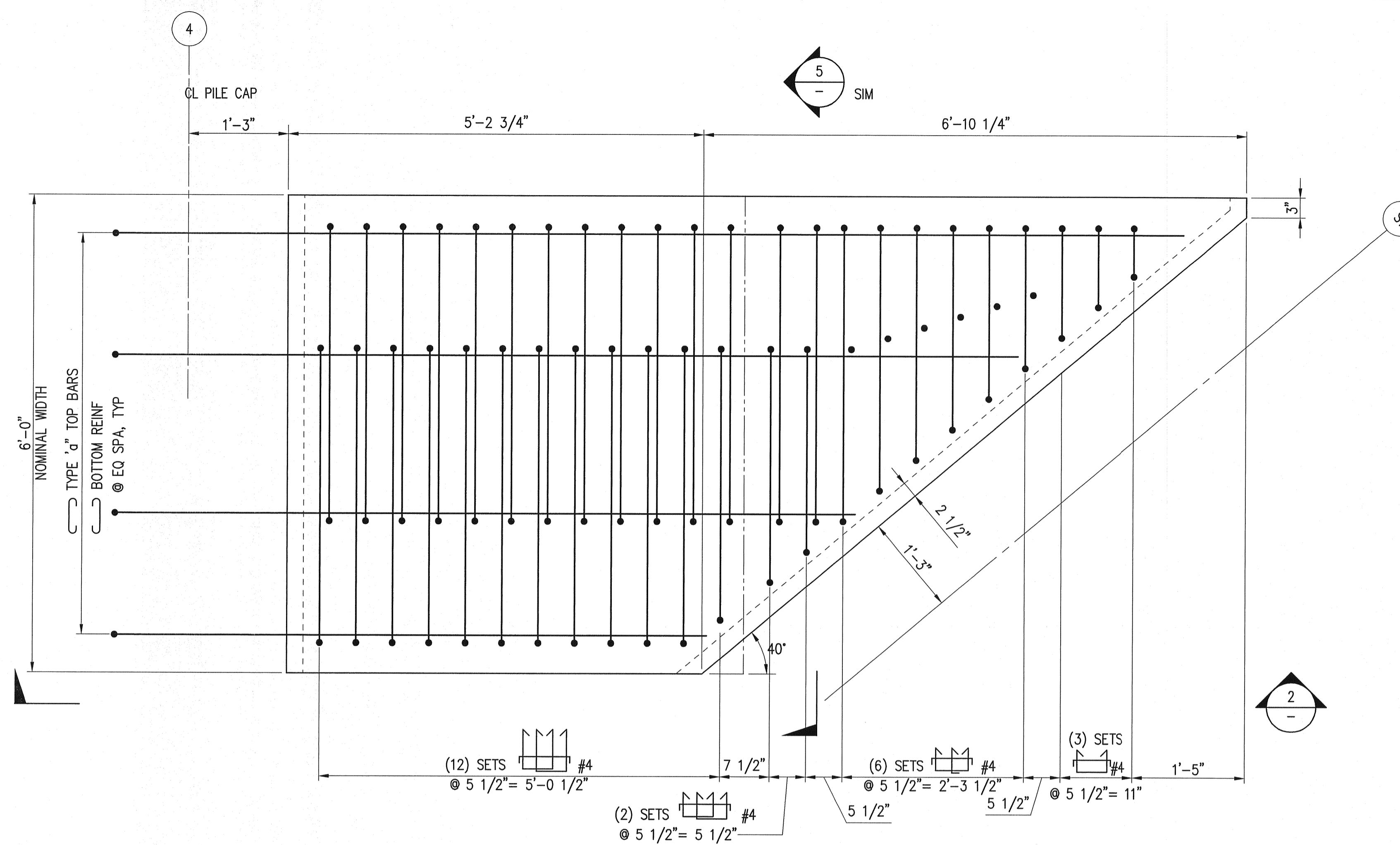
**k p f i**

MARK REVISION  
BY: DATE:



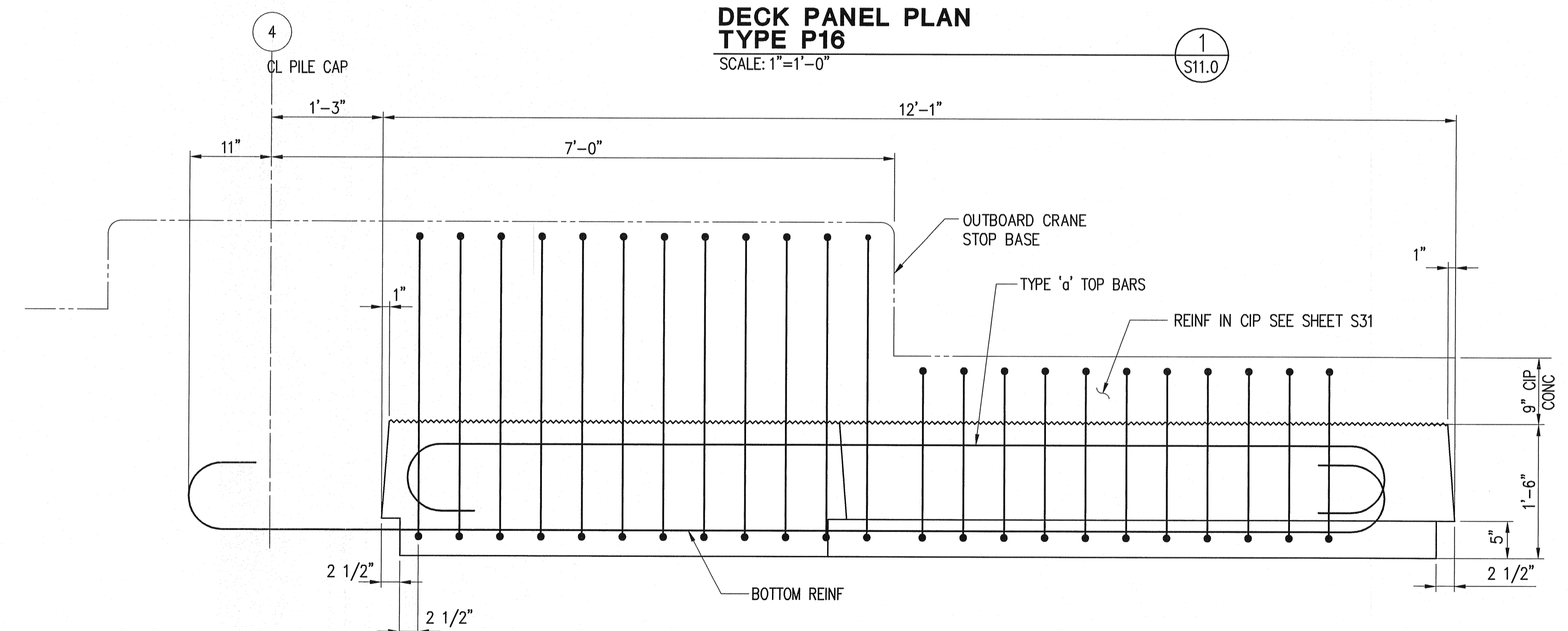






**DECK PANEL PLAN TYPE P16**  
SCALE: 1"=1'-0"

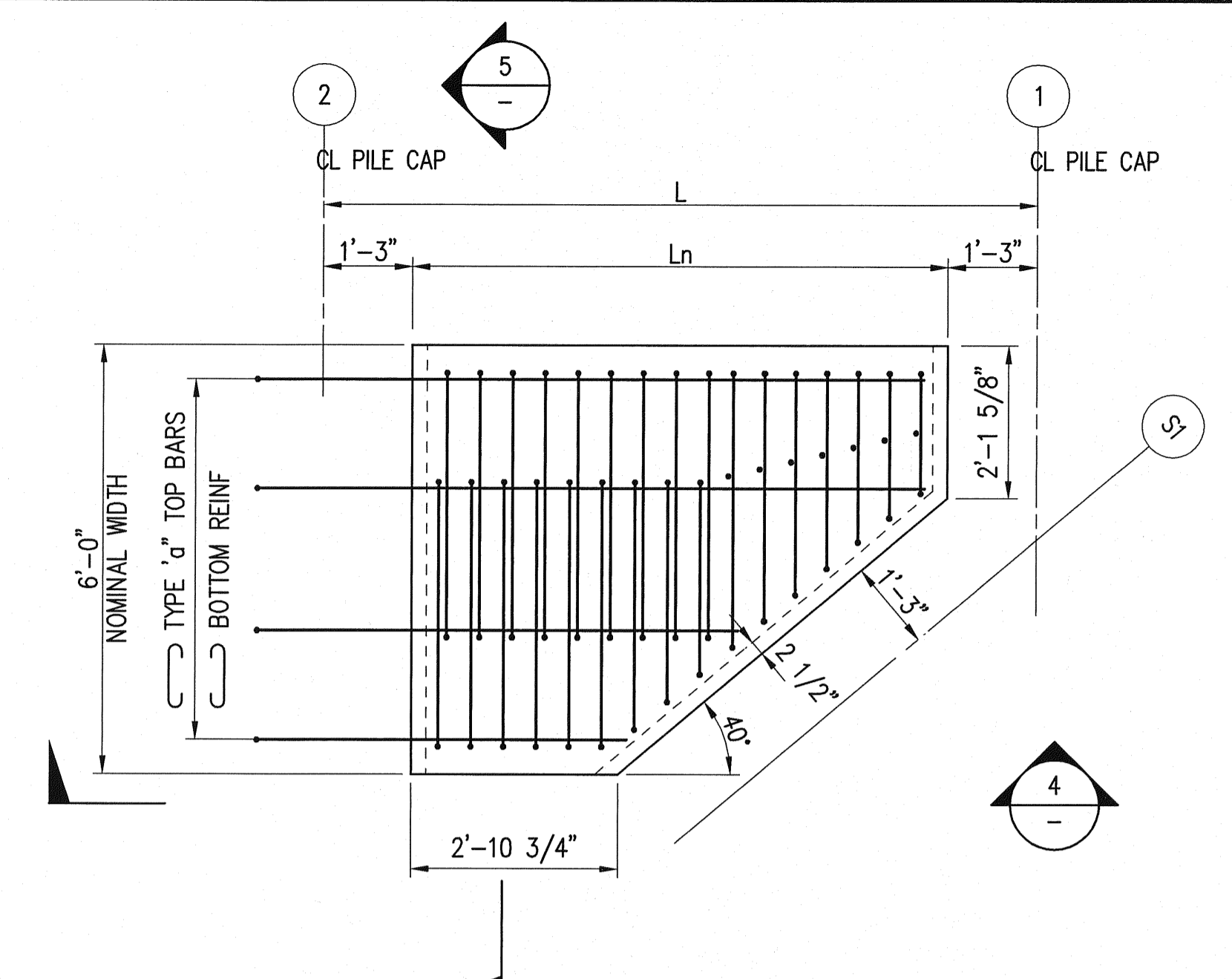
1  
S11.0



**DECK PANEL ELEVATION TYPE P16**  
SCALE: 1"=1'-0"

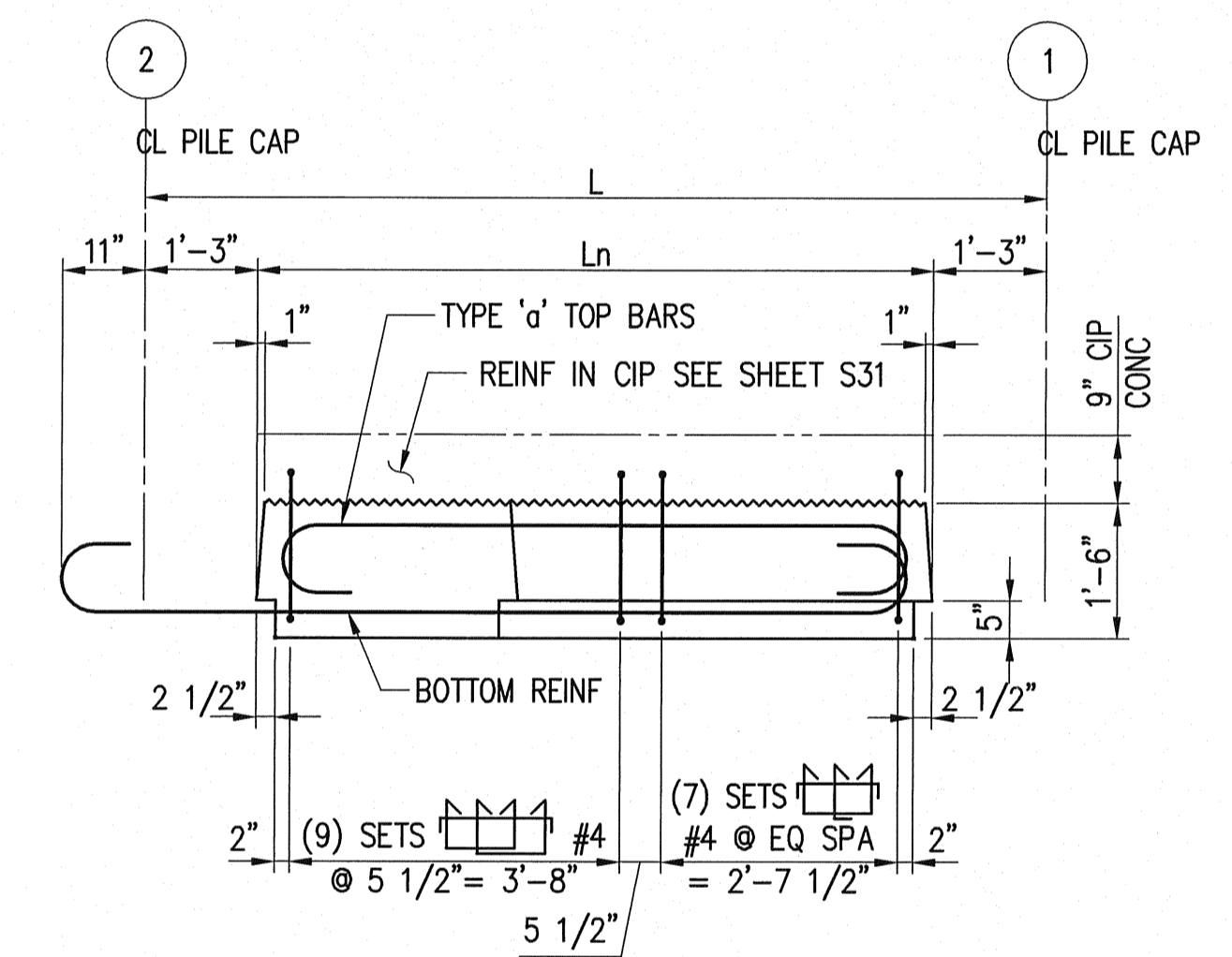
2  
-

**NOTES:**  
1. SEE DECK PANEL SCHEDULE, SHEET S43.0.



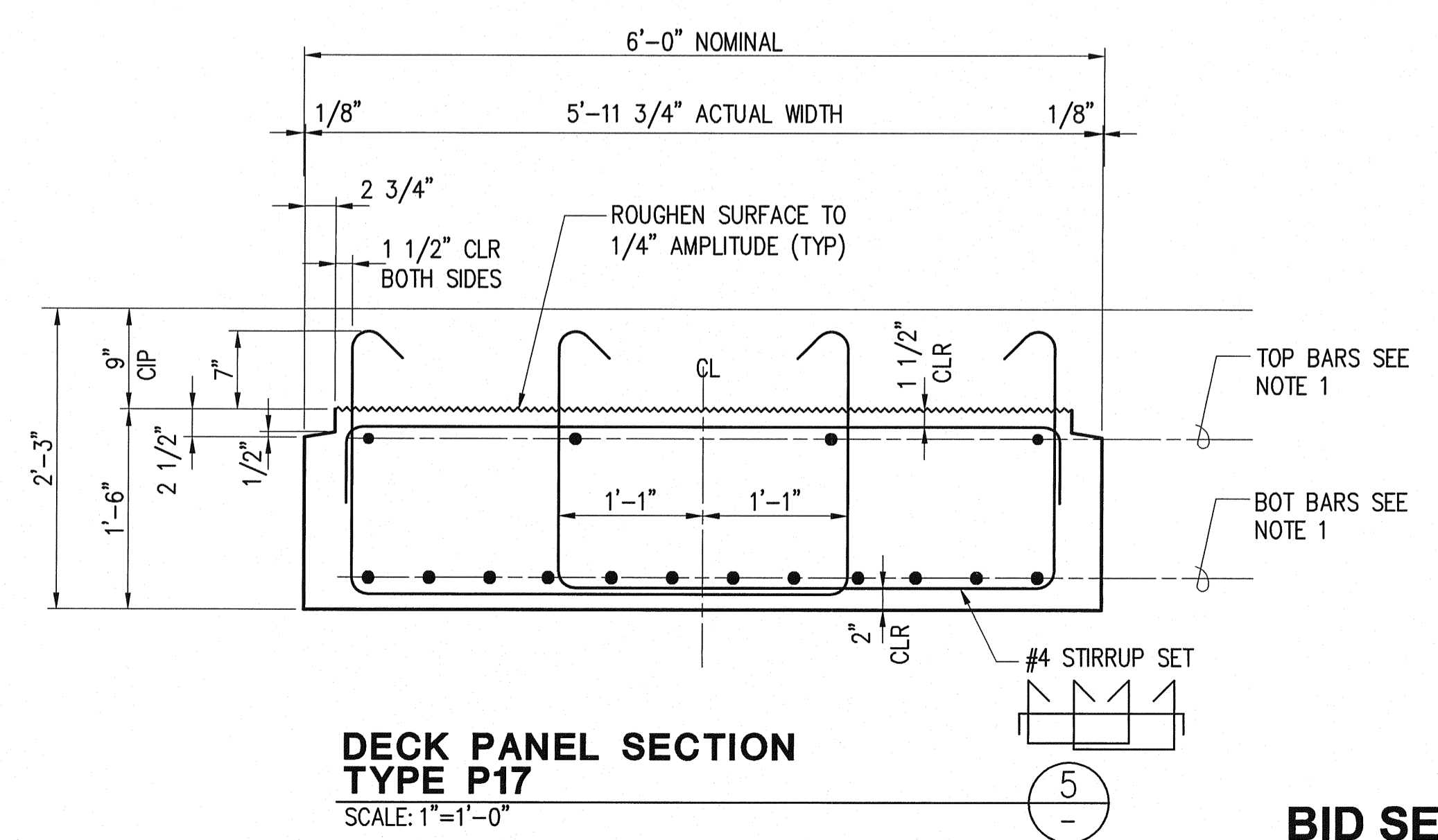
**DECK PANEL PLAN TYPE P17**  
SCALE: 1/2"=1'-0"

3  
S11.0



**DECK PANEL ELEVATION TYPE P17**  
SCALE: 1/2"=1'-0"

4  
-



**DECK PANEL SECTION TYPE P17**  
SCALE: 1"=1'-0"

5  
-

**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
DECK PANEL DETAILS 12

**EP-6305**  
**S41.2**  
SHEET 152 OF 215

CONTRACT NUMBER: 068018  
E NUMBER: E28203  
PHASE: BID SET

TOWNSHIP: 21 N. RANGE: 3 E. SECTION: 27  
DATUM: HORIZ. VERT.  
DRAWING SCALE: AS SHOWN

APPROVED: *H. J. ...*  
CHIEF ENGINEER - DATE: 2/24/07  
DRAWING DATE: 05/21/2007  
PROJECT: EAST BLAIR ONE WHARF  
PORT OF TACOMA

CHECKED BY: - DATE: 05/2007  
GGN 05/2007  
PROJECT ENGR. - DATE

RkJ 05/2007  
DATE

PORT OF TACOMA  
CONSULTING ENGINEERS  
1201 PACIFIC AVENUE, SUITE 800  
TACOMA, WASHINGTON 98402  
(253) 396-0160 FAX (253) 396-0162

**kp11**

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

MARK REVISION  
BY: DATE:

**BID SET**

**PRECAST DECK PANEL SCHEDULE**

PANEL TYPE	PANEL WIDTH (NOMINAL)	NOMINAL LENGTH "L"	ACTUAL LENGTH "Ln"	NON-HAUNCH LENGTH "Lm"	ONE END HOOKED TOP BAR	DRAIN HOLES	REF. PLAN	TRANSV. SECTION	REF. ELEV.	CONCRETE STRENGTH	FINAL PRESTRESS (KIPS)	BOTTOM REINF.	TOP REINFORCEMENT			SHEAR REINFORCEMENT			
													BAR 'a'	BAR 'b'	BAR 'c'	HAUNCH TO HAUNCH	END TO HAUNCH	END TO END	
P1	6'-0"	25'-0"	22'-6"	13'-6"	---	---	1 S36.0	2 S36.0	3 S36.0	f <sub>c</sub> @ RELEASE = 4000 PSI MIN f <sub>c</sub> @ 28 DAYS = 6000 PSI MIN f <sub>c</sub> @ ERECTION = 6000 PSI MIN	374	(4) #4	(10) #8	---	(4) #7	#5 @ 12	#5 @ 8		
P2	6'-0"	25'-0"	22'-6"	13'-6"	---	YES	1 S36.0	2 S36.0	3 S36.0		374	(4) #4	(10) #8	---	(4) #7	#5 @ 12	#5 @ 8		
P3	4'-0"	25'-0"	22'-6"	---	---	---	1 S37.0	2 S37.0	3 S37.0		440	(4) #8	(7) #10	(4) #7	---	---	---	#5 @ 5	
P4	6'-0"	25'-0"	22'-6"	13'-6"	---	---	1 S36.0	2 S36.0	3 S36.0		621	(5) #4	(10) #10	---	(2) #7	#5 @ 12	#5 @ 8		
P5	6'-0"	25'-0"	22'-6"	13'-6"	---	YES	1 S36.0	2 S36.0	3 S36.0		621	(5) #4	(10) #10	---	(2) #7	#5 @ 12	#5 @ 8		
P6	6'-0"	25'-0"	22'-6"	---	---	---	1 S36.1	2 S36.1	3 S36.1		435	(6) #8	(10) #10	(4) #7	---	---	---	#5 @ 6	
P7	6'-0"	12'-6"	10'-0"	---	---	---	1 S38.0	2 S38.0	3 S38.0		---	(16) #10	(4) #8	---	---	---	---	#6 @ 6	
P8	3'-0"	25'-0"	22'-6"	13'-6"	---	---	1 S39.0	2 S39.0	3 S39.0		240	(2) #4	(5) #10	---	---	#5 @ 11	#5 @ 4		
P9	6'-0"	25'-0"	22'-6"	13'-6"	---	YES	1 S36.0	2 S36.0	3 S36.0		479	(4) #4	(10) #10	---	---	#5 @ 12	#5 @ 8		
P10	3'-0"	25'-0"	22'-6"	---	---	---	1 S40.0	2 S40.0	3 S40.0		270	(3) #8	(5) #10	(3) #8	---	---	---	#5 @ 9	
P1A	6'-0"	25'-0"	22'-6"	13'-6"	YES	---	1 S36.0	2 S36.0	3 S36.0		519	(4) #4	(10) #9	---	(2) #6	#5 @ 12	#5 @ 8		
P2A	6'-0"	25'-0"	22'-6"	13'-6"	YES	YES	1 S36.0	2 S36.0	3 S36.0		519	(4) #4	(10) #9	---	(2) #6	#5 @ 12	#5 @ 8		
P3A	4'-0"	25'-0"	22'-6"	---	YES	---	1 S37.0	2 S37.0	3 S37.0		515	(3) #8	(7) #10	(4) #7	---	---	---	#5 @ 5	
P4A	6'-0"	25'-0"	22'-6"	13'-6"	YES	---	1 S36.0	2 S36.0	3 S36.0		621	(5) #4	(10) #10	---	(2) #7	#5 @ 12	#5 @ 8		
P5A	6'-0"	25'-0"	22'-6"	13'-6"	YES	YES	1 S36.0	2 S36.0	3 S36.0		621	(5) #4	(10) #10	---	(2) #7	#5 @ 12	#5 @ 8		
P6A	6'-0"	25'-0"	22'-6"	---	YES	---	1 S36.1	2 S36.1	3 S36.1		514	(6) #8	(10) #10	(4) #8	---	---	---	#5 @ 6	
P7A	6'-0"	12'-6"	10'-0"	---	---	---	1 S38.0	2 S38.0	4 S38.0		---	(16) #10	(4) #8	---	---	---	---	#6 @ 6	
P8A	3'-0"	25'-0"	22'-6"	13'-6"	YES	---	1 S39.0	2 S39.0	3 S39.0		338	(2) #4	(5) #10	---	(2) #6	#5 @ 8	#5 @ 4		
P9A	6'-0"	25'-0"	22'-6"	13'-6"	YES	YES	1 S36.0	2 S36.0	3 S36.0		676	(4) #4	(10) #10	---	(2) #7	#5 @ 12	#5 @ 6		
P10A	3'-0"	25'-0"	22'-6"	---	YES	---	1 S40.0	2 S40.0	3 S40.0		323	(3) #8	(5) #10	(3) #8	---	---	---	#5 @ 9	

**NOTES:**

- PROVIDE ASTM A706 GRADE 60 REINFORCEMENT FOR ALL TYPE 'a' TOP BARS.
- TYPE 'b' TOP BARS ARE HOOKED INSIDE PANEL AT BOTH ENDS.

**BID SET**

EP-6305  
**S42.0**  
SHEET 153 OF 215

CONTRACT NUMBER: 068018  
DRAWING NUMBER: EP6305  
DATE: 05/21/07  
DRAWING SCALE: AS SHOWN

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DALLAS - HORIZ.  
DRAWING SCALE: AS SHOWN

APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 05/21/07  
DRAWING DATE: 05/21/07  
PROJECT: PORT OF TACOMA, WA - PARCEL 17 & 18

APPROVED: \_\_\_\_\_  
MARK: \_\_\_\_\_  
REVISION: \_\_\_\_\_

PROJECT ENGR. - DATE: 05/2007  
GON: 05/2007  
CHECKED BY - DATE: 05/2007  
RKJ

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
DECK PANEL SCHEDULE 1

PORT OF TACOMA  
P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

**PRECAST DECK PANEL SCHEDULE**

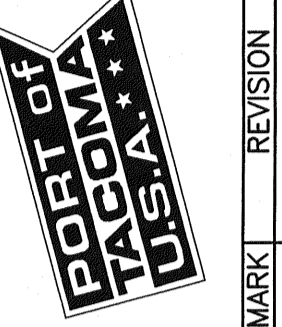
PANEL TYPE	PANEL WIDTH (NOMINAL)	NOMINAL LENGTH "L"	ACTUAL LENGTH "Ln"	NON-HAUNCH LENGTH "Lm"	ONE END HOOKED TOP BAR	DRAIN HOLES	REF. PLAN	TRANSV. SECTION	REF. ELEV.	CONCRETE STRENGTH	FINAL PRESTRESS (KIPS)	BOTTOM REINF.	TOP REINFORCEMENT			SHEAR REINFORCEMENT		
													BAR 'a'	BAR 'b'	BAR 'c'	HAUNCH TO HAUNCH	END TO HAUNCH	END TO END
P1B	6'-0"	20'-0"	17'-6"	8'-6"	--	--	1 S36.0	2 S36.0	3 S36.0		612	(4) #4	(10) #9	---	(2) #6	#5 @ 12	#5 @ 8	
P2B	6'-0"	20'-0"	17'-6"	8'-6"	--	YES	1 S36.0	2 S36.0	3 S36.0		612	(4) #4	(10) #9	---	(2) #6	#5 @ 12	#5 @ 8	
P3B	4'-0"	20'-0"	17'-6"	8'-6"	--	--	1 S39.1	2 S39.1	3 S39.1		357	(2) #4	(7) #10	(6) #9	---	#5 @ 12	#5 @ 5	
P4B	6'-0"	20'-0"	17'-6"	8'-6"	--	--	1 S36.0	2 S36.0	3 S36.0		590	(4) #4	(10) #10	(8) #8	---	#5 @ 12	#5 @ 5	
P5B	6'-0"	20'-0"	17'-6"	8'-6"	--	YES	1 S36.0	2 S36.0	3 S36.0		590	(4) #4	(10) #10	(8) #8	---	#5 @ 12	#5 @ 5	
P6B	6'-0"	20'-0"	17'-6"	---	--	--	1 S36.1	2 S36.0	3 S36.1		380	(6) #8	(10) #10	(4) #7	---	---	---	#5 @ 6
P7B	6'-0"	10'-0"	7'-6"	---	--	--	1 S38.0	2 S38.0	3 S38.0		---	(16) #10	(4) #8	---	---	---	---	#6 @ 6
P8B	3'-0"	20'-0"	17'-6"	8'-6"	--	--	1 S39.0	2 S39.0	3 S39.0		302	(2) #4	(5) #10	---	(2) #6	#5 @ 12	#5 @ 5	
P9B	6'-0"	20'-0"	17'-6"	8'-6"	--	YES	1 S36.0	2 S36.0	3 S36.0		603	(4) #4	(10) #10	---	(4) #7	#5 @ 12	#5 @ 8	
P10B	3'-0"	20'-0"	17'-6"	---	--	--	1 S40.0	2 S40.0	3 S40.0		216	(3) #8	(5) #10	(3) #8	---	---	---	#5 @ 9
P1C	6'-0"	10'-0"	7'-6"	---	YES	--	1 S41.0	2 S41.0	3 S41.0		---	(8) #8	(10) #9	---	---	---	---	#5 @ 8
P2C	6'-0"	10'-0"	7'-6"	---	YES	YES	1 S41.0	2 S41.0	3 S41.0		---	(8) #8	(10) #9	---	---	---	---	#5 @ 8
P3C	4'-0"	20'-0"	17'-6"	---	YES	--	1 S37.0	2 S37.0	3 S37.0		440	(4) #8	(7) #10	(4) #7	---	---	---	#5 @ 5
P4C	6'-0"	20'-0"	17'-6"	8'-6"	YES	--	1 S36.0	2 S36.0	3 S36.0		590	(4) #4	(10) #10	(8) #8	---	#5 @ 12	#5 @ 5	
P5C	6'-0"	20'-0"	17'-6"	8'-6"	YES	YES	1 S36.0	2 S36.0	3 S36.0		590	(4) #4	(10) #10	(8) #8	---	#5 @ 12	#5 @ 5	
P6C	6'-0"	20'-0"	17'-6"	---	YES	--	1 S36.1	2 S36.1	3 S36.1		380	(6) #8	(10) #10	(4) #7	---	---	---	#5 @ 6
P7C	6'-0"	12'-6"	10'-0"	---	--	--	1 S38.1	2 S38.1	3 S38.1		---	(16) #10	(4) #8	---	---	---	---	#6 @ 6
P8C	3'-0"	25'-0"	22'-6"	13'-6"	SEE NOTE 2	--	1 S39.0	2 S39.0	3 S39.0		338	(2) #4	(5) #10	---	(2) #6	#5 @ 8	#5 @ 4	

f<sub>c</sub> @ RELEASE = 4000 PSI MIN  
 f<sub>c</sub> @ 28 DAYS = 6000 PSI MIN  
 f<sub>c</sub> @ ERECTION = 6000 PSI MIN

**NOTES:**

1. PROVIDE ASTM A706 GRADE 60 REINFORCEMENT FOR ALL TYPE 'a' TOP BARS.
2. TYPE 'b' TOP BARS ARE HOOKED INSIDE PANEL AT BOTH ENDS.

PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841



Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162

APPROVED: *[Signature]*  
 CHIEF ENGINEER - DATE: 05/21/2007  
 CHECKED BY: - DATE: 05/2007  
 GGN PROJECT ENGR. - DATE: 05/2007



DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 3340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 DECK PANEL SCHEDULE 2

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

EP-6305  
**S43.0**  
 SHEET 154 OF 215  
 CONTRACT NUMBER: 06801B  
 NUMBER: E223  
 PHASE: BID SET

**BID SET**

**PRECAST DECK PANEL SCHEDULE**

PANEL TYPE	PANEL WIDTH (NOMINAL)	NOMINAL LENGTH "L"	ACTUAL LENGTH "Ln"	NON-HAUNCH LENGTH "Ln"	ONE END HOOKED TOP BAR	DRAIN HOLES	REF. PLAN	TRANSV. SECTION	REF. ELEV.	CONCRETE STRENGTH	FINAL PRESTRESS (KIPS)	BOTTOM REINF.	TOP REINFORCEMENT			SHEAR REINFORCEMENT		
													BAR 'a'	BAR 'b'	BAR 'c'	HAUNCH TO HAUNCH	END TO HAUNCH	END TO END
P1D	6'-0"	10'-0"	7'-6"	--	SEE NOTE 2	--	1 S41.1	2 S41.1	3 S41.1		---	(8) #8	(10) #9	---	---	---	#5 @ 8	
P3D	4'-0"	25'-0"	22'-6"	8'-6"	YES	--	1 S39.1	2 S39.1	3 S39.1		393	(2) #4	(7) #10	(6) #8	---	#5 @ 9	#5 @ 5	
P6D	6'-0"	20'-0"	17'-6"	--	YES	YES	1 S36.1	2 S36.1	3 S36.1		380	(6) #8	(10) #10	(4) #7	---	---	#5 @ 6	
P7D	6'-0"	12'-6"	10'-0"	---	---	--	1 S38.2	2 S38.2	4 S38.2		---	(16) #10	(4) #8	---	---	---	#6 @ 6	
P3E	4'-0"	25'-0"	22'-6"	13'-6"	---	--	1 S39.1	2 S39.1	3 S39.1		249	(3) #4	(7) #8	---	(3) #7	#5 @ 9	#5 @ 5	
P3F	4'-0"	20'-0"	17'-6"	8'-6"	YES	--	1 S39.1	2 S39.1	3 S39.1		379	(2) #4	(7) #10	(6) #9	---	#5 @ 12	#5 @ 5	
P11	6'-0"	25'-0"	22'-6"	---	NOTE 3	--	1 S41.1	6 S41.1	3 S41.1		---	(12) #9	(4) #8	---	---			
P12	6'-0"	25'-0"	22'-6"	---	NOTE 3	--	1 S41.1	6 S41.1	3 S41.1		---	(12) #9	(4) #8	---	---			
P13	6'-0"	VARIES	VARIES	---	NOTE 3	--	2 S41.1	6 S41.1	4 S41.1		---	(9) #9	(4) #8	---	---			
P14	6'-0"	VARIES	VARIES	---	NOTE 3	--	2 S41.1	6 S41.1	4 S41.1		---	(9) #9	(4) #8	---	---			
P15	6'-0"	VARIES	VARIES	---	NOTE 3	--	2 S41.1	6 S41.1	4 S41.1		---	(6) #9	(4) #8	---	---			
P16	6'-0"	VARIES	VARIES	---	NOTE 3	--	1 S41.2	5 S41.2	2 S41.2		---	(6) #9	(4) #8	---	---			
P17	6'-0"	10'-0"	7'-6"	---	NOTE 3	--	3 S41.2	5 S41.2	4 S41.2		---	(6) #9	(4) #8	---	---			

f<sub>c</sub> @ RELEASE = 4000 PSI MIN  
 f<sub>c</sub> @ 28 DAYS = 6000 PSI MIN  
 f<sub>c</sub> @ ERECTION = 6000 PSI MIN

**NOTES:**

- PROVIDE ASTM A706 GRADE 60 REINFORCEMENT FOR ALL TYPE 'a' TOP BARS.
- TYPE 'b' TOP BARS ARE HOOKED INSIDE PANEL AT BOTH ENDS.

**BID SET**

EP-6305  
**S43.1**  
SHEET 155 OF 215  
CONTRACT NUMBER: 068018  
E. NUMBER: E2623  
PHASE: BID SET

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
DECK PANEL SCHEDULE 3

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ.  
DRAWING SCALE: AS SHOWN

APPROVED  
*M. Adams*  
CHIEF ENGINEER - DATE  
22 May 07

CKEYED BY - DATE  
GGN 05/2007  
PROJECT ENGR. - DATE

REVISION  
MARK

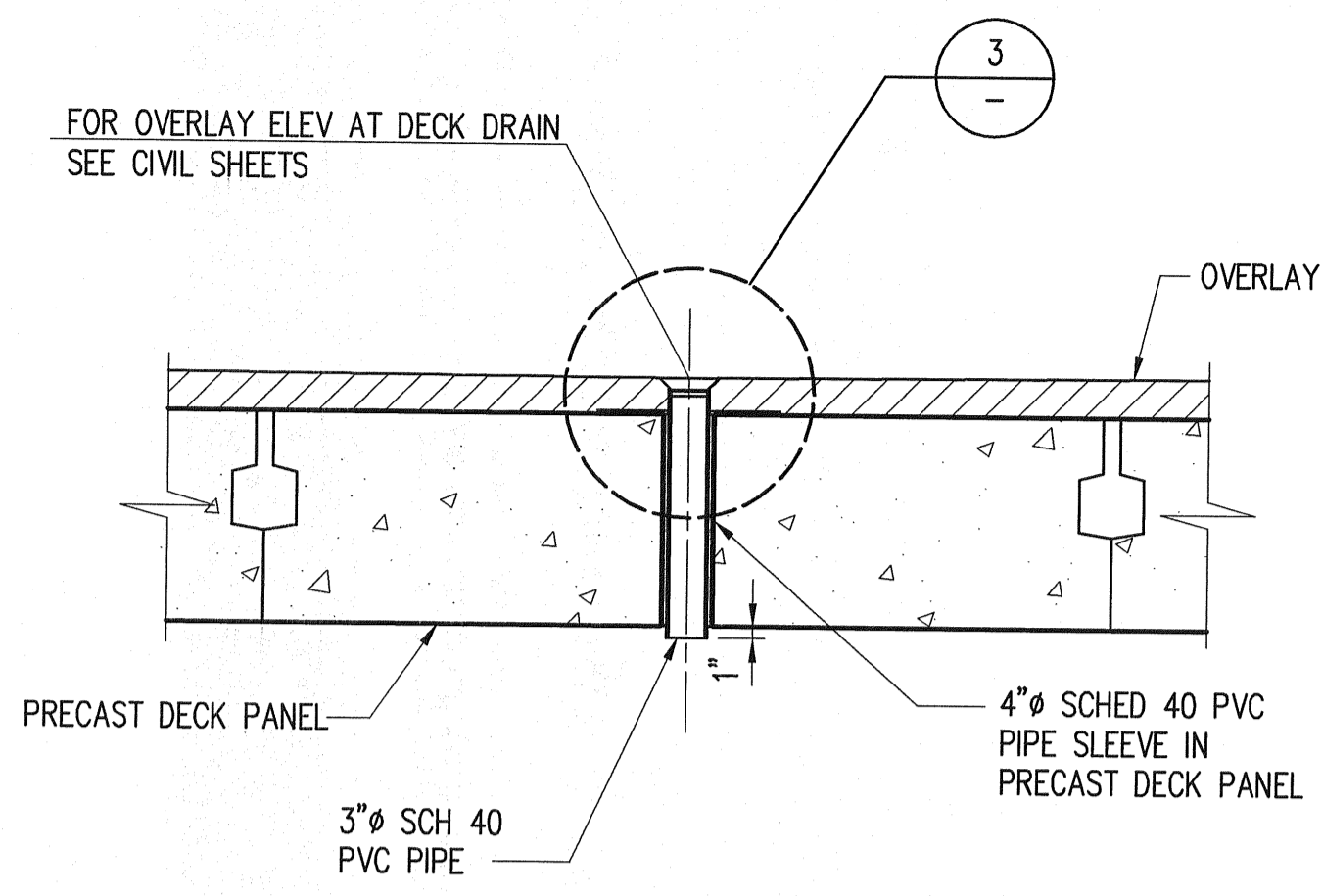
05/2007 - DATE

05/2007 - DATE

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

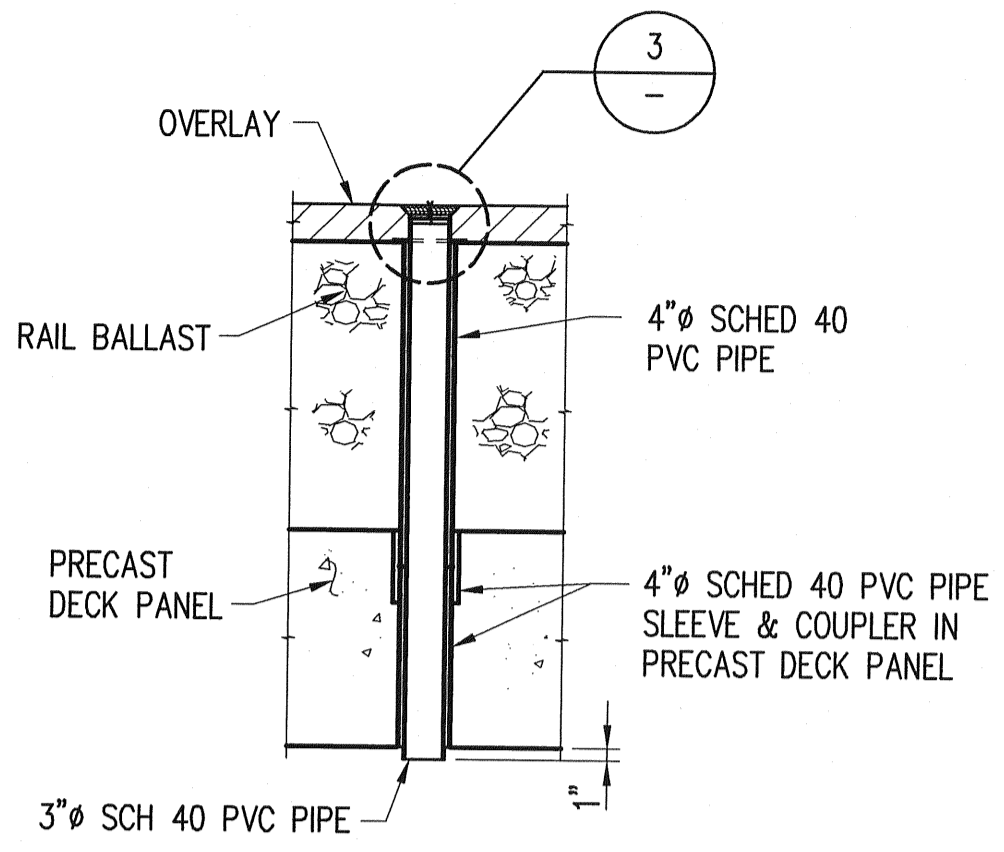
Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

**kprf**

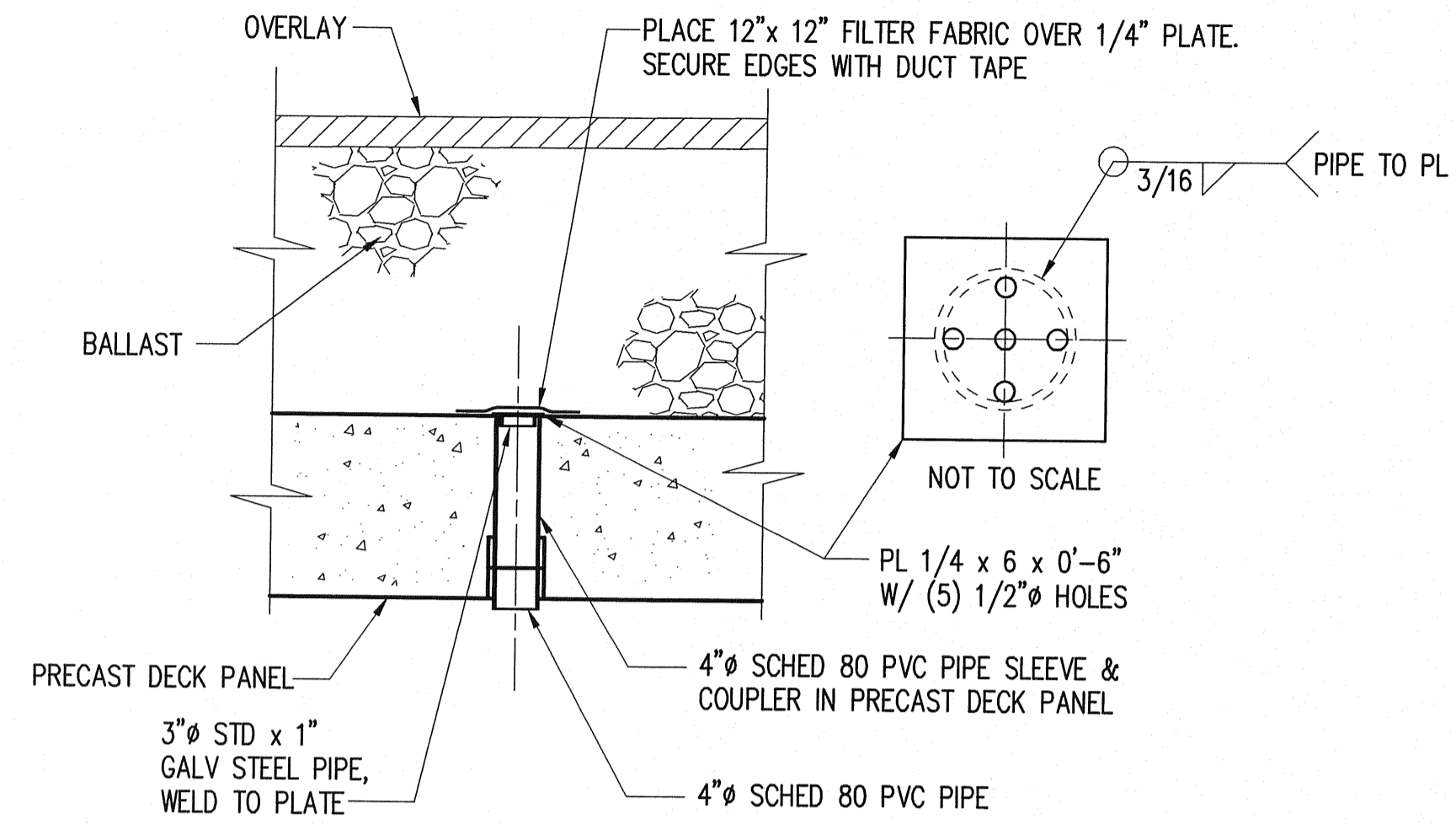


TYP UNO

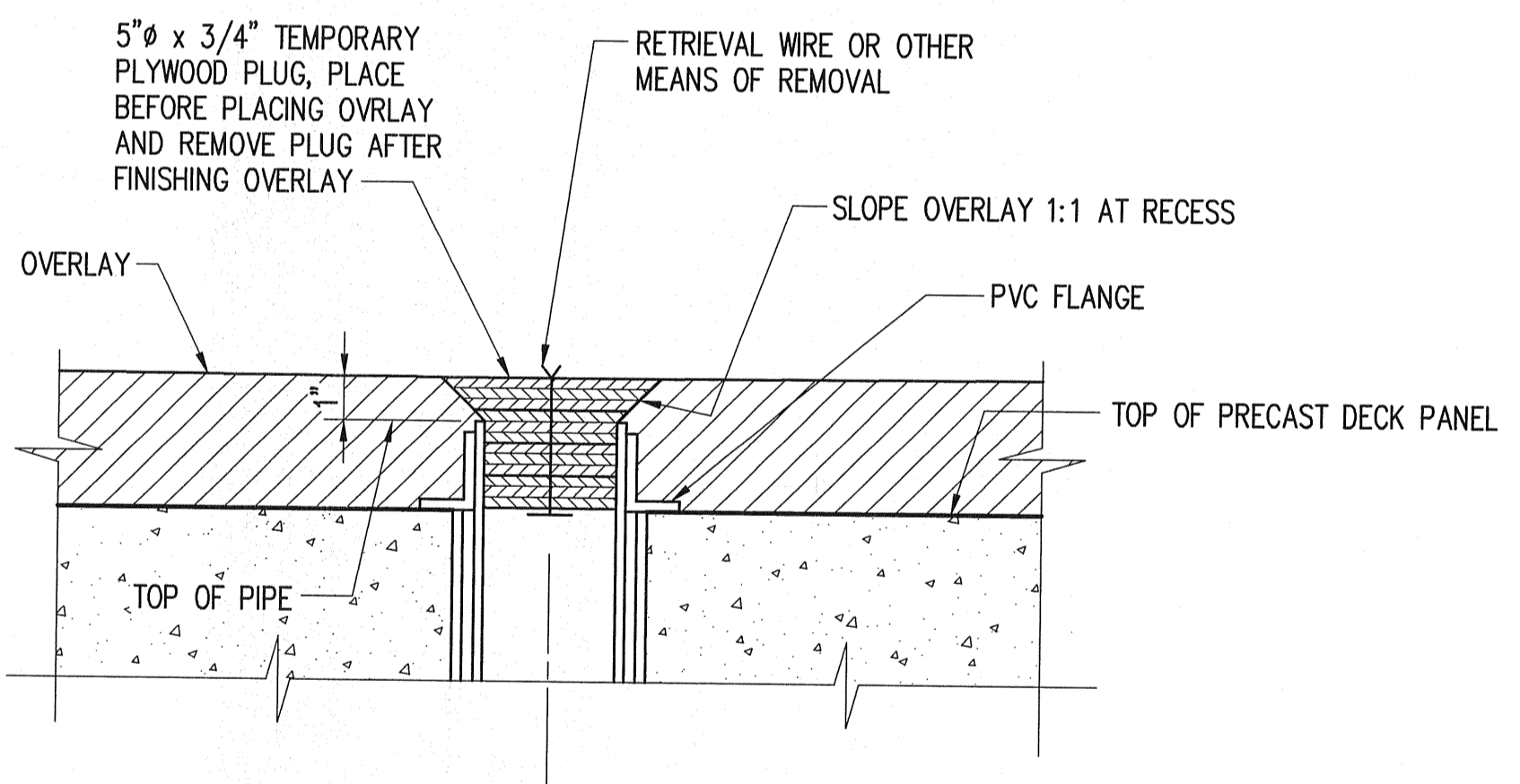
**SURFACE DRAIN**  
SCALE: 3/4"=1'-0"



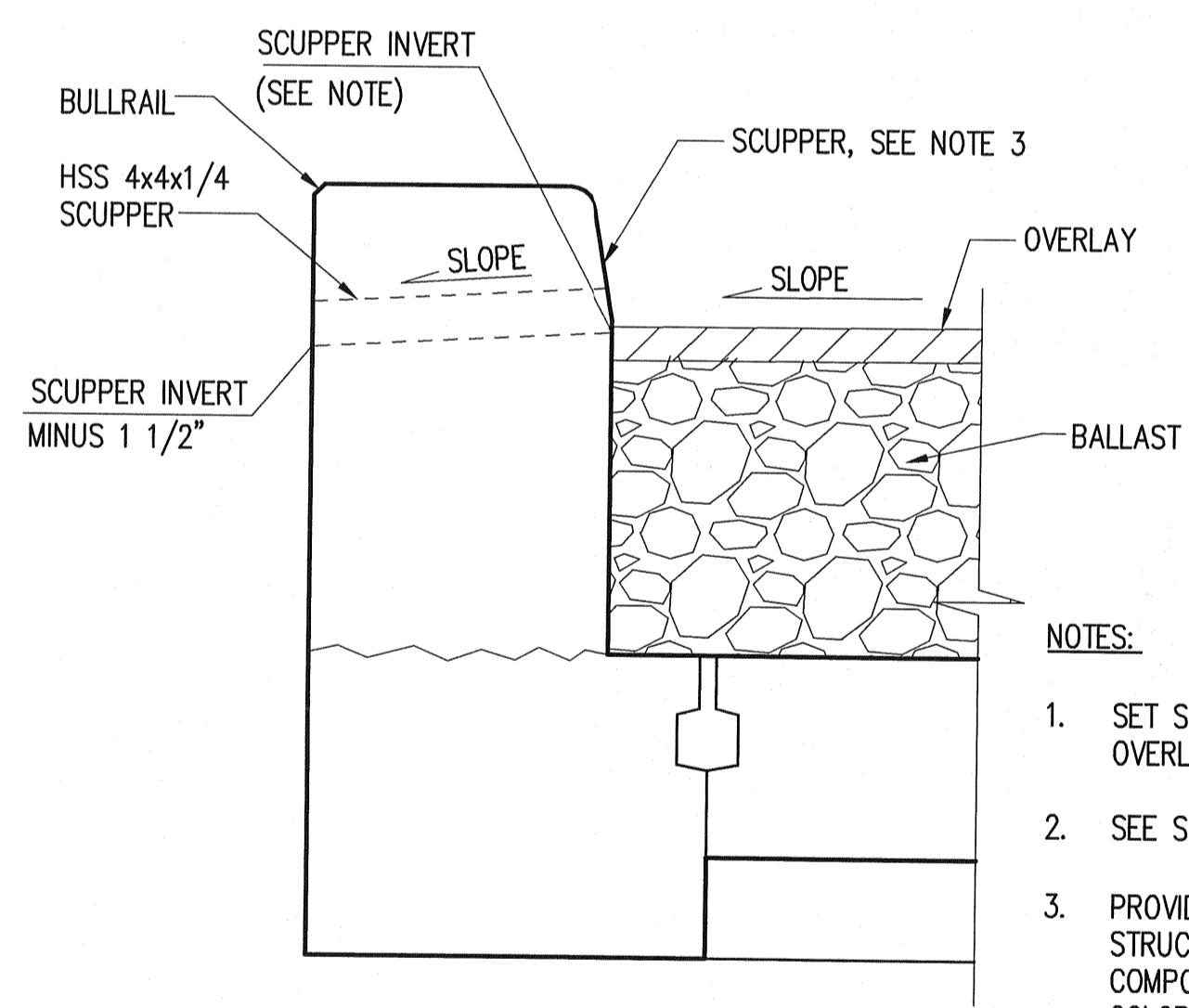
DECK PANEL AT RAIL TRENCH  
SEE SHEET S11.0 FOR LOCATIONS



**SUB-SURFACE DRAIN**  
SCALE: 3/4"=1'-0"



**SURFACE DRAIN DETAIL**  
SCALE: 3"=1'-0"



**SCUPPER DETAIL**  
SCALE: 3/4"=1'-0"

- NOTES:
1. SET SCUPPER INVERT ELEVATIONS 1/2" BELOW OVERLAY ELEVATIONS AT BULLRAIL.
  2. SEE SHEET S32 FOR SCUPPER LOCATIONS.
  3. PROVIDE 4x4x1/4" SQUARE PULTRUDED FIBERGLASS STRUCTURAL TUBE MANUFACTURED BY FIBERGRATE COMPOSITE STRUCTURES, INC., OR APPROVED EQUAL COLOR TO BE DARK GREY.

PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0650 Fax (253) 396-0162

**kpfi**

PORT OF TACOMA  
 U.S.A.

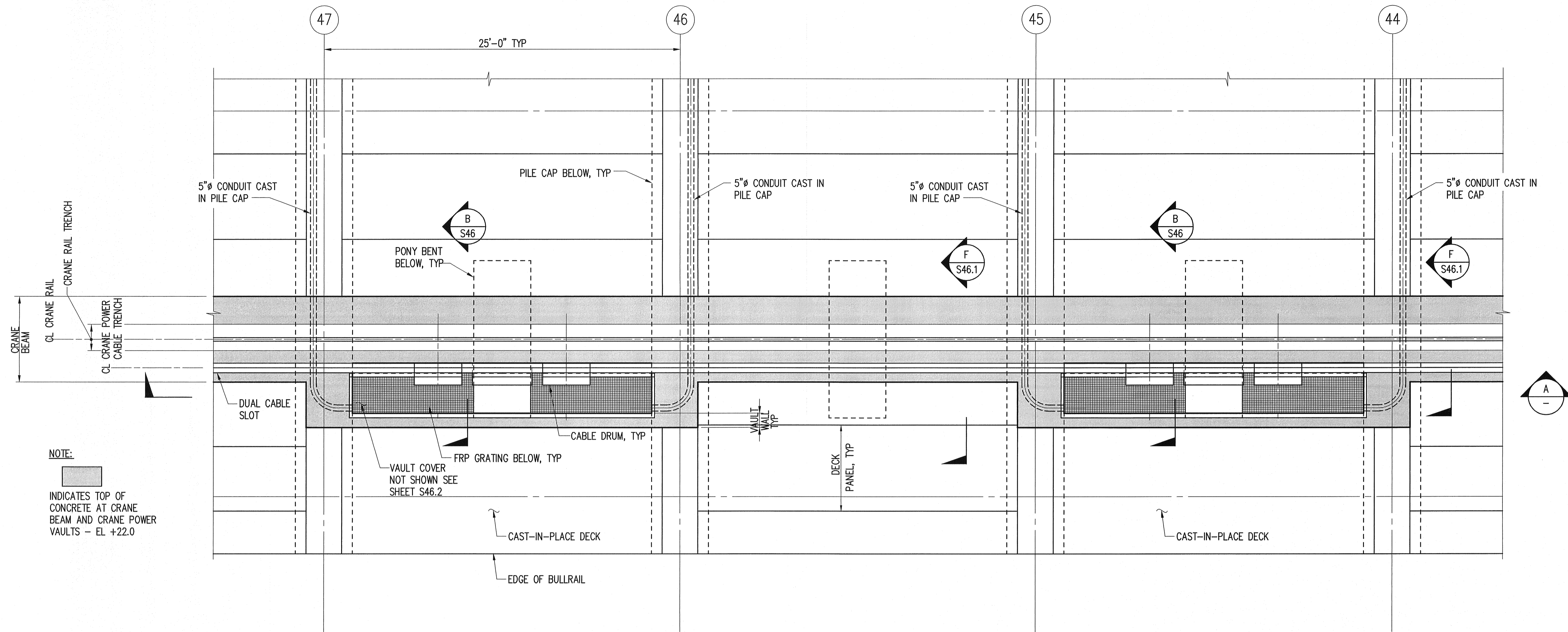
APPROVED: *H. A. ...*  
 CHIEF ENGINEER - DATE: 23/4/07  
 CHECKED BY: RJK 05/2007  
 PROJECT ENGR. - DATE: GGN 05/2007  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 L E ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18  
 EXP: 09/10/08

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 DECK DRAIN DETAILS

EP-6305  
**\$44.0**  
 SHEET 156 OF 215  
 CONTRACT NUMBER: 068018  
 E. NUMBER: E2623  
 PHASE: BID SET

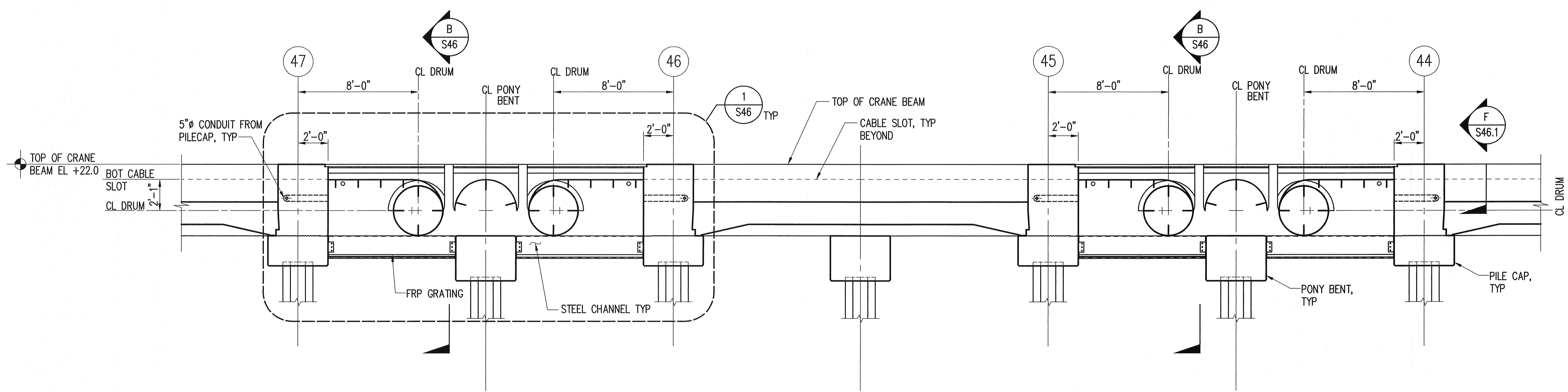
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

MARK REVISION  
 BY: APPROVED DATE:



NOTE:  
 INDICATES TOP OF CONCRETE AT CRANE BEAM AND CRANE POWER VAULTS - EL. +22.0

**PLAN - CRANE POWER VAULTS**  
 SCALE: 1/4"=1'-0"



**SECTION - CRANE POWER VAULTS**  
 SCALE: 1/4"=1'-0"

PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0182

**PORT OF TACOMA USA**  
**kpf1**

APPROVED: *M. Adams*  
 CHIEF ENGINEER - DATE: 23 MAR 07  
 CHECKED BY: GGN - DATE: 05/2007  
 PROJECT ENGR. - DATE: 05/2007

DRAWING DATE: 05-21-2007  
 PROJECT NO.: 33-30-ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

RJK 05/2007 - DATE  
 GGN 05/2007 - DATE

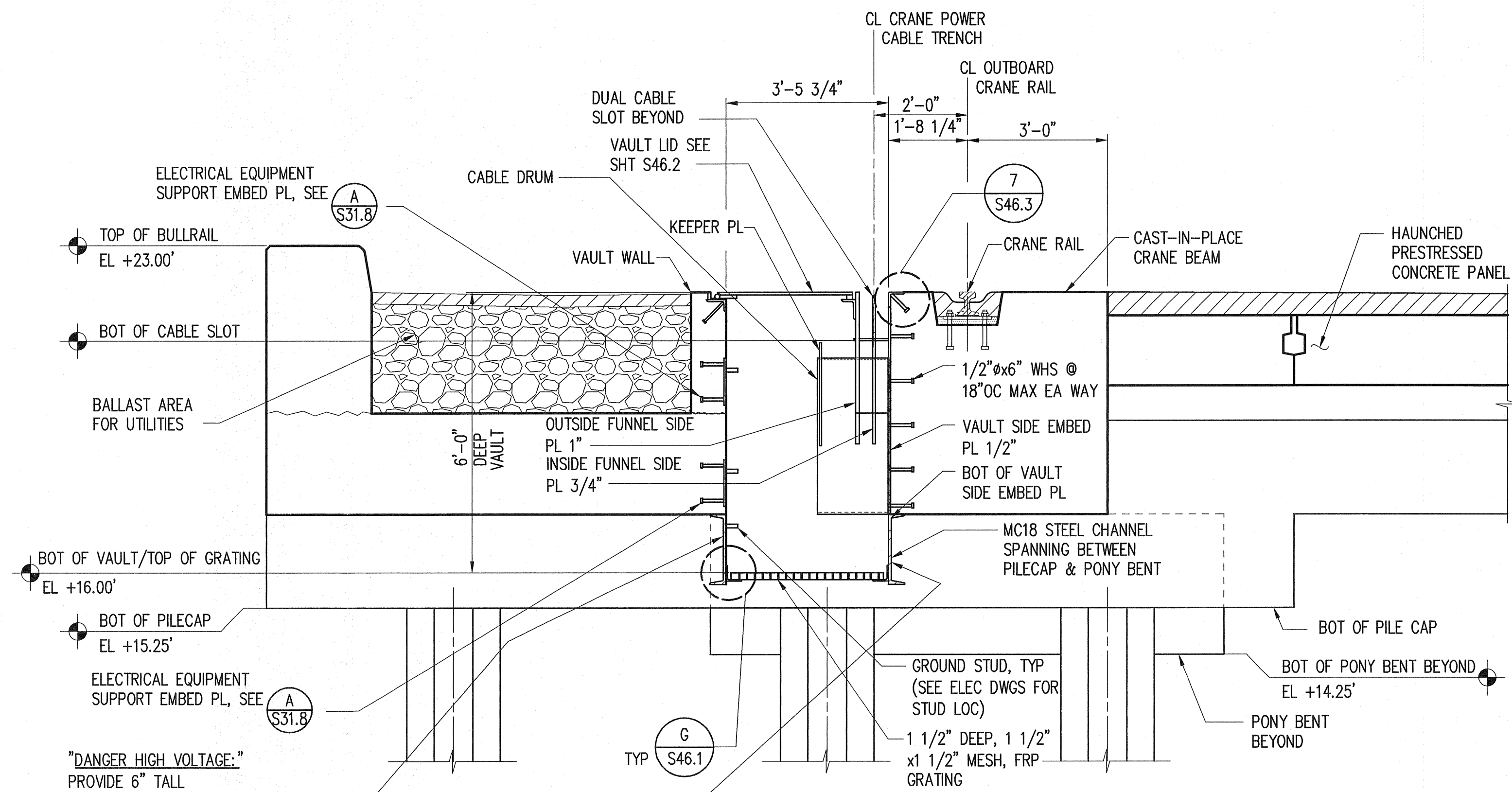
MARK REVISION  
 BY: DATE:



PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 CRANE POWER VAULT  
 PLAN AND ELEVATION

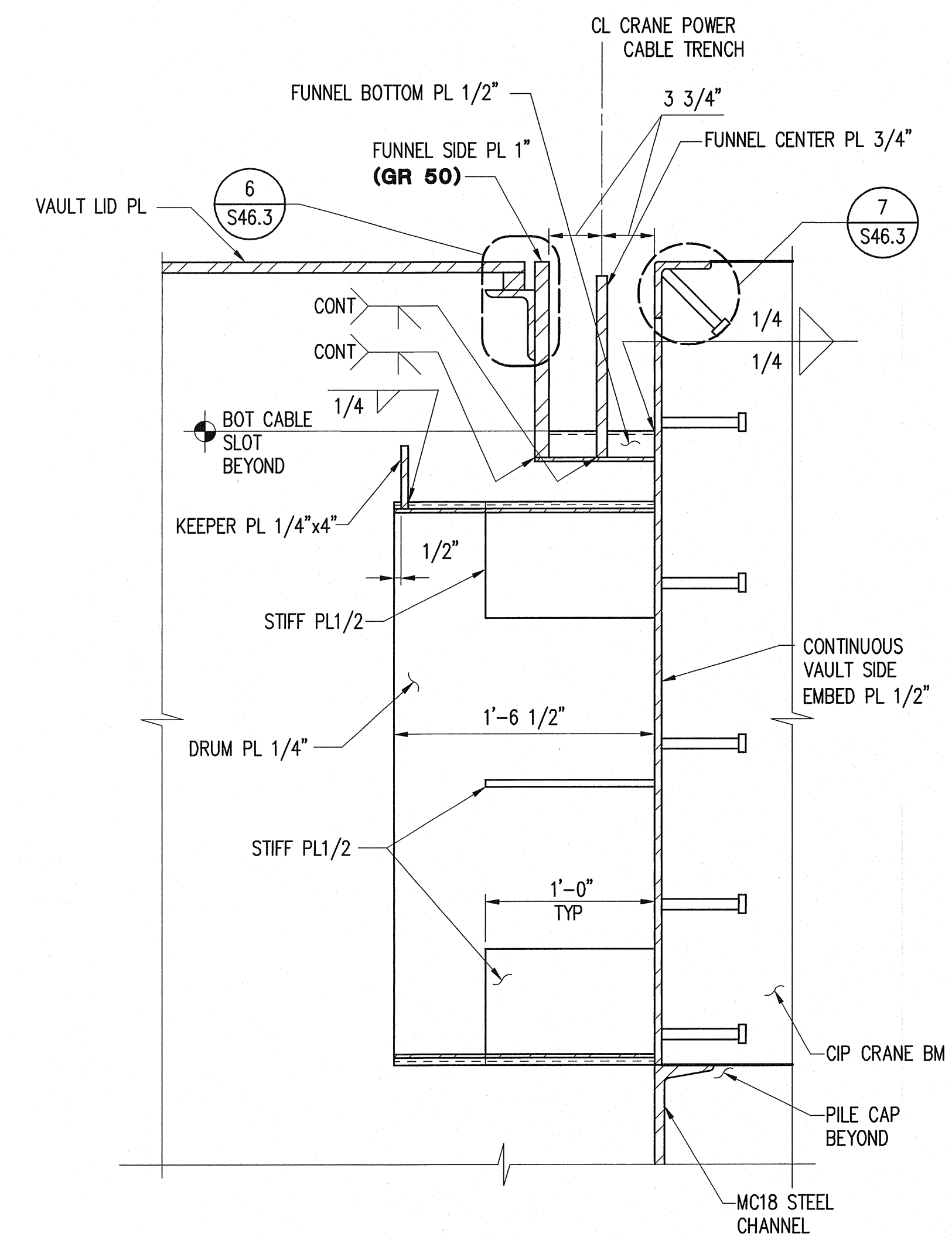
EP-6305  
**S45.0**  
 SHEET 157 OF 215  
 CONTRACT NUMBER: 068018  
 DRAWING NUMBER: S45.0  
 PHASE: BID SET

BID SET



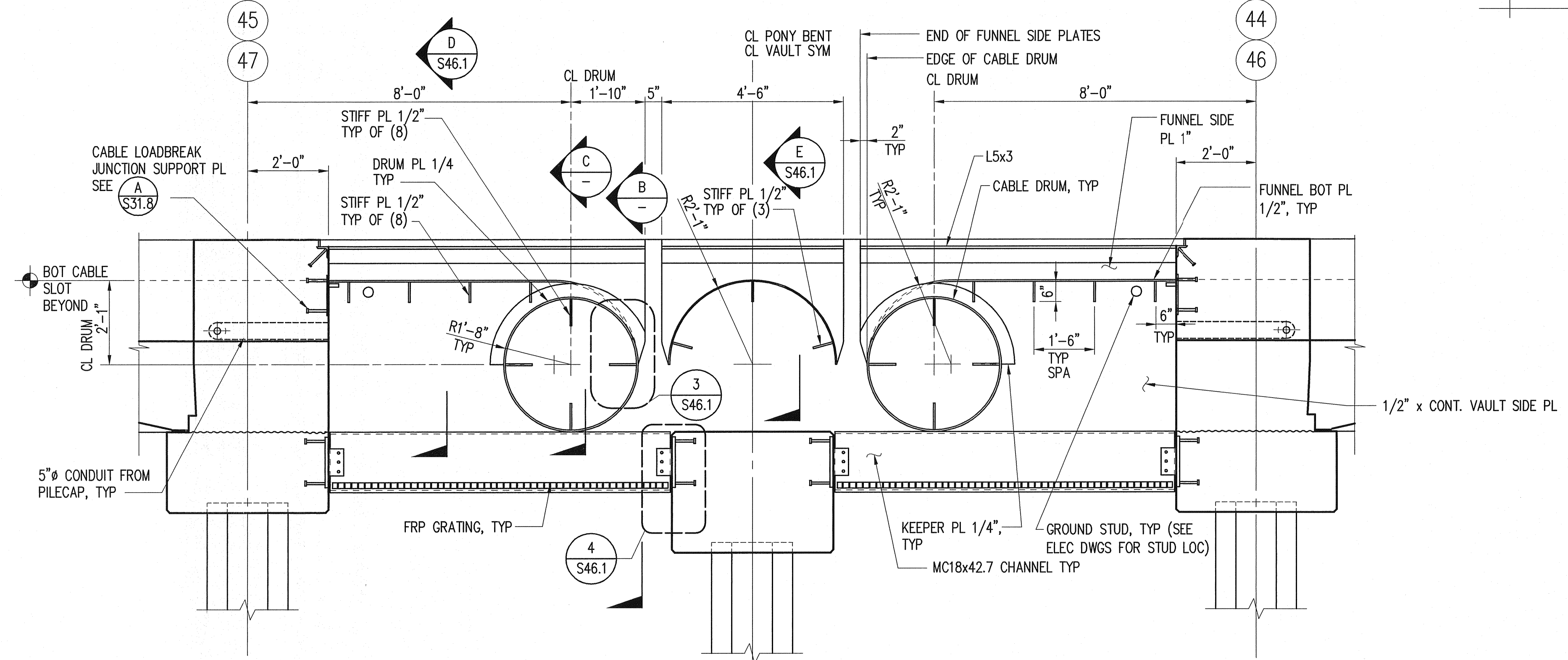
**SECTION - TYPICAL CRANE POWER CABLE VAULT**  
SCALE: 1/2"=1'-0"

(B) S45



**SECTION - CRANE POWER VAULT**  
SCALE: 1 1/2"=1'-0"

(C)



**DETAIL - TYPICAL CRANE POWER CABLE VAULT**  
SCALE: 1/2"=1'-0"

(1) S45

**NOTES:**

1. CONTRACTOR SHALL VERIFY THE CABLE SLOT WIDTH & DEPTH, FUNNEL DIMENSIONS, DISTANCE FROM CENTERLINE OF CRANE RAIL TO CENTERLINE OF CABLE SLOT AND CABLE VAULT WITH PORT PRIOR TO FABRICATION OF CABLE SLOT.
2. CONTRACTOR TO COORDINATE ALL PENETRATIONS, EMBEDDED STEEL IN CONCRETE AND VAULT LOCATION AND SIZE. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

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 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0182

**PORT OF TACOMA USA**  
**kprfi**

APPROVED: *M. Adams*  
 CHIEF ENGINEER - DATE: 05/21/2007  
 DRAWING NO: 23-44-07  
 PORT ADDRESS: 2440 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

CHECKED BY: DATE: 05/2007  
 GGN 05/2007  
 PROJECT ENGR. - DATE:

REVISION: MARK REVISION  
 DATE:

EXPIRES 9/30/08

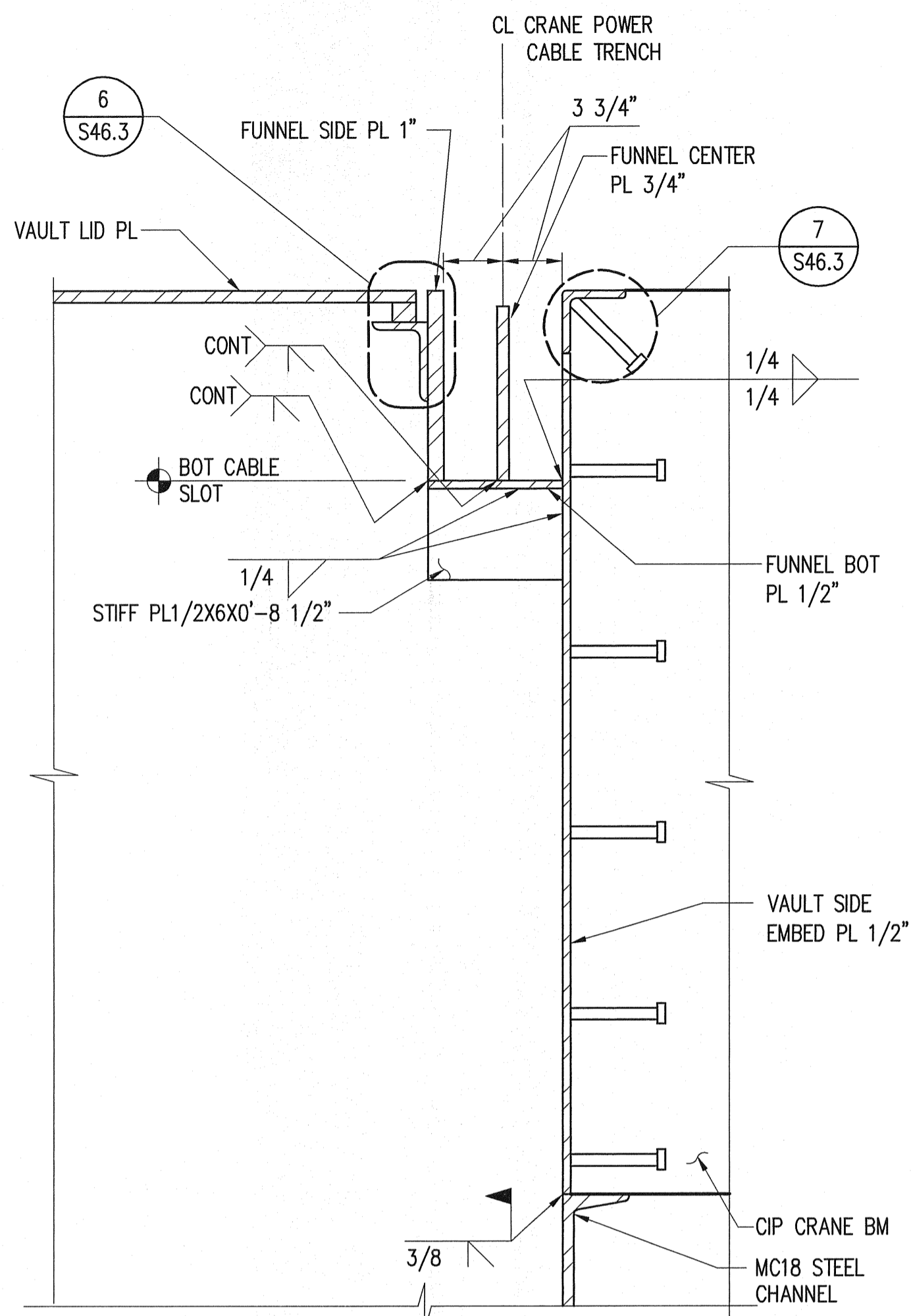
**PORT OF TACOMA**  
**EAST BLAIR ONE WHARF**  
**CRANE POWER VAULT DETAILS**

EP-6305  
**S46.0**  
 SHEET 158 OF 215

CONTRACT NUMBER: 068018  
 E. NUMBER: E2623  
 PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

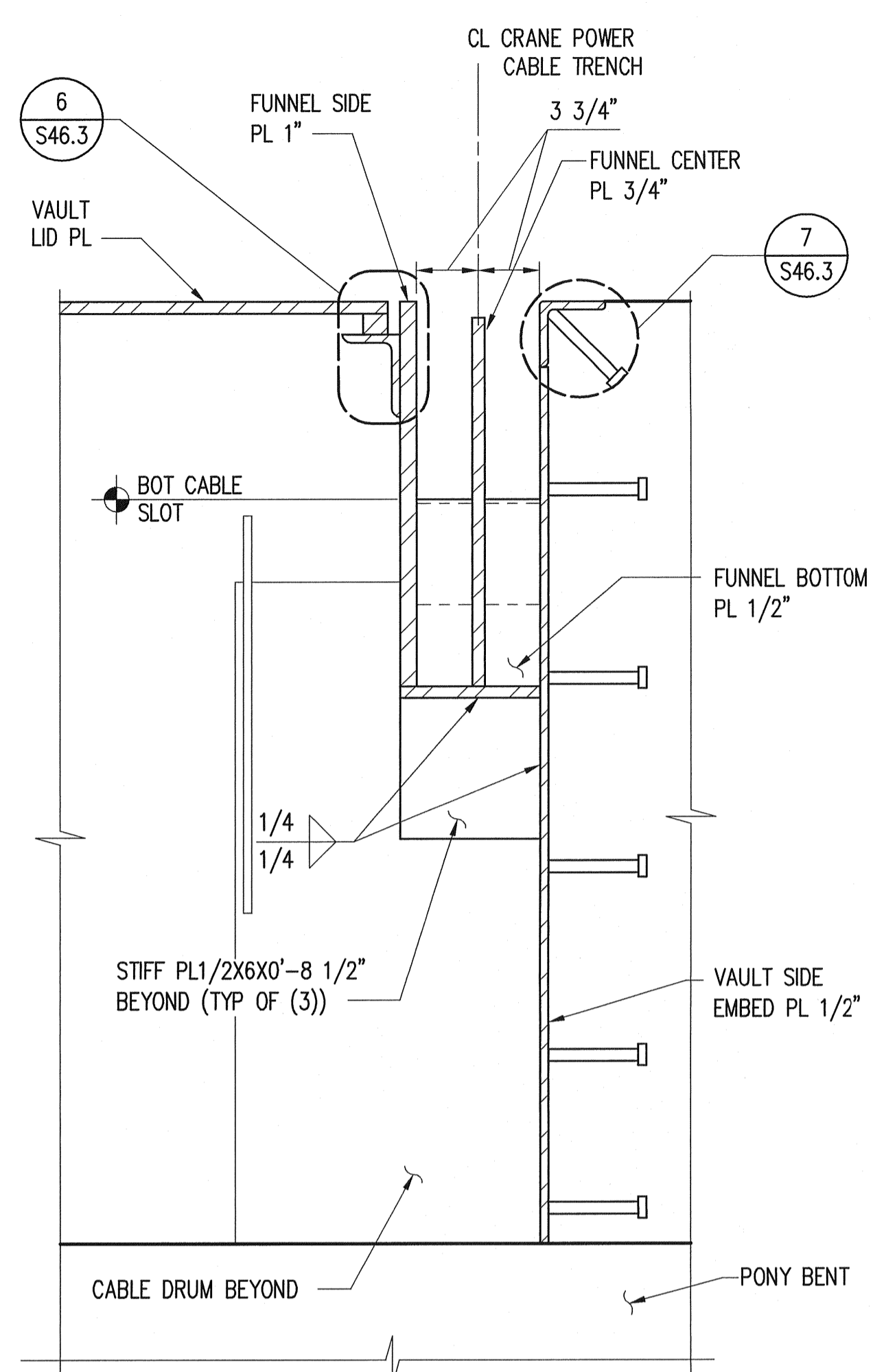
**BID SET**



**SECTION - CRANE POWER VAULT**

SCALE: 1 1/2"=1'-0"

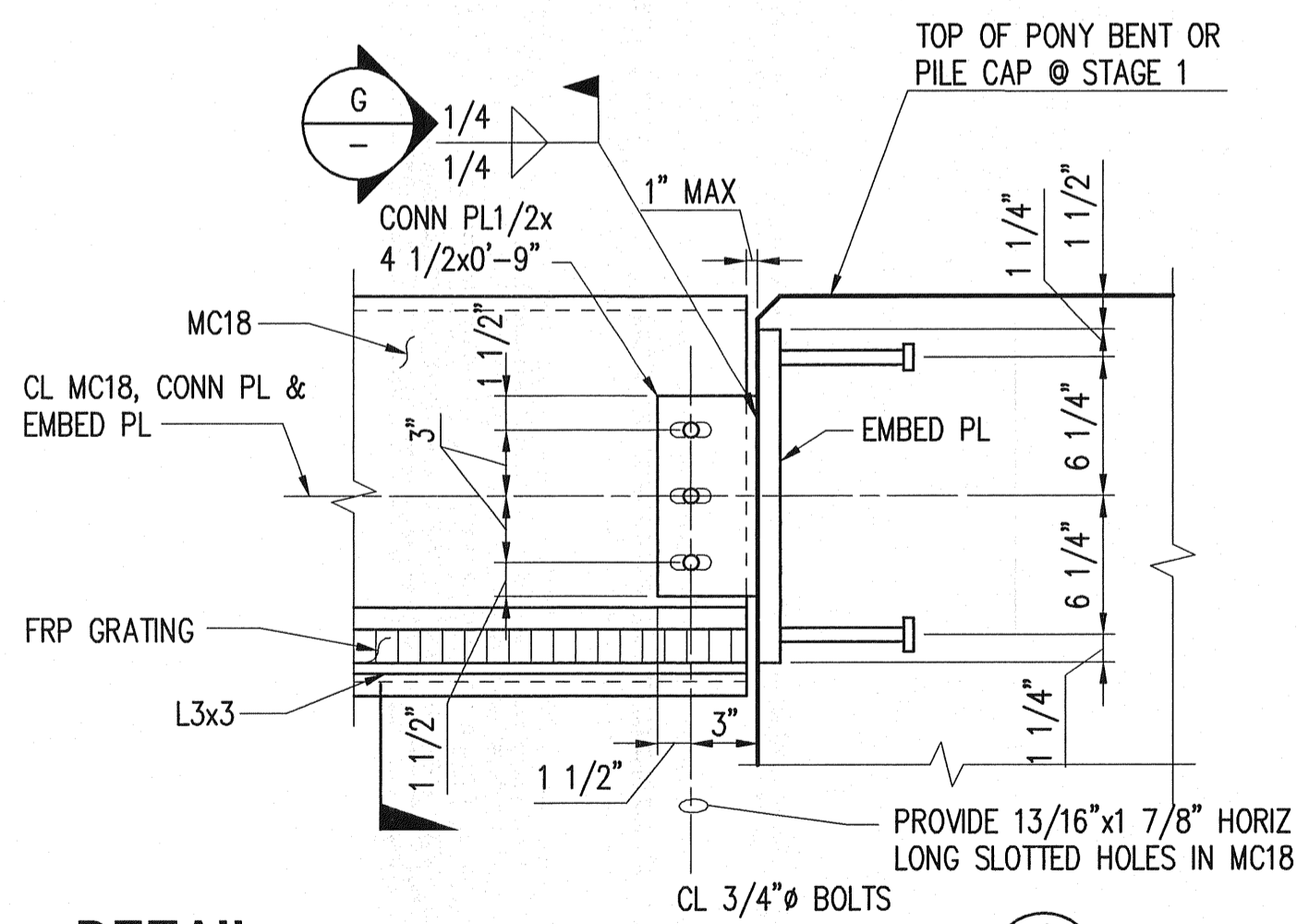
(D) S46



**SECTION - CRANE POWER VAULT**

SCALE: 1 1/2"=1'-0"

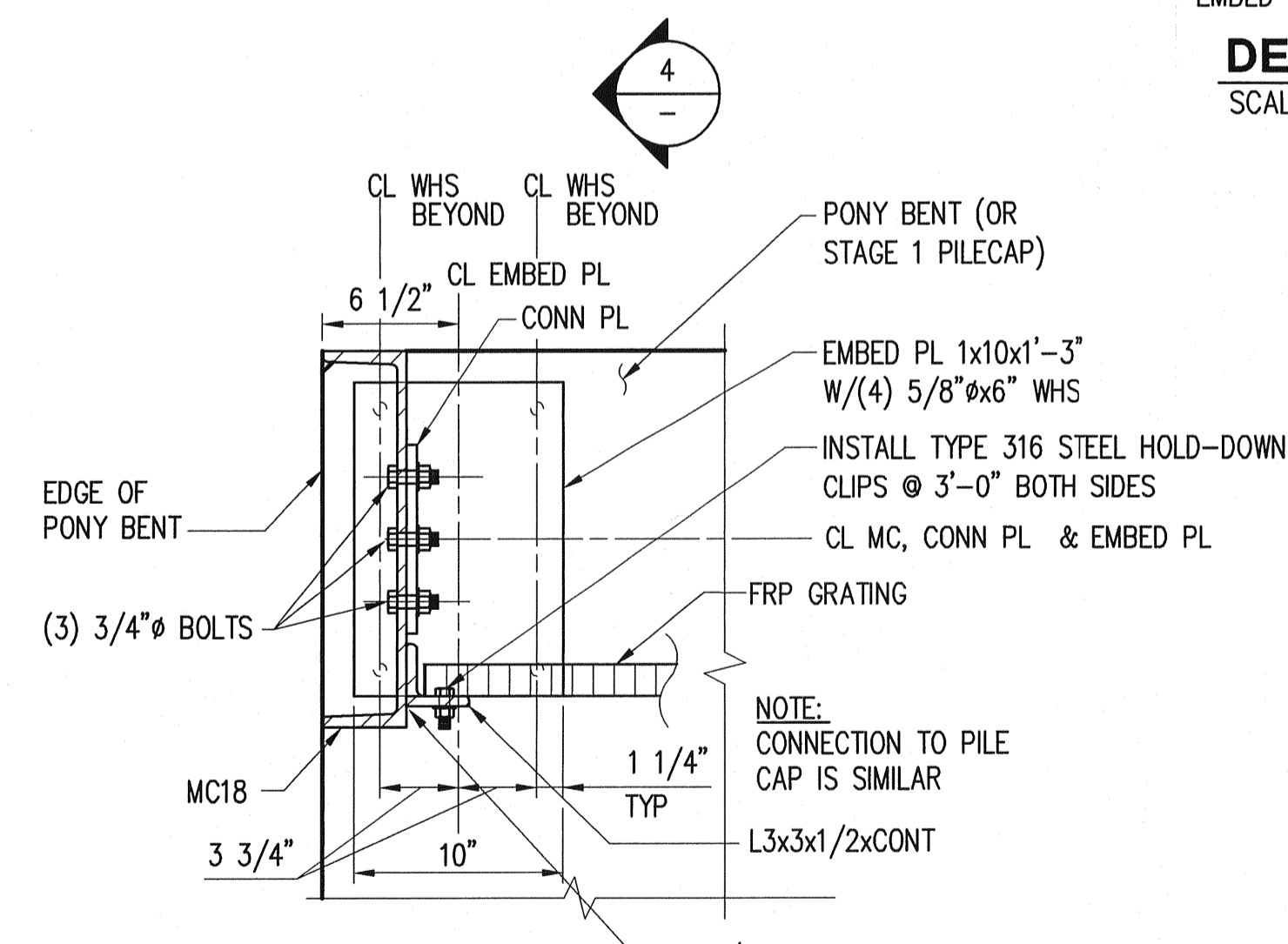
(E) S46



**DETAIL**

SCALE: 1 1/2"=1'-0"

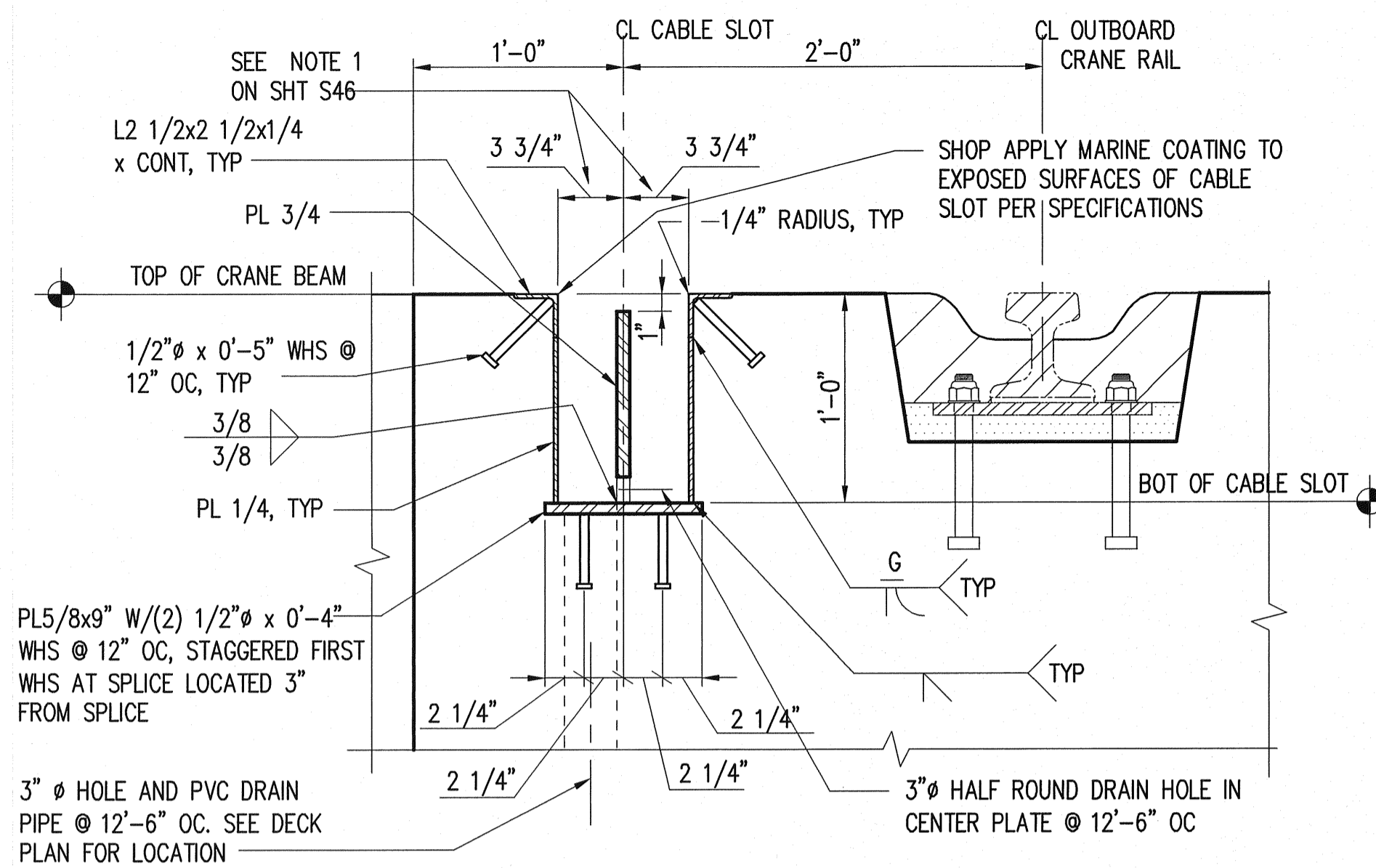
(4) S46



**SECTION**

SCALE: 1 1/2"=1'-0"

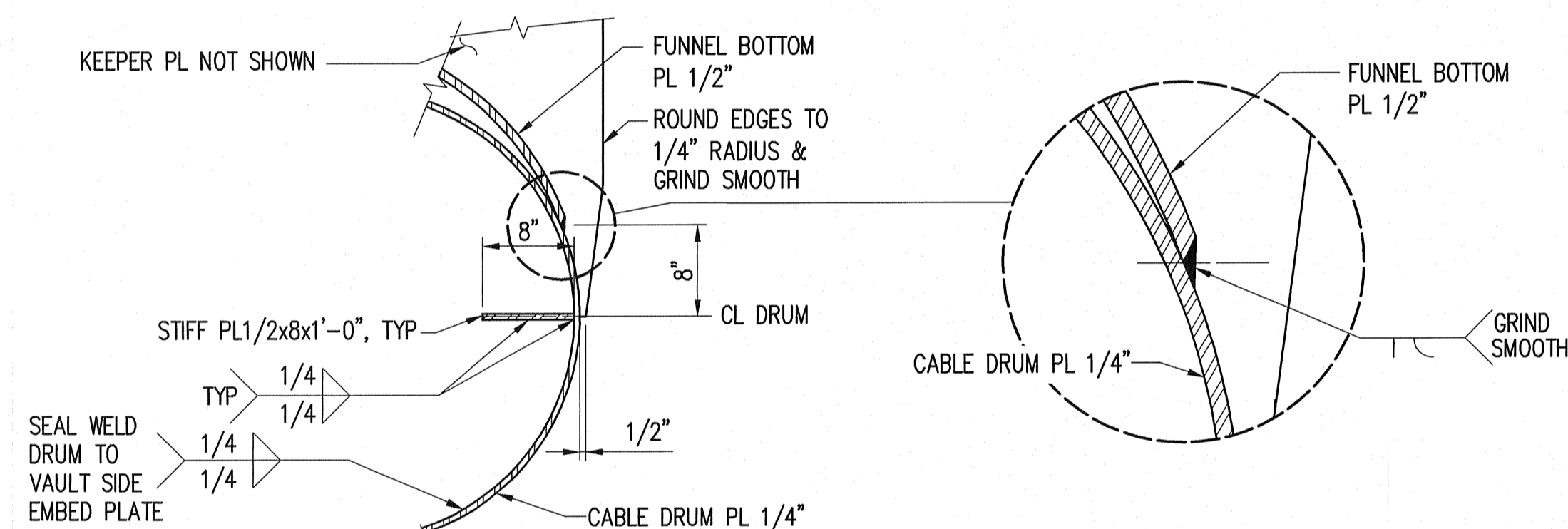
(G) S46



**SECTION - TYPICAL DUAL CABLE SLOT**

SCALE: 1 1/2"=1'-0"

(F) S45



**DETAIL**

SCALE: 1"=1'-0"

(3) S46

**PORT OF TACOMA**  
**EAST BLAIR ONE WHARF**  
**CRANE POWER VAULT DETAILS**

**EP-6305**  
**S46.1**  
**SHEET 159 OF 215**

CONTRACT NUMBER: 068018  
 E-NUMBER: E2923  
 PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

APPROVED: *[Signature]*  
 CHIEF ENGINEER - DATE: 2/24/07  
 DRAWING DATE: 05-21-2007  
 PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18  
 EXPIRES: 9/30/08

APPROVED: *[Signature]*  
 PROJECT ENGR. - DATE: 05/2007  
 GGN  
 CHECKED BY: - DATE: 05/2007  
 RKJ  
 05/2007

MARK: REVISION  
 BY: APPROVED: DATE:

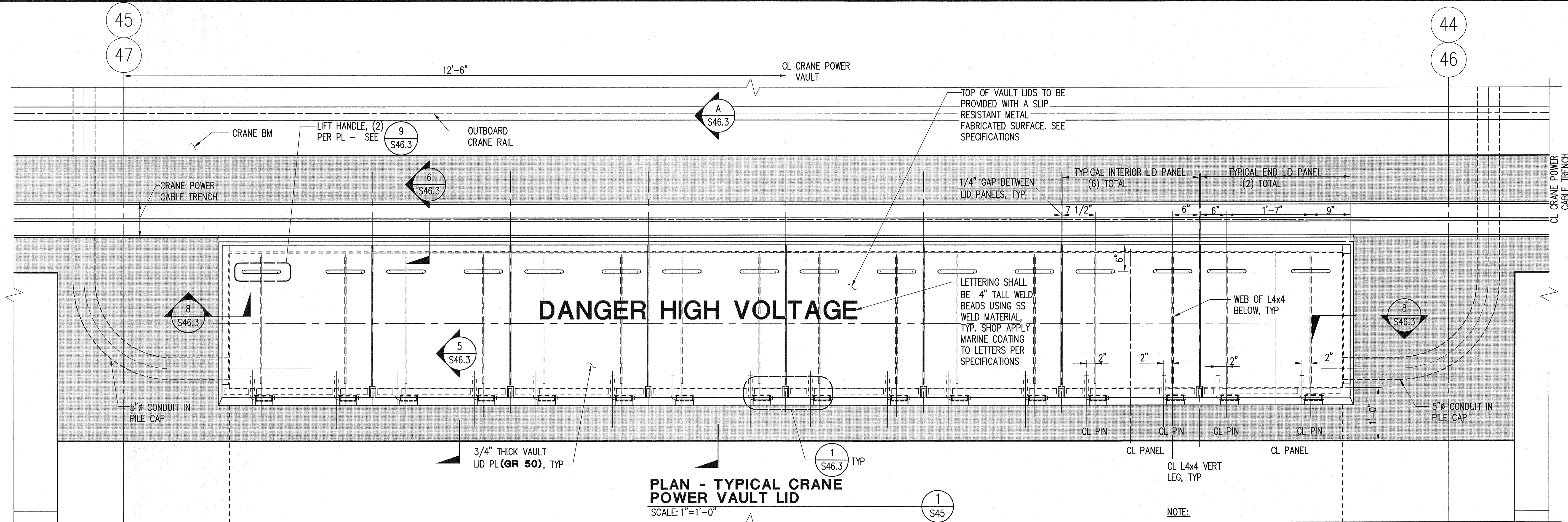
**PORT OF TACOMA**  
**TACOMA, WA 98401**  
**253-383-5841**

**kpfi**  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0150 Fax (253) 396-0162

**PORT OF TACOMA**  
**USA**

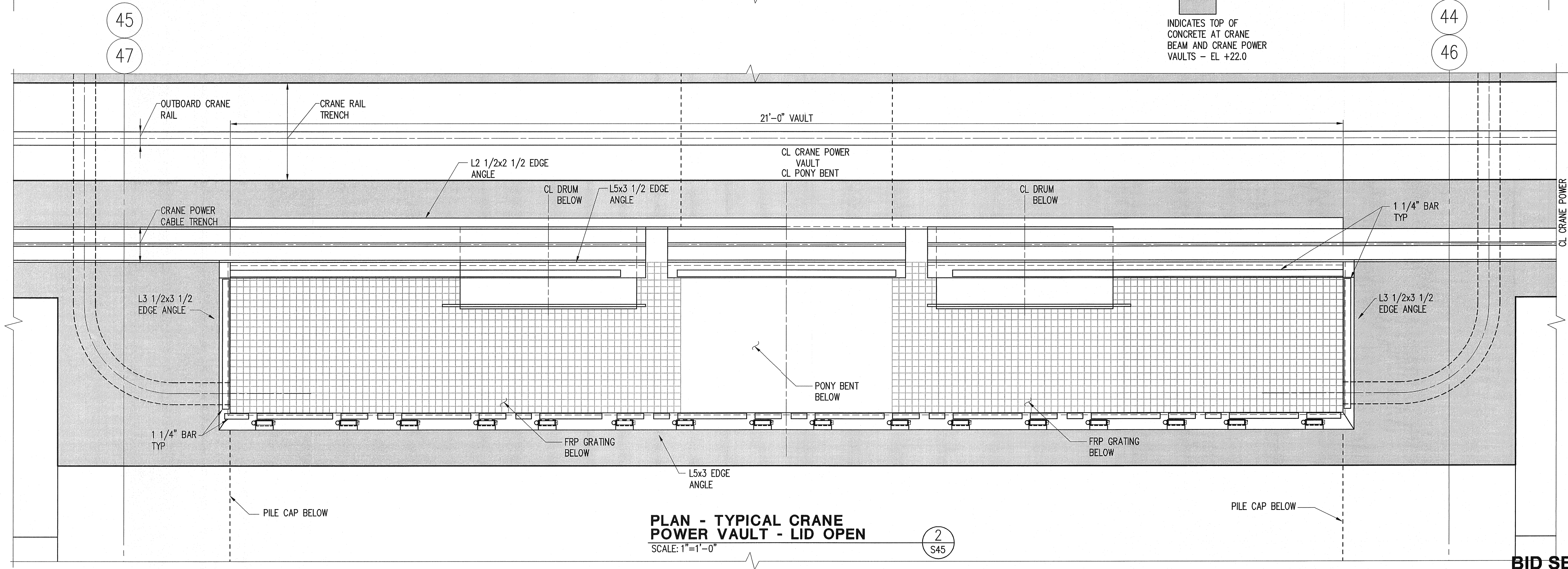
P.O. BOX 1837

**BID SET**



**PLAN - TYPICAL CRANE POWER VAULT LID**  
SCALE: 1"=1'-0"

**NOTE:**  
INDICATES TOP OF CONCRETE AT CRANE BEAM AND CRANE POWER VAULTS - EL +22.0

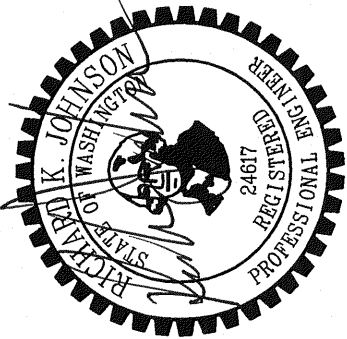


**PLAN - TYPICAL CRANE POWER VAULT - LID OPEN**  
SCALE: 1"=1'-0"

PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841  
 Consulting Engineers  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0160 Fax (253) 396-0162

PORT OF TACOMA  
 USA

kp11

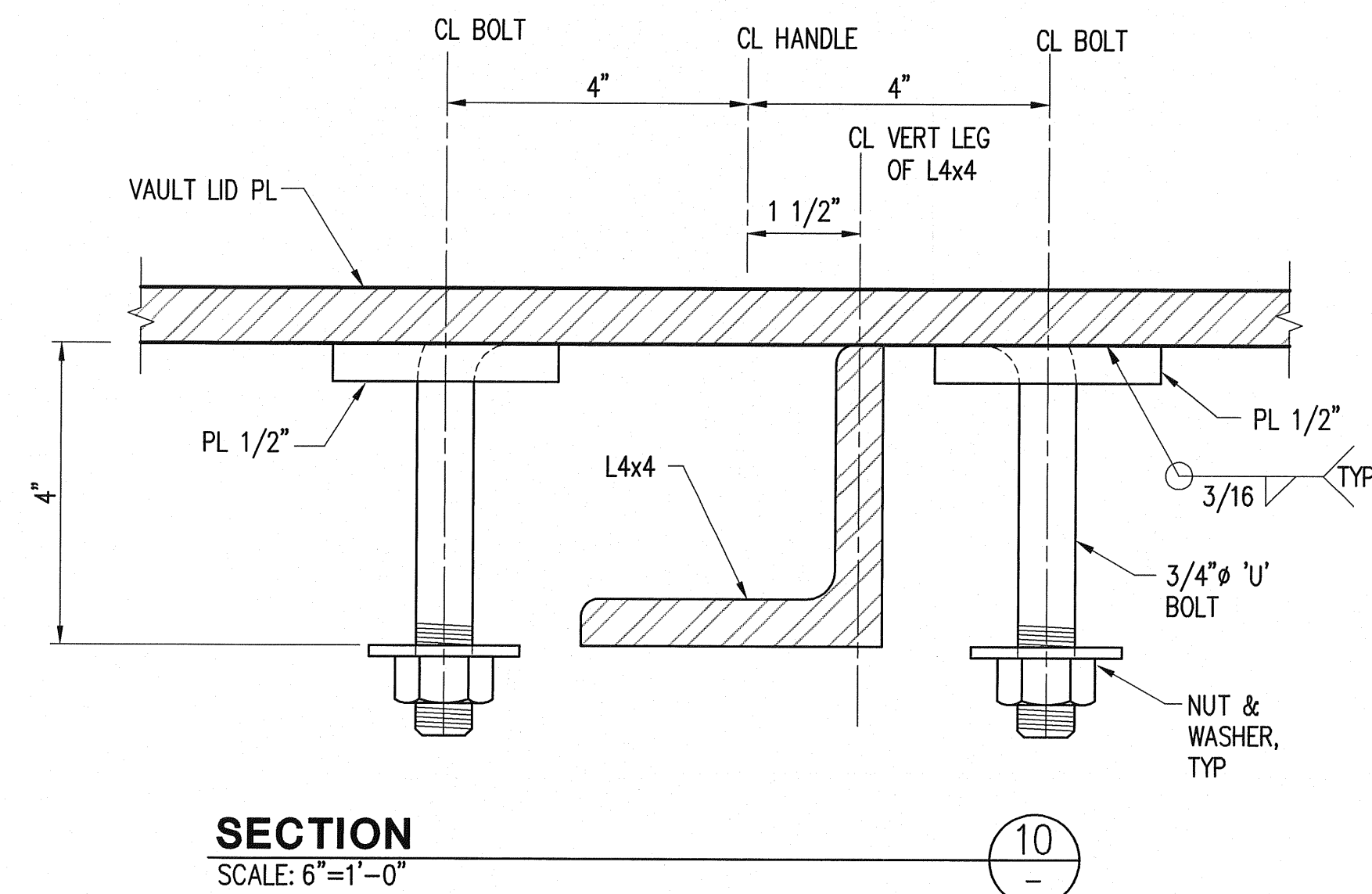
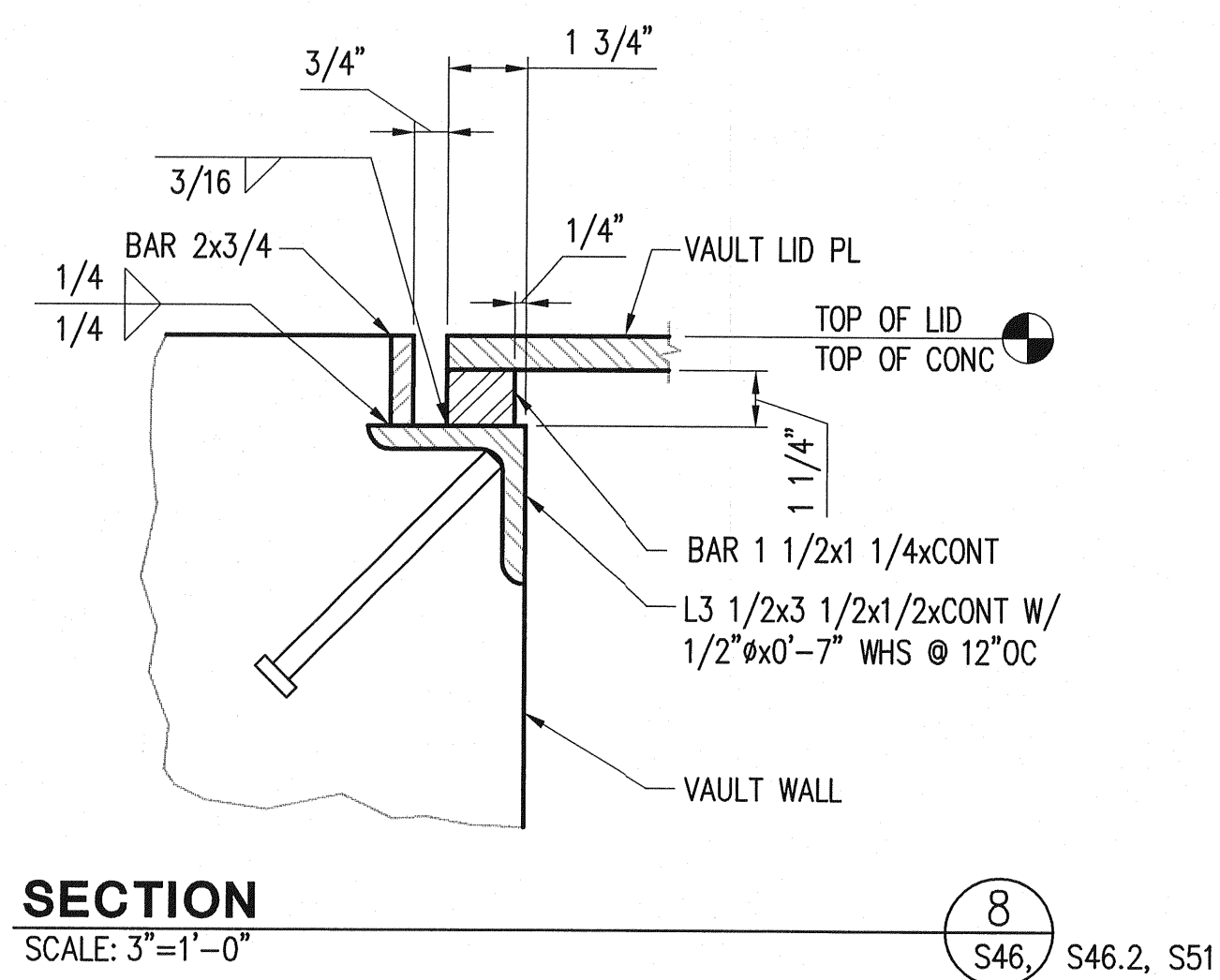
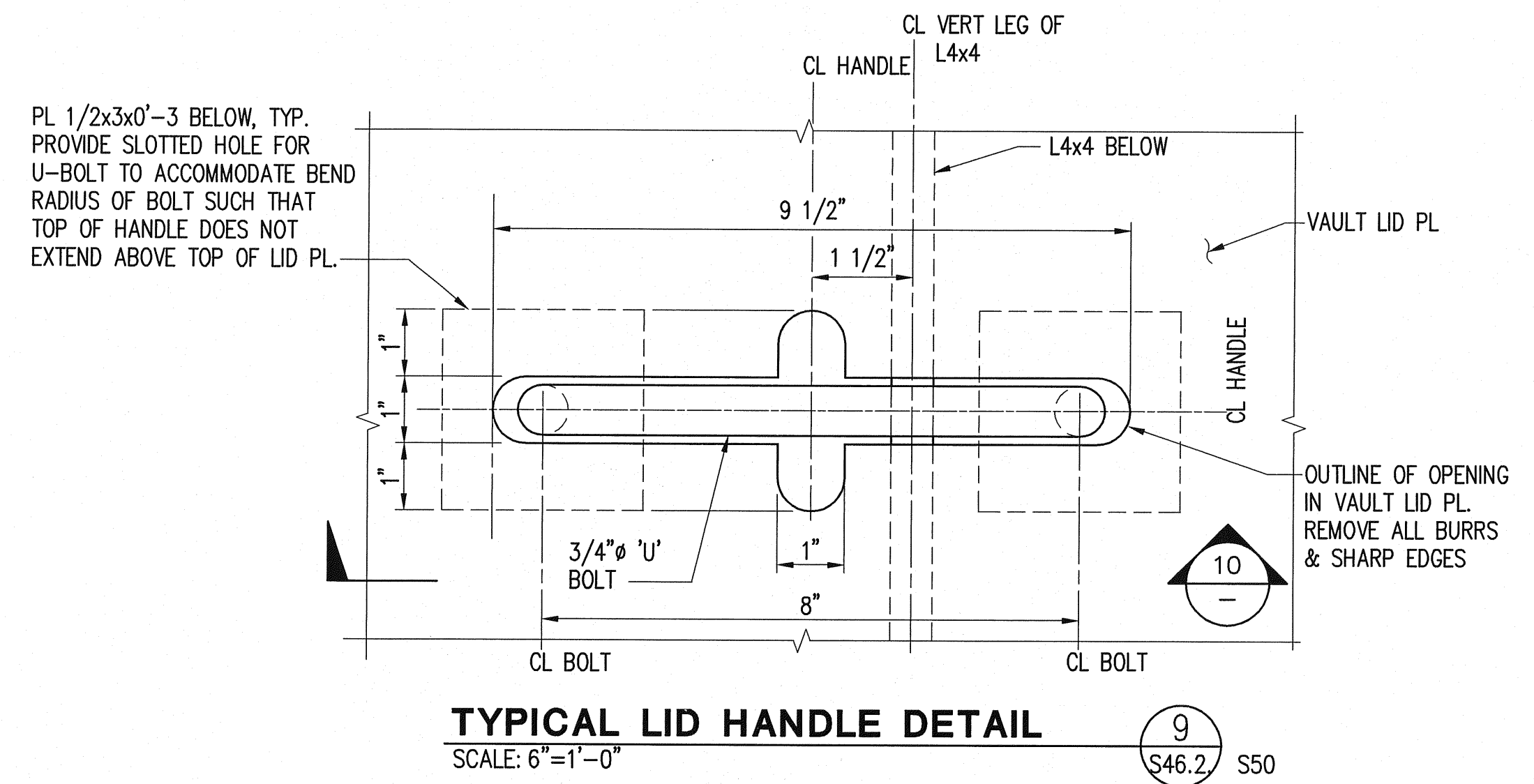
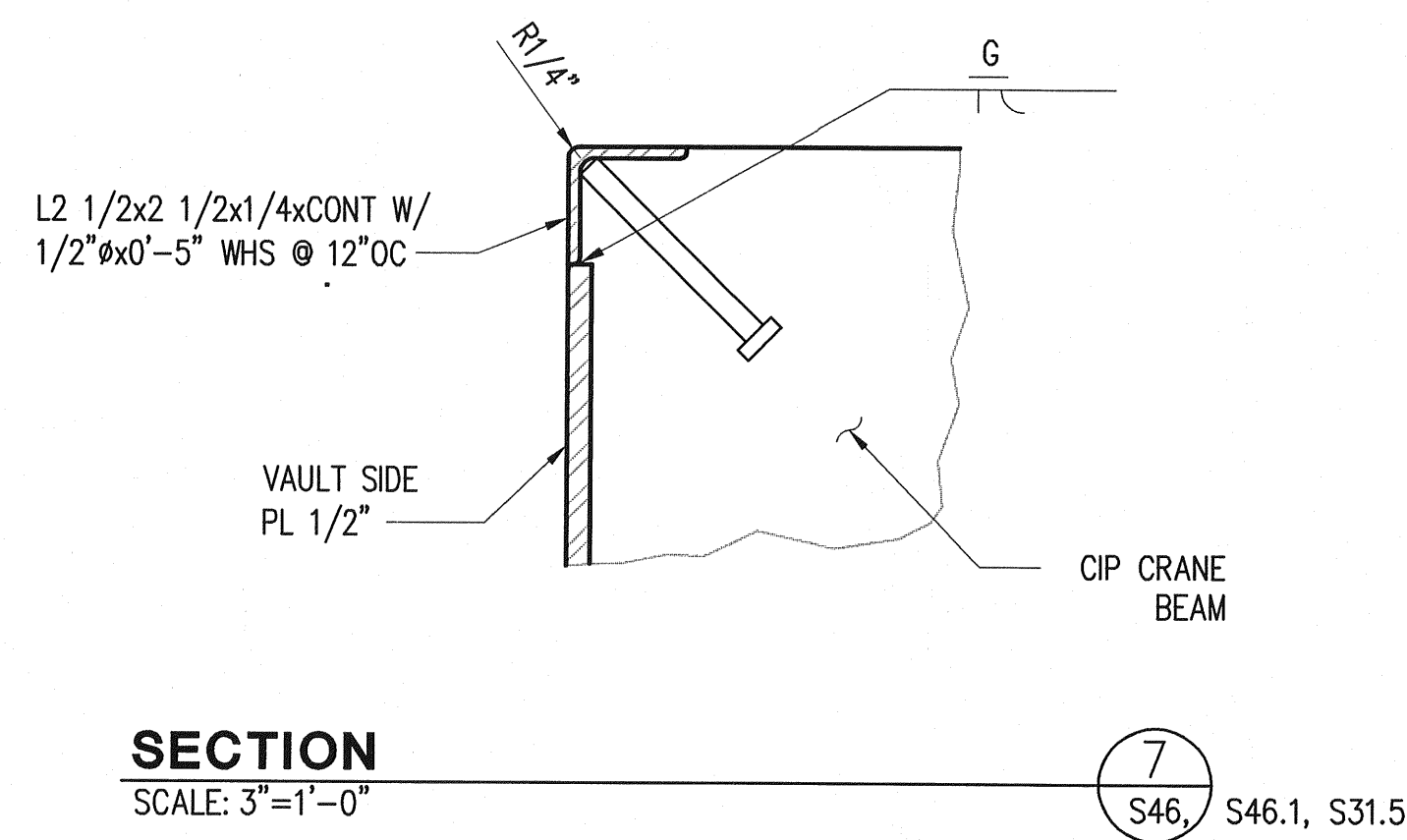
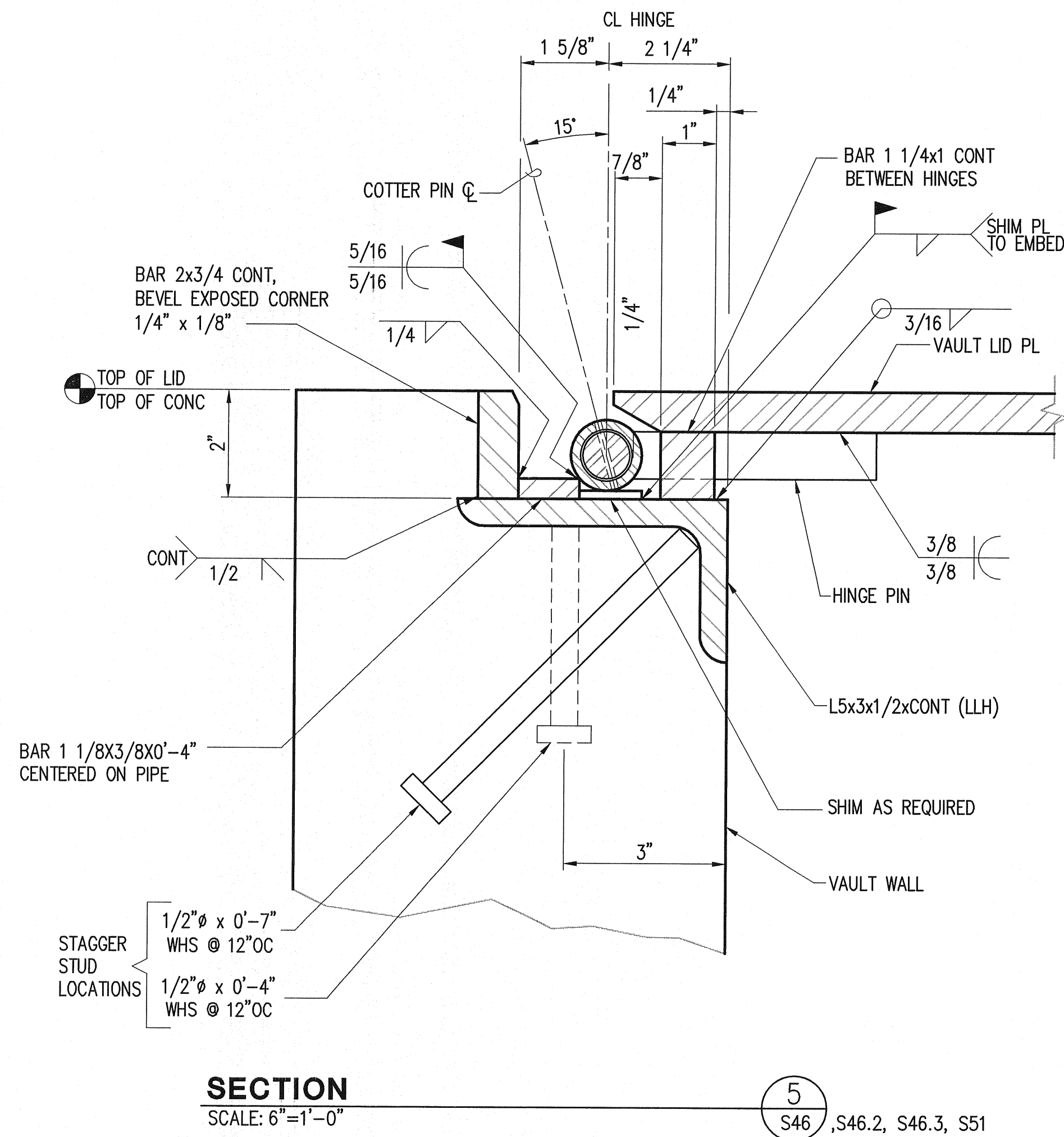
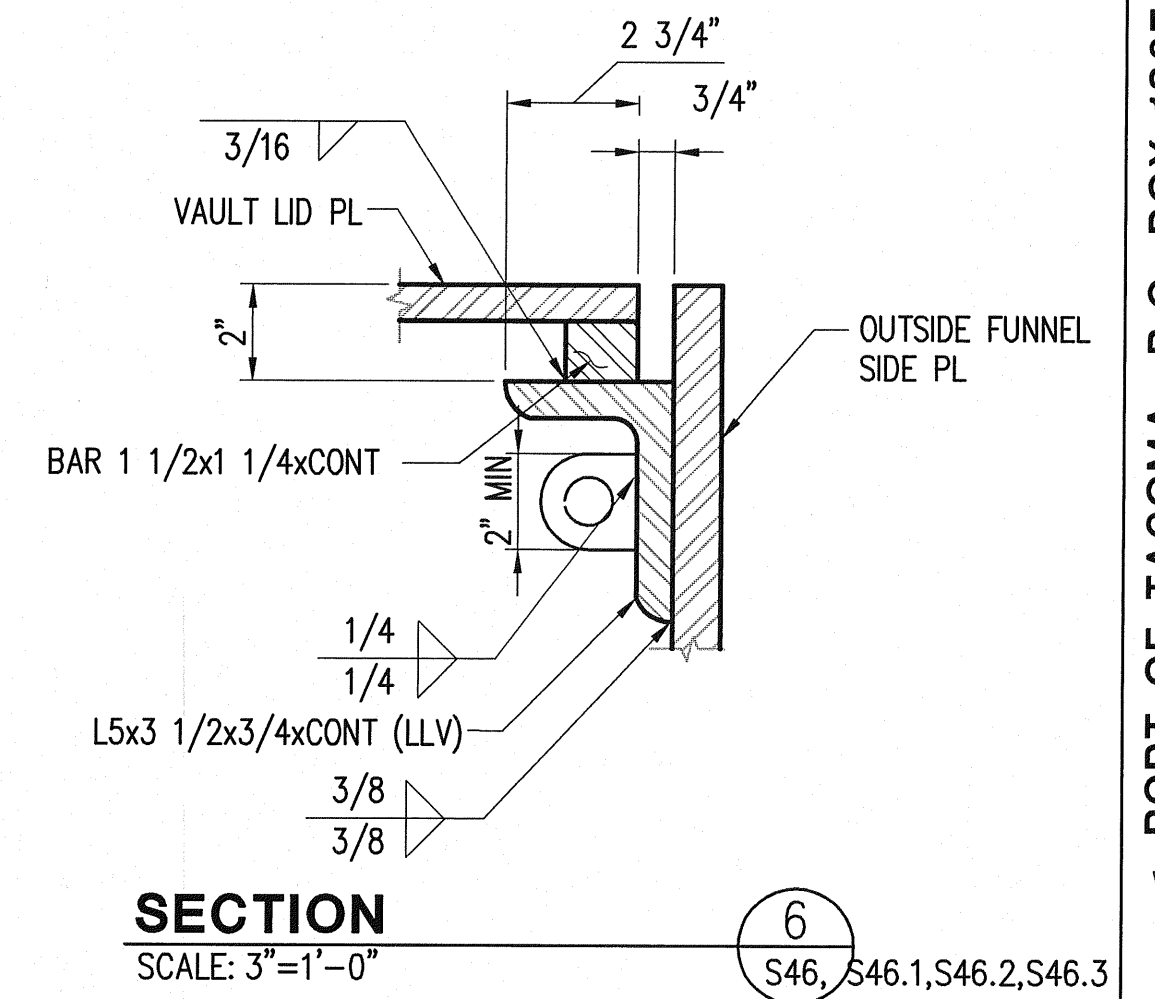
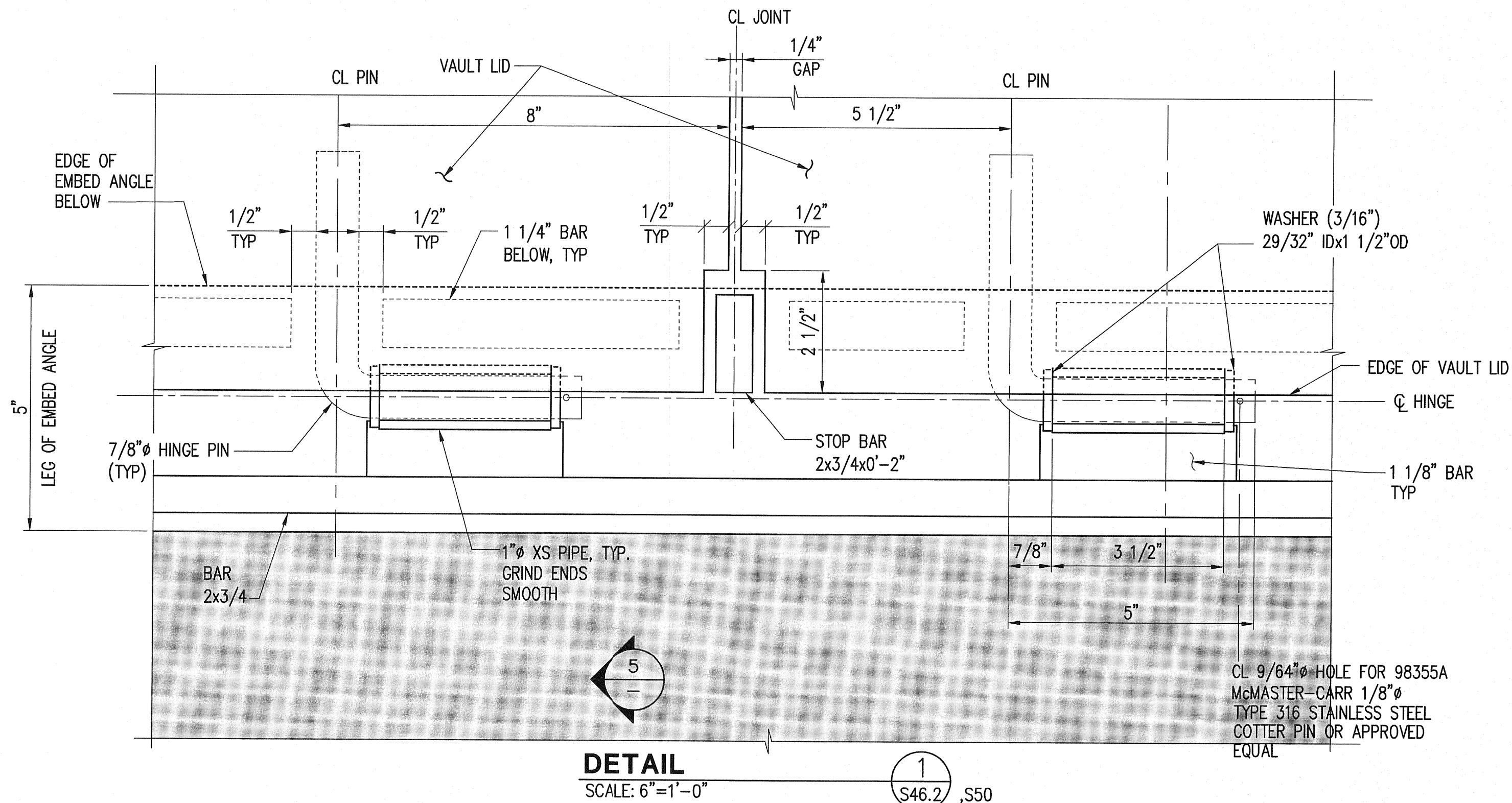
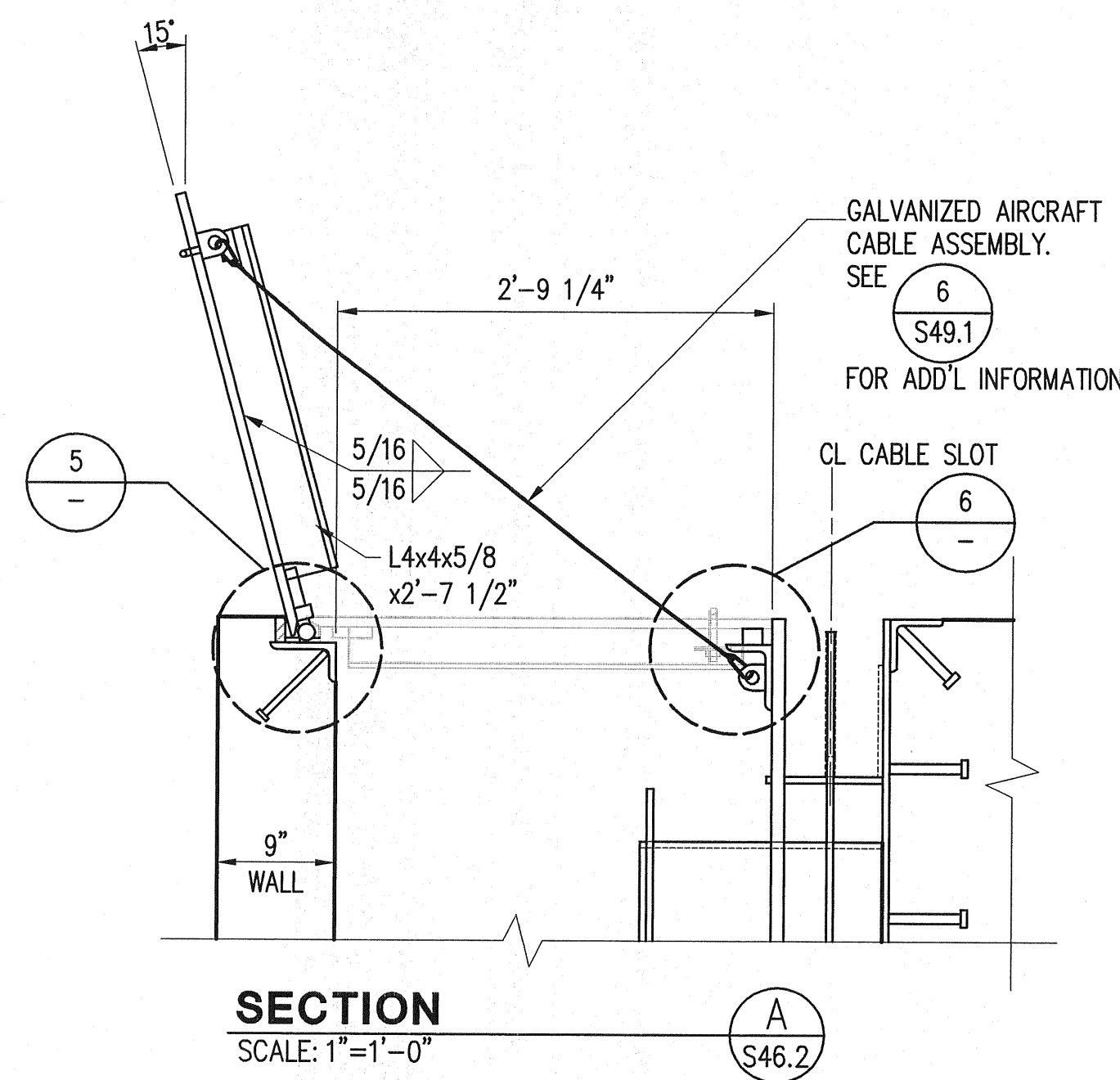
APPROVED		DATE: 05/21/2007 PROJECT ENGR.: DATE: 05/2007	CHECKED BY: GGN PROJECT ENGR.: DATE: 05/2007	MARK: REVISION:	APPROVE: DATE:
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EP-6305  
**S46.2**  
 SHEET 160 OF 215  
 CONTRACT NUMBER: 068018  
 NUMBER: E2623  
 DATE: 05/08

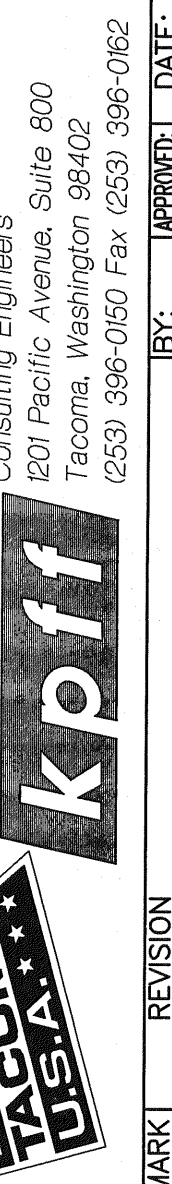
**PORT OF TACOMA**  
**EAST BLAIR ONE WHARF**  
**CRANE POWER VAULT**  
**LID DETAILS**

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 COUNTY: PIERCE  
 DRAWING SCALE: AS SHOWN

BID SET



PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841



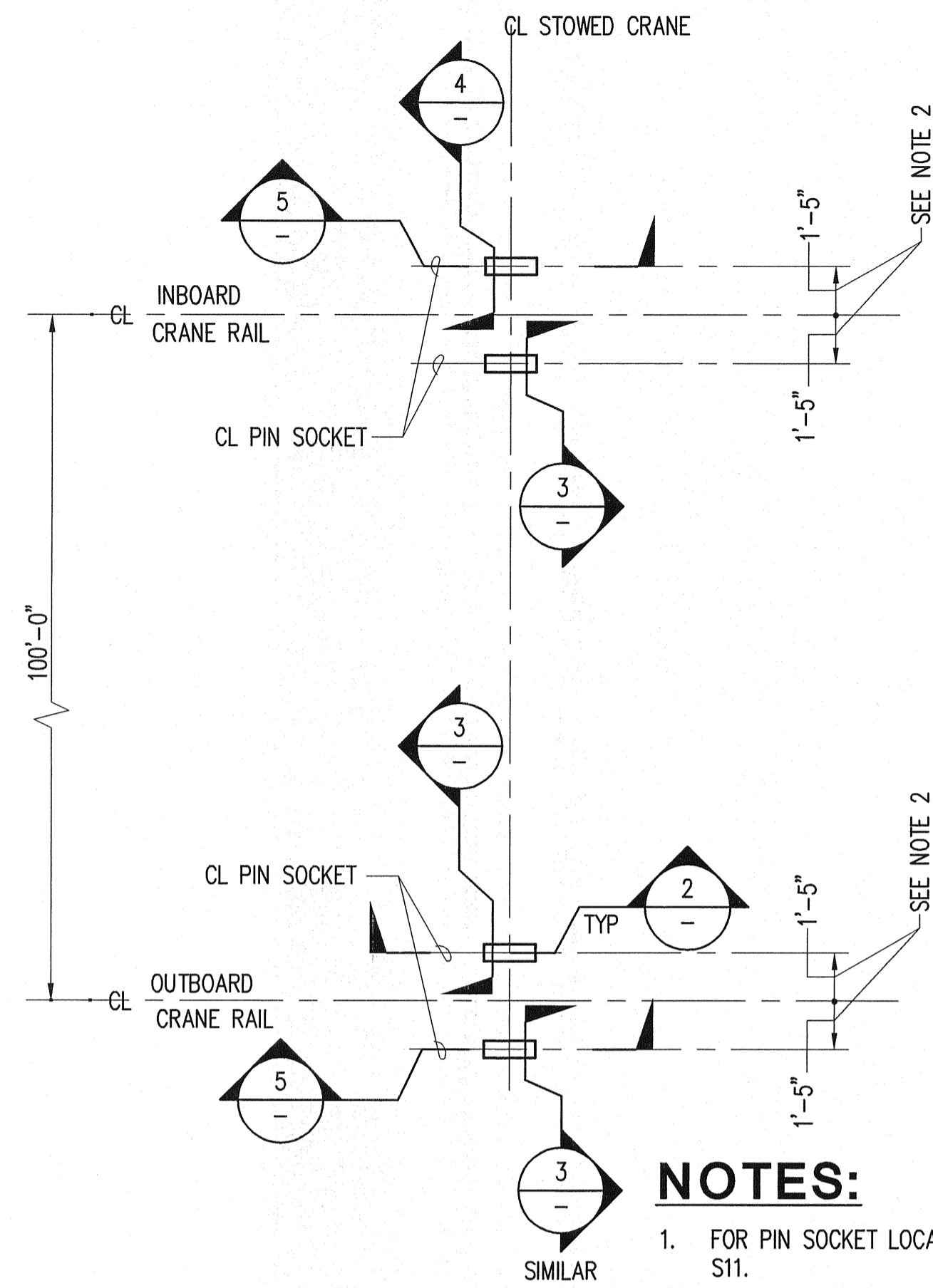
APPROVED: *H. Adams*  
CHECKED BY: DATE: 05/2007  
PROJECT ENGR.: DATE: 05/2007  
CHIEF ENGINEER: DATE: 05/2007



PORT OF TACOMA  
EAST BLAIR ONE WHARF  
CRANE POWER VAULT  
LID DETAILS

EP-6305  
S46.3  
SHEET 161 OF 215

BID SET



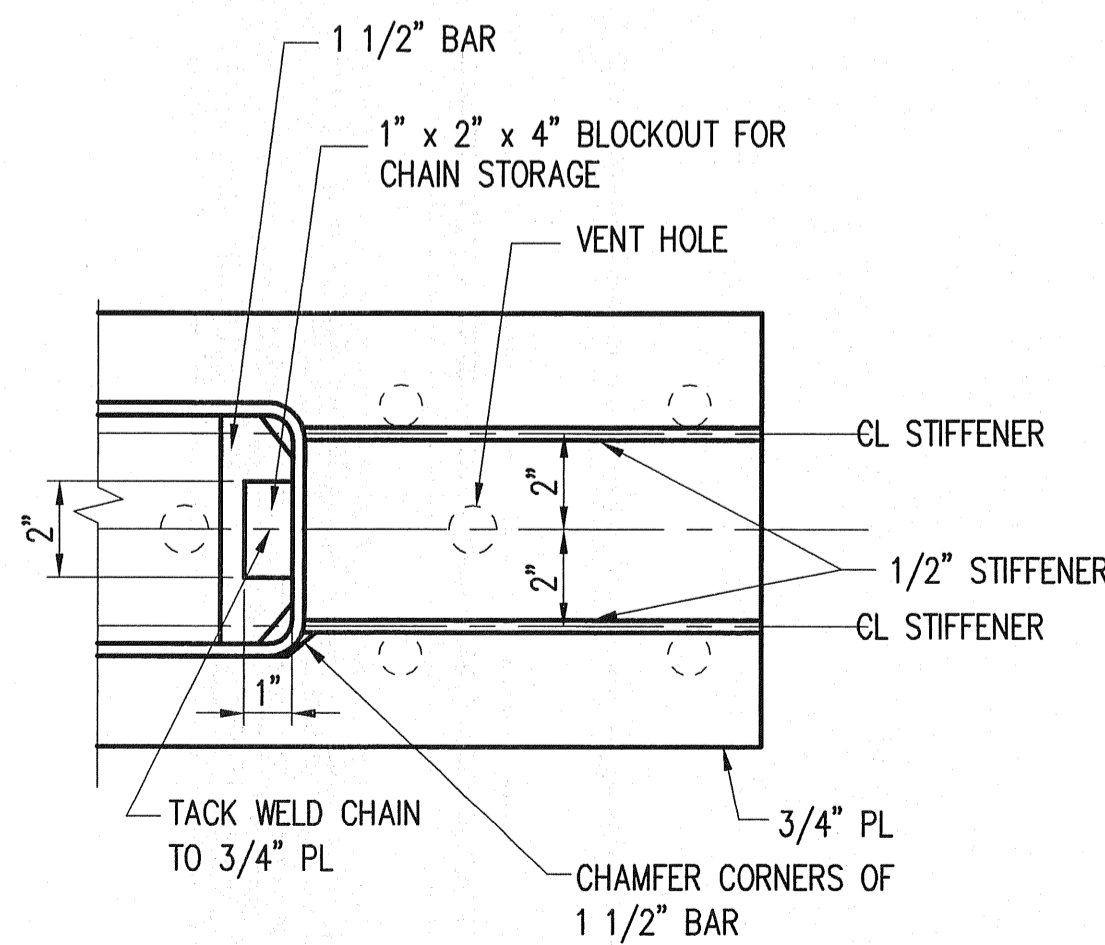
**NOTES:**

1. FOR PIN SOCKET LOCATIONS SEE SHEETS S8, S9, S10 AND S11.
2. CONTRACTOR SHALL VERIFY DISTANCE FROM CENTERLINE OF CRANE RAIL TO PIN SOCKET LOCATION WITH PORT PRIOR TO FABRICATION.
3. CONTRACTOR SHALL VERIFY DIMENSION OF PIN SOCKET WITH PORT PRIOR TO FABRICATION.

**PLAN - PIN SOCKET AT STOWED CRANE LOCATIONS**

SCALE: 1/4"=1'-0"

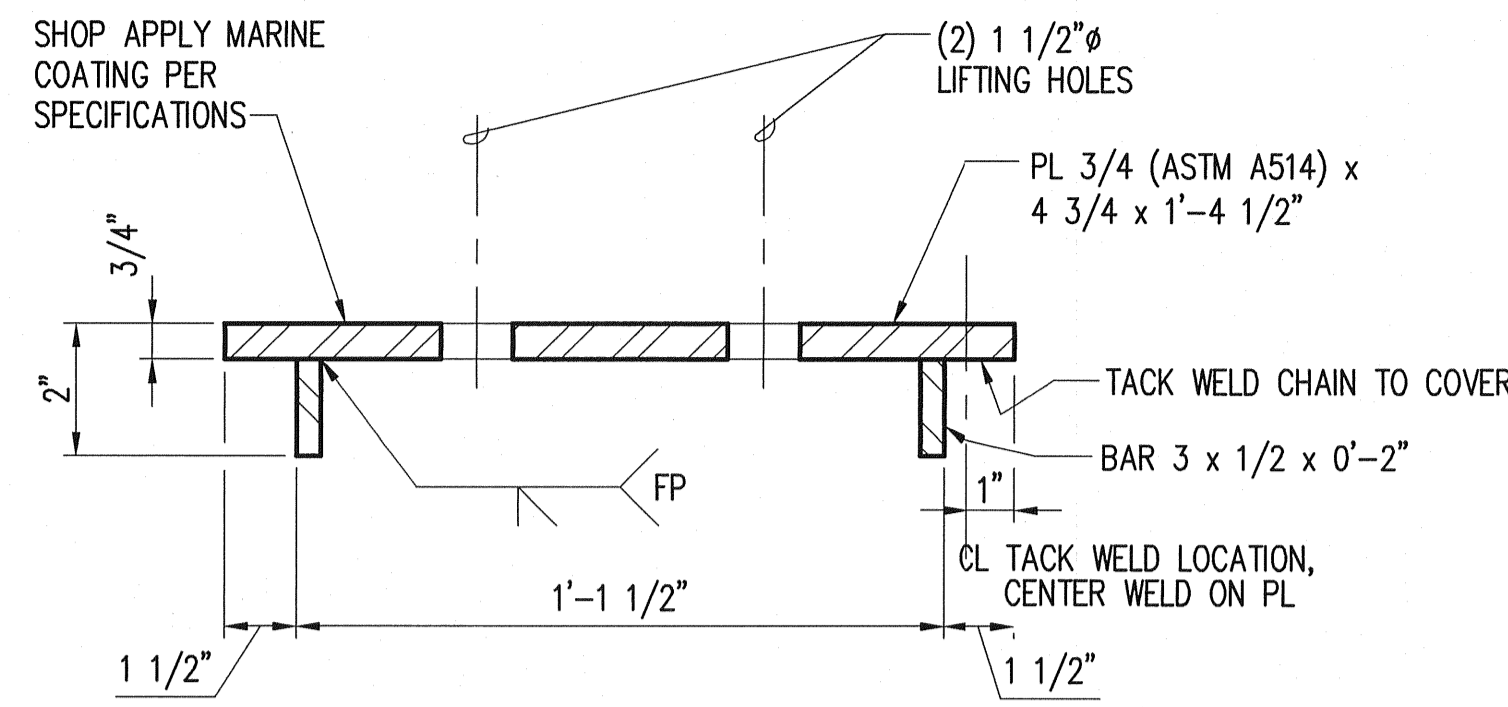
1  
S8, S3



**DETAIL**

SCALE: 3"=1'-0"

6

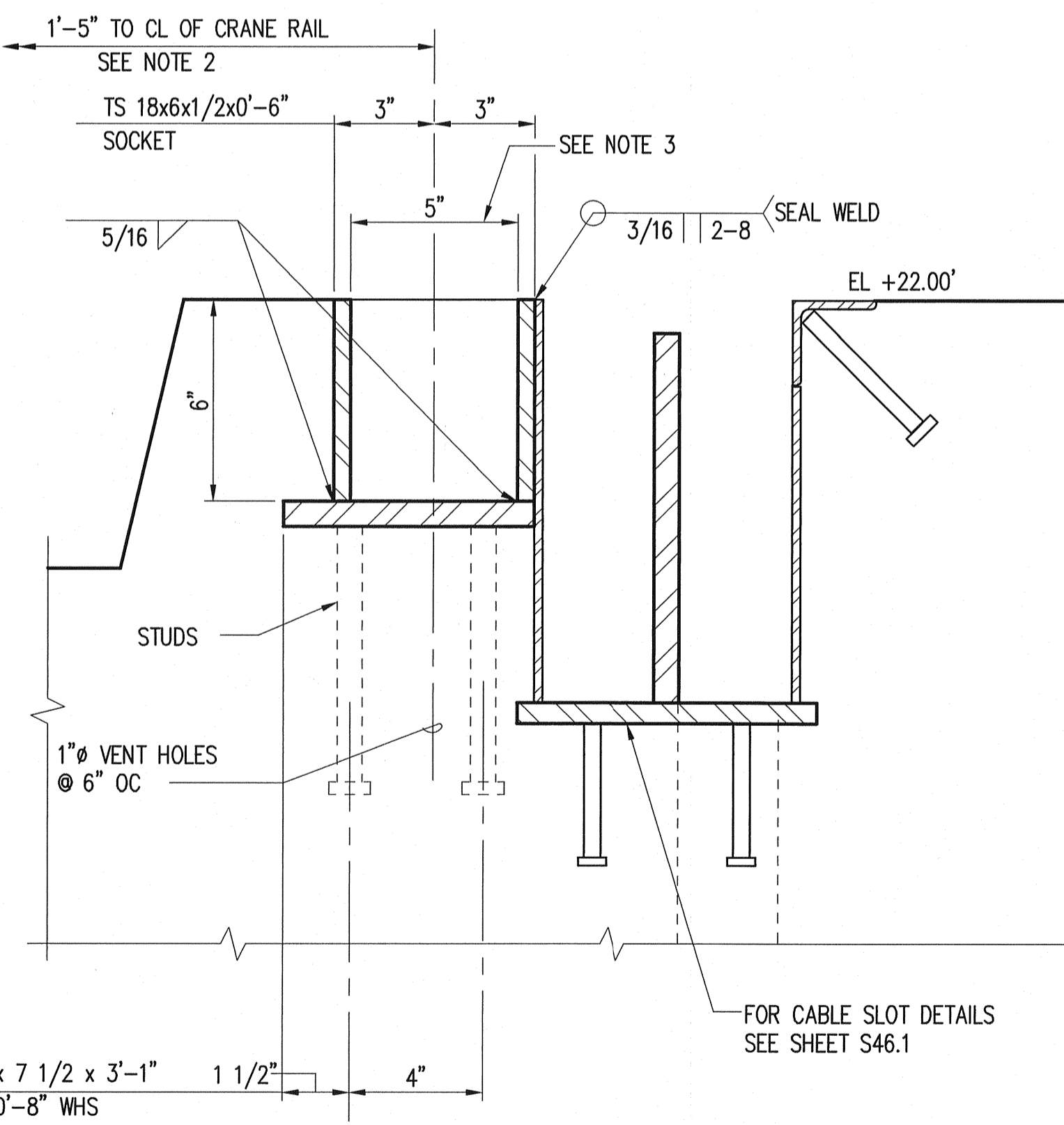


**DETAIL - PIN SOCKET COVER**

SCALE: 3"=1'-0"

2

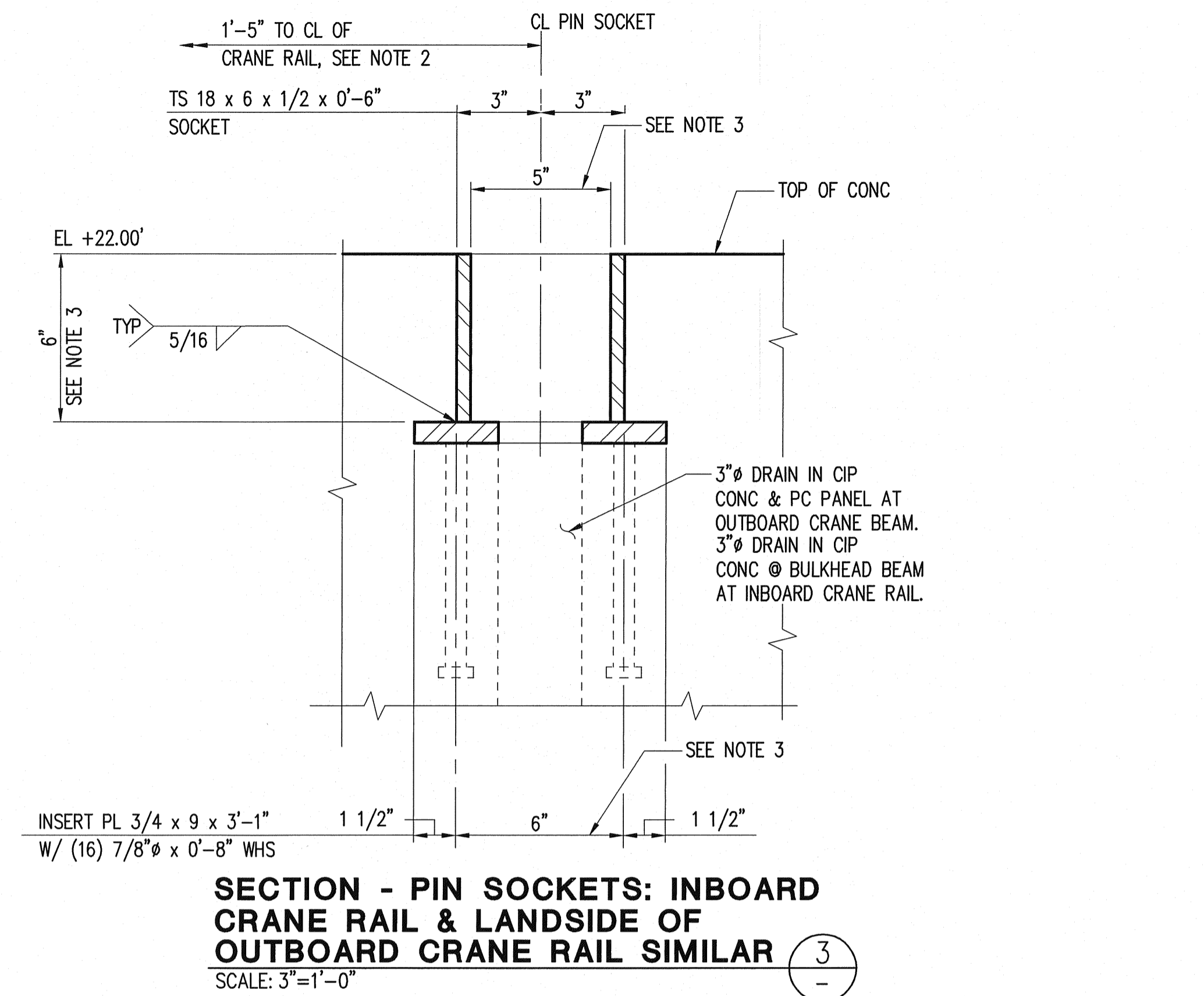
**NOTE:**  
CONTRACTOR SHALL PROVIDE A GALVANIZED RESTRAINING CHAIN WITH A MINIMUM WORKING LOAD OF 200 POUNDS BETWEEN THE PIN SOCKET COVER AND PIN SOCKET EMBED. CONTRACTOR SHALL COORDINATE WITH THE PORT TO OBTAIN INFORMATION FOR CRANES & PIN SOCKETS. CHAIN LOCATION SHALL NOT INTERFERE WITH COVER FIT OR CRANE PIN FIT



**SECTION - PIN SOCKETS: WATER SIDE OF OUTBOARD CRANE RAIL**

SCALE: 3"=1'-0"

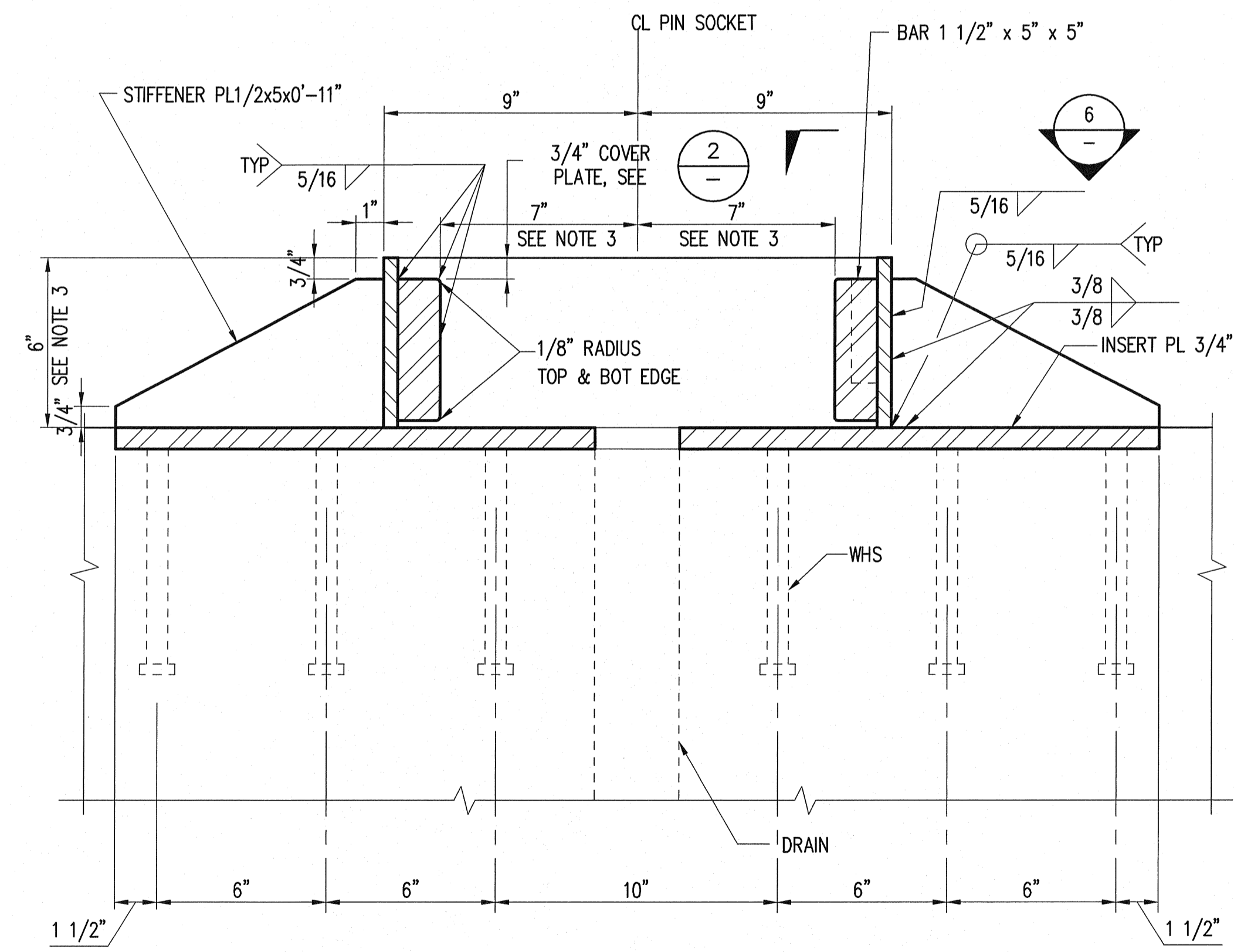
4



**SECTION - PIN SOCKETS: INBOARD CRANE RAIL & LANDSIDE OF OUTBOARD CRANE RAIL SIMILAR**

SCALE: 3"=1'-0"

3

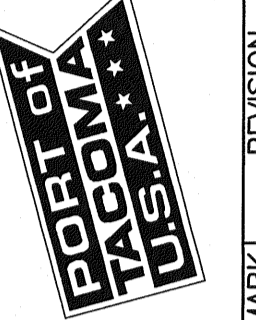


**SECTION - TYPICAL PIN SOCKET**

SCALE: 3"=1'-0"

5

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841



APPROVED: *H. B. B...*  
DATE: 05/21/2007  
PROJECT: 05/2007  
PROJECT ENGR.: DATE

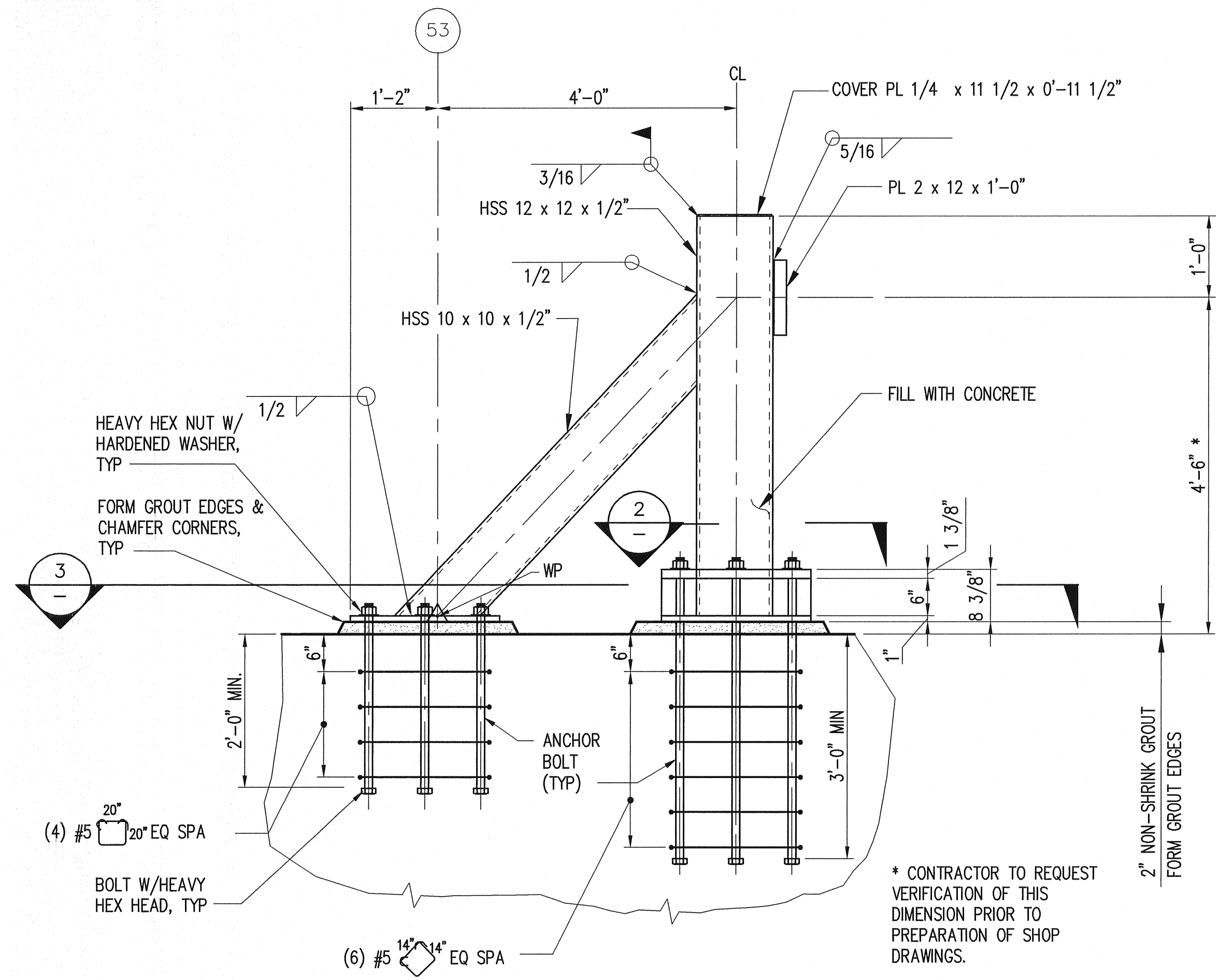


EP-6305  
**S47.0**  
SHEET 162 OF 215  
CONTRACT NUMBER: 068018  
DATE: 05/2007  
DRAWING NUMBER: E2603  
PHASE: BID SET

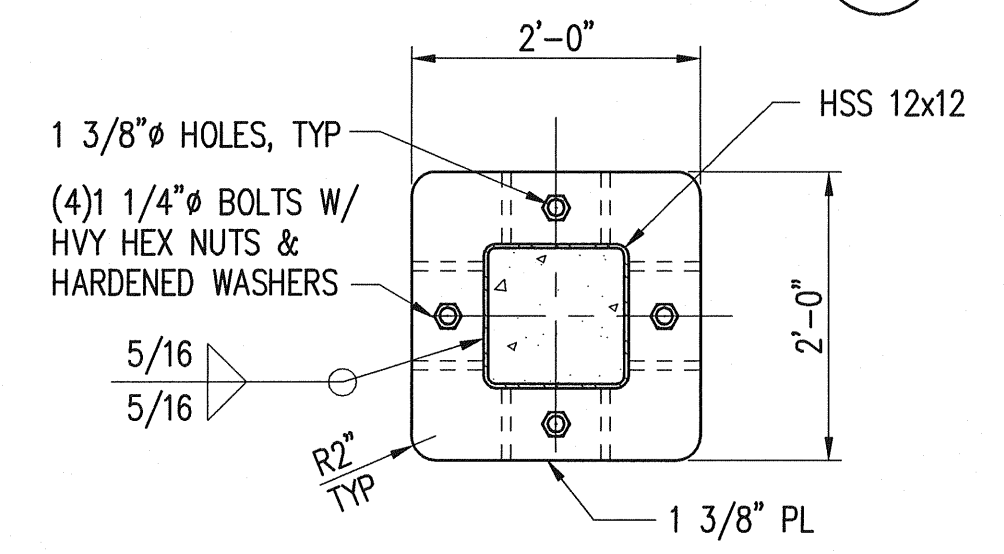
PORT OF TACOMA  
EAST BLAIR ONE WHARF  
CRANE PIN SOCKET DETAILS

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DUTY: HORIZ. AVERT.  
DRAWING SCALE: AS SHOWN

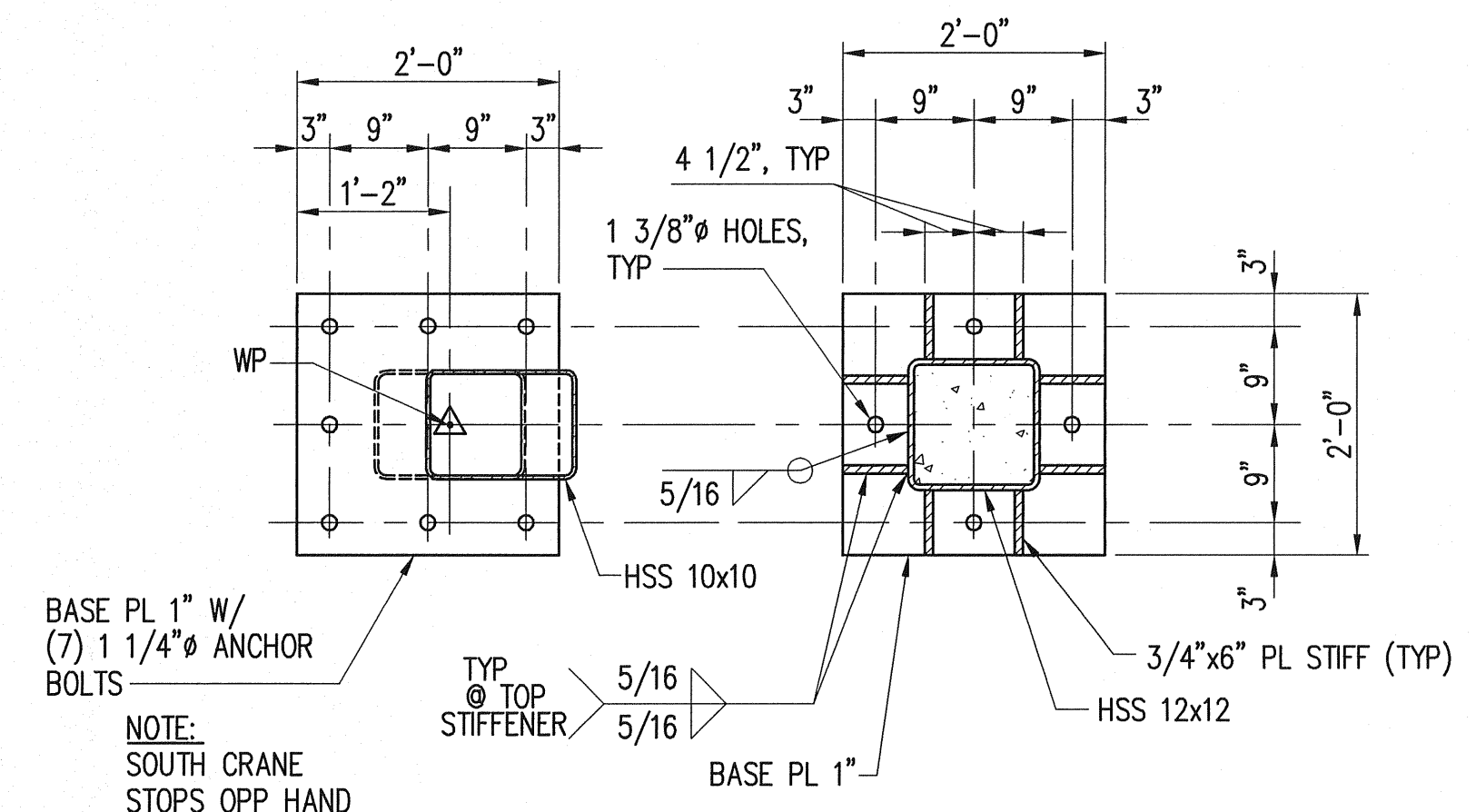
BID SET



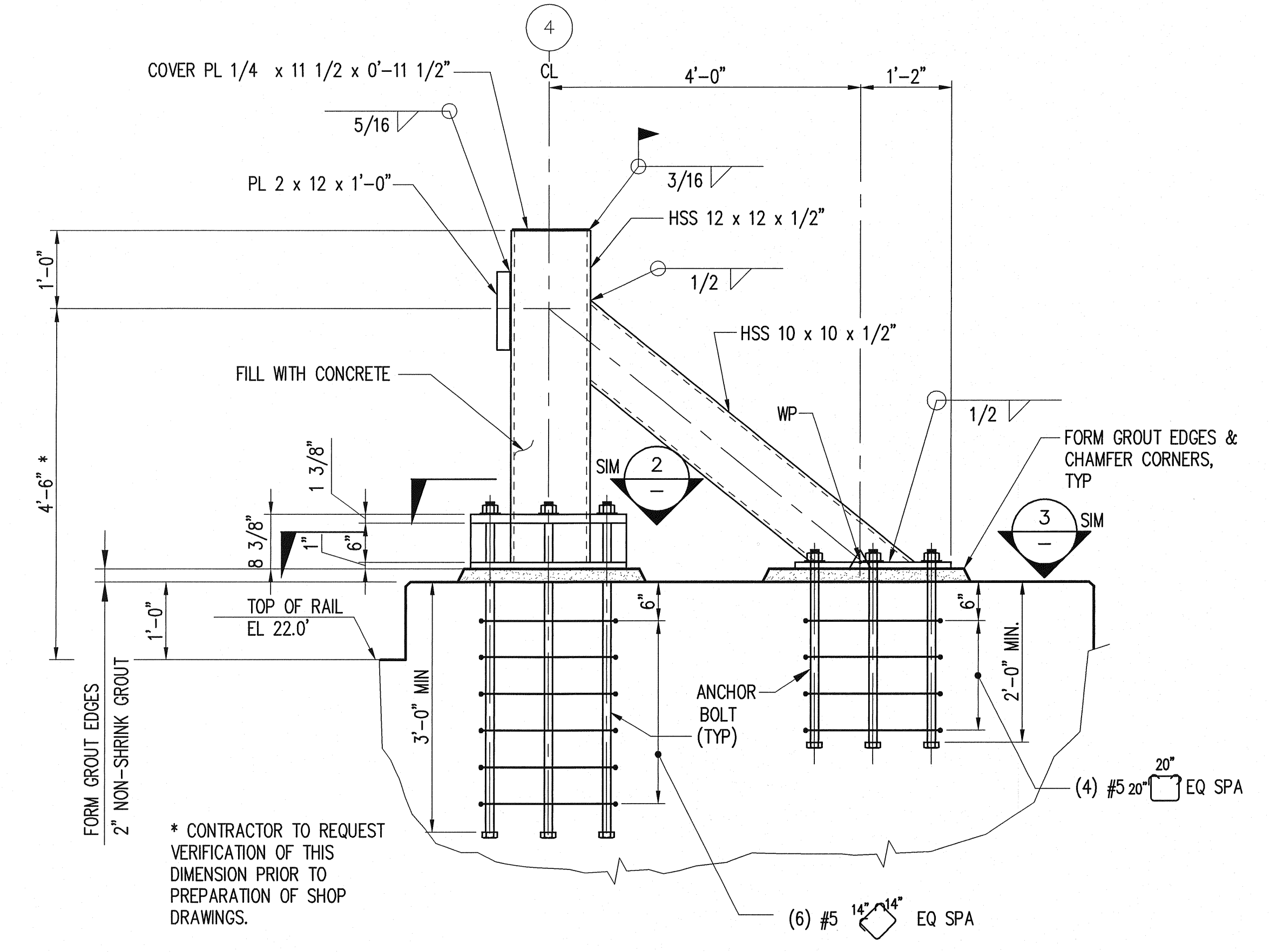
**ELEVATION - NORTH CRANE STOPS  
SOUTH INBOARD CRANE STOP (OPP)**  
SCALE: 3/4"=1'-0" 1  
S8, S11, S3



**SECTION - NORTH CRANE STOP BASE PLATE**  
SCALE: 3/4"=1'-0" 2



**SECTION - NORTH CRANE STOP BASE PLATES  
(SIM @ SOUTH CRANE STOP)**  
SCALE: 3/4"=1'-0" 3



**ELEVATION - SOUTH OUTBOARD CRANE STOP**  
SCALE: 3/4"=1'-0" 4  
S11

**NOTE:**  
ALL CRANE STOP ANCHOR BOLTS SHALL BE F1554 GRADE 105 W/ HEAVY HEX NUTS AND HARDENED WASHERS

**NOTE:**  
SHOP APPLY MARINE COATING PER SPECIFICATIONS. SURFACES IN CONTACT WITH THE GROUT PADS NEED NOT BE PAINTED.

**PORT OF TACOMA** P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

**PORT OF TACOMA USA** Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0650 Fax (253) 396-0162

**k p f i**

APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 23 Apr 07  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 3340 E. ALEXANDER AVENUE  
PORT PARCEL: 1, 2 & 1B

EXPIRES: 9/30/08

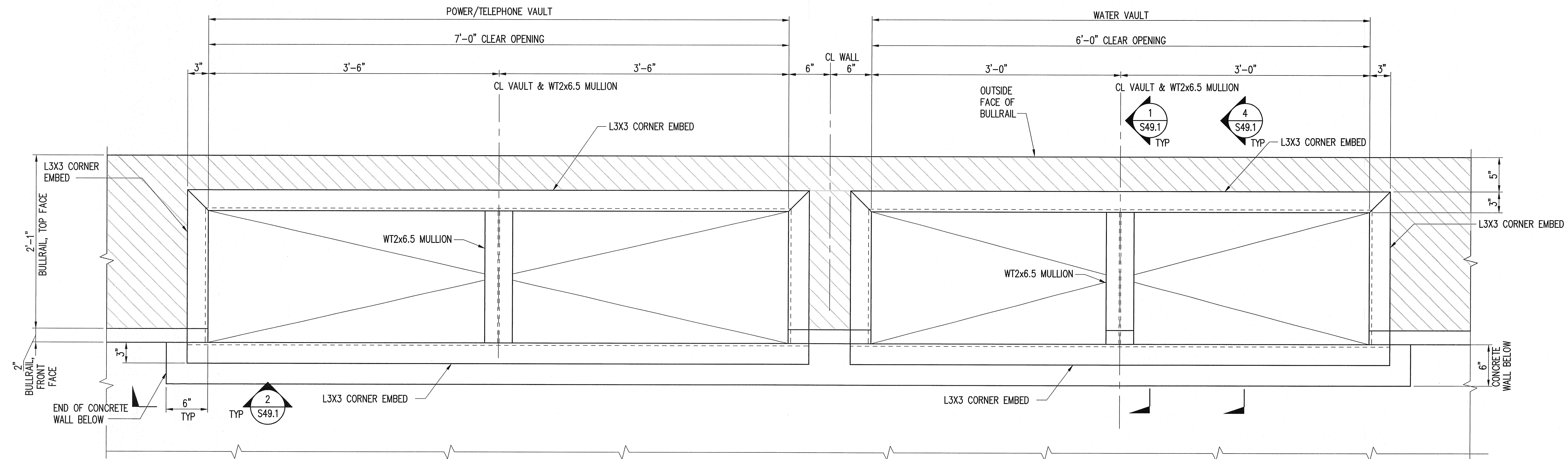
REVISION: \_\_\_\_\_  
MARK: \_\_\_\_\_  
BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

RKJ 05/2007  
CHECKED BY - DATE  
GGN 05/2007  
PROJECT ENGR. - DATE

**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
CRANE STOP  
SECTIONS AND DETAILS

EP-6305  
**S48.0**  
SHEET 163 OF 215  
CONTRACT NUMBER: 06801B  
E. NUMBER: E2623  
TOWNSHIP: 21N RANGE: 35E SECTION: 27  
DATALIN: HORIZ. VERT.  
DRAWING SCALE: AS SHOWN

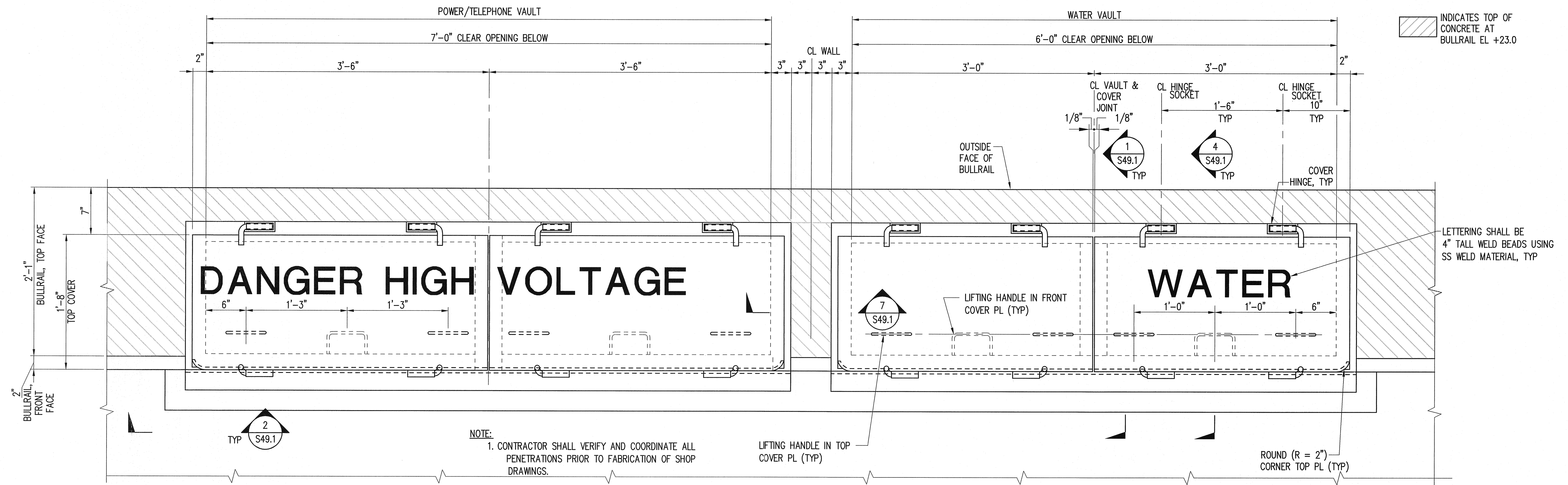
**BID SET**



**PLAN - BULLRAIL POWER/TELEPHONE/  
WATER VAULTS:  
VAULT COVER NOT SHOWN**

SCALE: 1 1/2"=1'-0"

1  
S3



**PLAN - BULLRAIL POWER/TELEPHONE/  
WATER VAULTS:  
VAULT COVER SHOWN**

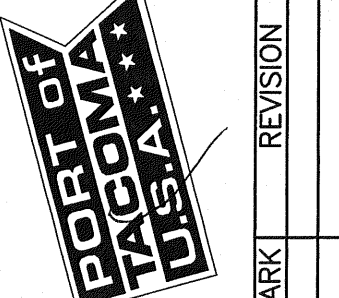
SCALE: 1 1/2"=1'-0"

2  
S3

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-883-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 366-0160 Fax (253) 366-0162

**kpfi**



APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 23 MAY 07

REVISION: \_\_\_\_\_

MARK: \_\_\_\_\_

REVISION: \_\_\_\_\_

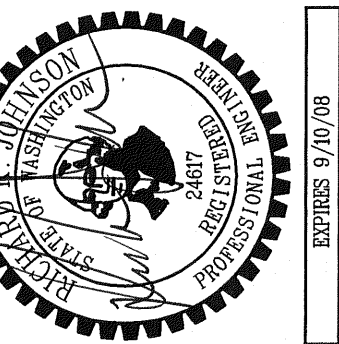
MARK: \_\_\_\_\_

05/2007 - DATE  
RKL CHECKED BY

05/2007 - DATE  
GNN PROJECT ENGR.

05/21/2007 - DATE  
DRAUGHTSMAN: J. J. J.

2340 E. ALEXANDER AVENUE  
PORT TACOMA, WA 98401



PORT OF TACOMA  
EAST BLAIR ONE WHARF  
BULLRAIL UTILITY VAULT DETAILS

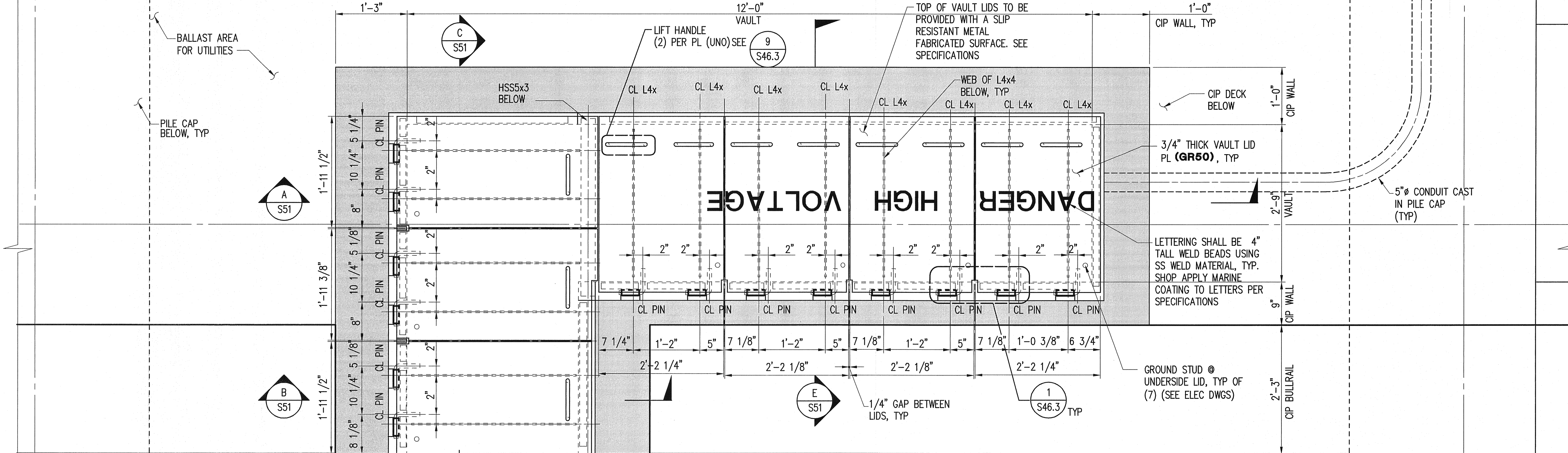
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ.  
DRAWING SCALE: AS SHOWN

EP-6305  
**S49.0**  
SHEET 164 OF 215

CONTRACT NUMBER: 068018  
DRAWING NUMBER: E2023  
DATE: 05/23/07

**BID SET**



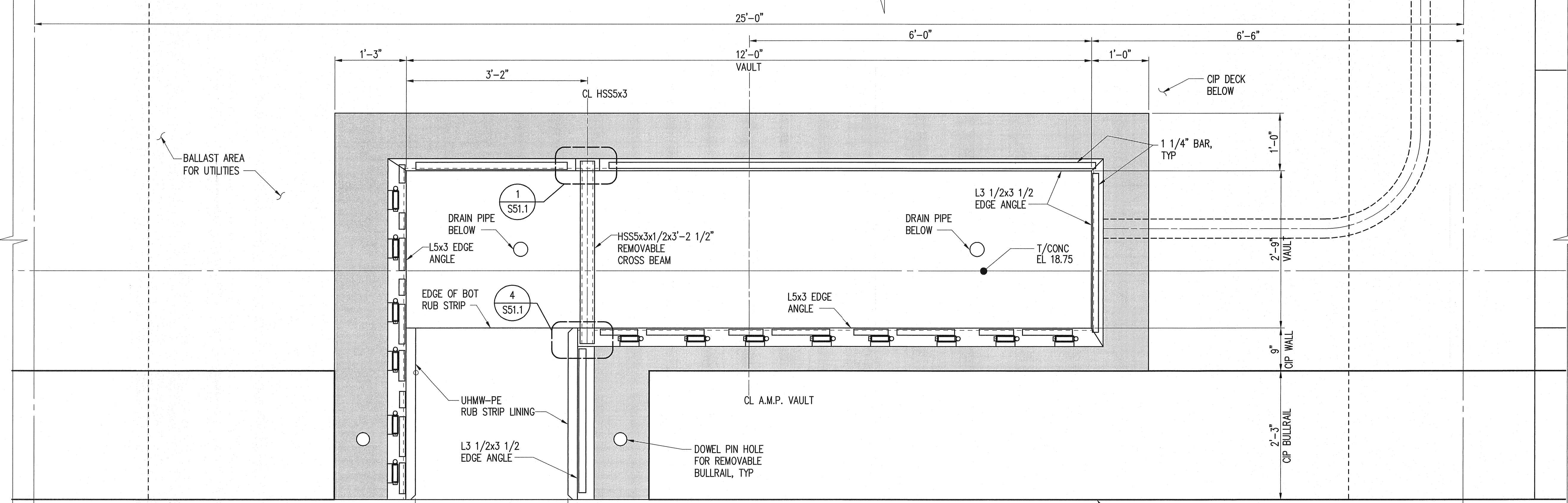


**PLAN - TYPICAL SSP VAULT - LID CLOSED**  
SCALE: 1"=1'-0"

20  
44

19  
43

- NOTES:
- INDICATES TOP SURFACE OF CONC @ EL. +22.0
  - SEE 7 S51.1 FOR TYPICAL LID RESTRAINT CABLE DETAIL



**PLAN - TYPICAL SSP VAULT - LID OPEN**  
SCALE: 1"=1'-0"

2  
S8, S10, S3

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0550 Fax (253) 396-0862

**k p f i**

PORT OF TACOMA USA

APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 23 Apr 07

PROJECT ENGR. - DATE: 05/2007  
GNN

CHECKED BY - DATE: 05/2007  
RKJ

REVISION: \_\_\_\_\_  
MARK: \_\_\_\_\_

PHASE: BID SET

CONTRACT NUMBER: 08801B  
SHEET 166 OF 215  
E NUMBER: E2623

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATING: HORIZ.  
DRAWING SCALE: AS SHOWN

EDWARDS 9/10/08

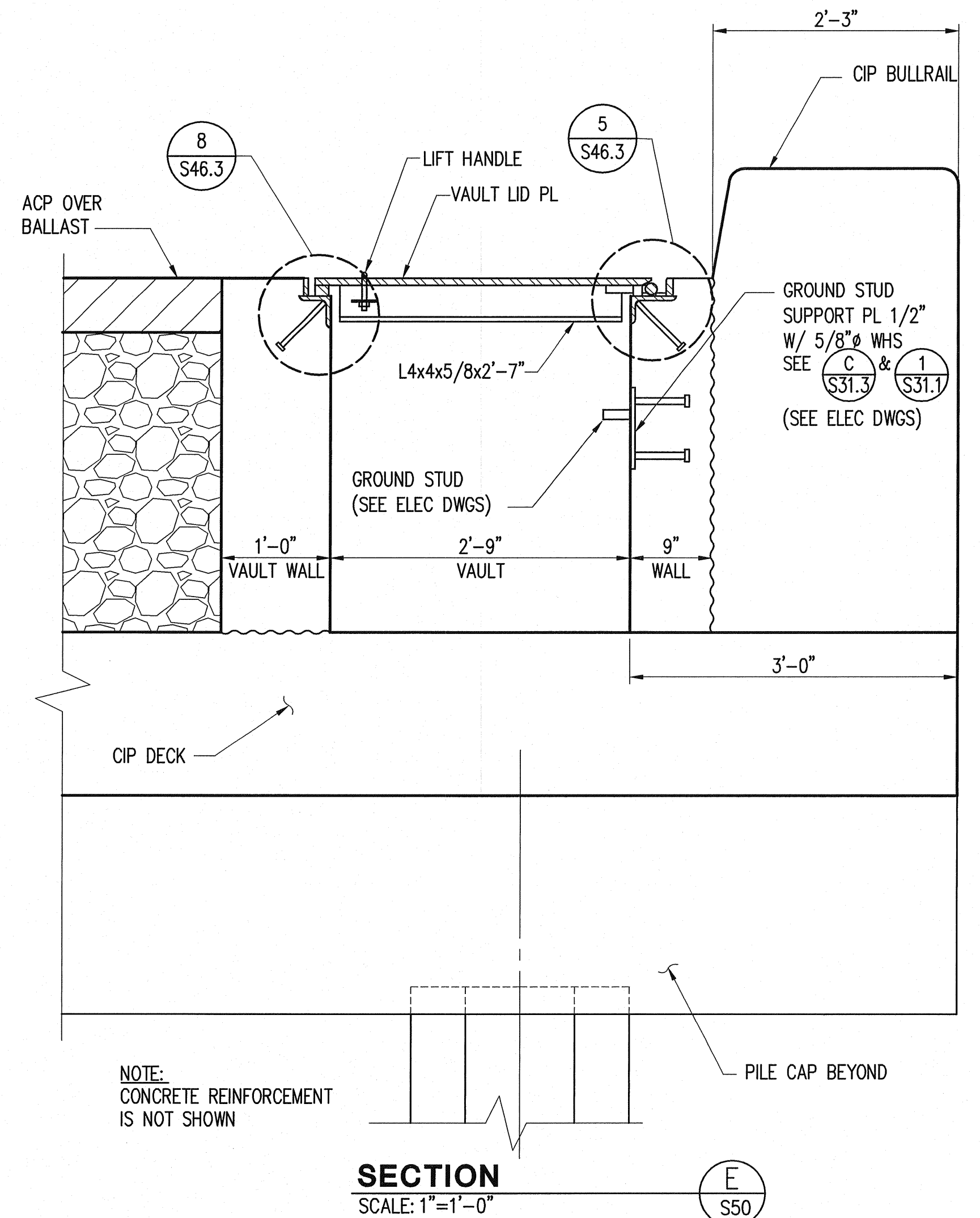
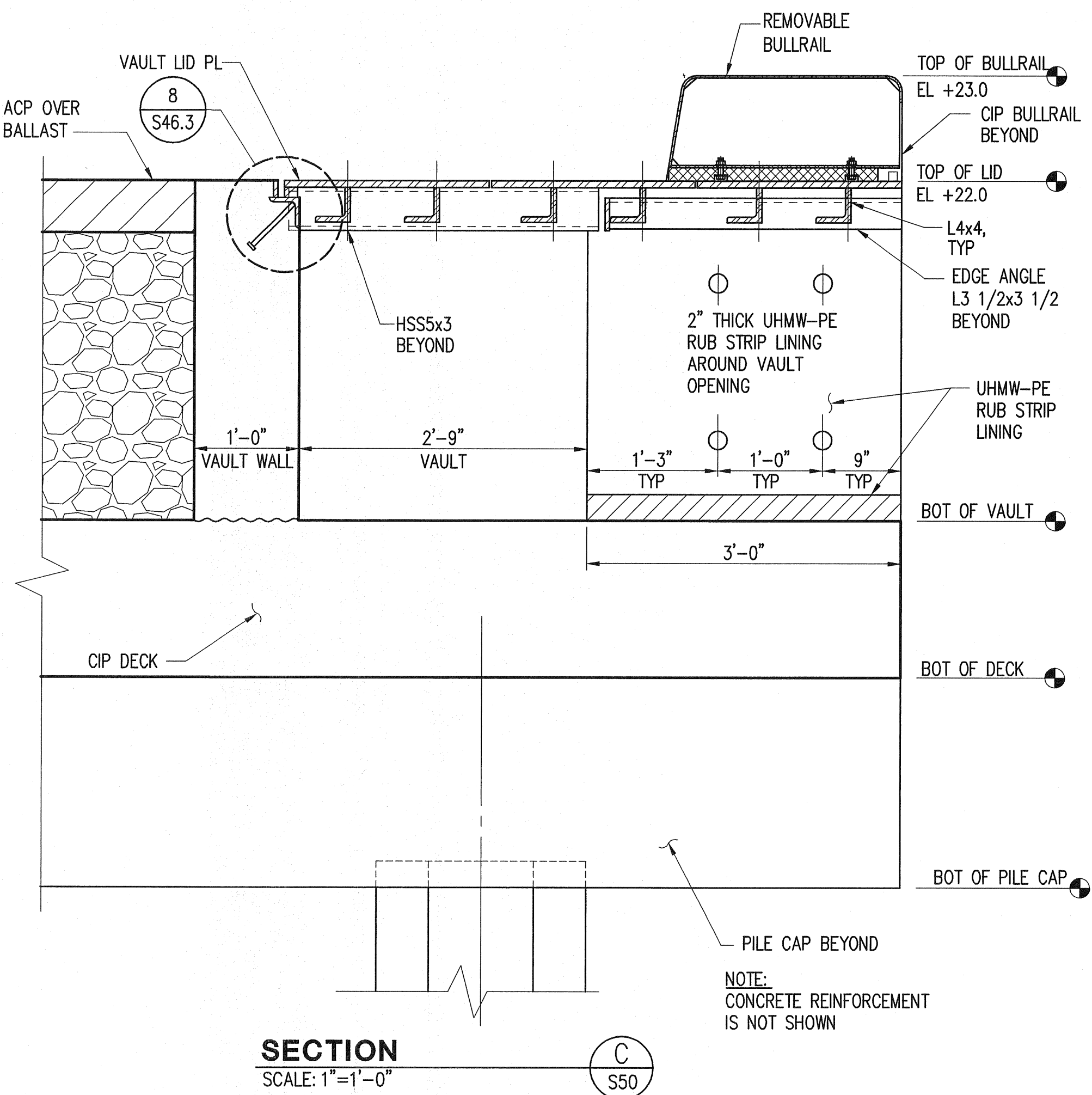
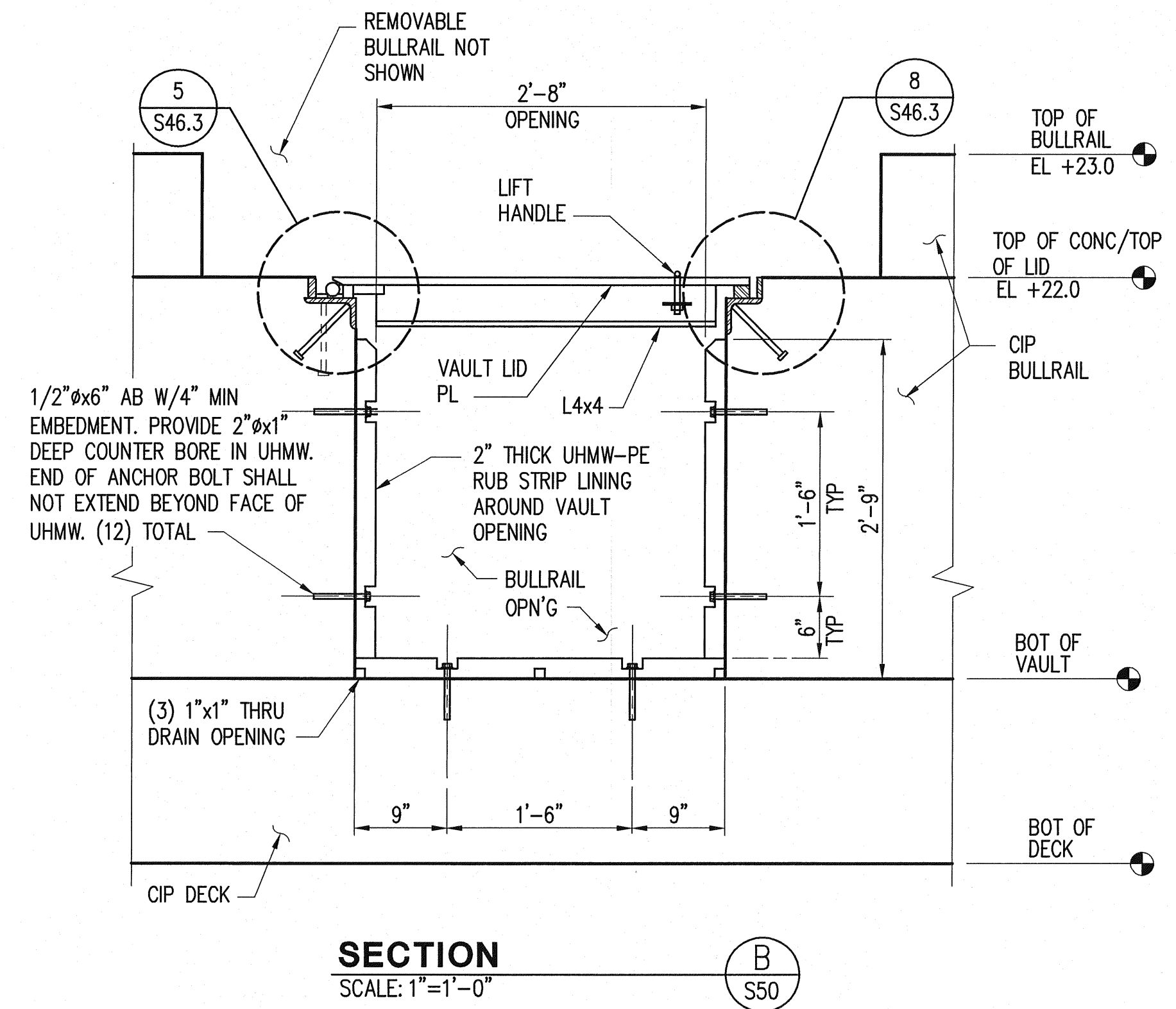
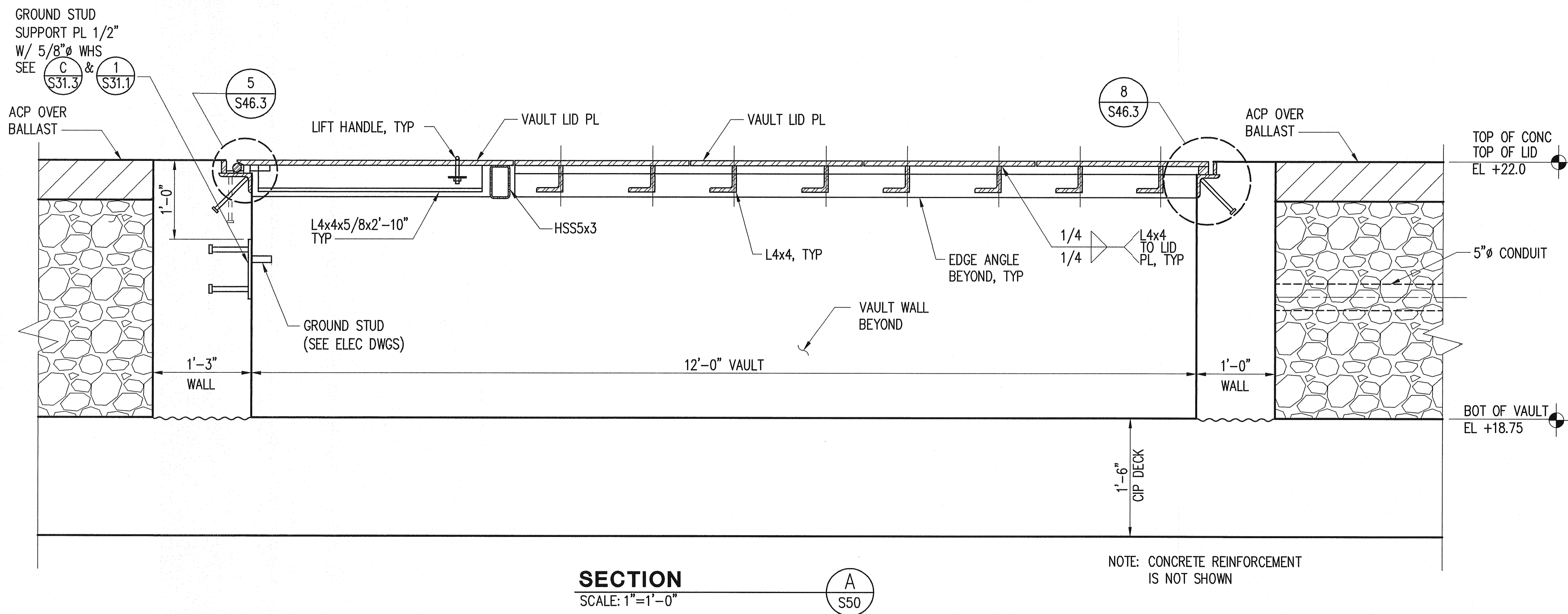
**PORT OF TACOMA  
EAST BLAIR ONE WHARF  
SSP VAULT DETAILS**

**EP-6305**

**\$50.0**

**SHEET 166 OF 215**

**BID SET**



PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 398-0150 Fax (253) 398-0162

**kpfi**

PORT OF TACOMA U.S.A.

APPROVED: *H. B. Jones* CHIEF ENGINEER - DATE: 05/21/2007  
DESIGNED BY: 234407 DATE: 05/21/2007  
CHECKED BY: GGN DATE: 05/20/2007  
PROJECT ENGR. - DATE: 05/20/2007

REVISION: MARK REVISION

DATE: 05/20/2007

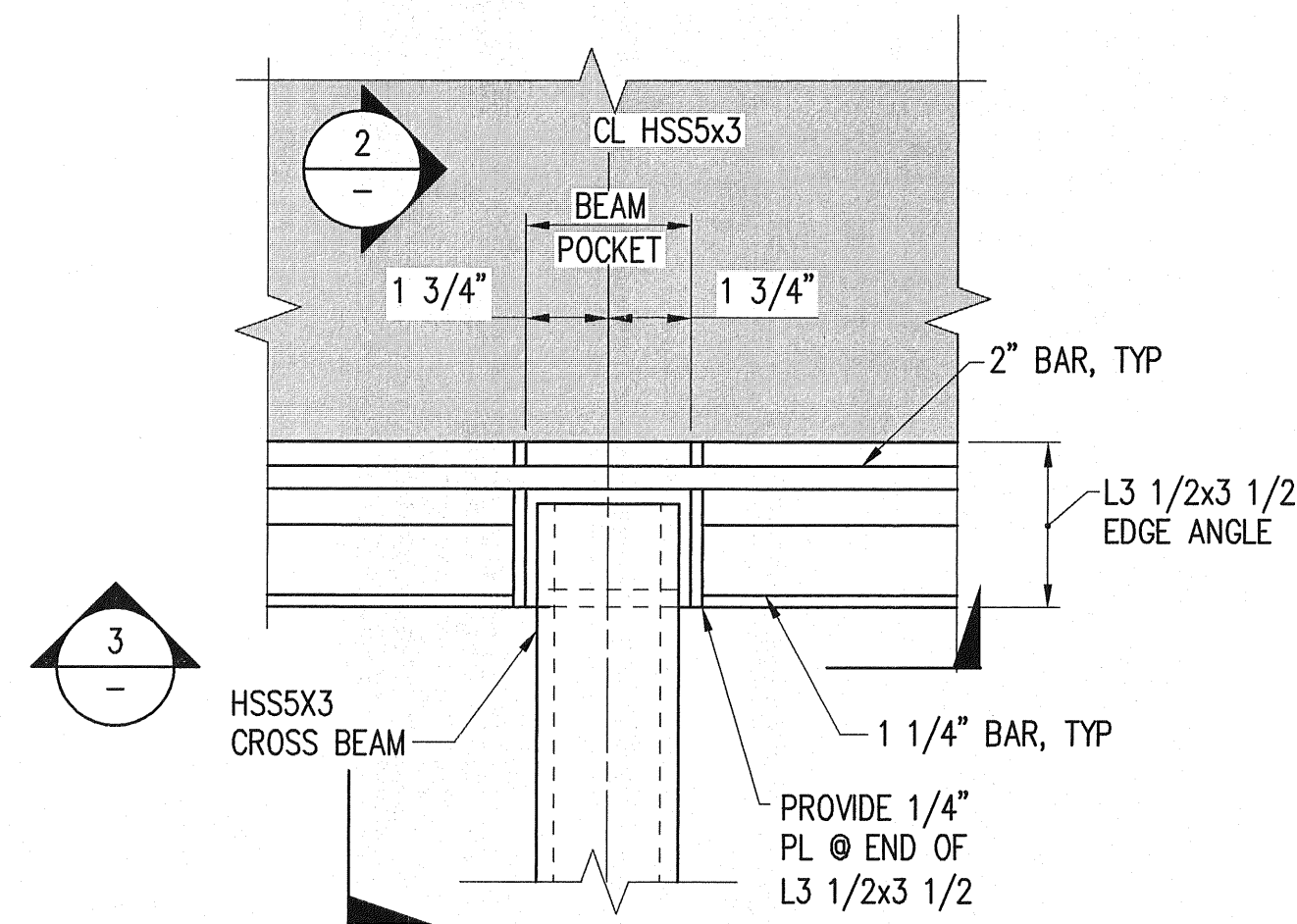
CONTRACT NUMBER: 068018  
SHEET 167 OF 215  
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATING: HORIZ. VERT.  
DRAWING SCALE: AS SHOWN  
PHASE: BID SET

EXPIRES 9/30/08

**PORT OF TACOMA  
EAST BLAIR ONE WHARF  
SSP VAULT DETAILS**

**EP-6305  
S51.0  
SHEET 167 OF 215**

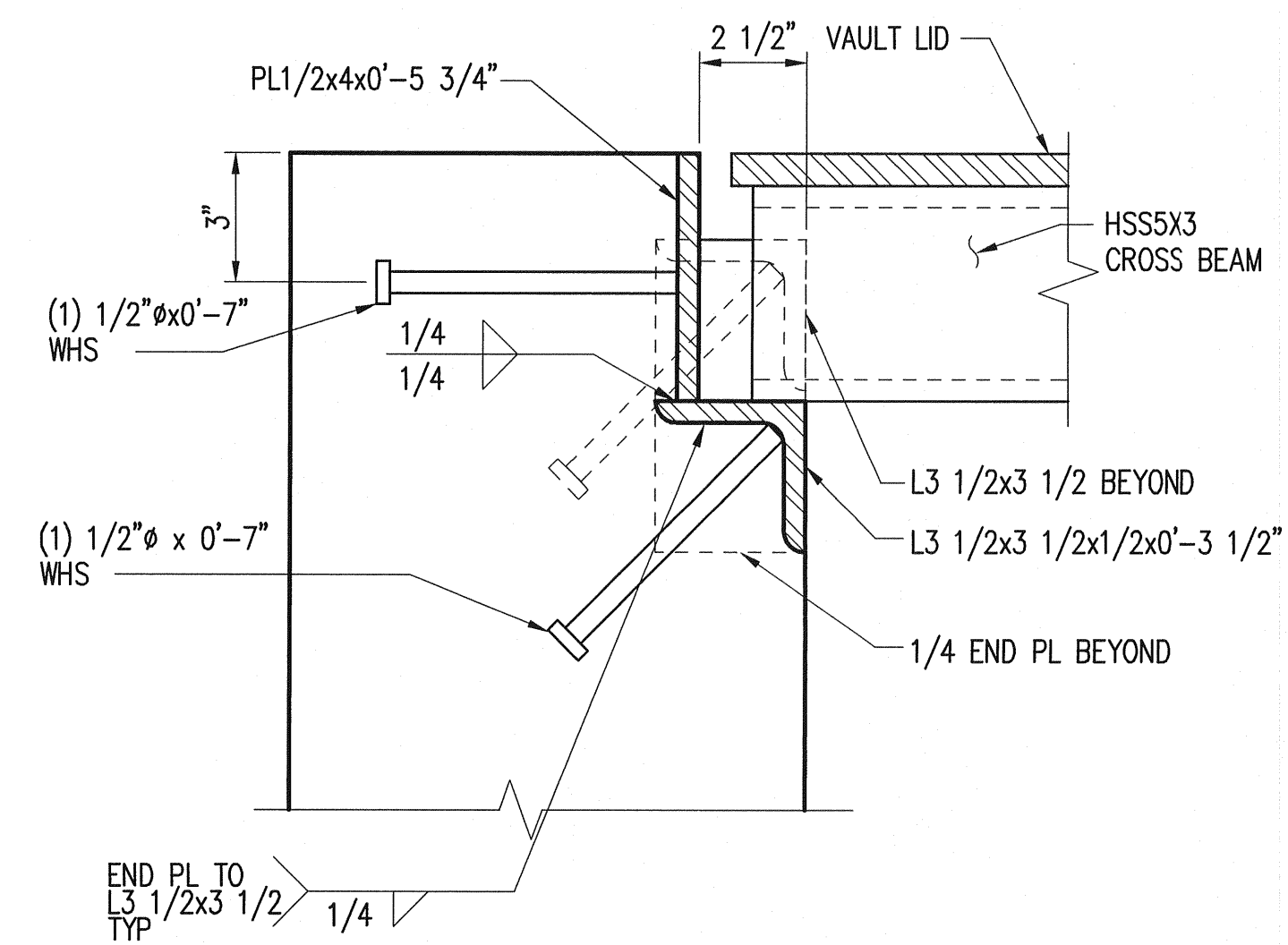
**BID SET**



**DETAIL**

SCALE: 3"=1'-0"

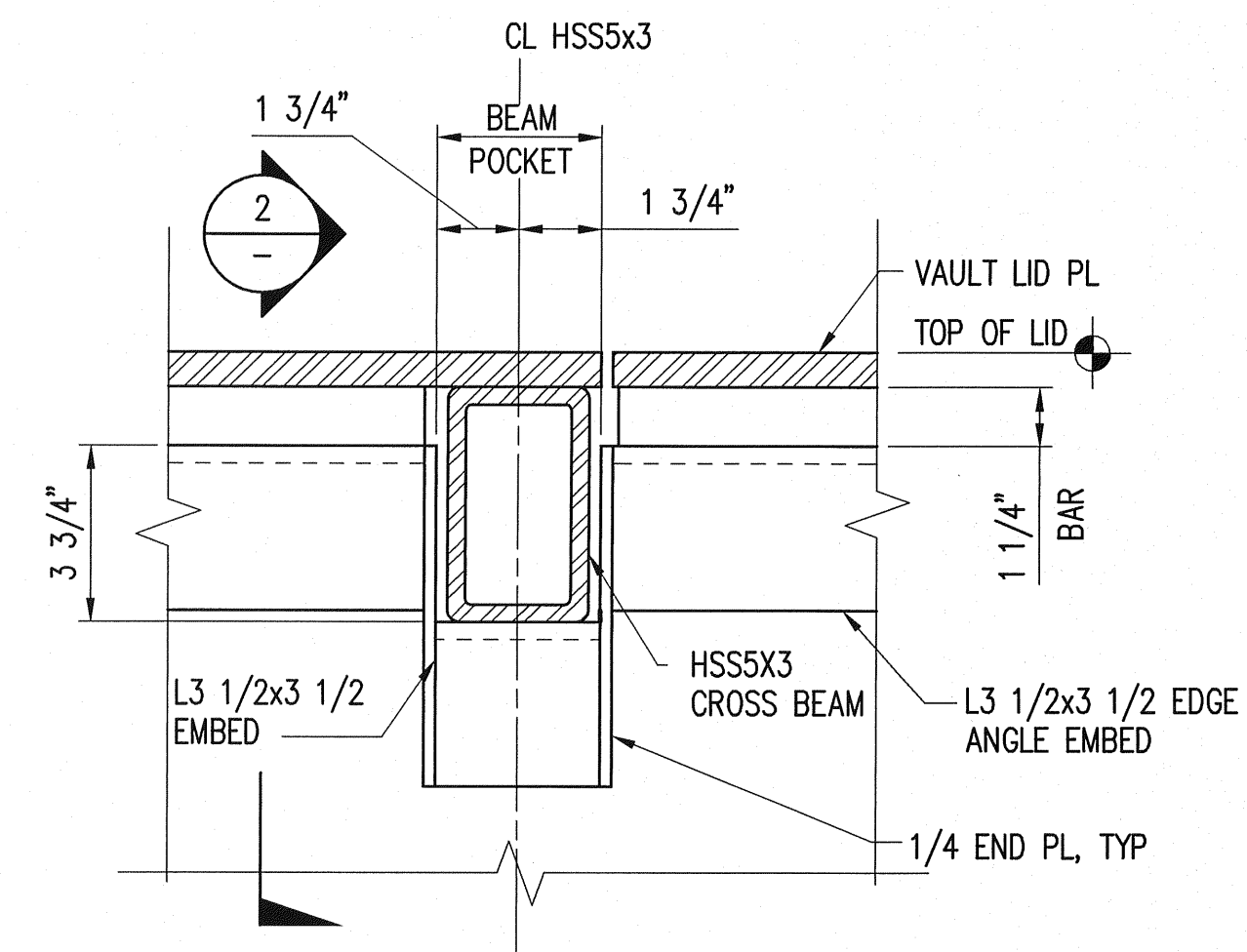
1  
S50



**SECTION**

SCALE: 3"=1'-0"

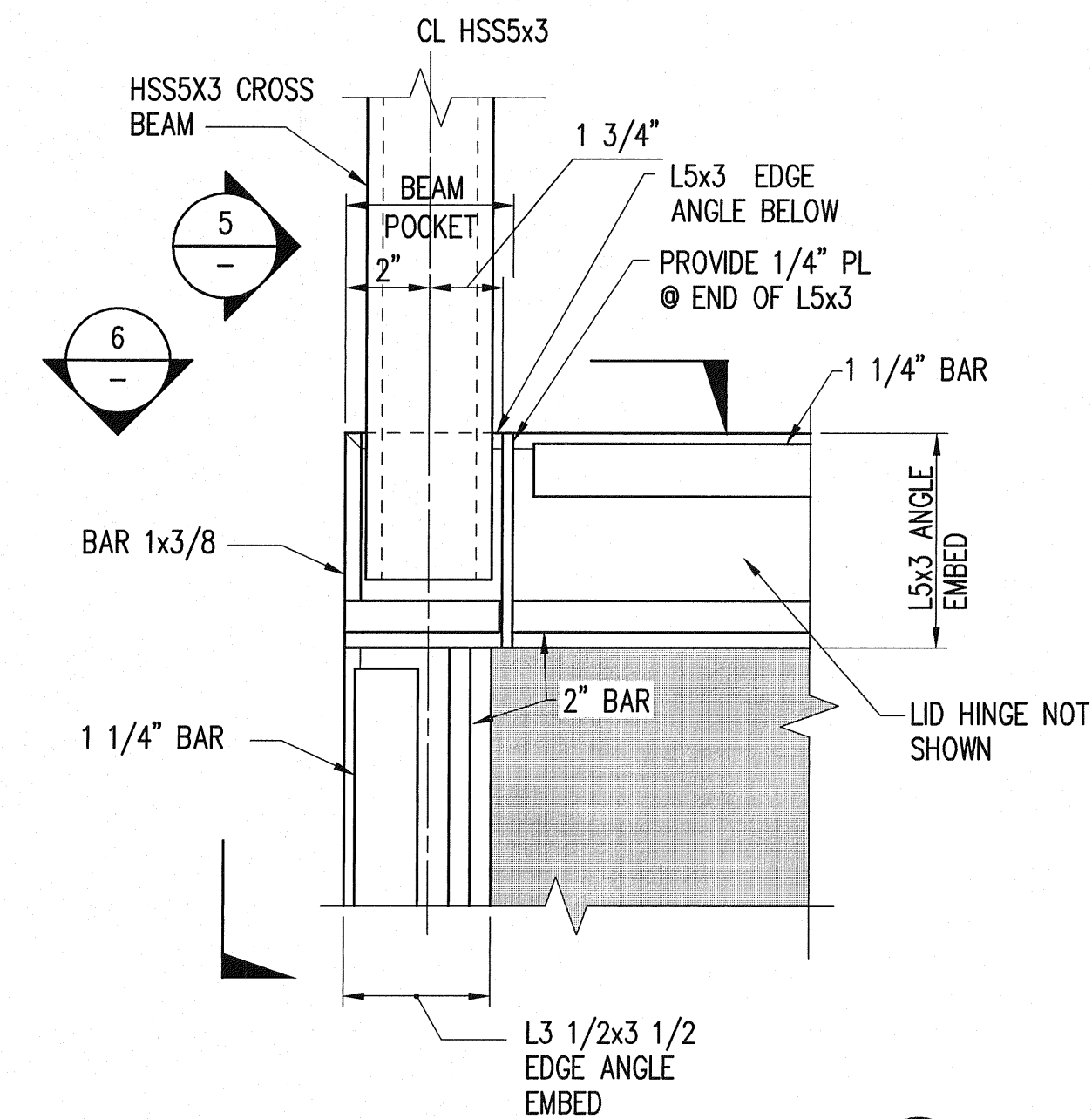
2  
-



**DETAIL**

SCALE: 3"=1'-0"

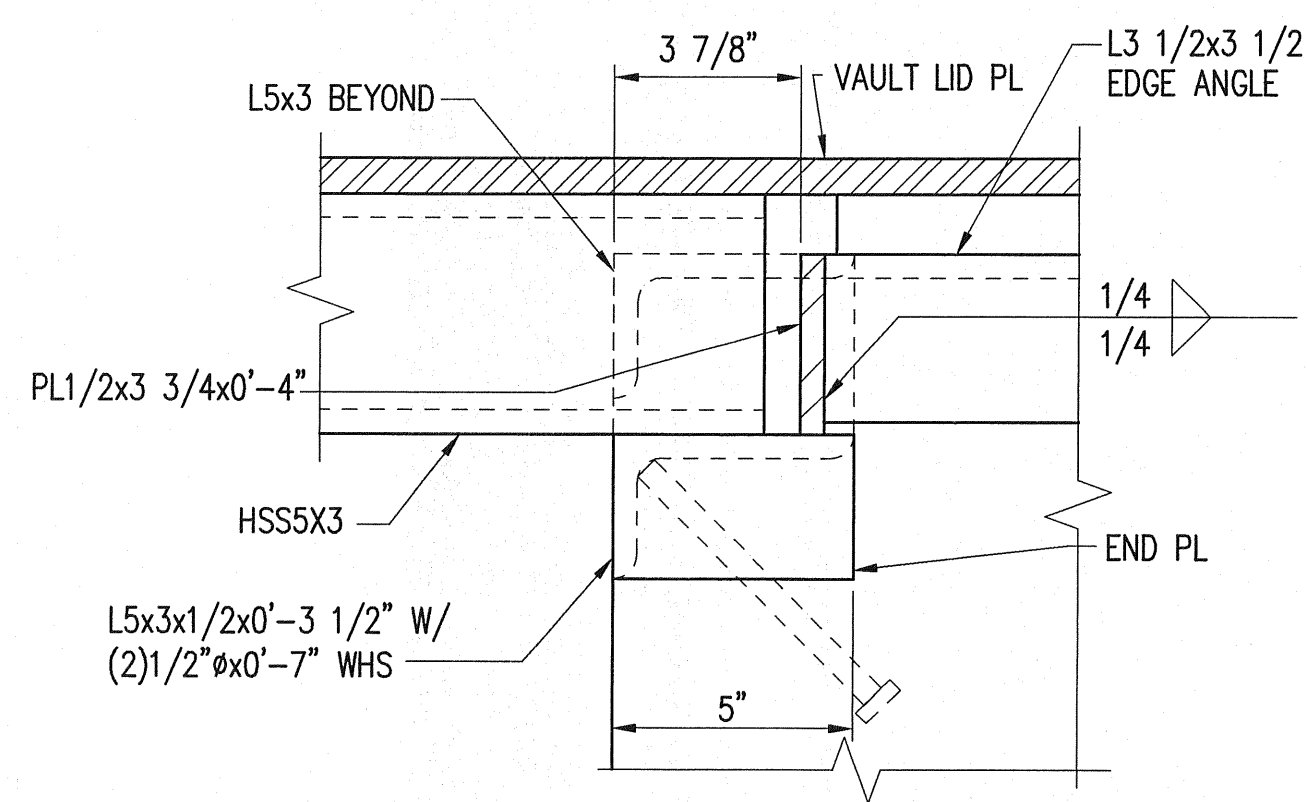
3  
-



**DETAIL**

SCALE: 3"=1'-0"

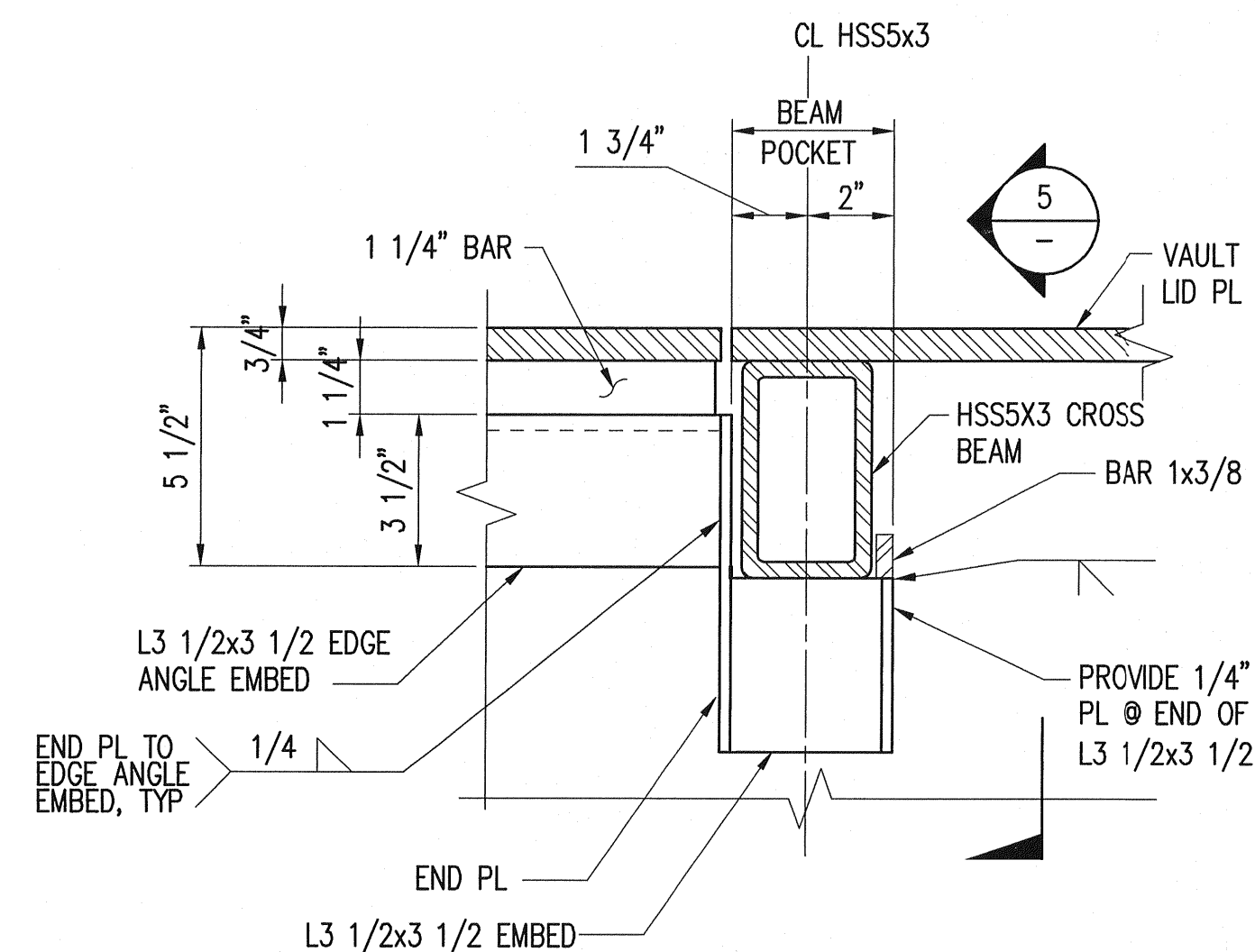
4  
S50



**DETAIL**

SCALE: 3"=1'-0"

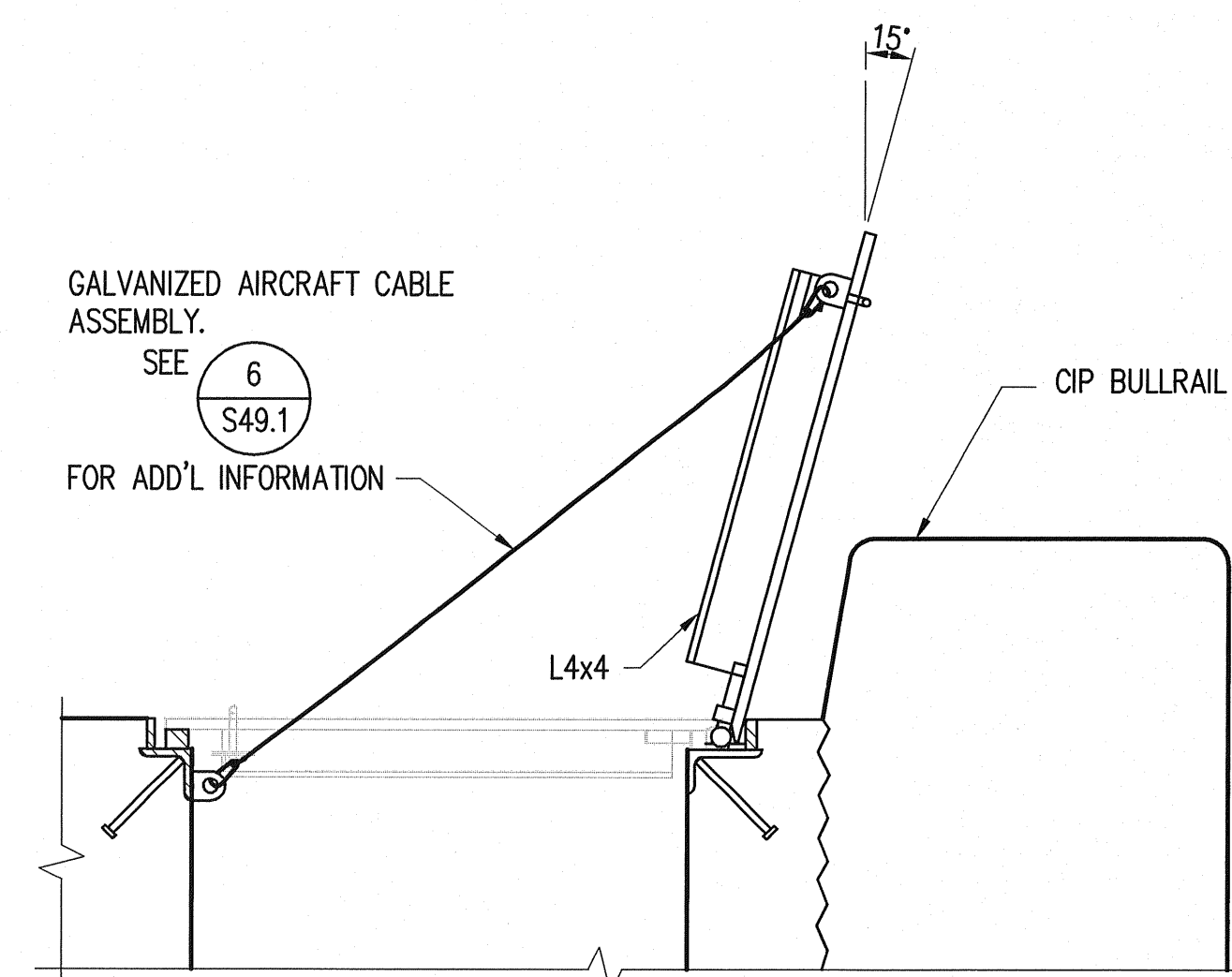
5  
-



**SECTION**

SCALE: 3"=1'-0"

6  
-

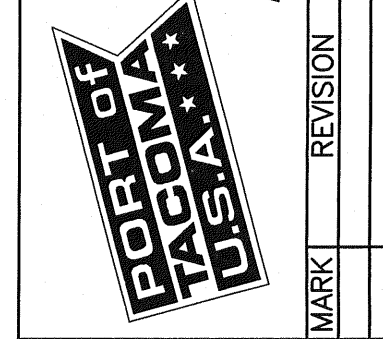


**TYPICAL RESTRAINT CABLE AND CONNECTION DETAIL**

SCALE: 1"=1'-0"

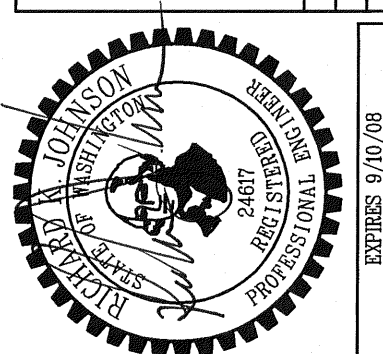
7  
S50

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841  
Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0160 Fax (253) 396-0162



APPROVED  
R/KJ 05/2007  
CHECKED BY - DATE  
GGN 05/2007  
PROJECT ENGR. - DATE  
23/11/07

CHIEF ENGINEER - DATE  
23/11/07  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT FACEL: 17 & 18

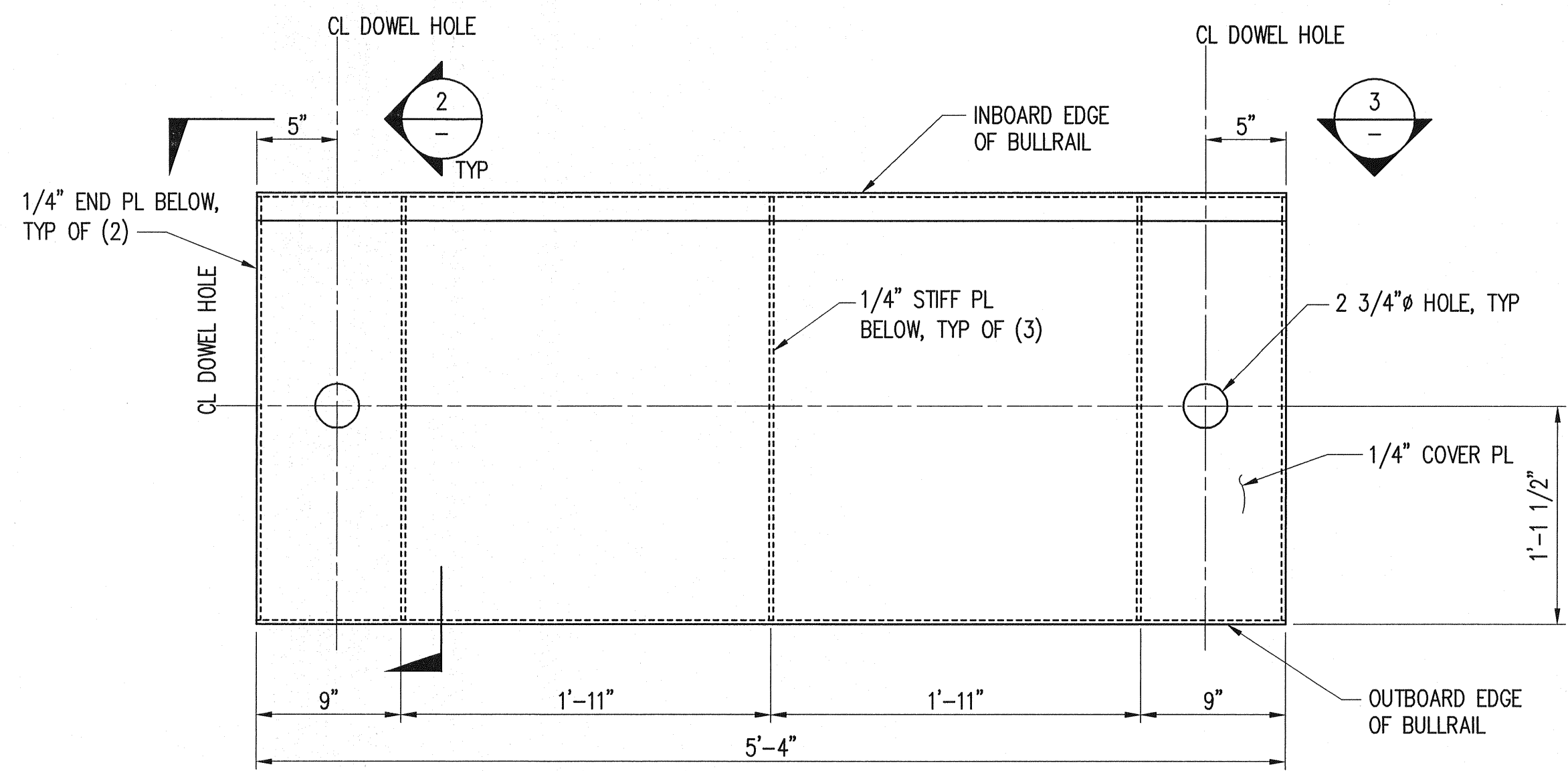


PORT OF TACOMA  
EAST BLAIR ONE WHARF  
SSP VAULT DETAILS

EP-6305  
SHEET 168 OF 215  
CONTRACT NUMBER: 068018  
DRAWING NUMBER: E2623  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
COUNTY: TACOMA  
DRAWING SCALE: AS SHOWN

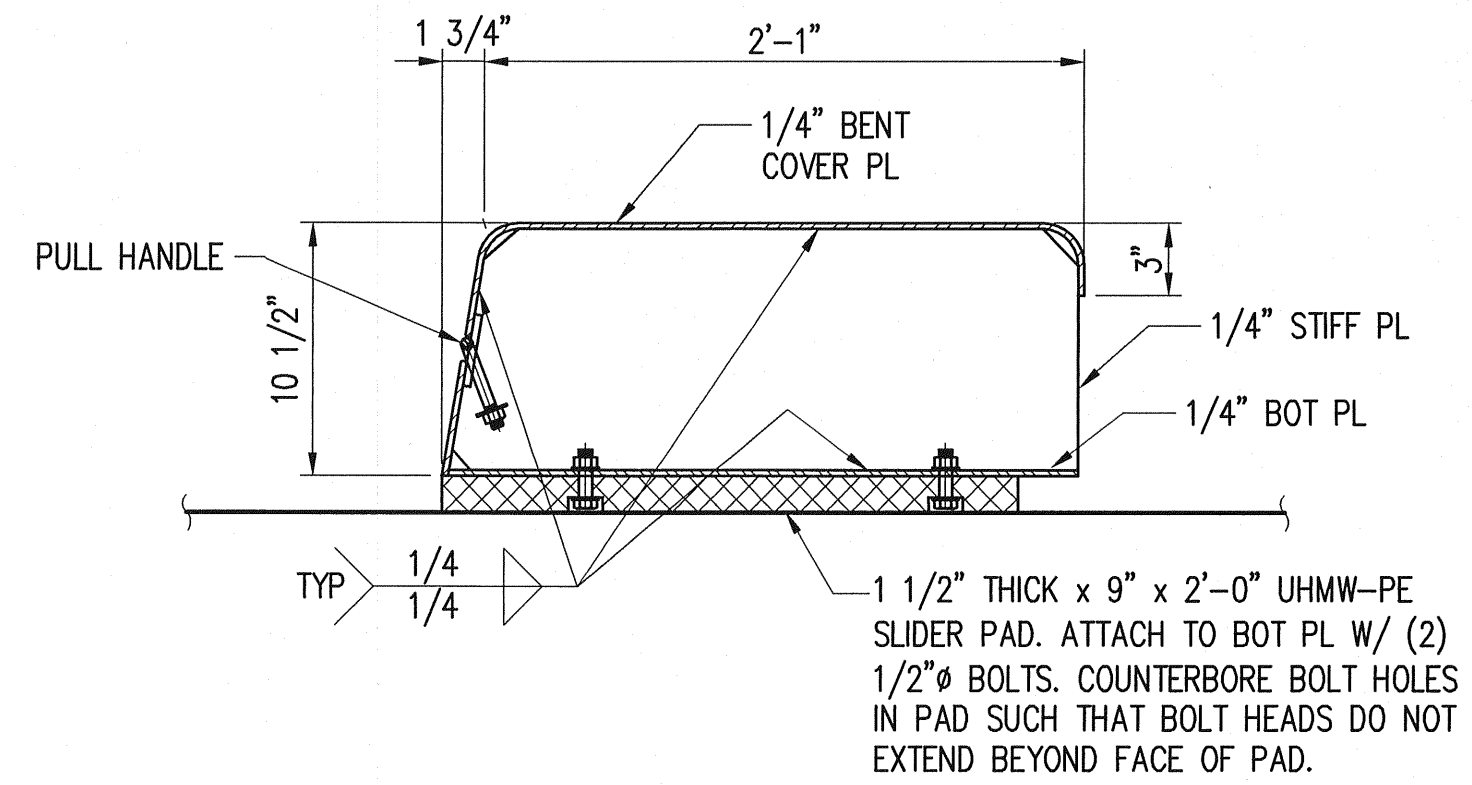
BID SET



**PLAN - STEEL REMOVABLE BULLRAIL**

SCALE: 1 1/2"=1'-0"

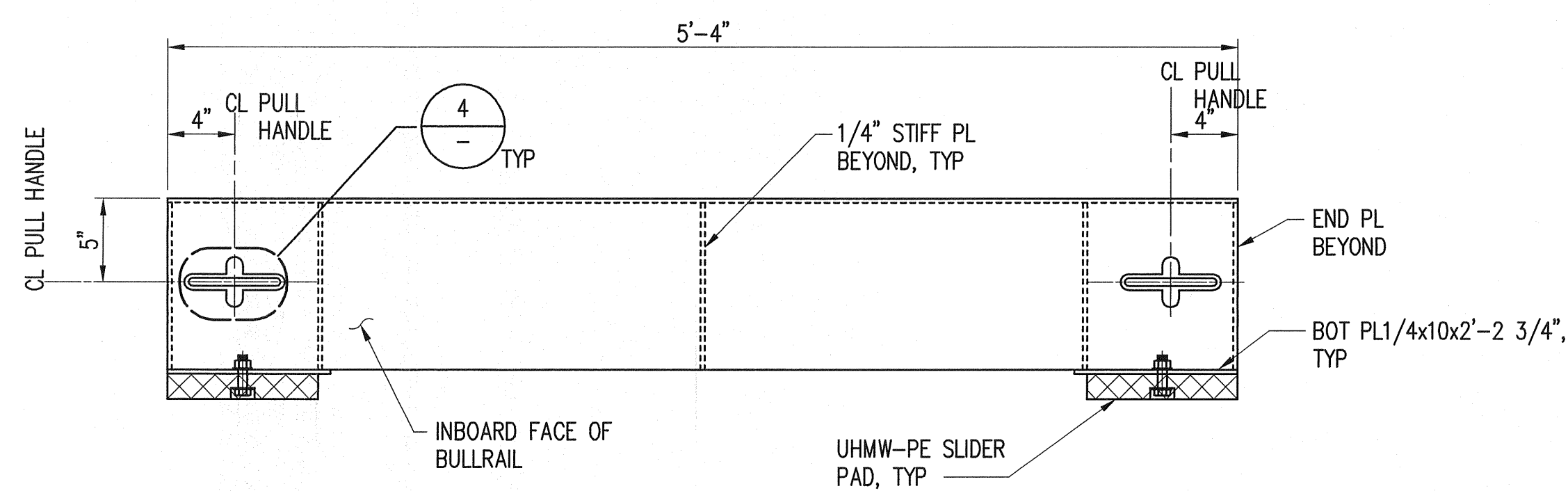
1  
S35



**SECTION**

SCALE: 1 1/2"=1'-0"

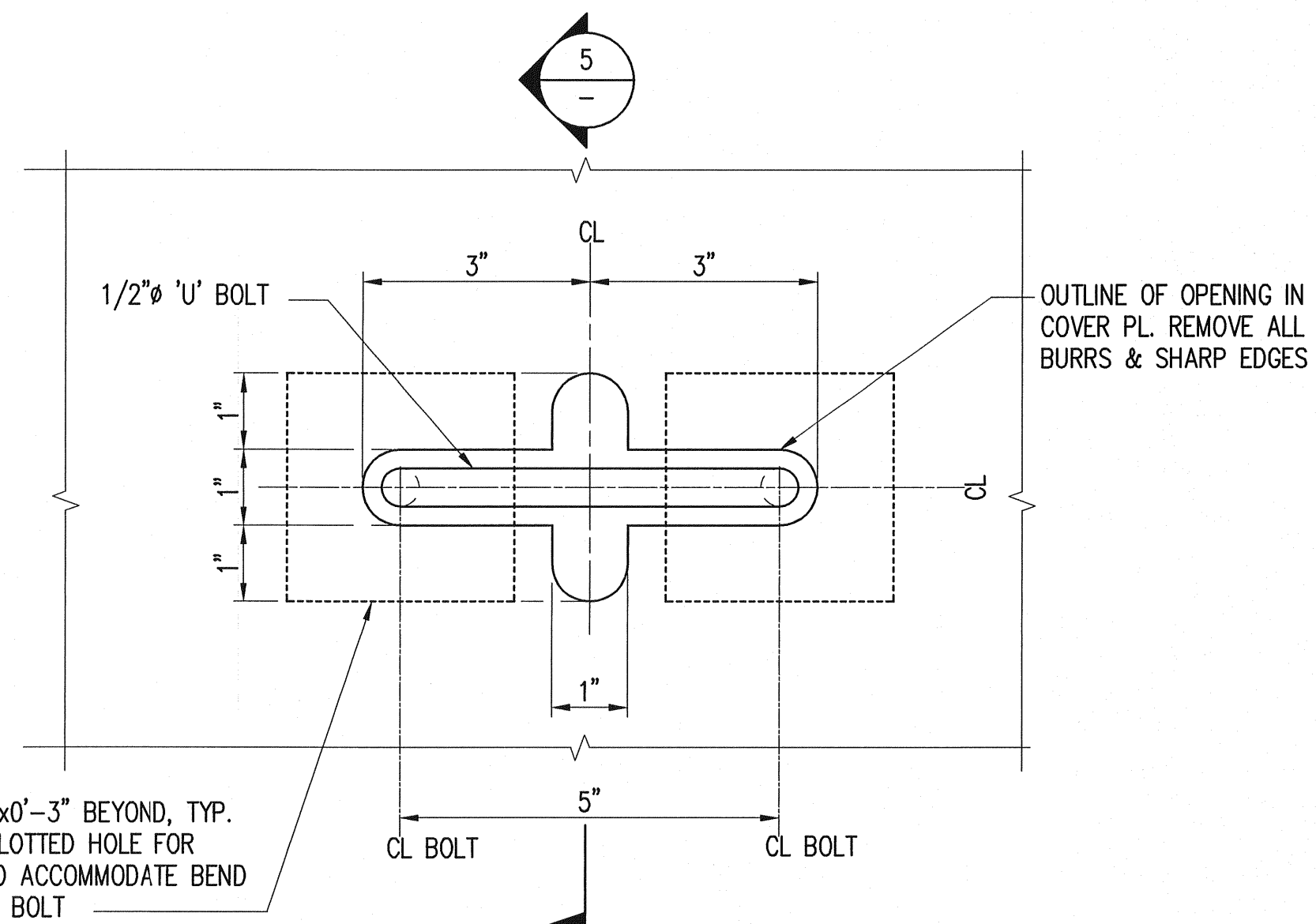
2  
-



**SECTION**

SCALE: 1 1/2"=1'-0"

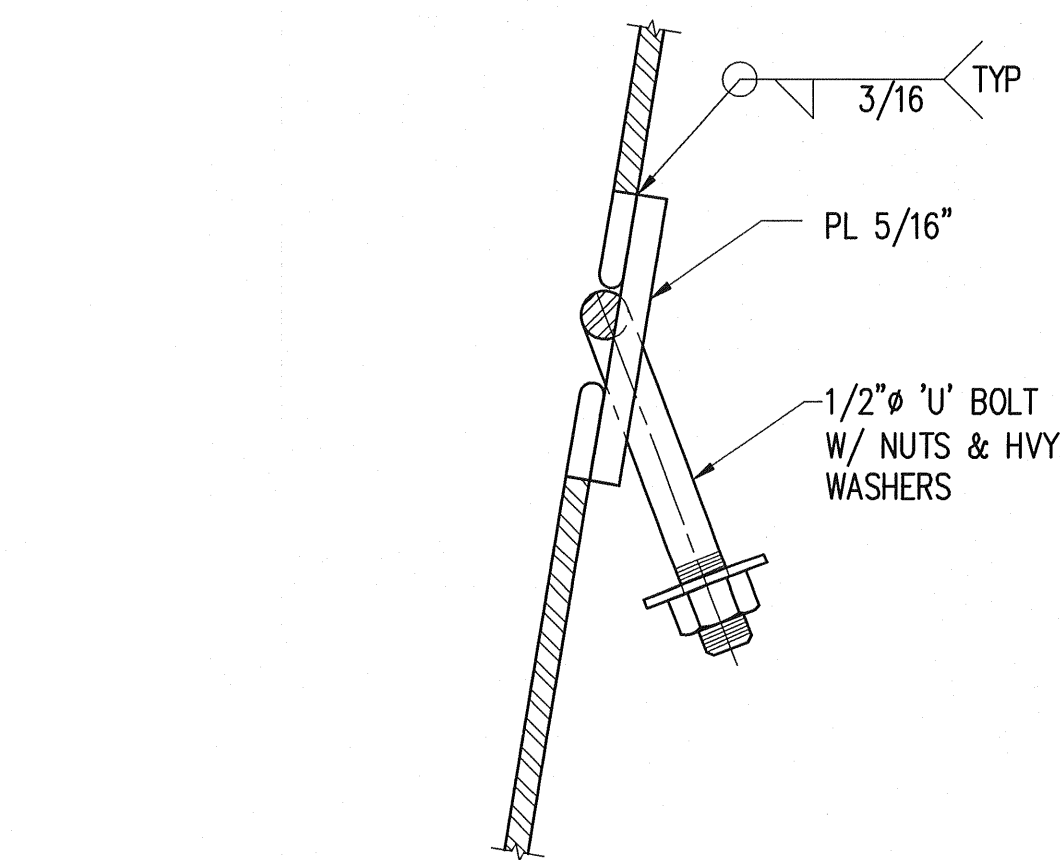
3  
-



**PULL HANDLE DETAIL**

SCALE: 6"=1'-0"

4  
-



**SECTION**

SCALE: 6"=1'-0"

5  
-

**NOTES:**

1. SHOP APPLY MARINE COATING TO STEEL REMOVABLE BULLRAIL PER SPECIFICATIONS.
2. THE STEEL REMOVABLE BULLRAIL IS INTENDED TO BE SECURED IN PLACE BY THE DOWEL PINS SHOWN ON 5/S35. OPENING OF SOME OF THE SSP VAULT LIDS REQUIRES THAT THE BULLRAIL SECTION BE REMOVED. REMOVAL OF THE BULLRAIL IS INTENDED TO OCCUR BY REMOVING THE DOWEL PINS AND SLIDING THE BULLRAIL ACROSS THE WHARF DECK. UHMW PADS ARE PROVIDED TO REDUCE THE FORCE REQUIRED TO SLIDE THE BULLRAIL. THE ESTIMATED TOTAL WEIGHT OF THE STEEL BULLRAIL IS 335 POUNDS. THE ESTIMATED TOTAL PULLING/PUSHING FORCE REQUIRED TO SLIDE THE STEEL BULLRAIL IS 168 POUNDS, APPLIED HORIZONTALLY, BASED ON AN ASSUMED COEFFICIENT OF FRICTION OF 0.5 BETWEEN UHMW AND ASPHALT.

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

PORT OF TACOMA  
USA

RKJ 05/2007  
CHECKED BY - DATE  
GGN 05/2007  
PROJECT ENGR. - DATE

APPROVED  
M. Anderson  
CHIEF ENGINEER - DATE  
23 May 07

PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
DRAWING DATE: 05-21-2007  
PORT PARCEL: 17 & 18

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
STEEL REMOVABLE  
BULLRAIL DETAILS

EP-6305  
S51.2  
SHEET 169 OF 215  
CONTRACT NUMBER: 068018  
E NUMBER: E2623  
PHASE: BID SET

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

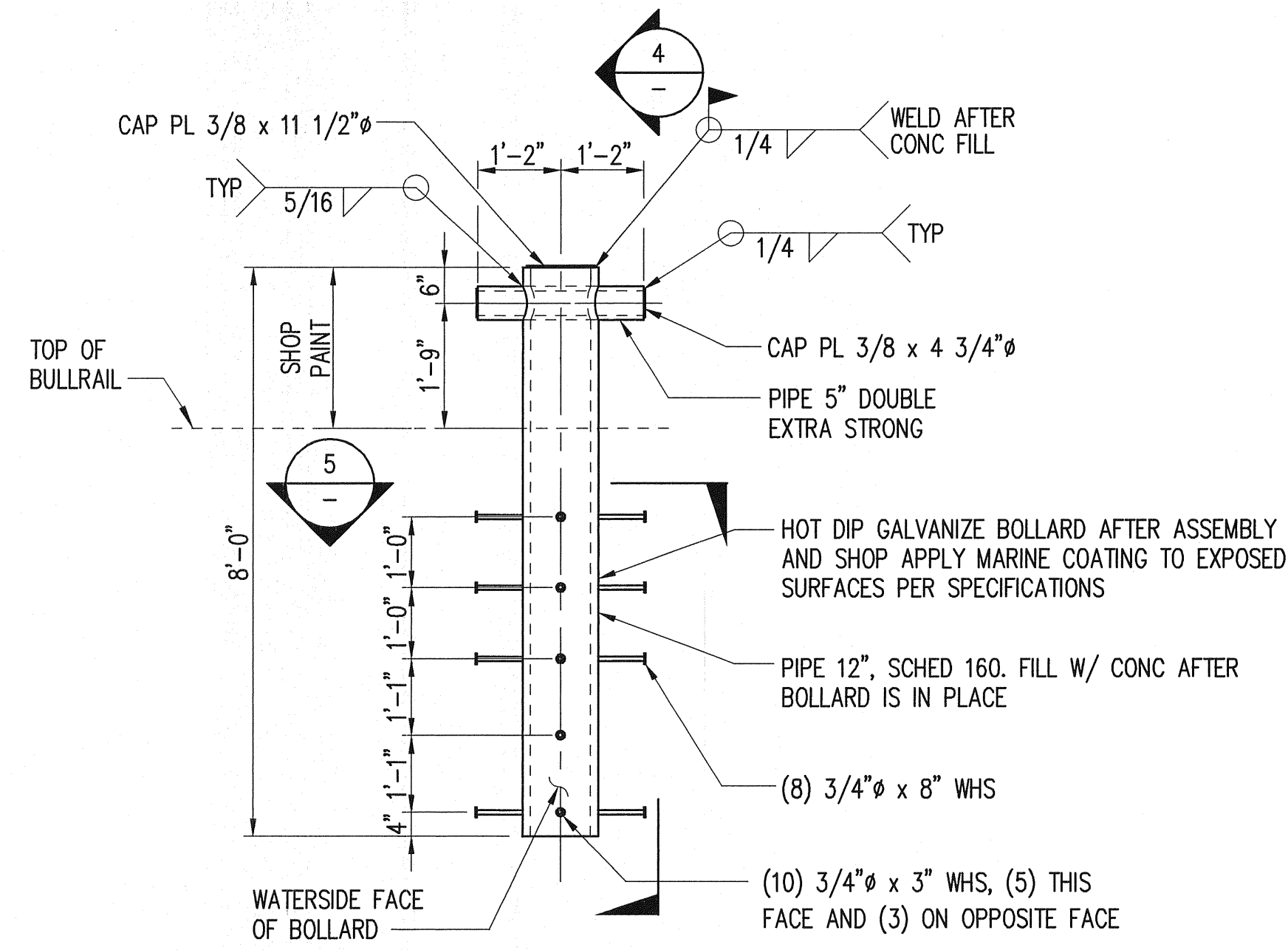
**kpf**

MARK REVISION BY: DATE:

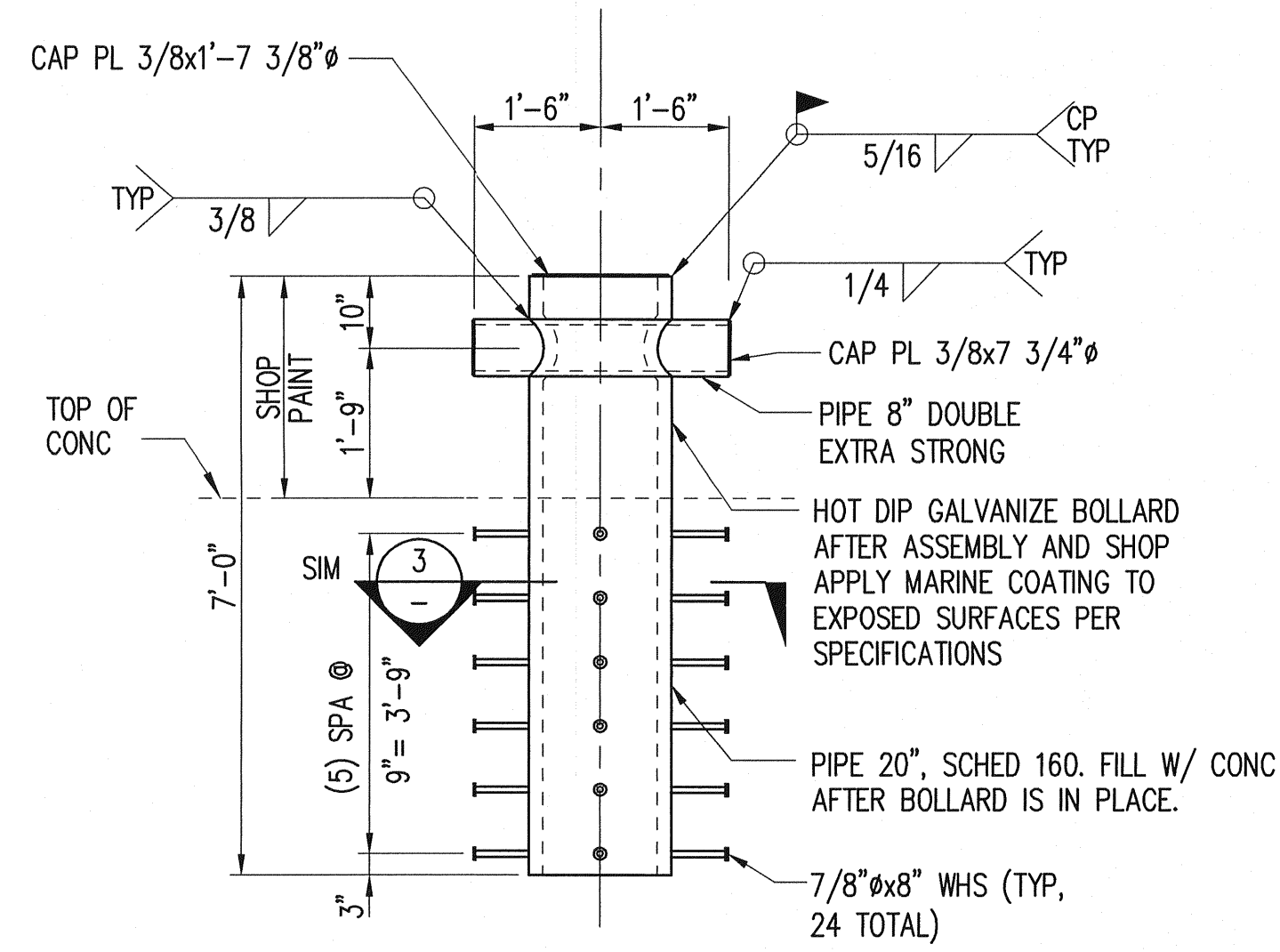
TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ: VERT:  
DRAWING SCALE: AS SHOWN

EXPIRES 9/1/08

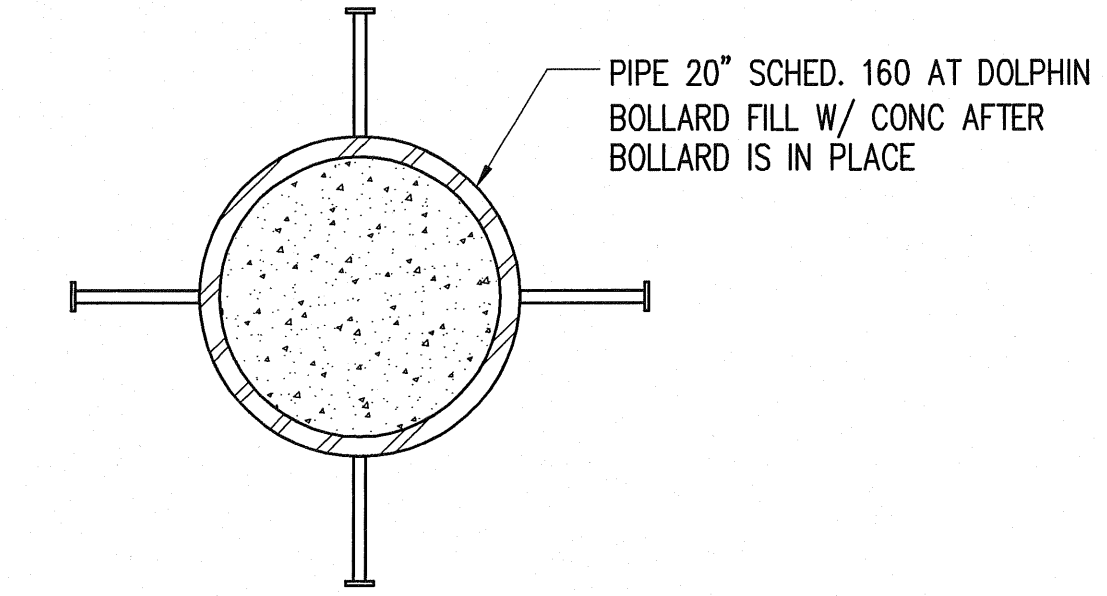
**BID SET**



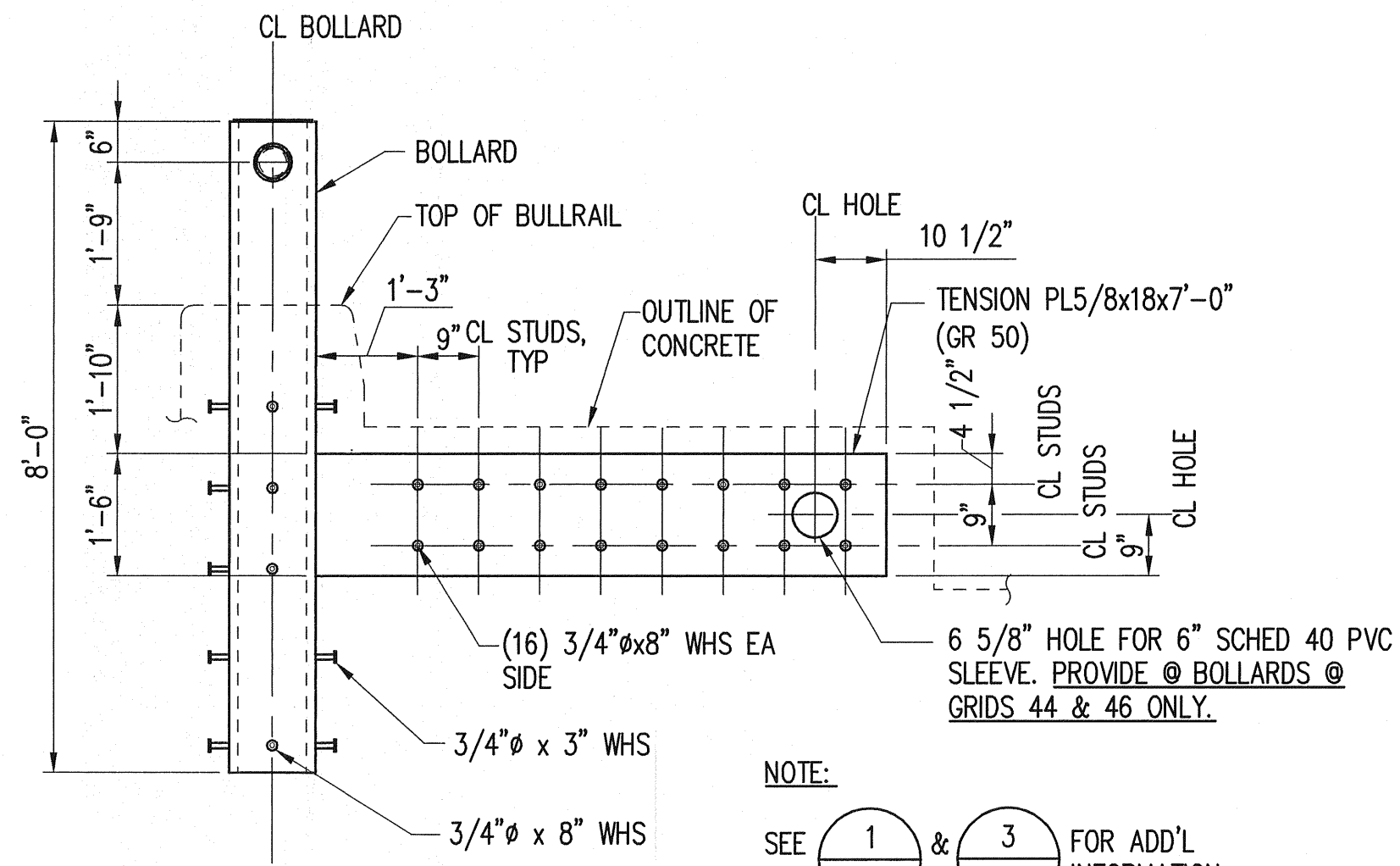
**DETAIL - TYP WHARF BOLLARD** 1  
SCALE: 1/2"=1'-0" S3, S34



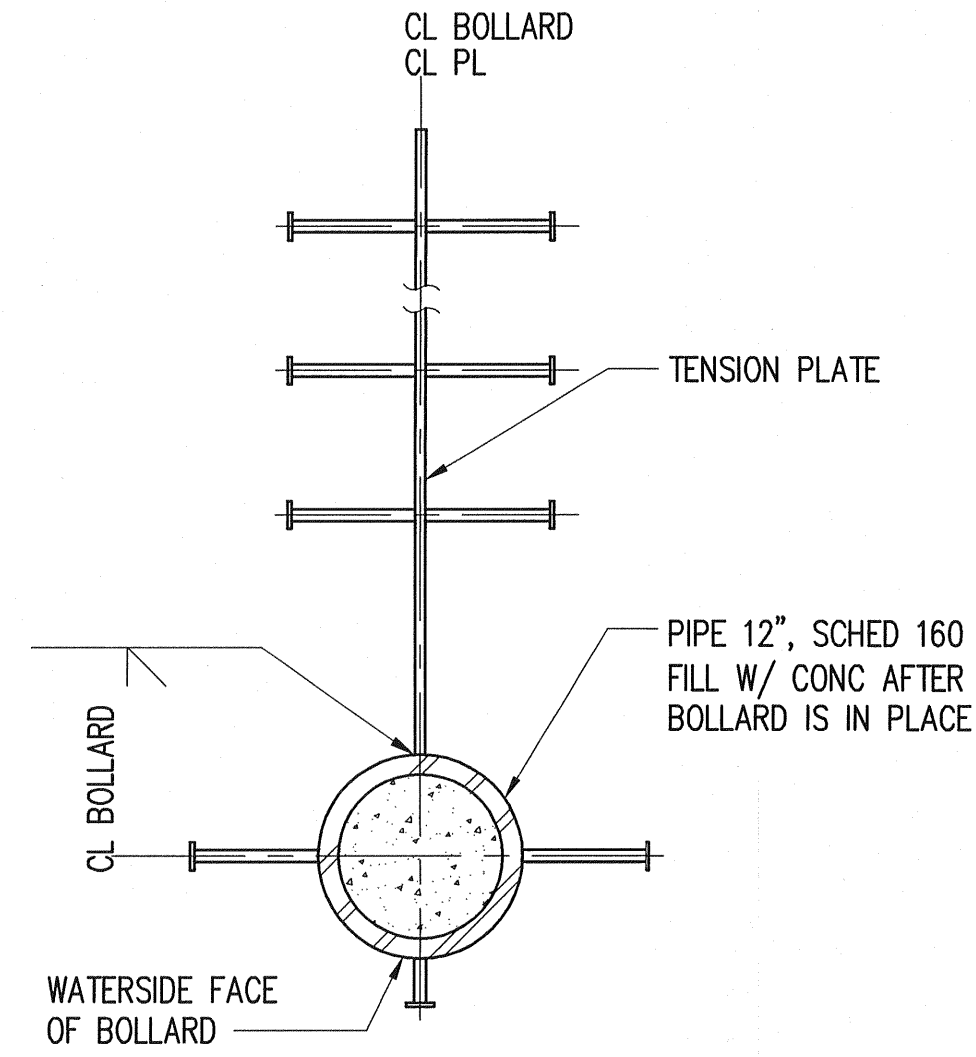
**DETAIL - DOLPHIN BOLLARD** 2  
SCALE: 1/2"=1'-0" S57, S57.1



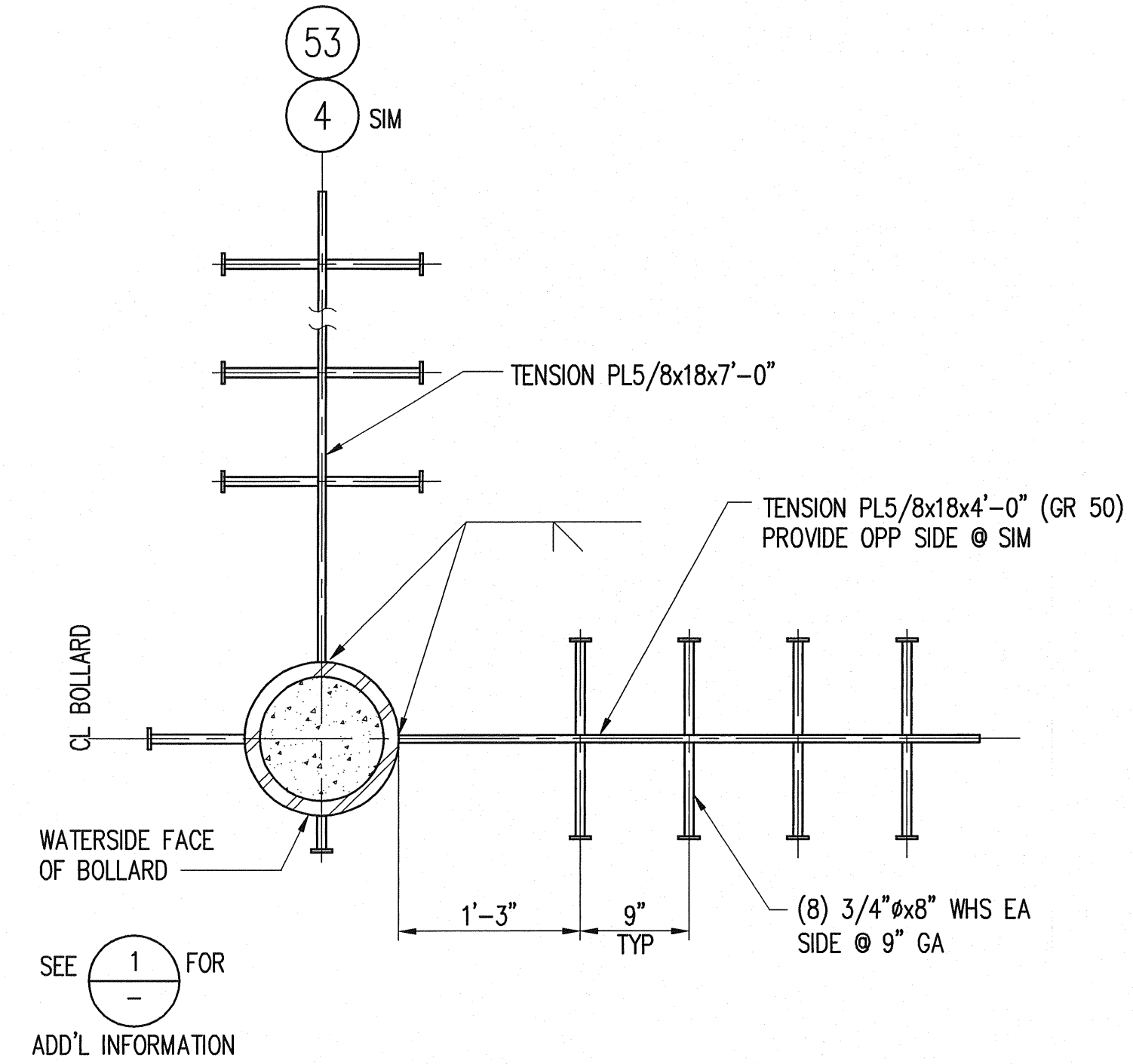
**SECTION - DOLPHIN BOLLARD** 3  
SCALE: 1"=1'-0"



**DETAIL - WHARF BOLLARD** 4  
SCALE: 1/2"=1'-0"



**SECTION - WHARF BOLLARD** 5  
SCALE: 1"=1'-0"



**DETAIL - WHARF CORNER BOLLARD @ GRIDS 4 & 53** 6  
SCALE: 1"=1'-0" S34.1

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

05/2007 - DATE  
05/2007 - DATE

APPROVED  
CHIEF ENGINEER - DATE  
13 MAY 07

DRAWING DATE: 05-21-2007  
PORT ADDRESS: 3340 E. ALEXANDER AVENUE  
PORT PARCEL: 1, 2 & 18

EDWARDS 9/10/08

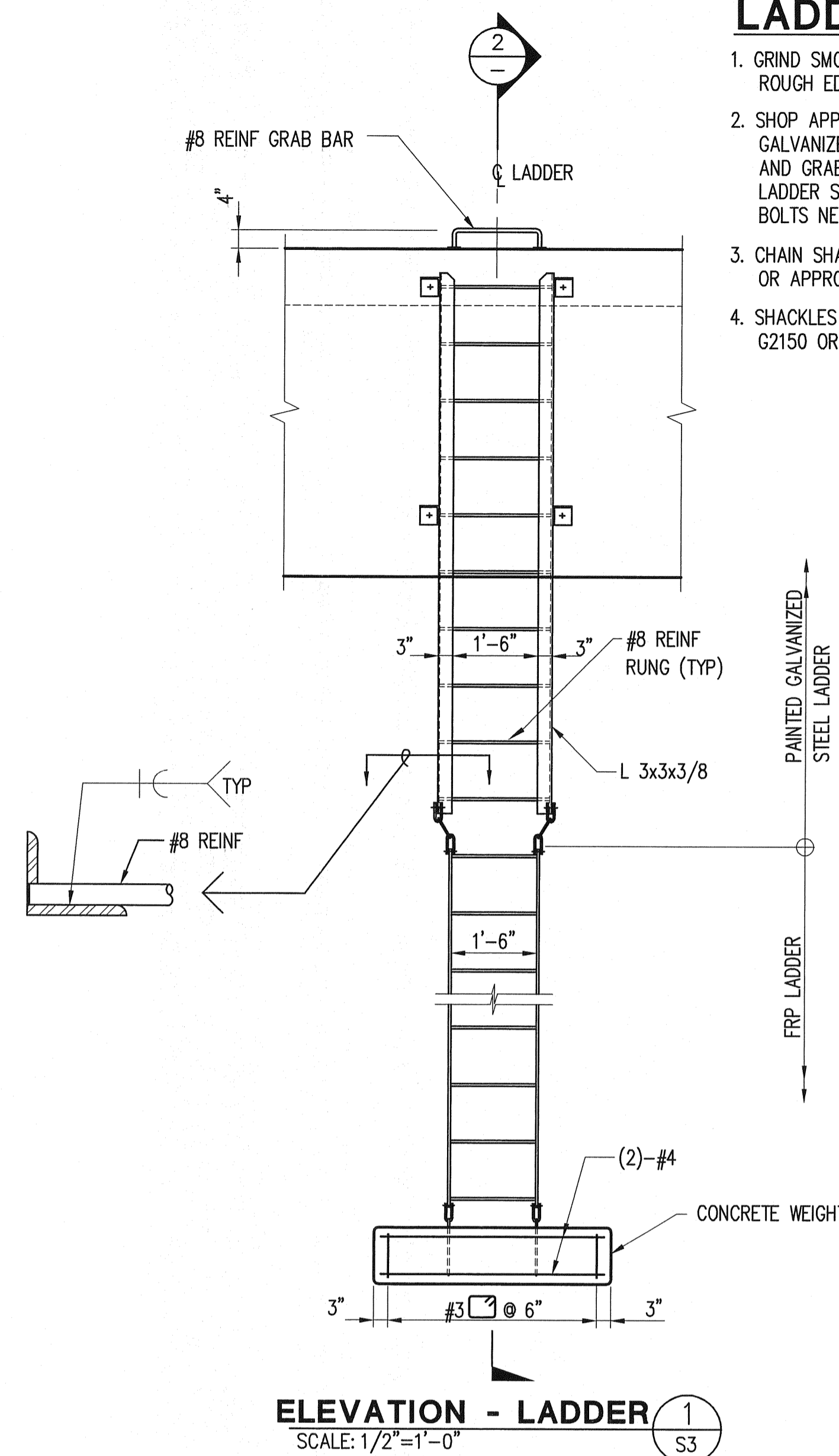
PORT OF TACOMA  
EAST BLAIR ONE WHARF  
MISCELLANEOUS STEEL DETAILS

EP-6305  
S52.0  
SHEET 170 OF 215

CONTRACT NUMBER: 08801B  
E NUMBER: E2223  
PHASE: BID SET

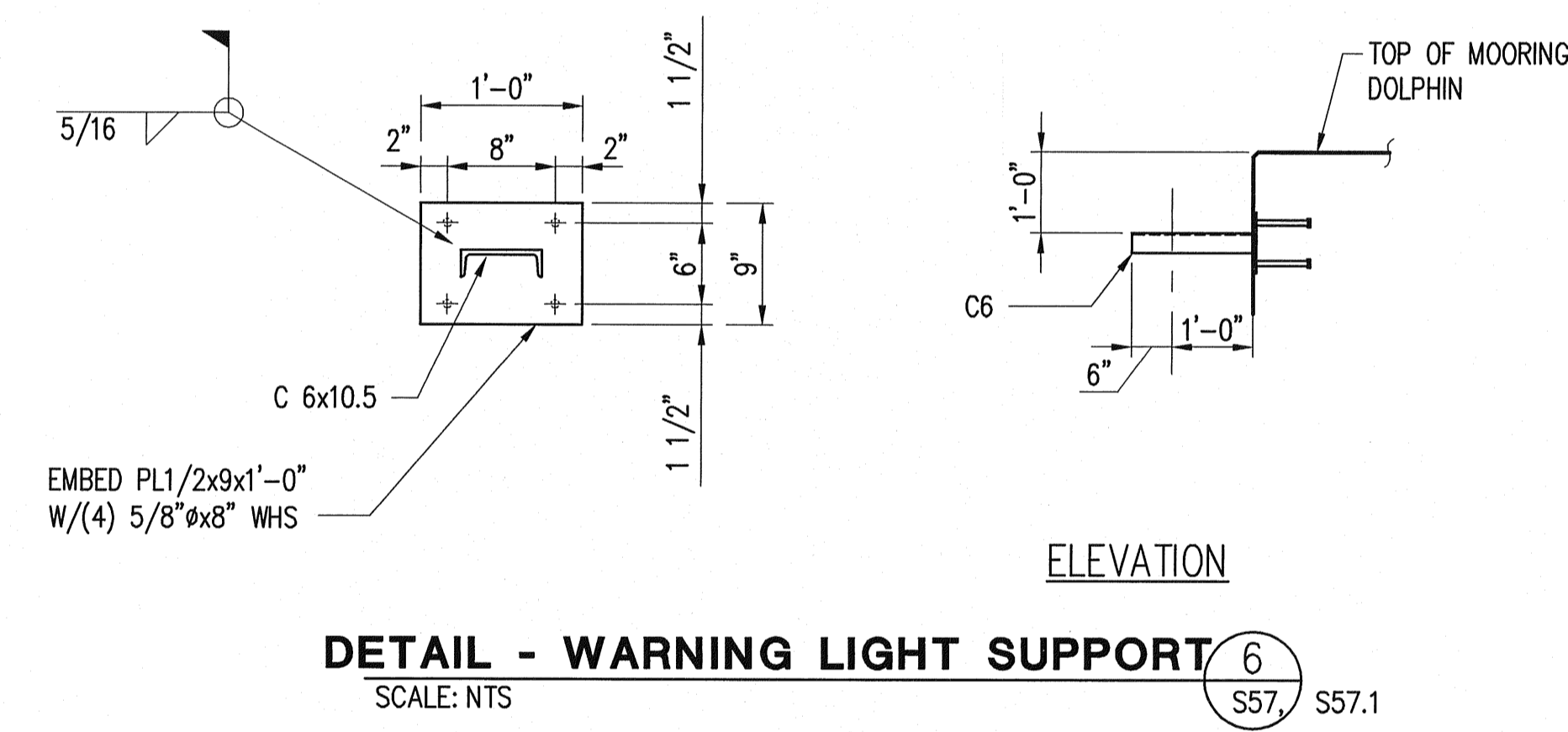
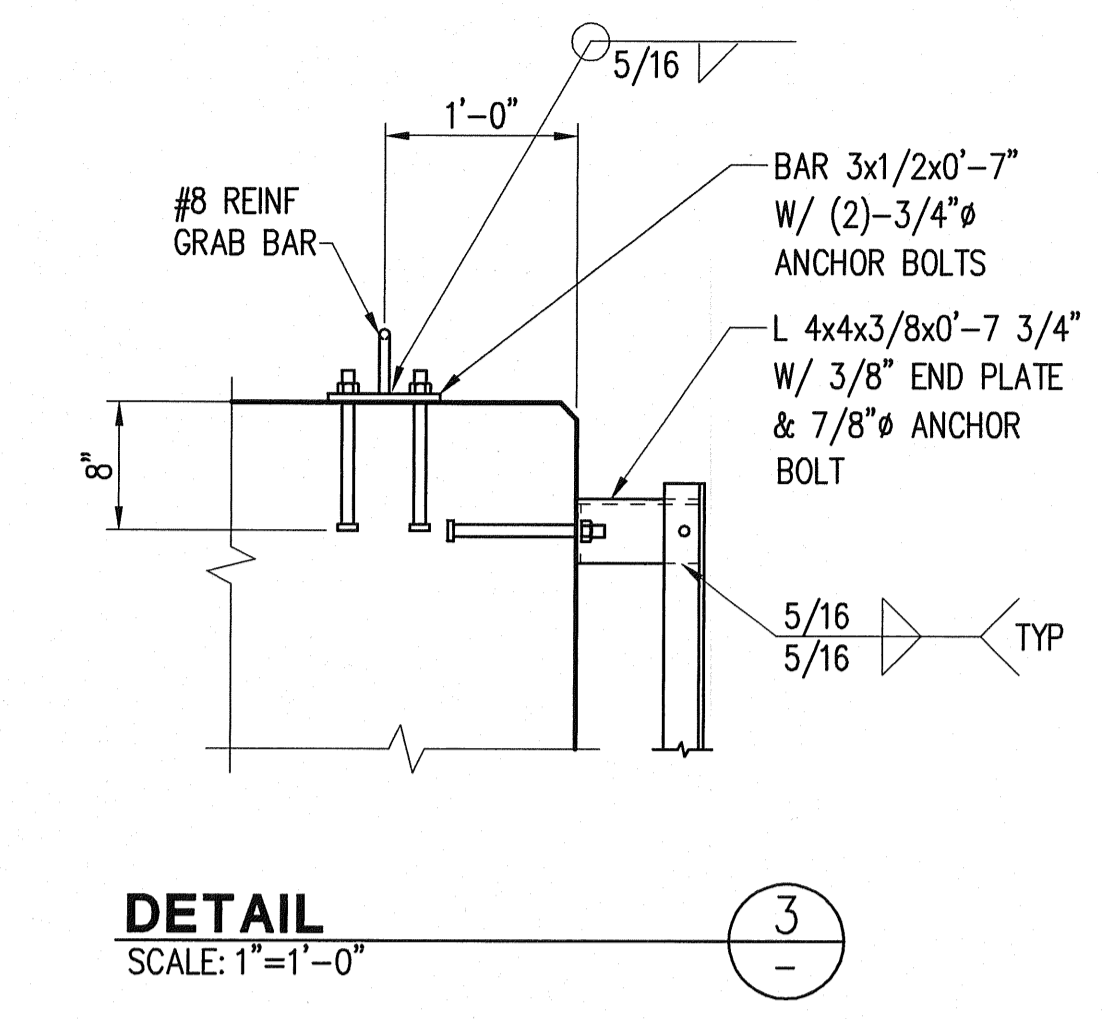
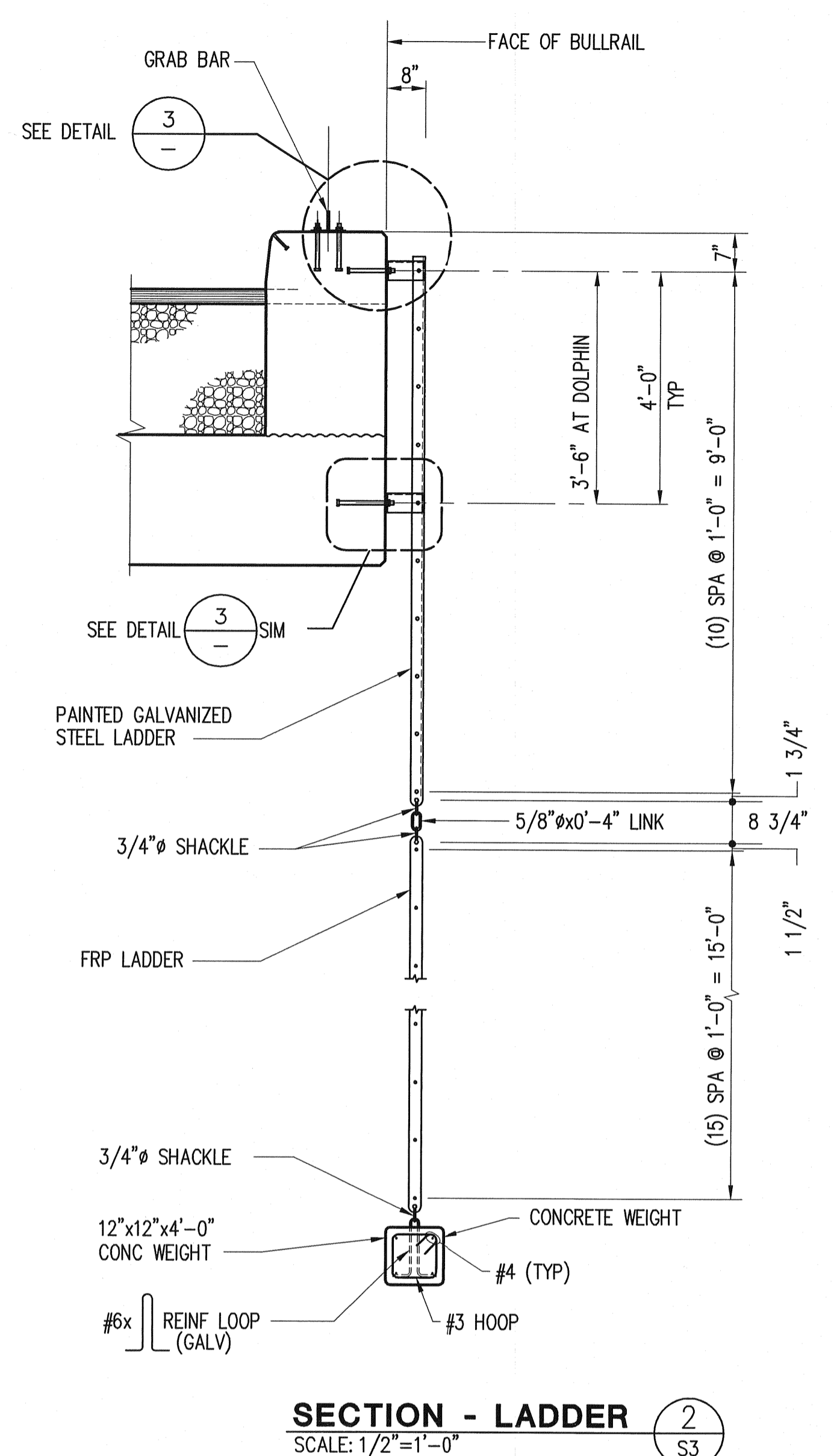
MARK	REVISION	BY:	APPROVED:	DATE:

BID SET



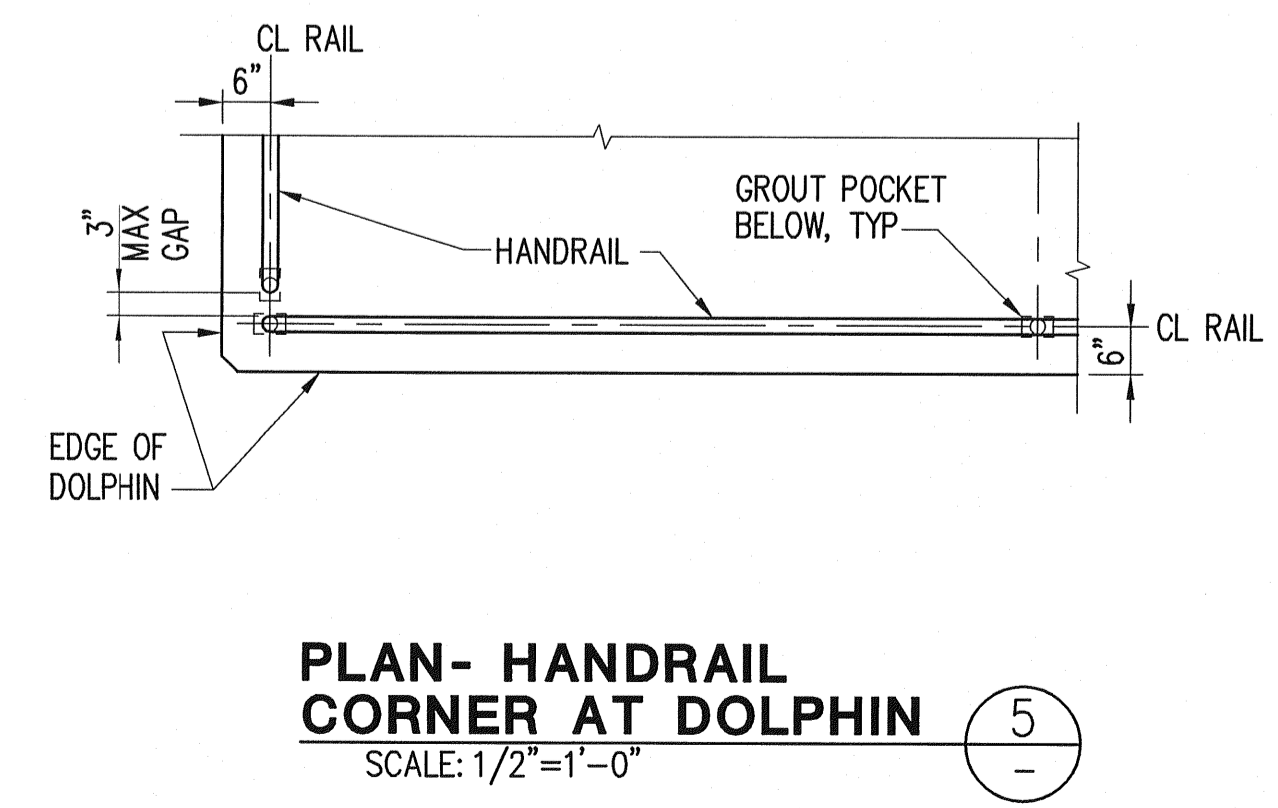
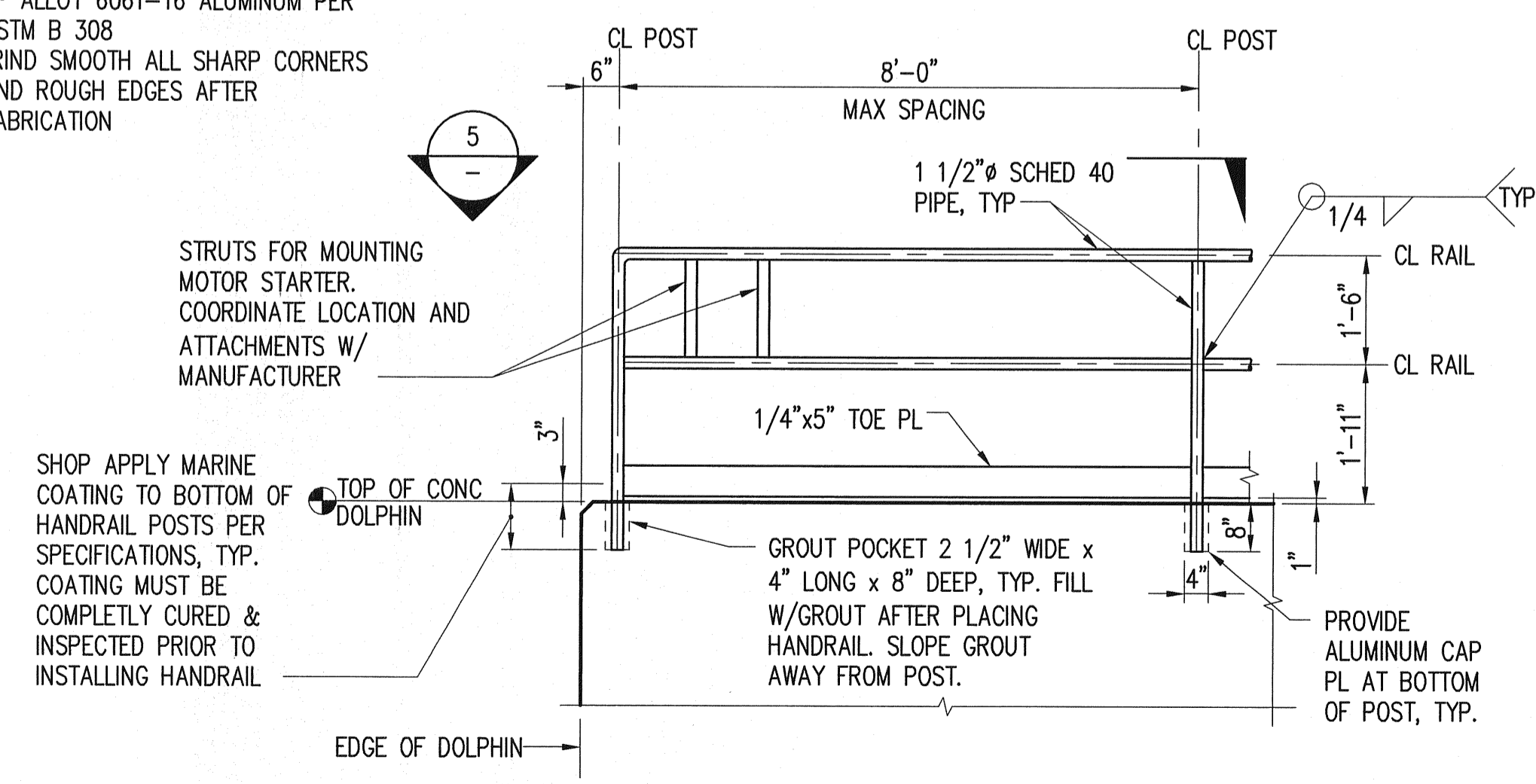
**LADDER NOTES:**

1. GRIND SMOOTH ALL SHARP CORNERS AND ROUGH EDGES AFTER FABRICATION.
2. SHOP APPLY MARINE COATING TO GALVANIZED STEEL PORTIONS OF LADDER AND GRAB BAR PER SPECIFICATIONS. LADDER SHACKLES, LINKS AND ANCHOR BOLTS NEED NOT BE PAINTED.
3. CHAIN SHALL BE CROSBY SPECTRUM 3, OR APPROVED EQUAL.
4. SHACKLES SHALL BE CROSBY BOLT-TYPE G2150 OR APPROVED EQUAL.



**NOTES:**

1. HANDRAIL SHALL BE CONSTRUCTED OF ALLOY 6061-T6 ALUMINUM PER ASTM B 308
2. GRIND SMOOTH ALL SHARP CORNERS AND ROUGH EDGES AFTER FABRICATION



PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0152

**k p o i**

PORT OF TACOMA USA

APPROVED: *H. Lopez* CHIEF ENGINEER - DATE: 23 Mar-07  
DRAWING DATE: 05-31-2007  
PORT ADDRESS: 2340 F. ALEXANDER AVENUE  
PORT PARCEL: 17 & 18

REVISION: MARK: REVISION: DATE: BY: APPROVED: DATE:

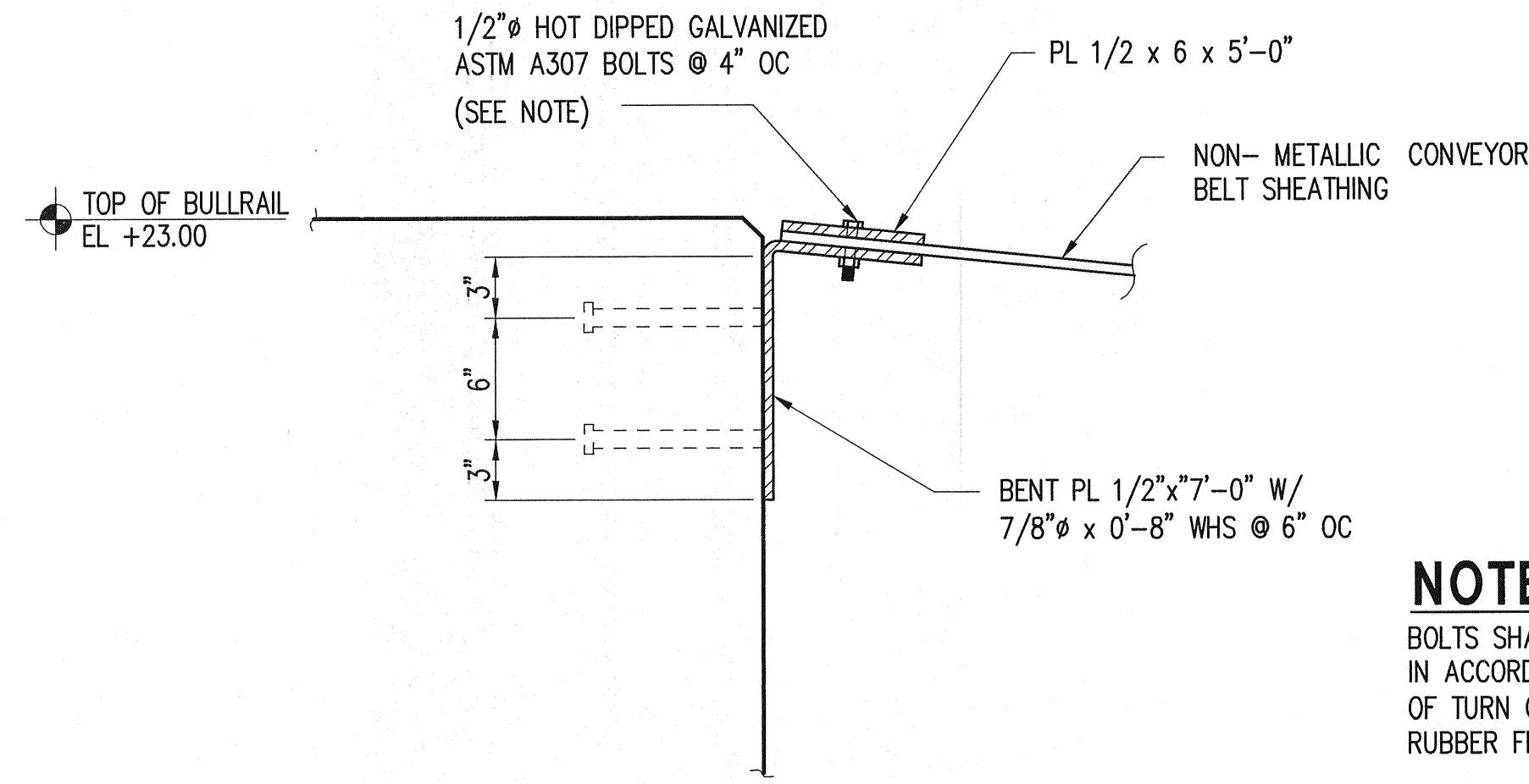
EP-6305  
**S53.0**  
SHEET 171 OF 215  
CONTRACT NUMBER: 068018  
E NUMBER: E2623  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORZ: VERT:  
DRAWING SCALE: AS NOTED

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
MISCELLANEOUS STEEL DETAILS

**BID SET**

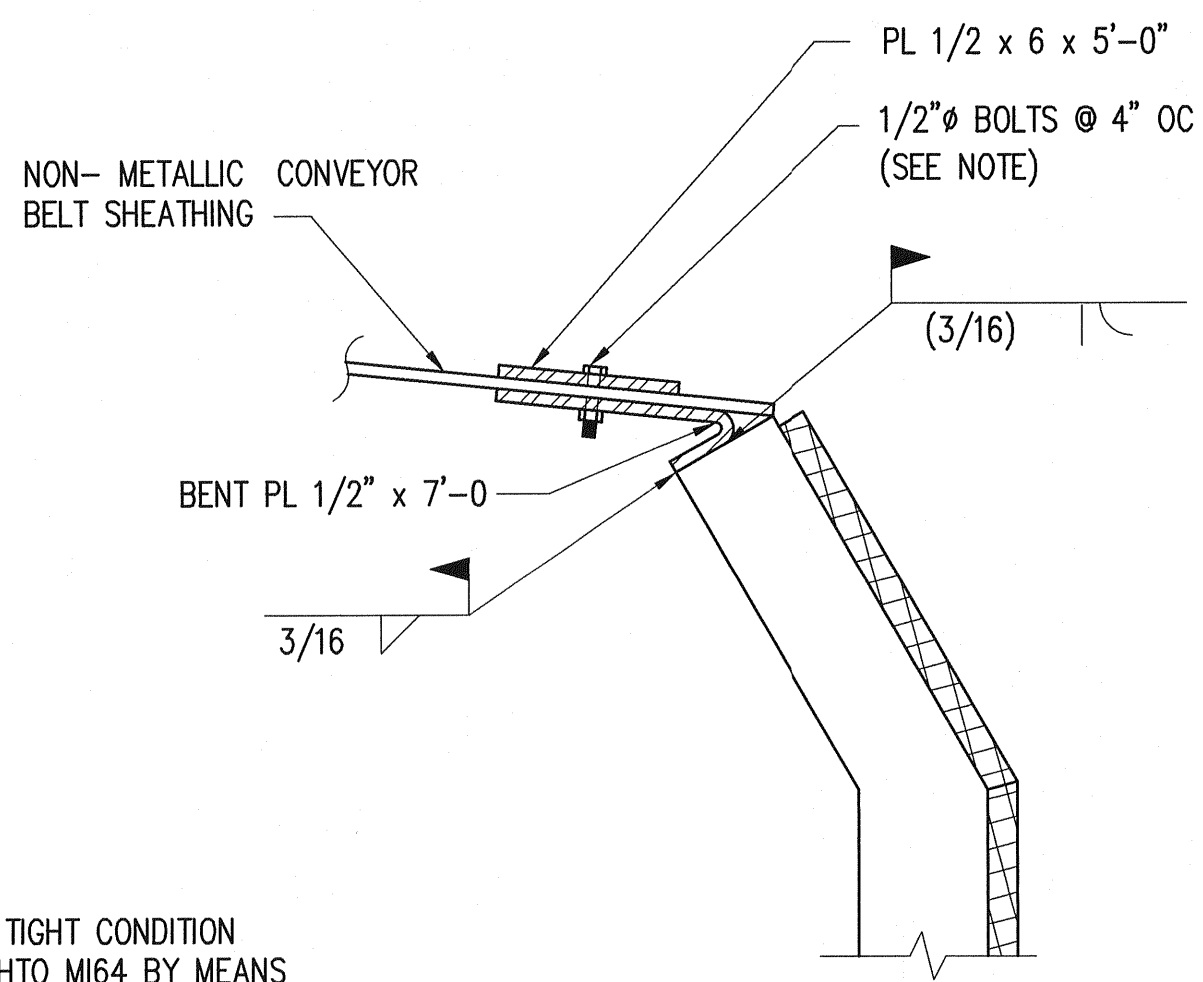




**DETAIL - TOP FOULING CLAMP**

SCALE: 1 1/2"=1'-0"

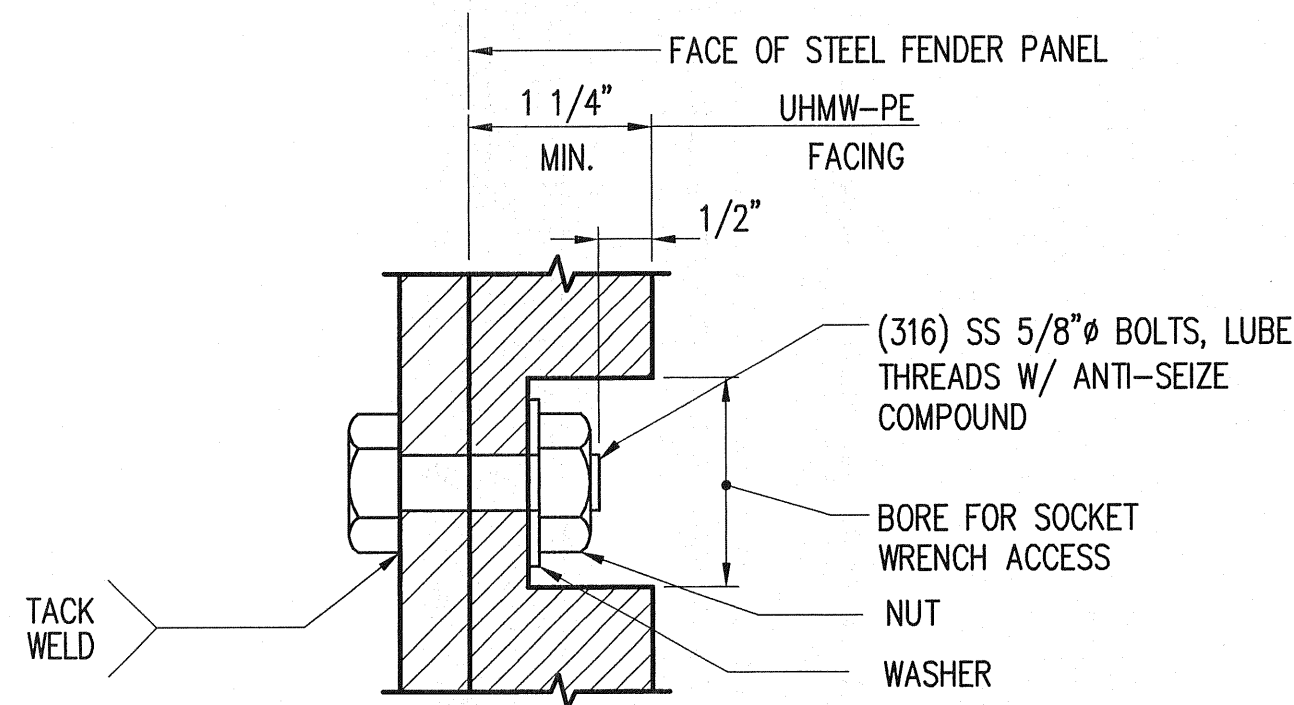
1  
S54



**DETAIL - BOTTOM FOULING CLAMP**

SCALE: 1 1/2"=1'-0"

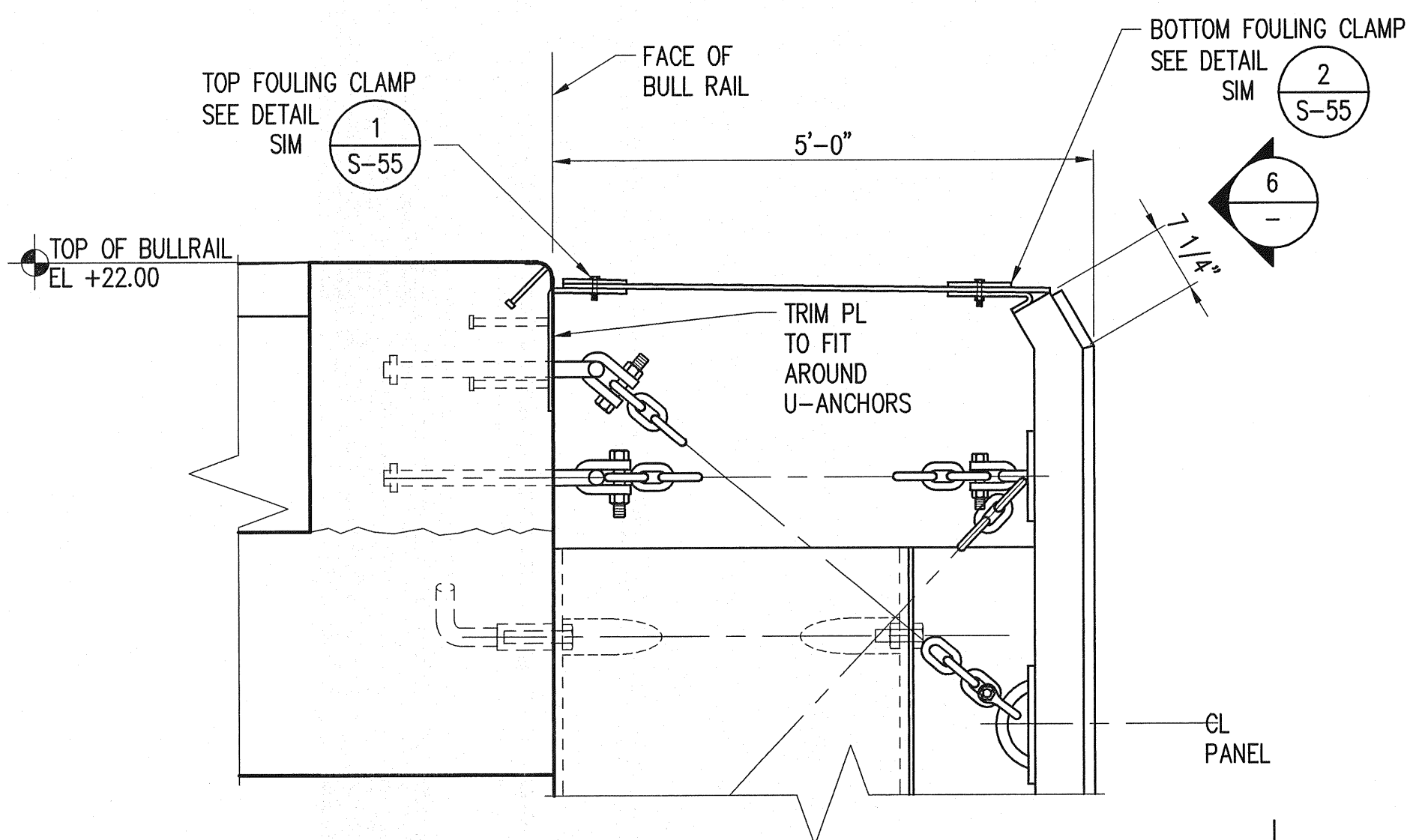
2  
S54



**DETAIL - ATTACHMENT OF FACING**

SCALE: NTS

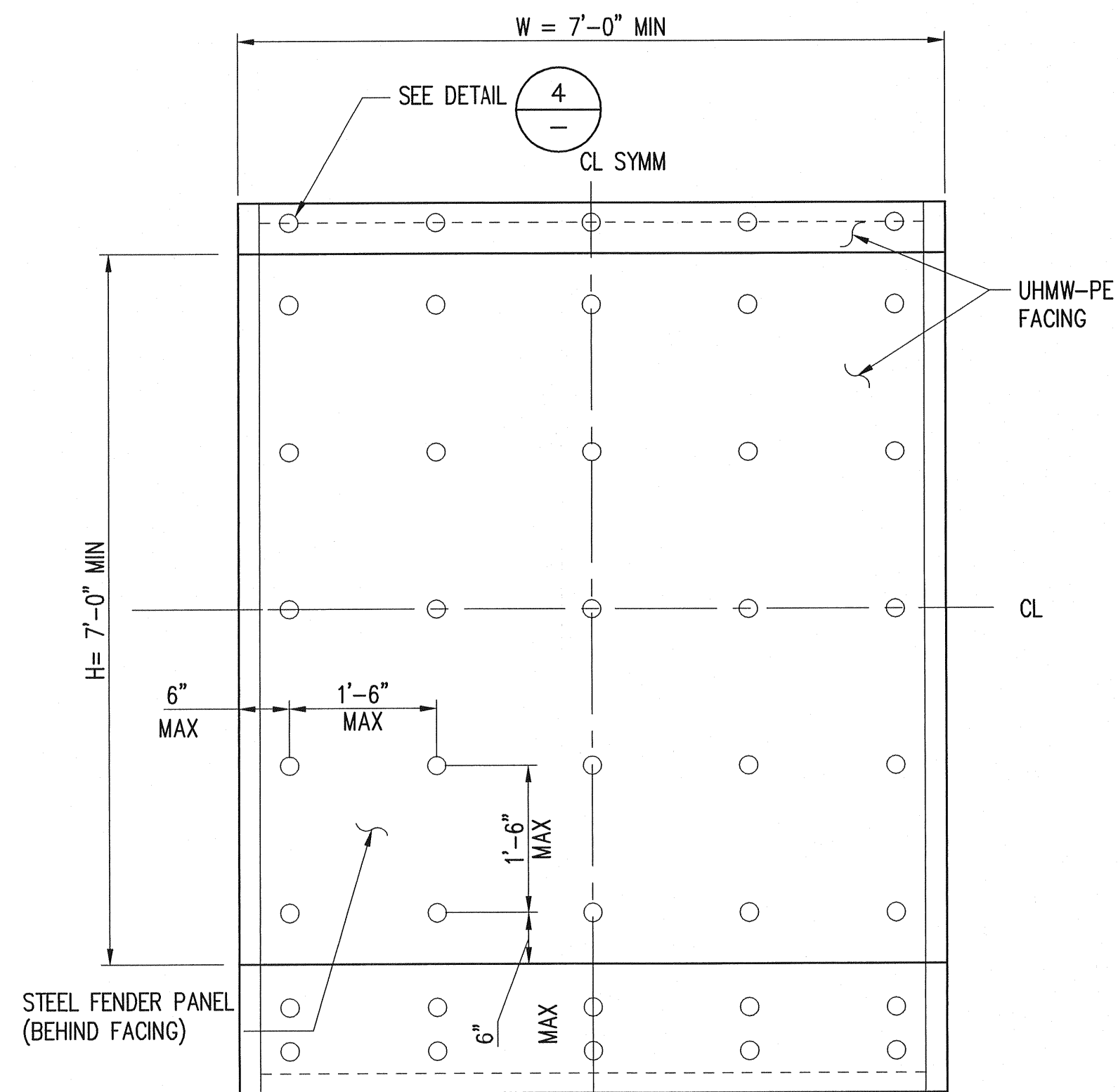
4  
-



**SECTION - FENDER @ GRIDS 9, 12 & 14**

SCALE: 3/4"=1'-0"

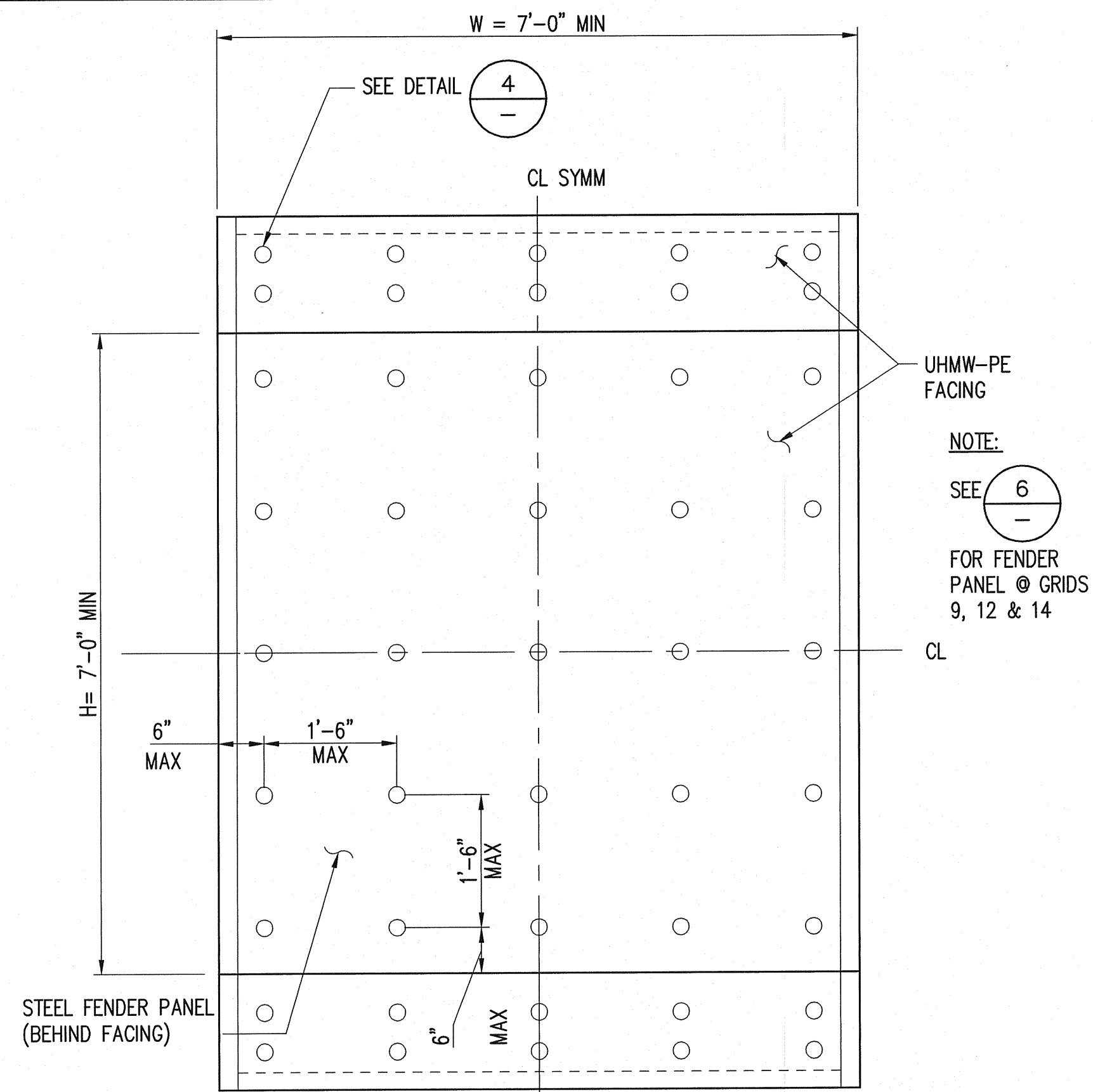
5  
S54



**ELEVATION - FENDER PANEL @ GRIDS 9, 12 & 14**

SCALE: 3/4"=1'-0"

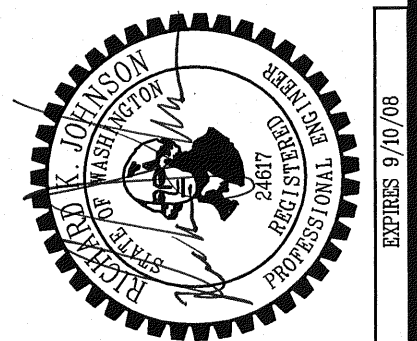
6  
-



**ELEVATION - FENDER PANEL**

SCALE: 3/4"=1'-0"

3  
S54



APPROVED: *H. J. [Signature]*  
 CHIEF ENGINEER - DATE: 05/21/2007  
 PORT ADDRESS: 2340 E ALEXANDER AVENUE  
 PORT PARCEL: 17 & 18

REVISION: MARK  
 CHECKED BY: GGN - DATE: 05/20/2007  
 PROJECT ENGR. - DATE: 05/20/2007

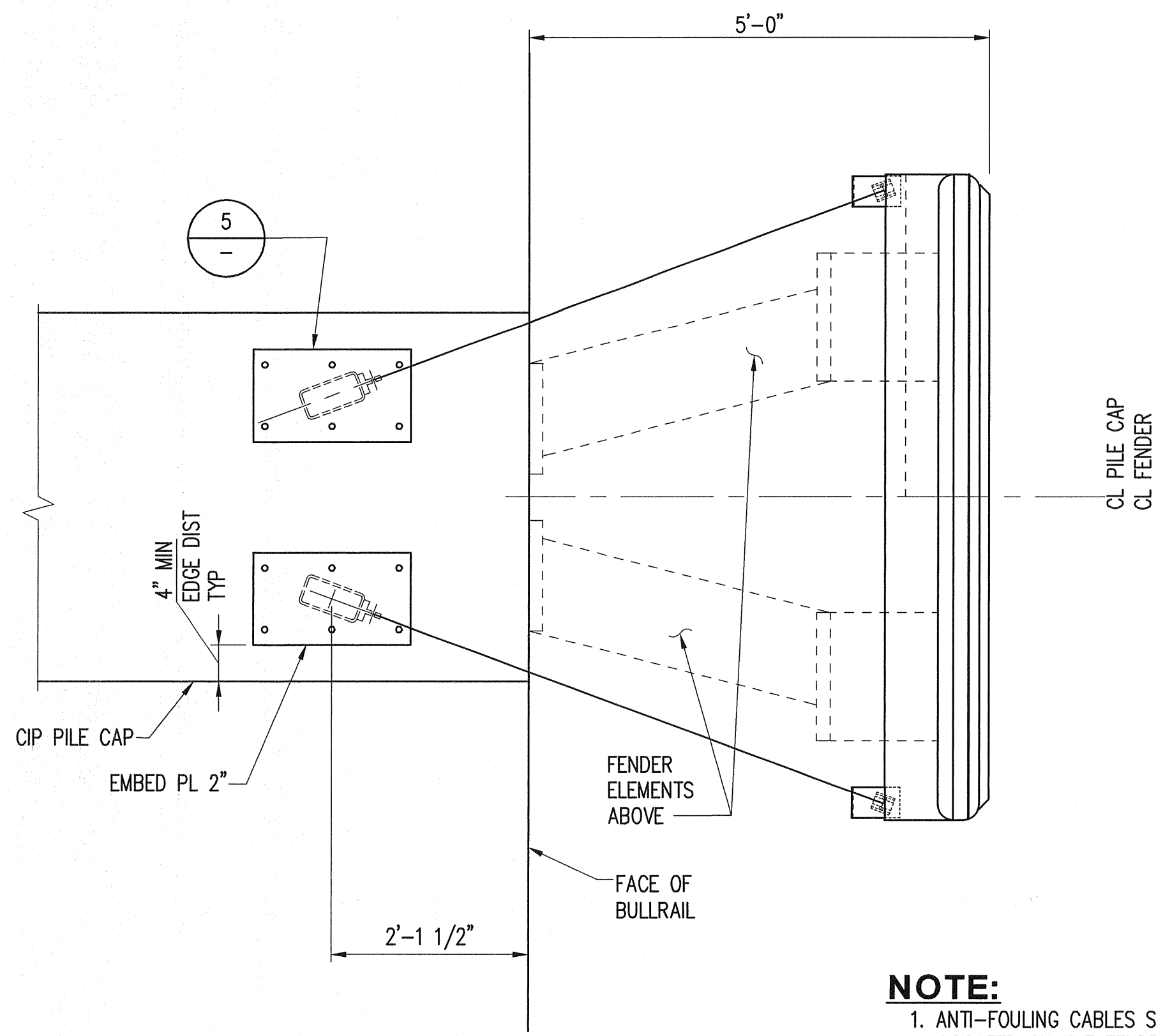
PORT OF TACOMA  
 CONSULTING ENGINEERS  
 1201 Pacific Avenue, Suite 800  
 Tacoma, Washington 98402  
 (253) 396-0160 Fax (253) 396-0162

PORT OF TACOMA P.O. BOX 1837  
 TACOMA, WA 98401 253-383-5841

PORT OF TACOMA  
 EAST BLAIR ONE WHARF  
 FENDER SYSTEM DETAILS

EP-6305  
**S55.0**  
 SHEET 173 OF 215  
 CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

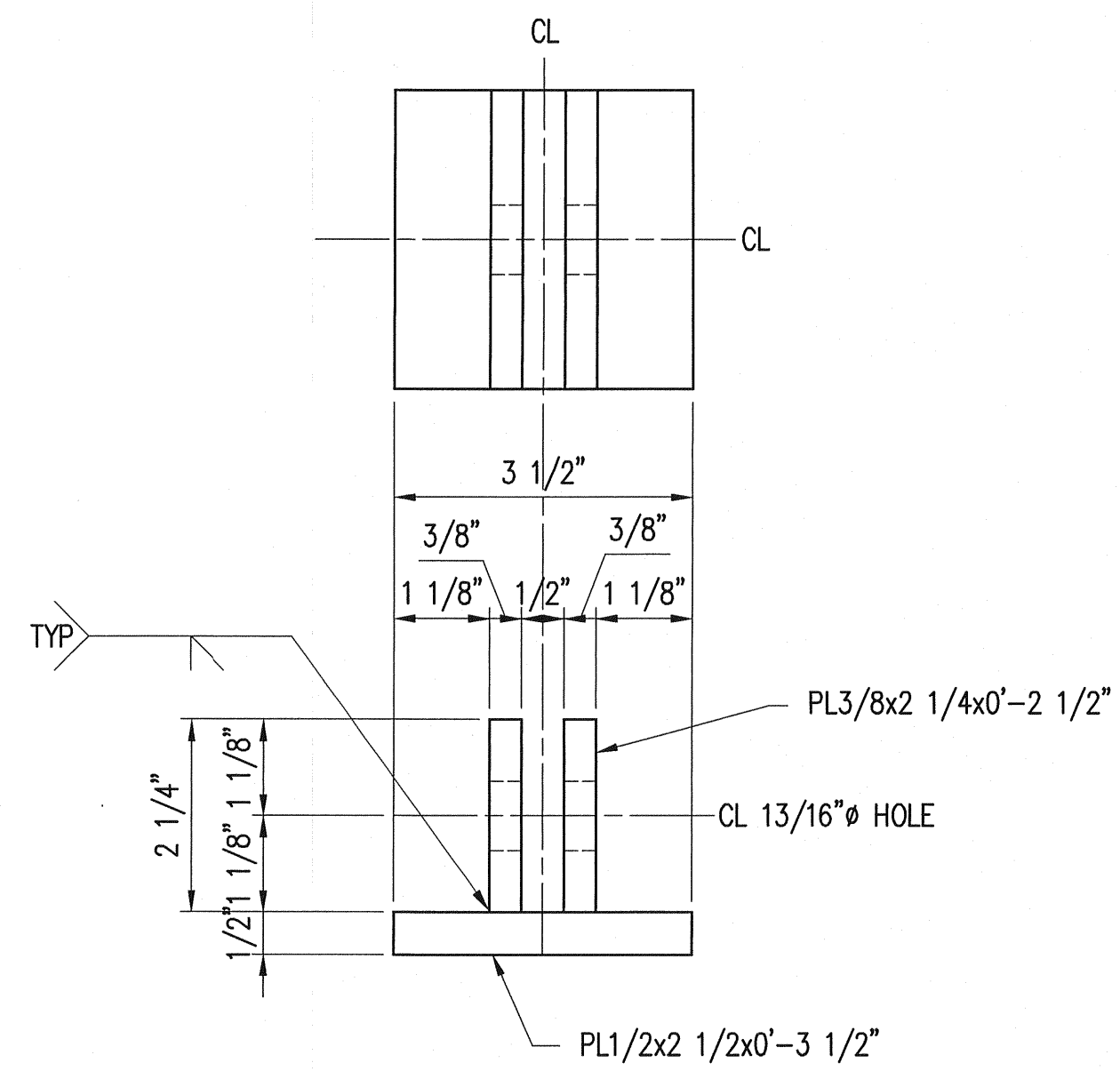
BID SET



**SECTION - ANTI-FOULING CABLES**  
SCALE: 3/4"=1'-0"

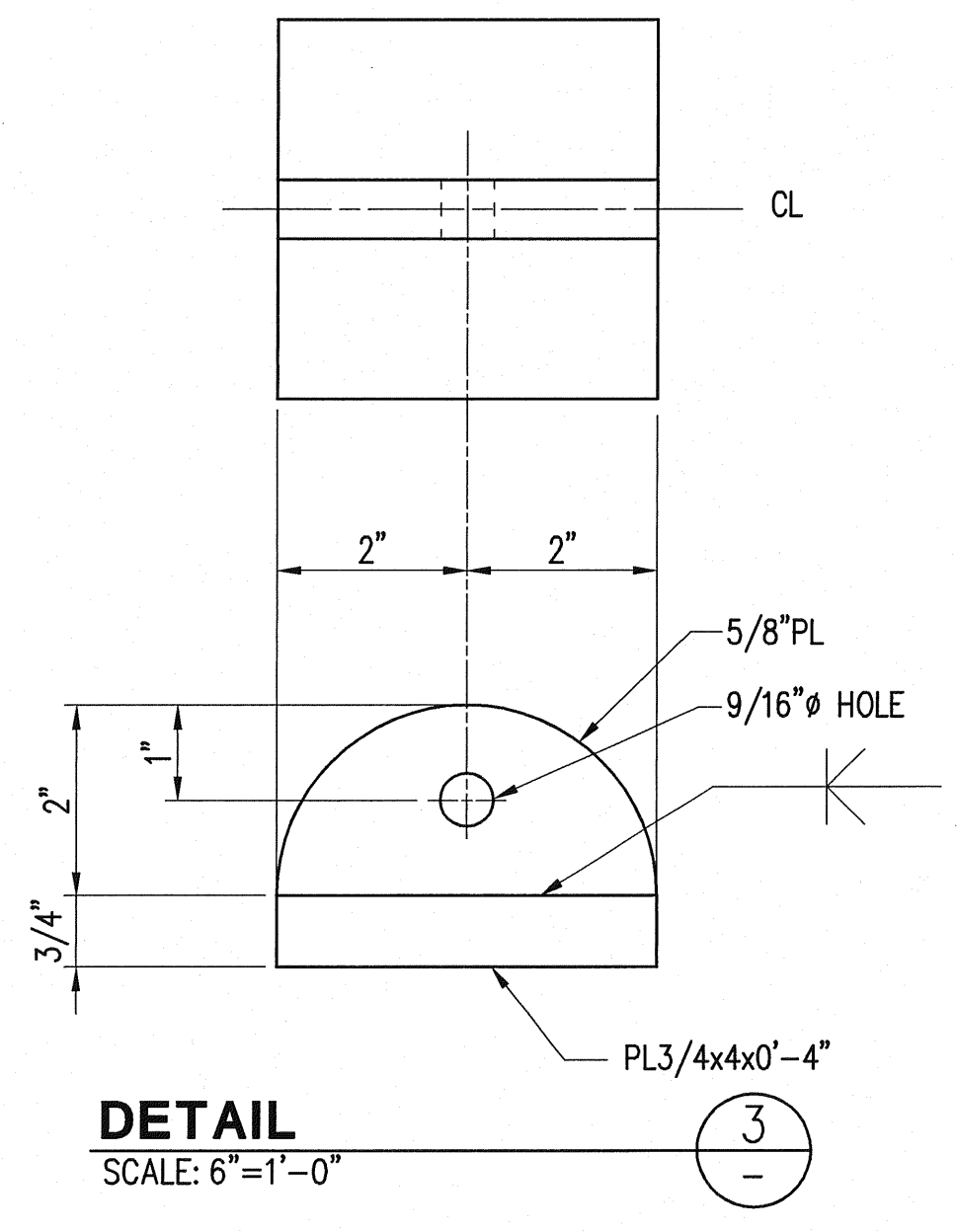
**NOTE:**  
1. ANTI-FOULING CABLES SHALL BE LOCATED ON THE FENDER PANELS AT GRIDS 5, 7, 9, 48, 50 AND 52.

1  
S54



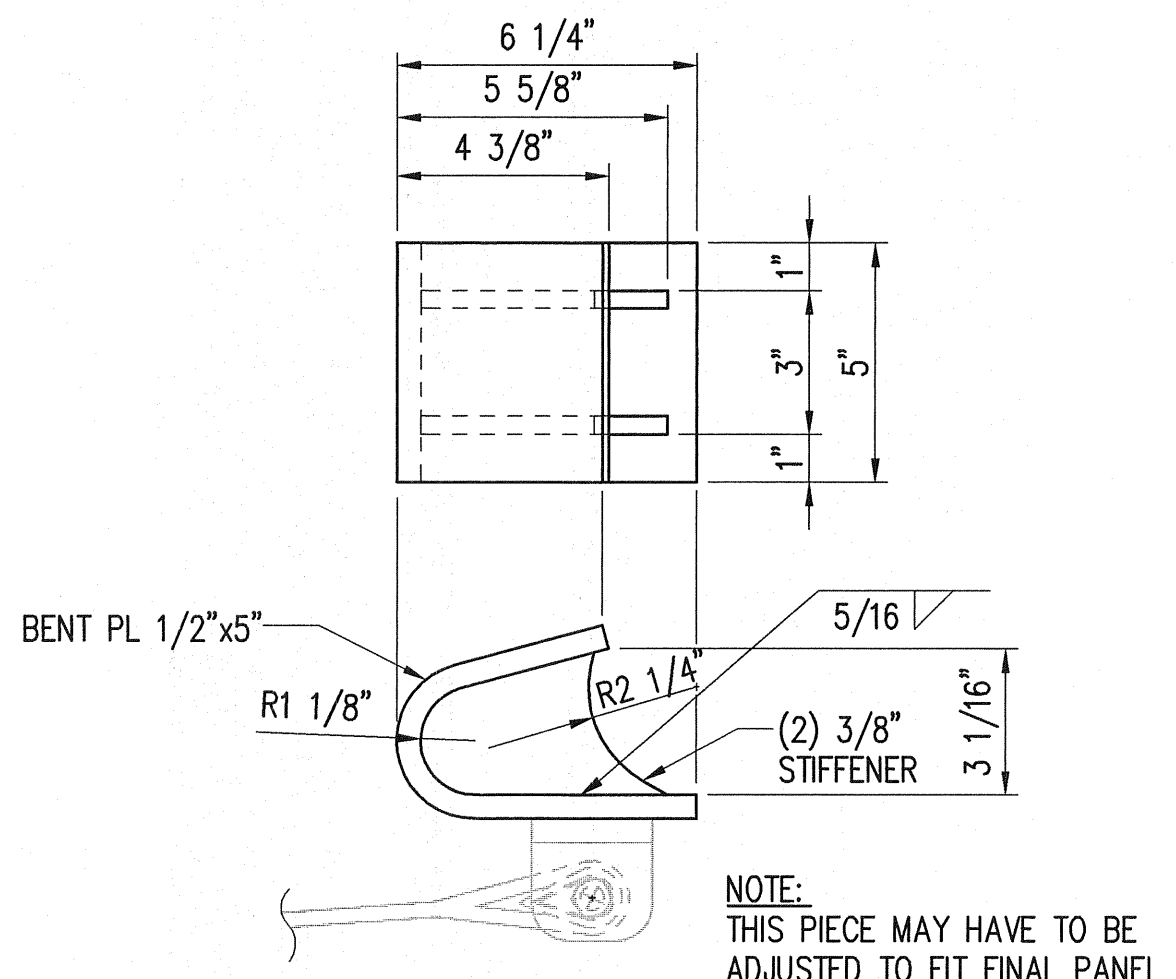
**DETAIL**  
SCALE: 6"=1'-0"

2  
S54



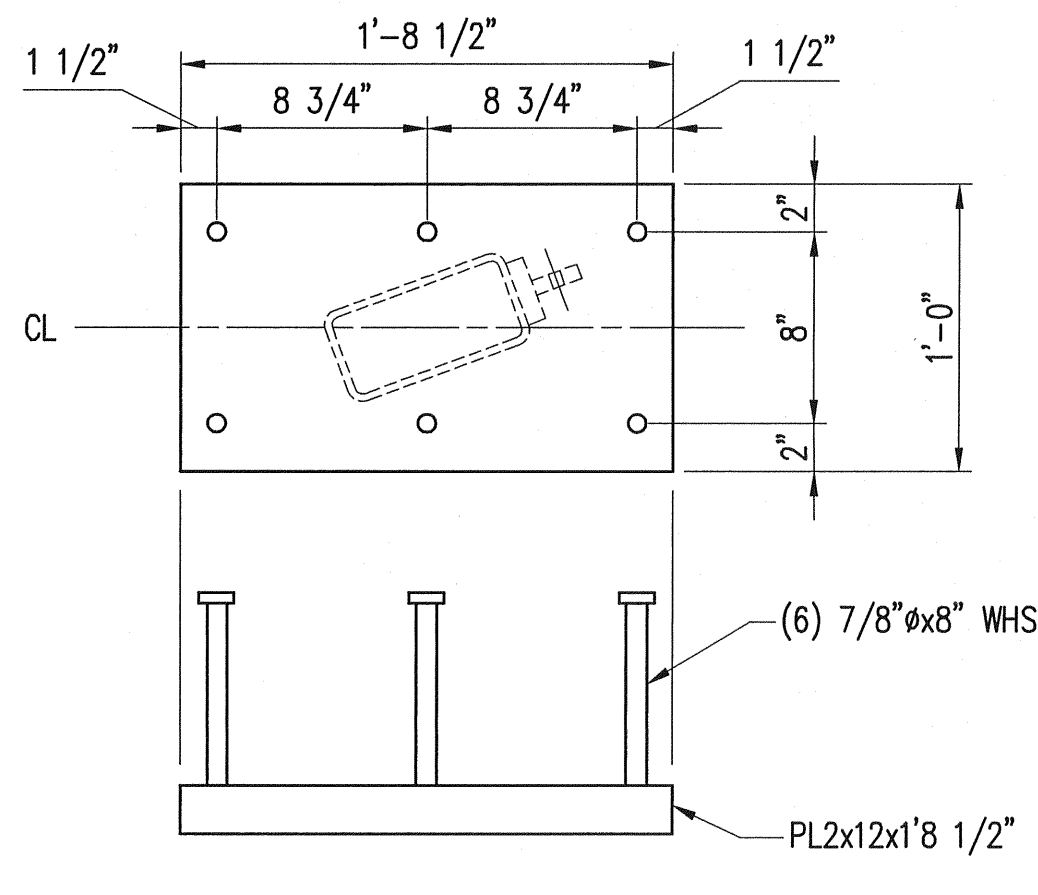
**DETAIL**  
SCALE: 6"=1'-0"

3  
S54



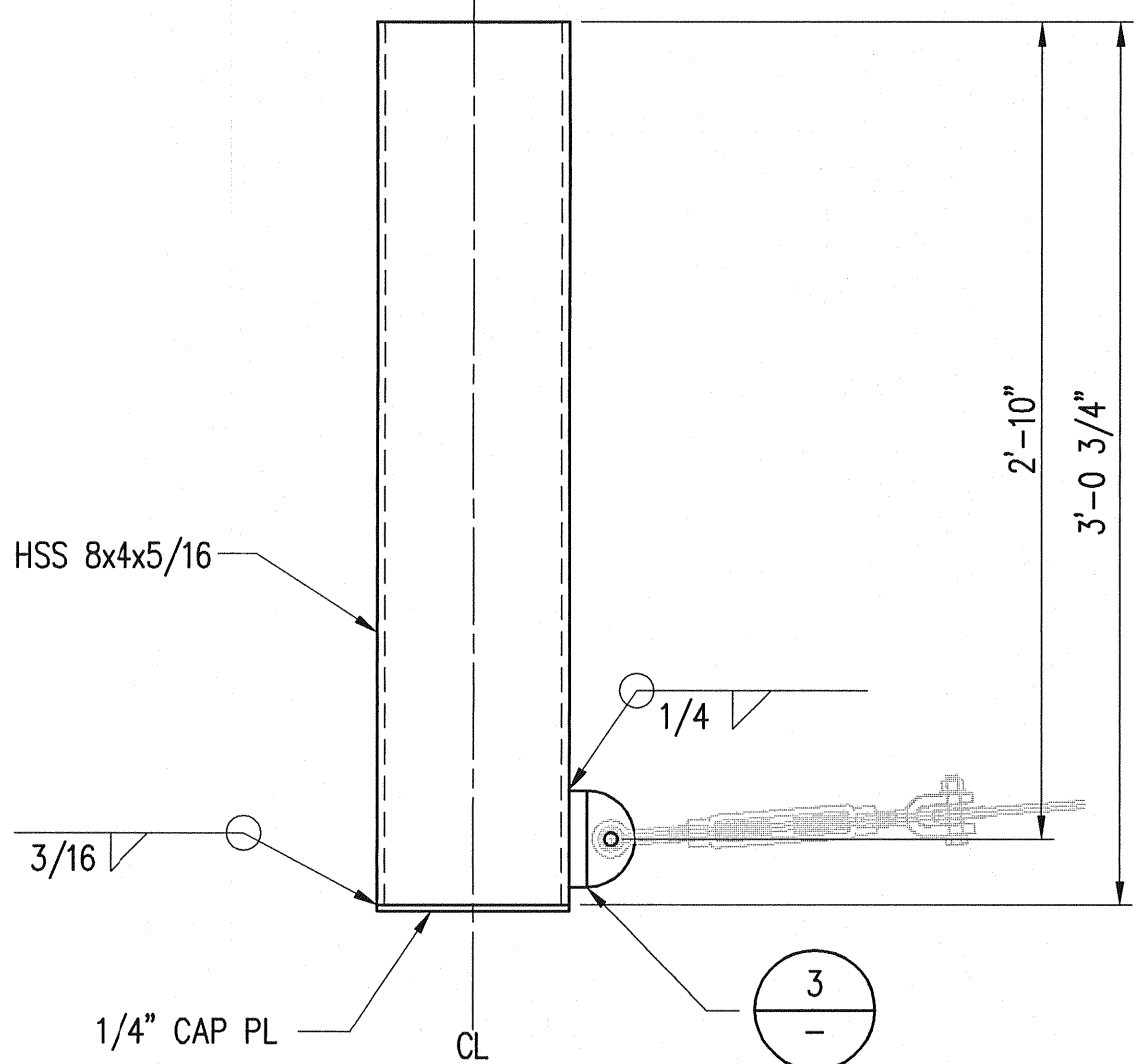
**DETAIL**  
SCALE: 3"=1'-0"

4  
S54



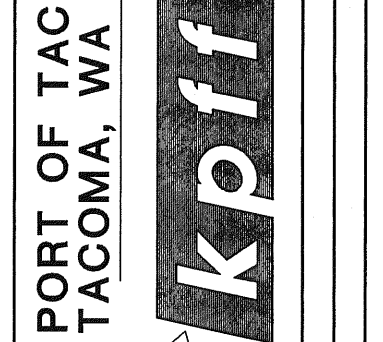
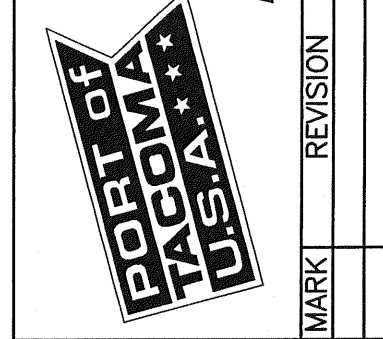
**DETAIL**  
SCALE: 1 1/2"=1'-0"

5  
S54



**DETAIL**  
SCALE: 1 1/2"=1'-0"

6  
S54



PORT OF TACOMA P.O. BOX 1837  
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Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

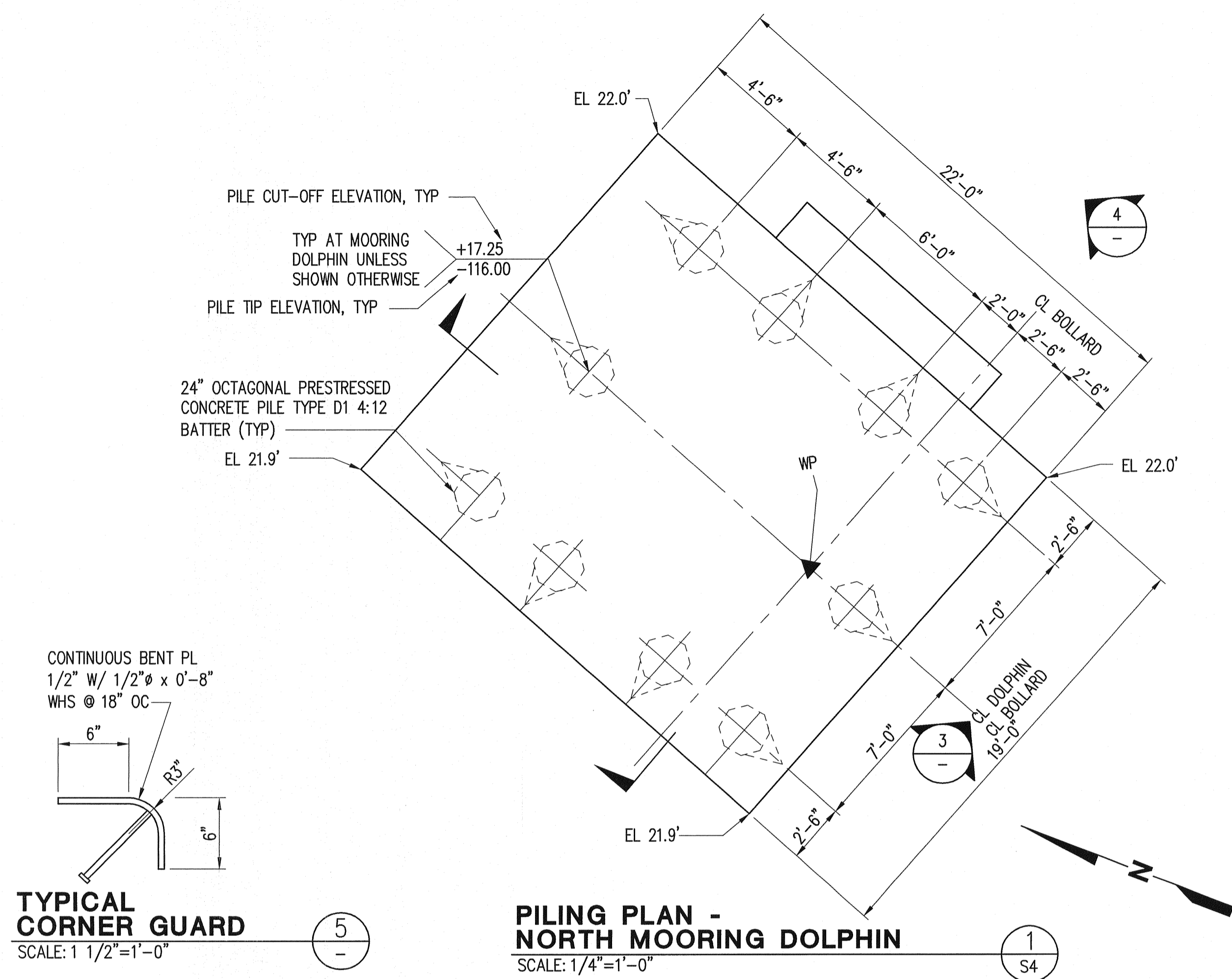
APPROVED	05/2007	05/2007
<i>Alexander</i>	CHECKED BY - DATE	CHECKED BY - DATE
CHIEF ENGINEER - DATE	GGN	GGN
05-21-2007	PROJECT ENGR. - DATE	PROJECT ENGR. - DATE
05-21-2007		
ALEXANDER AVENUE	MARK	REVISION
PORT PAGE 17 of 18		

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
FENDER SYSTEM DETAILS

EP-6305  
S56.0  
SHEET 174 OF 215  
CONTRACT NUMBER: 068018  
DRAWING NUMBER: EP623  
PHASE: BID SET

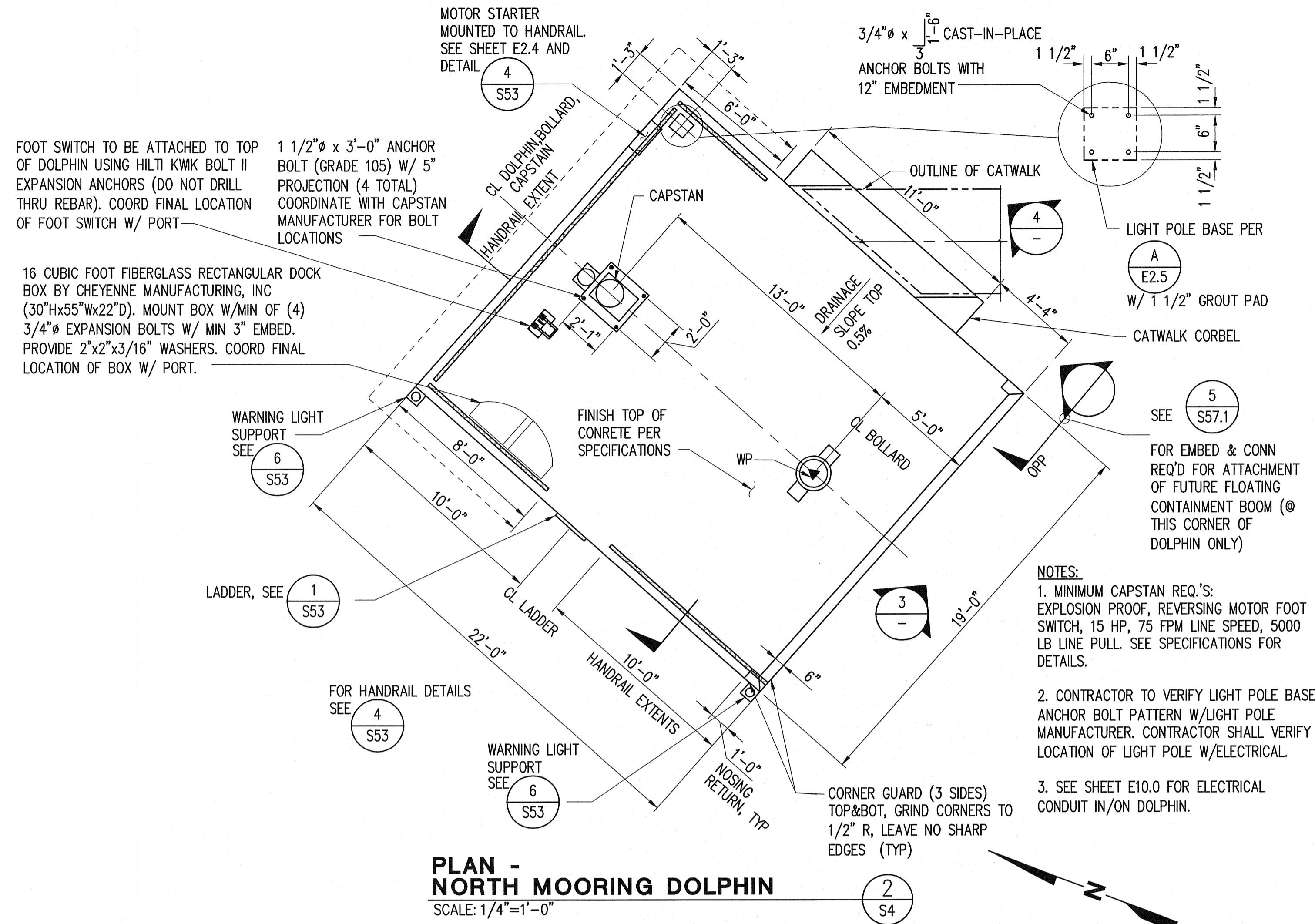
TOWNSHIP 21N RANGE 35E SECTION 27  
DALY - HORIZ.  
DRAWING SCALE: AS SHOWN

BID SET

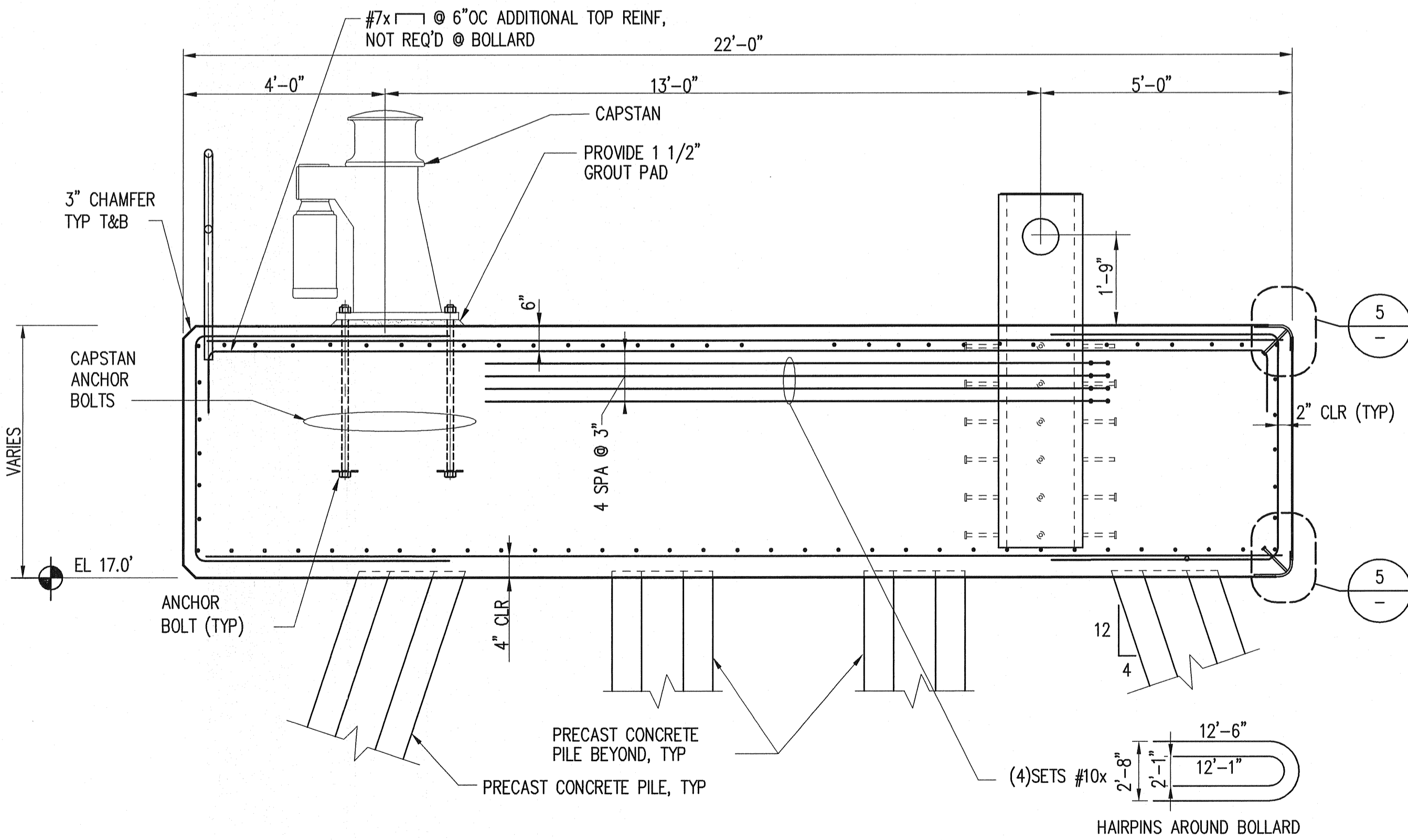


**TYPICAL CORNER GUARD**  
SCALE: 1 1/2"=1'-0"

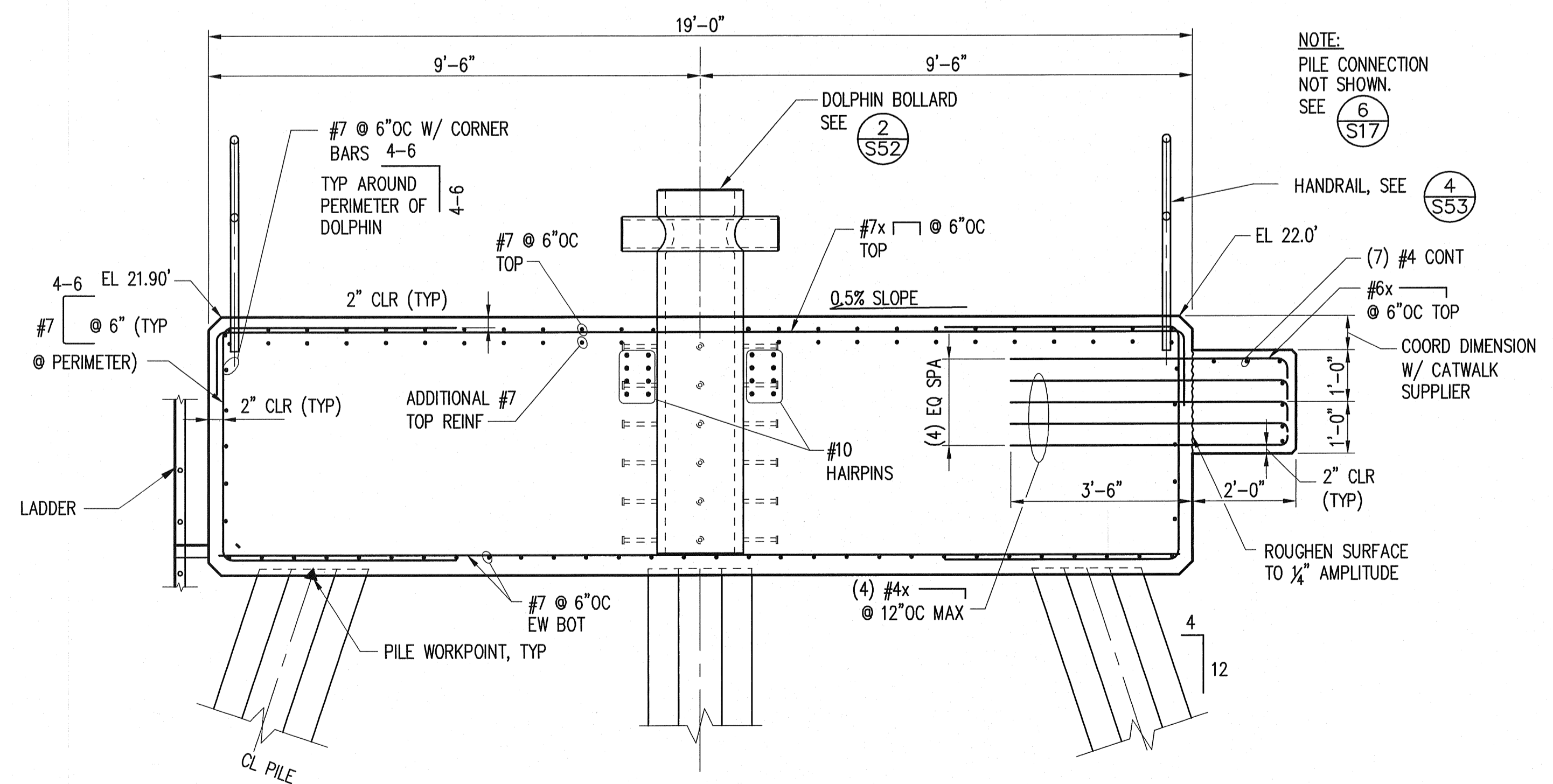
**PILING PLAN - NORTH MOORING DOLPHIN**  
SCALE: 1/4"=1'-0"



**PLAN - NORTH MOORING DOLPHIN**  
SCALE: 1/4"=1'-0"



**SECTION 3**  
SCALE: 1/2"=1'-0"



**SECTION 4**  
SCALE: 1/2"=1'-0"

**BID ALTERNATE** - NORTH DOLPHIN AND CATWALK  
THE INDICATED ITEMS ARE BID ALTERNATES PER THE SPECIFICATION.

**BID SET**

PORT OF TACOMA P.O. BOX 1837  
TACOMA, WA 98401 253-383-5841

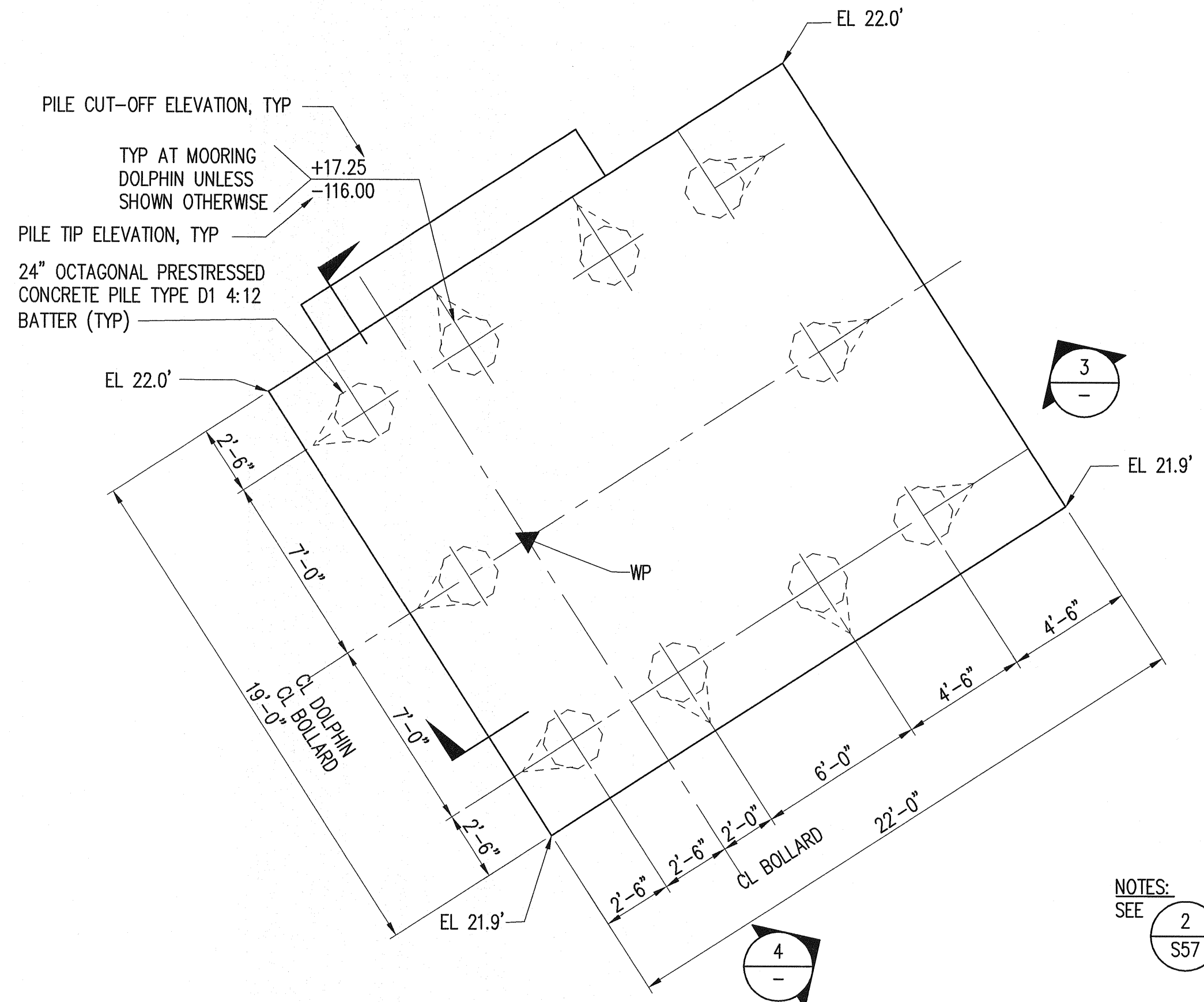
Consulting Engineers  
1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

**kpff**  
PORT OF TACOMA  
USA

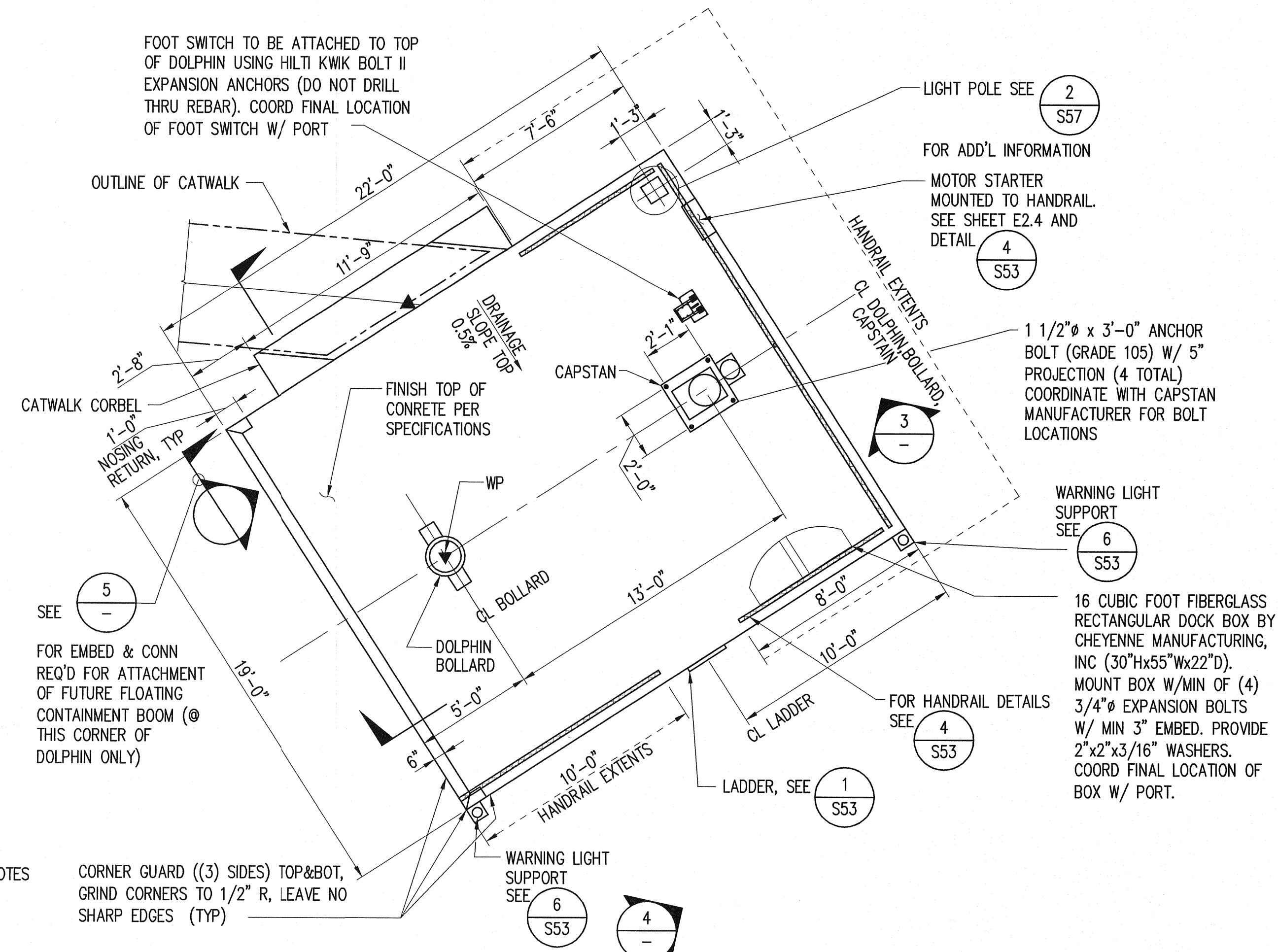
APPROVED: *H. Adams* CHIEF ENGINEER - DATE: 05/21/2007  
CHECKED BY: GSN PROJECT ENGR. - DATE: 05/20/2007  
RKJ 05/20/2007 DATE  
TOWNSHIP: 22N RANGE: 3E SECTION: 27  
DOLPHIN: 178-23  
CONTRACT NUMBER: 066018  
SHEET 175 OF 215  
DRAWING NUMBER: 178-23  
SCALE: AS SHOWN

EP-6305  
**S57.0**  
SHEET 175 OF 215

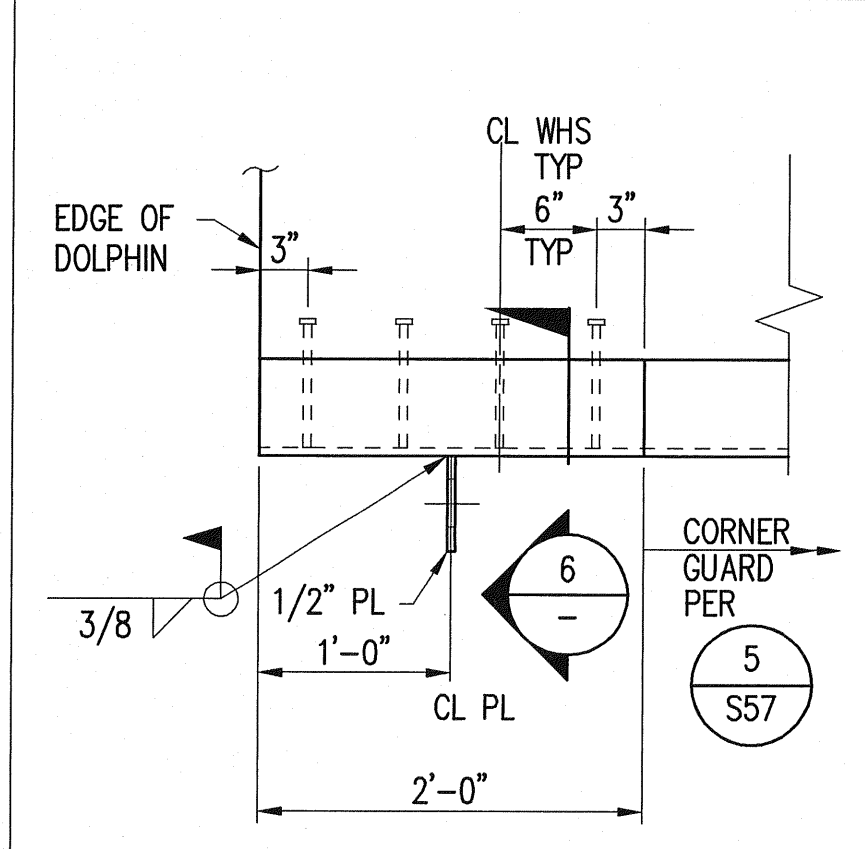
PORT OF TACOMA  
EAST BLAIR ONE WHARF  
NORTH MOORING DOLPHIN  
PLANS AND SECTIONS



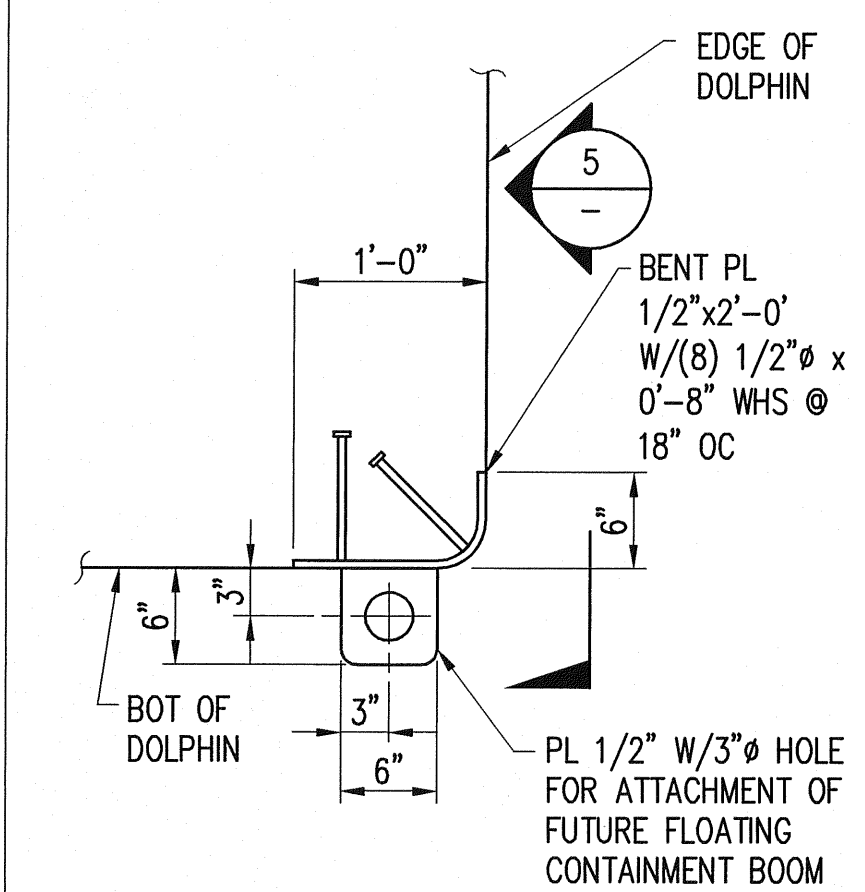
**PILING PLAN - SOUTH MOORING DOLPHIN**  
SCALE: 1/4"=1'-0"



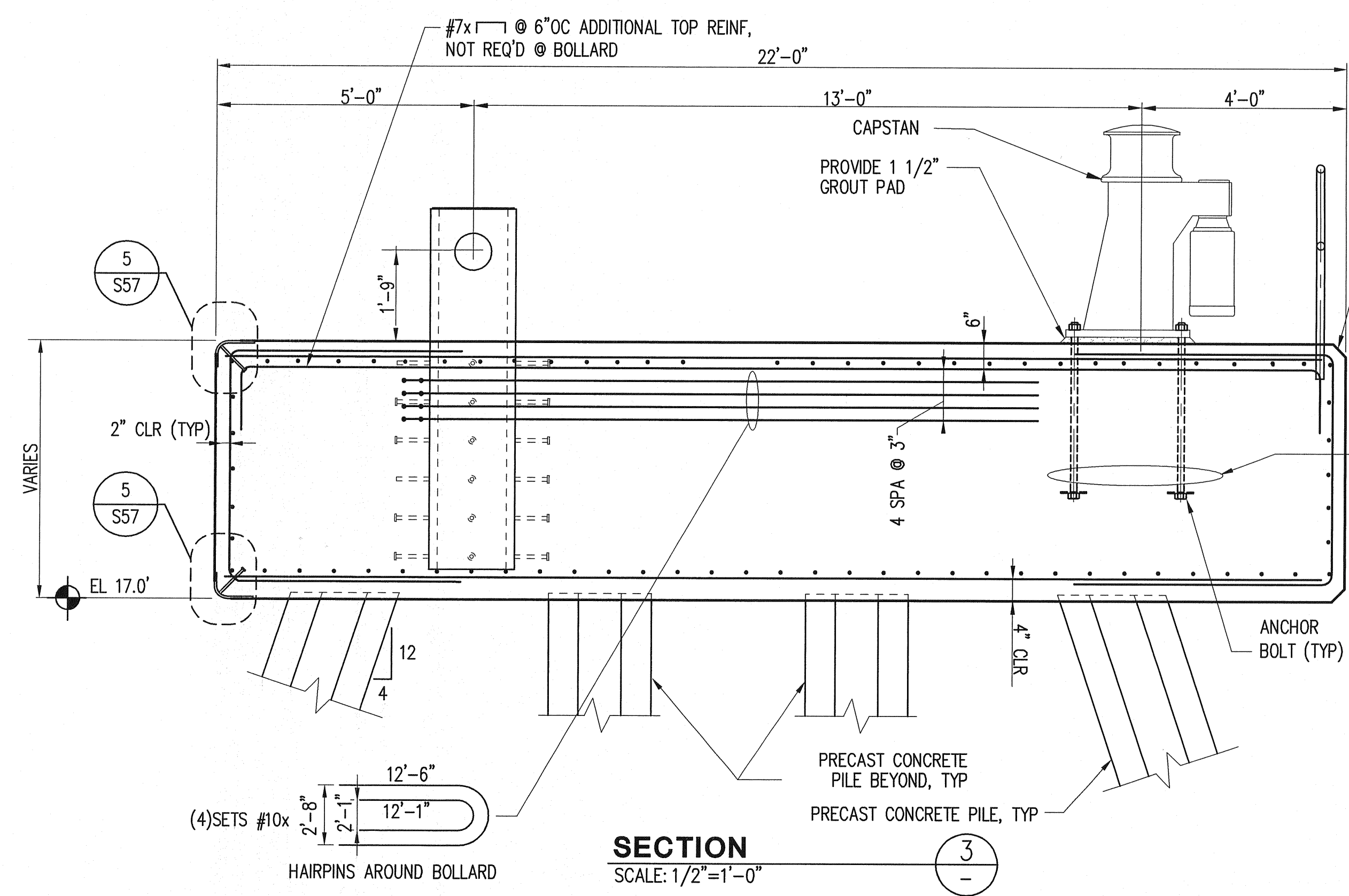
**PLAN - SOUTH MOORING DOLPHIN**  
SCALE: 1/4"=1'-0"



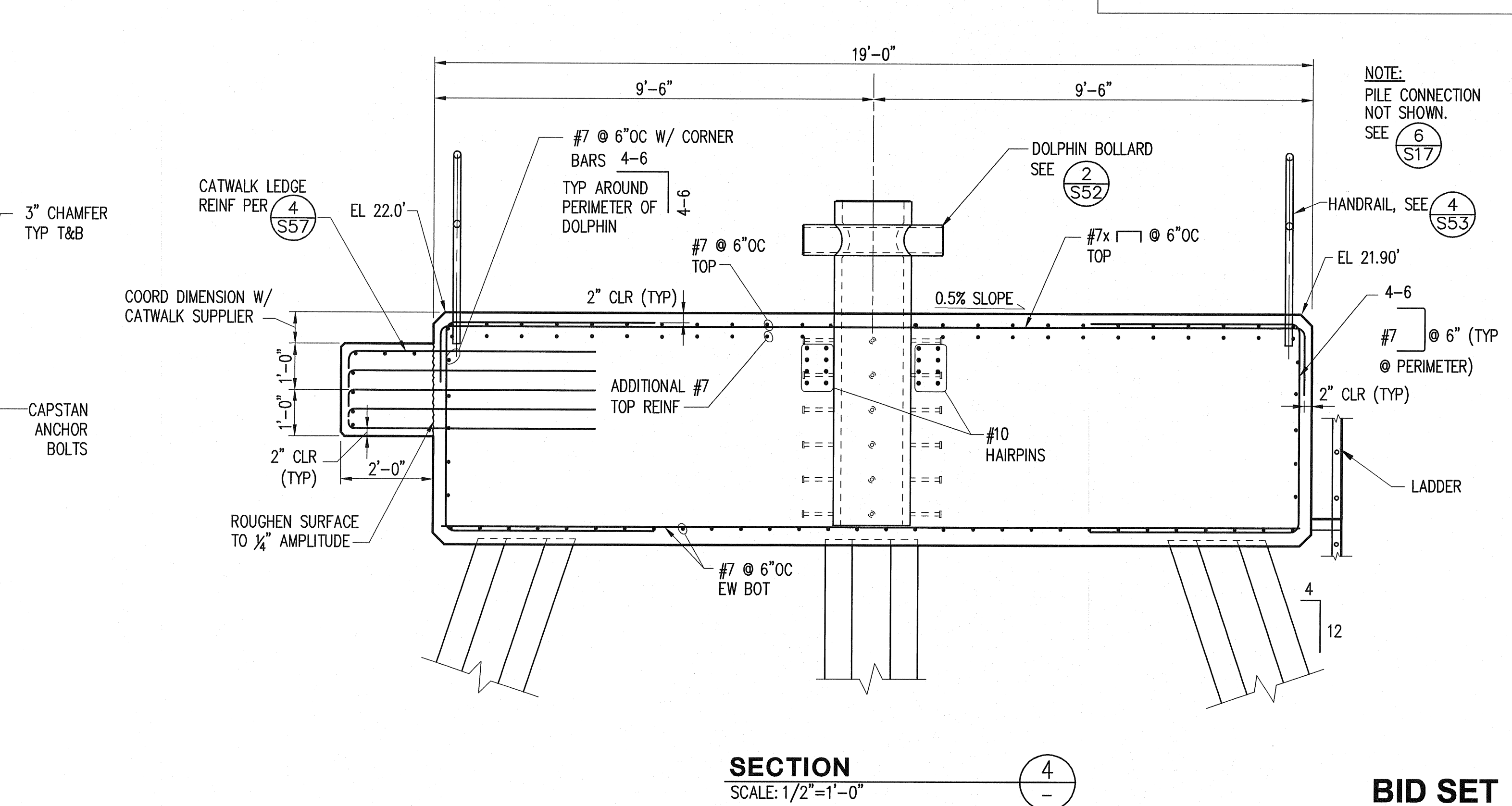
**SECTION 5**  
SCALE: 1"=1'-0"



**SECTION 6**  
SCALE: 1"=1'-0"



**SECTION 3**  
SCALE: 1/2"=1'-0"



**SECTION 4**  
SCALE: 1/2"=1'-0"

NOTES:  
SEE 2 FOR NOTES  
S57

CORNER GUARD ((3) SIDES) TOP&BOT, GRIND CORNERS TO 1/2" R, LEAVE NO SHARP EDGES (TYP)

1 1/2" x 3'-0" ANCHOR BOLT (GRADE 105) W/ 5" PROJECTION (4 TOTAL) COORDINATE WITH CAPSTAN MANUFACTURER FOR BOLT LOCATIONS

16 CUBIC FOOT FIBERGLASS RECTANGULAR DOCK BOX BY CHEYENNE MANUFACTURING, INC (30"Hx55"Wx22"D). MOUNT BOX W/MIN OF (4) 3/4" EXPANSION BOLTS W/ MIN 3" EMBED. PROVIDE 2"x2"x3/16" WASHERS. COORD FINAL LOCATION OF BOX W/ PORT.

NOTE:  
PILE CONNECTION NOT SHOWN. SEE 6 S17

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1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax (253) 396-0162

**kpf1**

PORT OF TACOMA USA

APPROVED: *[Signature]* DATE: 05/20/07  
CHECKED BY: *[Signature]* DATE: 05/20/07  
PROJECT ENGR: *[Signature]* DATE: 05/20/07

APPROVED: *[Signature]* DATE: 05/21/2007  
CHIEF ENGINEER: *[Signature]* DATE: 05/21/2007  
DRAWING DATE: 05-21-2007  
PORT ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT PARCEL: 17 & 18

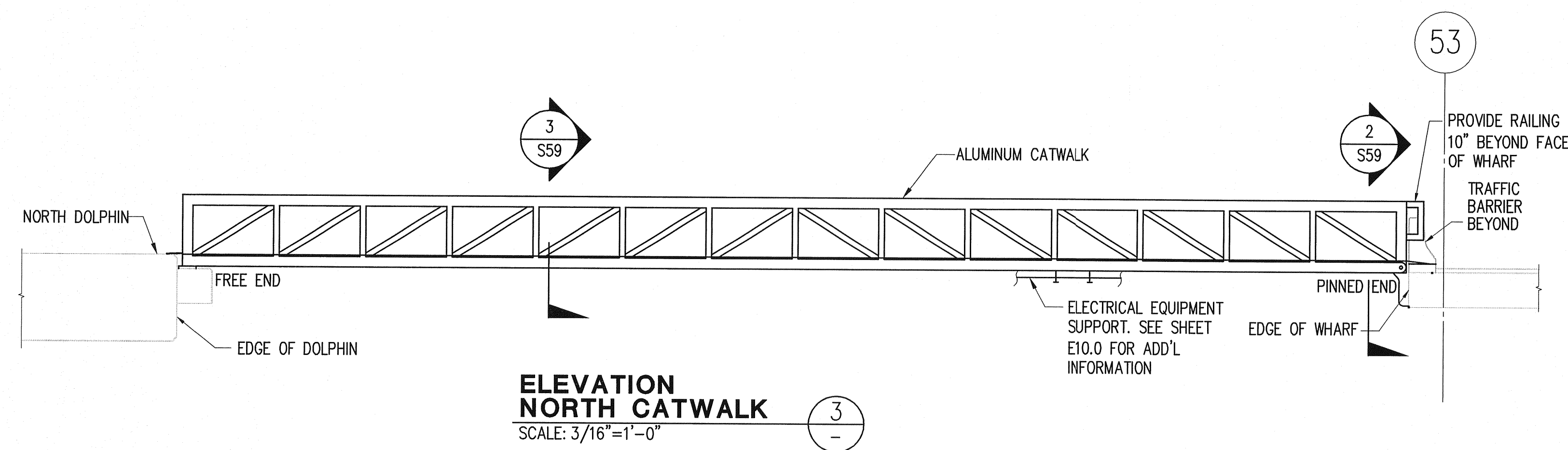
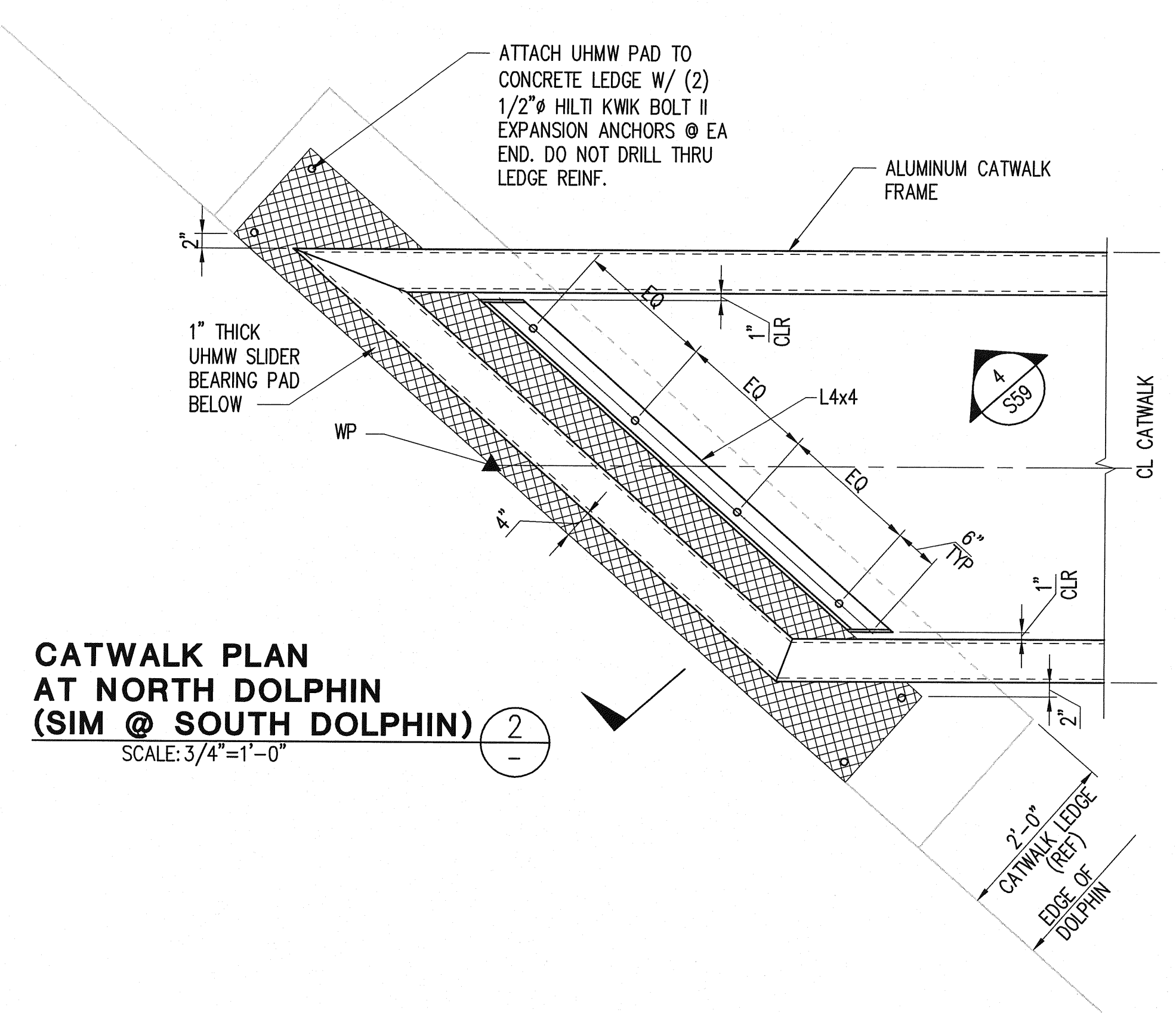
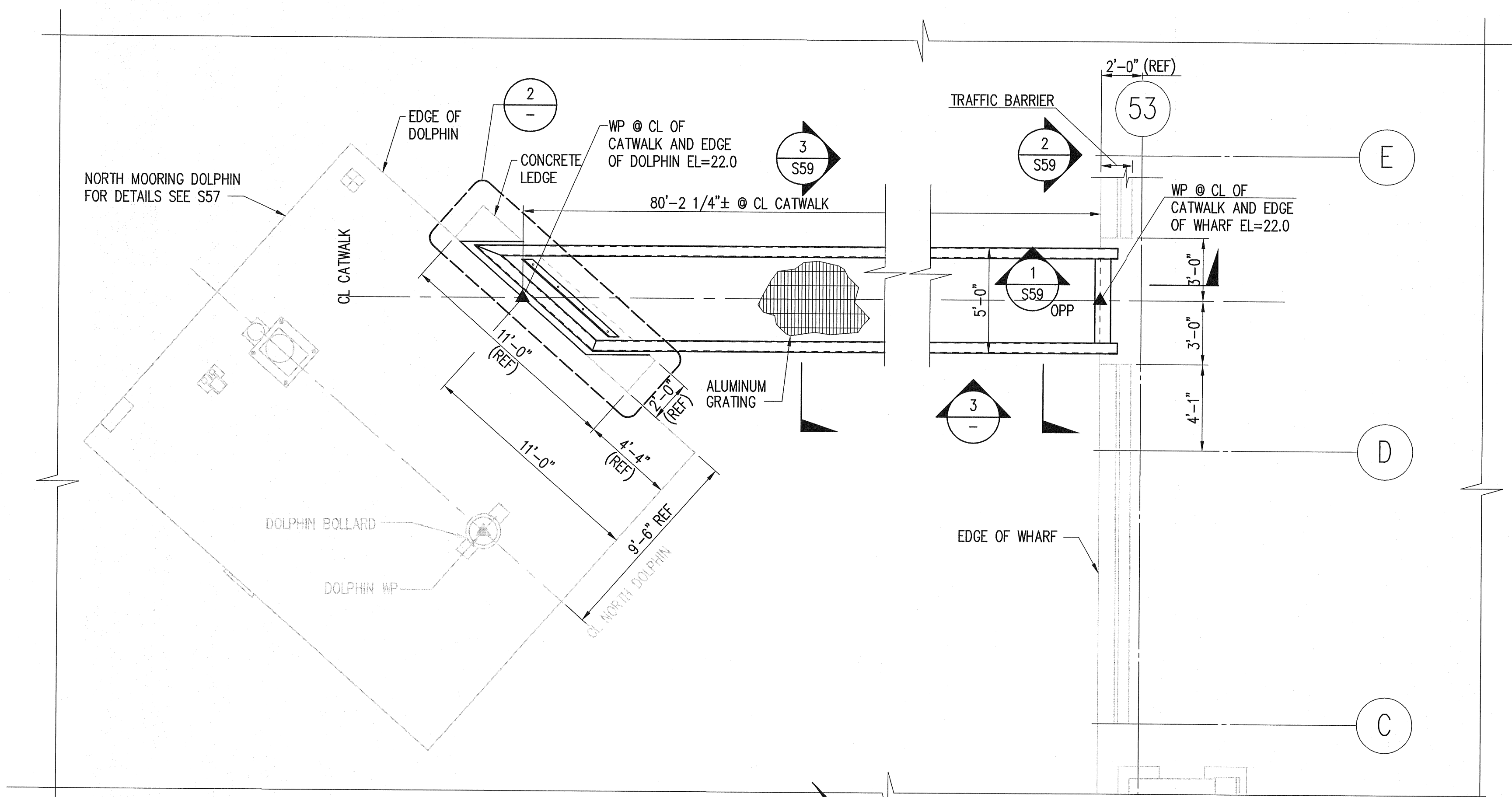
EDWARDS 9/10/06

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
SOUTH MOORING DOLPHIN  
PLANS AND SECTIONS

EP-6305  
**S57.1**  
SHEET 176 OF 215  
CONTRACT NUMBER: 068018  
E. NUMBER: E2623  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORYZ.  
DRAWING SCALE: AS SHOWN

**BID SET**



ESTIMATED CATWALK REACTIONS TO SUBSTRUCTURE

	VERTICAL REACTION	HORIZONTAL REACTIONS	
		LONGITUDINAL	TRANSVERSE
AT DOLPHIN	42 KIPS	-	10.5 KIPS
AT WHARF	42 KIPS	21 KIPS	10.5 KIPS

- NOTES:
1. VERTICAL REACTIONS ARE ESTIMATED MAXIMUM SERVICE REACTIONS DUE TO CATWALK DEAD LOAD + 100 PSF LIVE LOAD ON CATWALK.
  2. HORIZONTAL REACTIONS ARE ESTIMATED MAXIMUM ULTIMATE REACTIONS DUE TO WIND OR SEISMIC LOADING APPLIED TO CATWALK. LONGITUDINAL REACTIONS ACT PARALLEL TO CENTERLINE OF CATWALK. TRANSVERSE REACTIONS ACT PERPENDICULAR TO CENTERLINE OF CATWALK.
  3. SEE SPECIFICATIONS FOR CATWALK DESIGN CRITERIA.
  4. ENGINEER SHALL BE NOTIFIED IMMEDIATELY IF CATWALK REACTIONS TO SUBSTRUCTURE EXCEED THE VALUES INDICATED ABOVE.

**BID ALTERNATE** - NORTH DOLPHIN AND CATWALK  
THE INDICATED ITEMS ARE BID ALTERNATES PER THE SPECIFICATION.

EP-6305  
**S58.0**  
SHEET 177 OF 215  
CONTRACT NUMBER: 068018  
E NUMBER: E2623  
PHASE: BID SET

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
NORTH CATWALK PLAN AND ELEVATION

APPROVED: *H. Adams*  
CHIEF ENGINEER - DATE: 23 Mar 07

RKJ 05/2007  
CHECKED BY - DATE  
GON 05/2007  
PROJECT ENGR. - DATE

PORT OF TACOMA  
TACOMA, WA 98401  
253-383-5841

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201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0150 Fax: (253) 396-0162

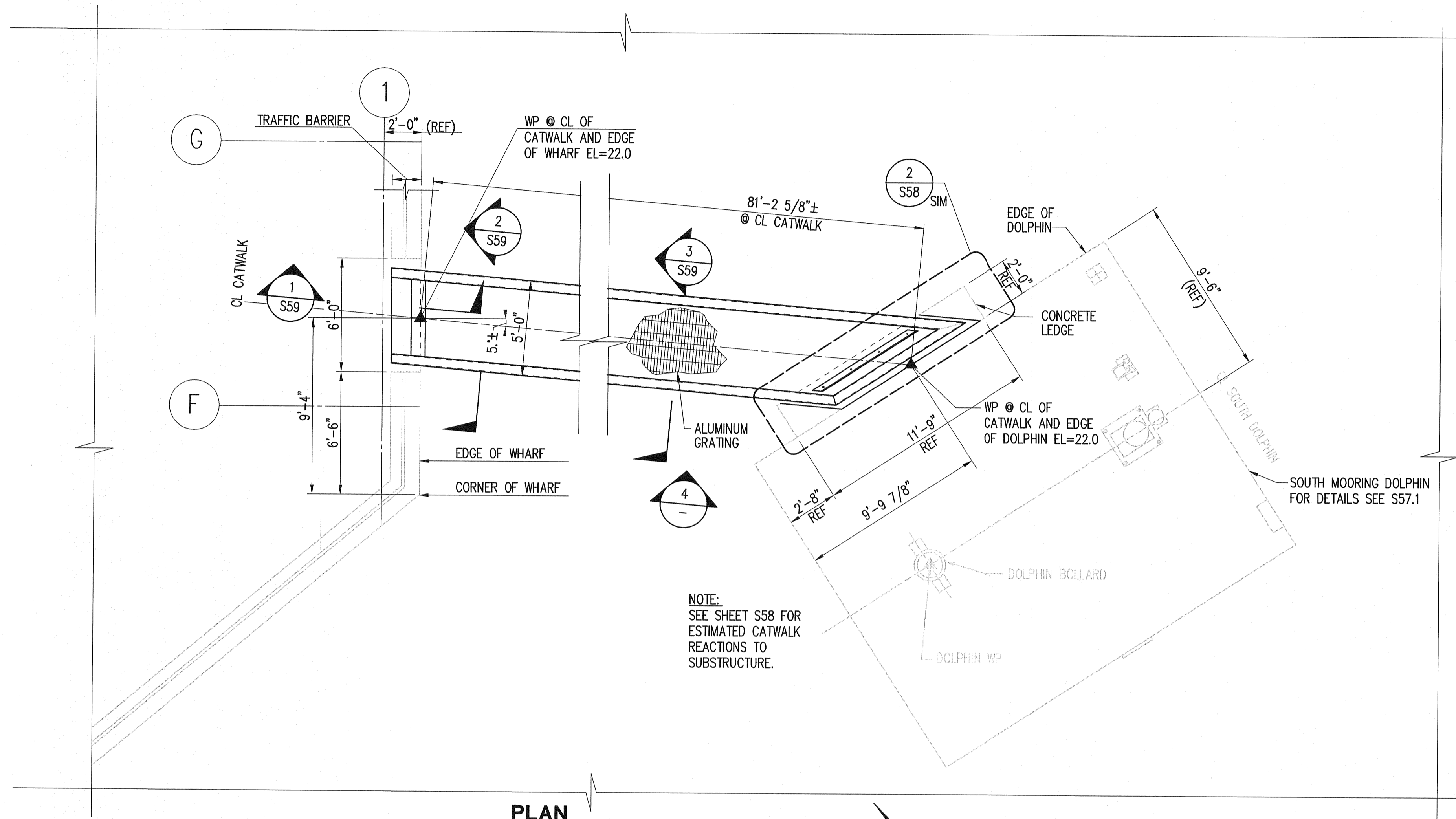
**kp11**

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ. AS SHOWN  
DRAWING SCALE: AS SHOWN

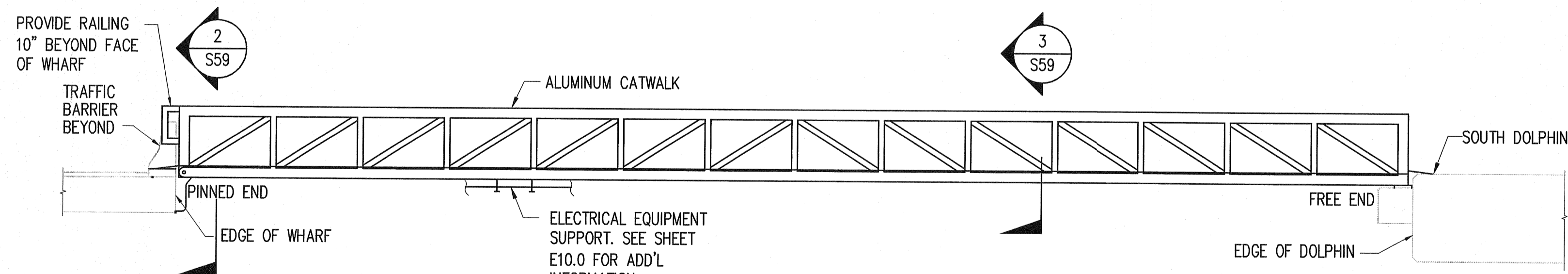
EXPIRES 9/10/08

MARK REVISION  
BY: DATE:

**BID SET**



**PLAN SOUTH CATWALK**  
SCALE: 1/4"=1'-0"



**ELEVATION SOUTH CATWALK**  
SCALE: 3/16"=1'-0"

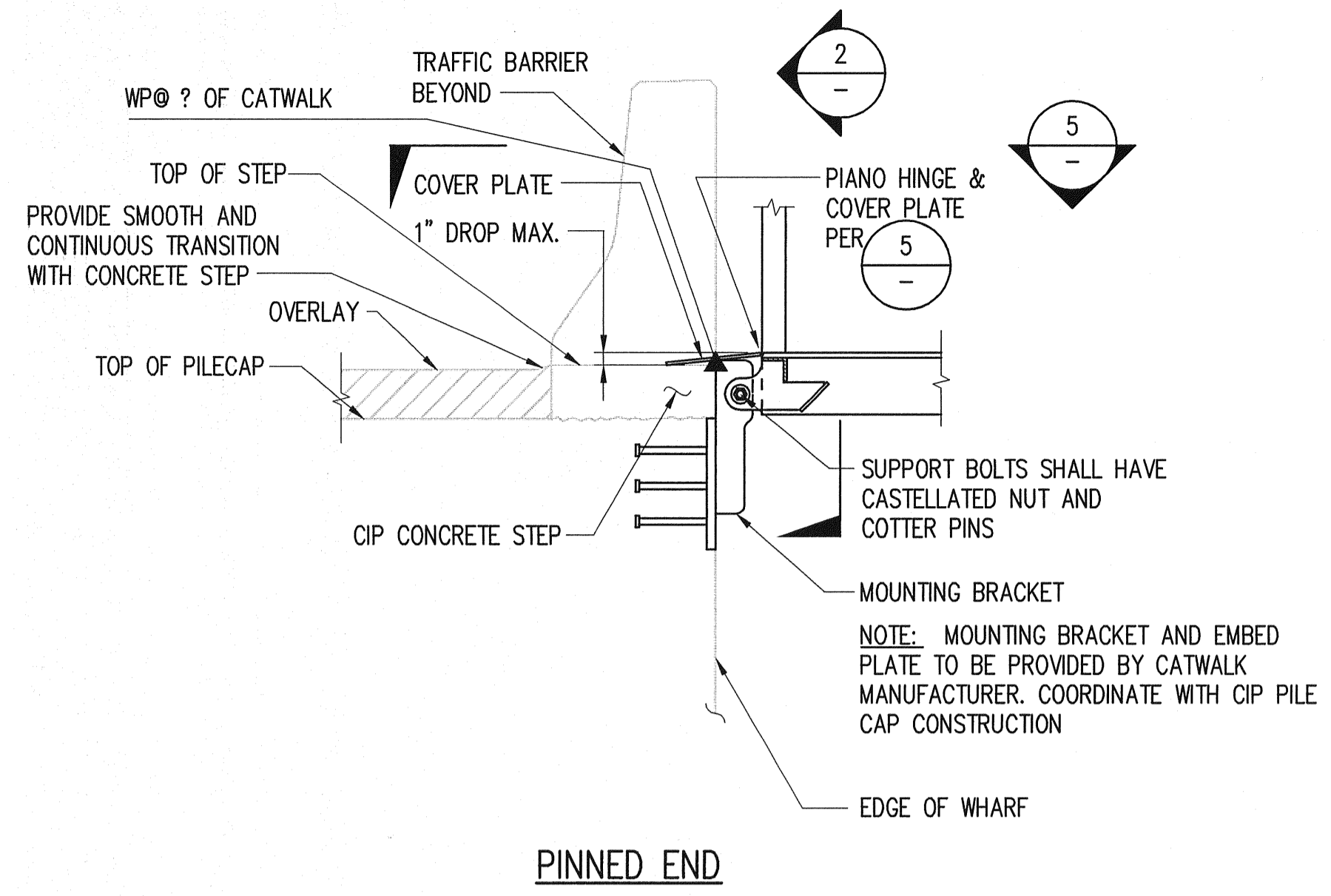
PORT OF TACOMA P.O. BOX 1837 TACOMA, WA 98401 253-383-5841 Consulting Engineers 801 Pacific Avenue, Suite 800 Tacoma, Washington 98402 (253) 396-0150 Fax: (253) 396-0162	
RKJ CHECKED BY - DATE GGN 05/2007 PROJECT ENGR. - DATE	05/2007 05/2007
APPROVED  CHIEF ENGINEER - DATE 23 April 07	
DRAWING DATE: 05-21-2007 EPOCH ADDRESS: 19340 ALEXANDER AVENUE PORT PARCEL: 17 & 18	
MARK	REVISION
BY:	DATE:



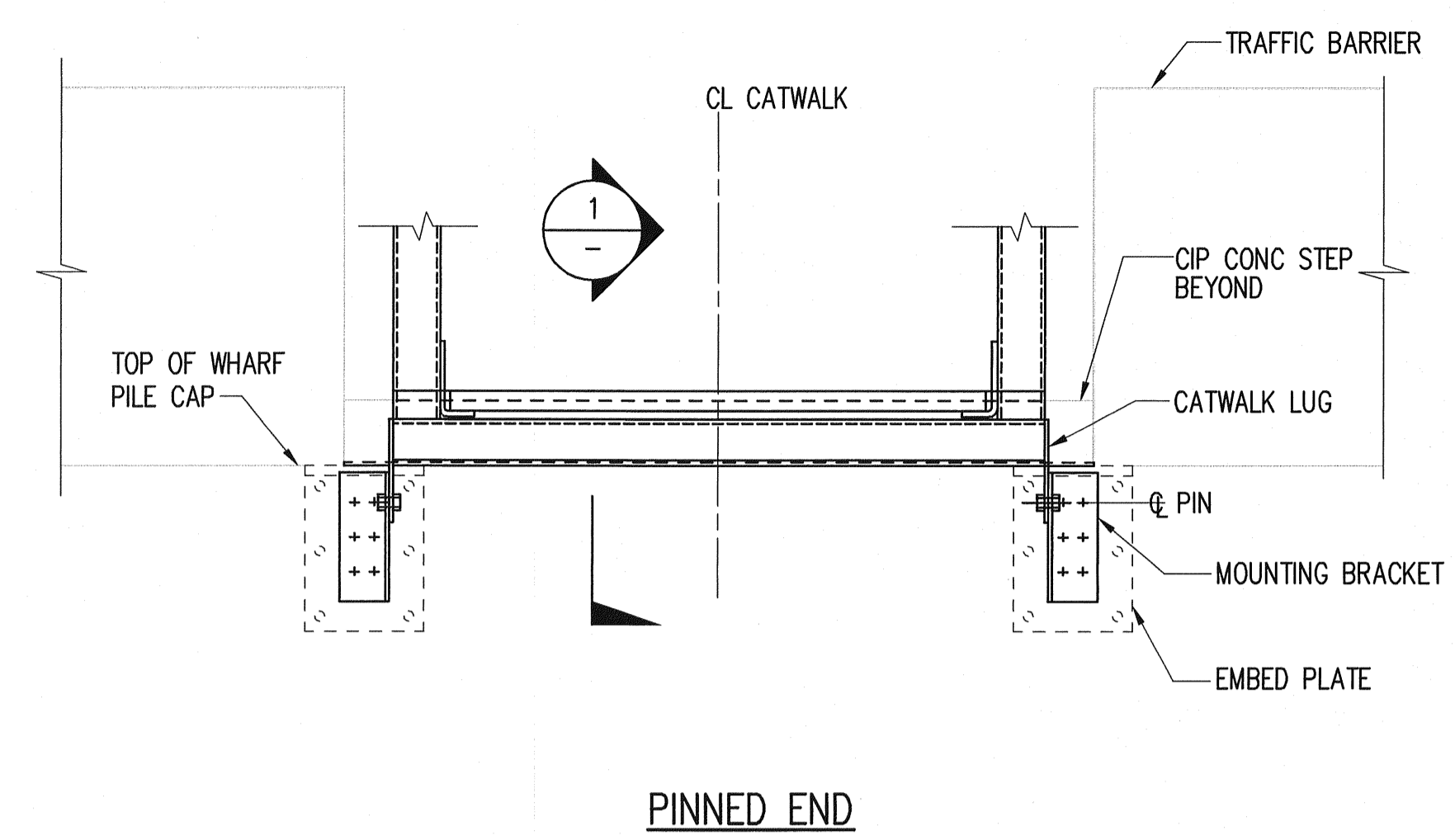
**PORT OF TACOMA**  
**EAST BLAIR ONE WHARF**  
**SOUTH CATWALK PLAN AND ELEVATION**  
 TOWNSHIP: 21N RANGE: 3E SECTION: 27  
 DATUM: HORIZ. VERT.  
 DRAWING SCALE: AS SHOWN

**EP-6305**  
**S58.1**  
 SHEET 178 OF 215  
 CONTRACT NUMBER: 068018  
 E NUMBER: E2623  
 PHASE: BID SET

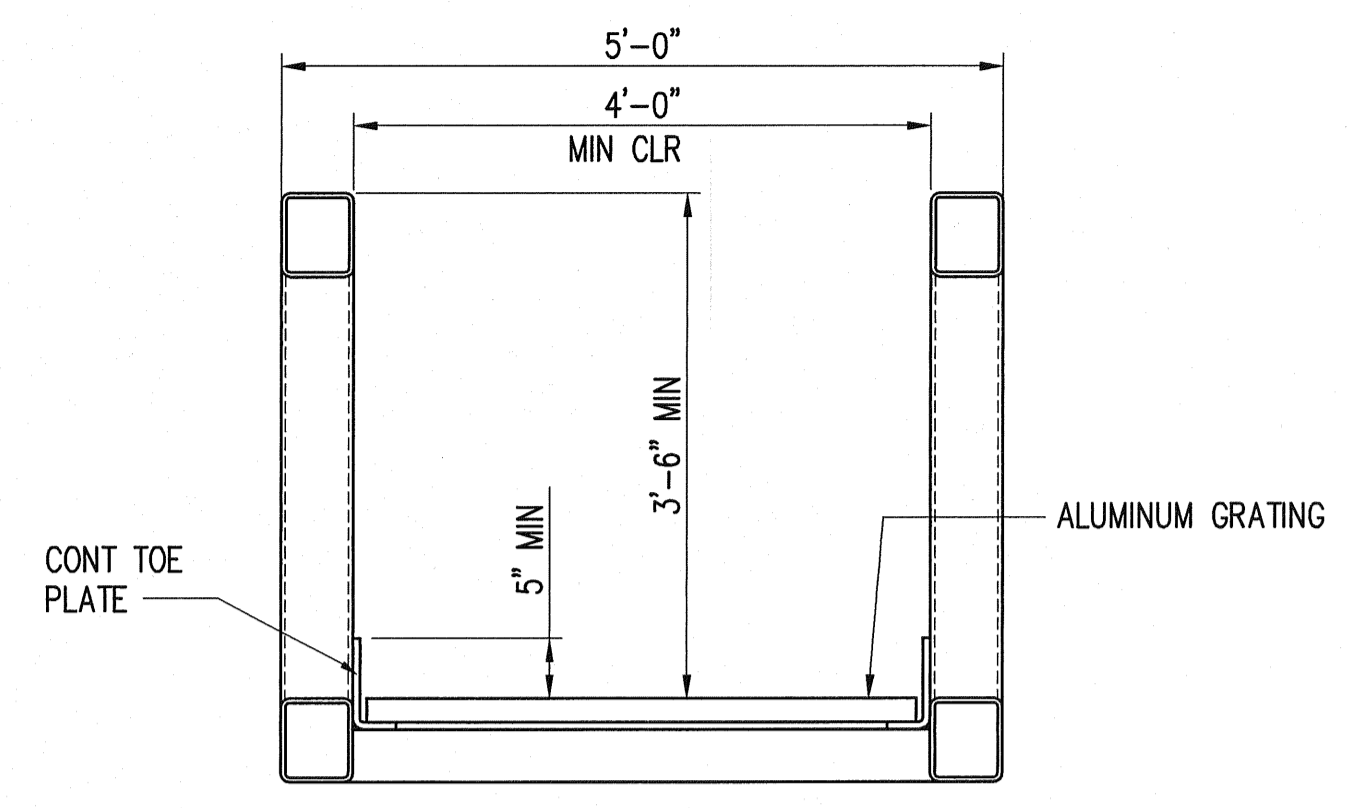
BID SET



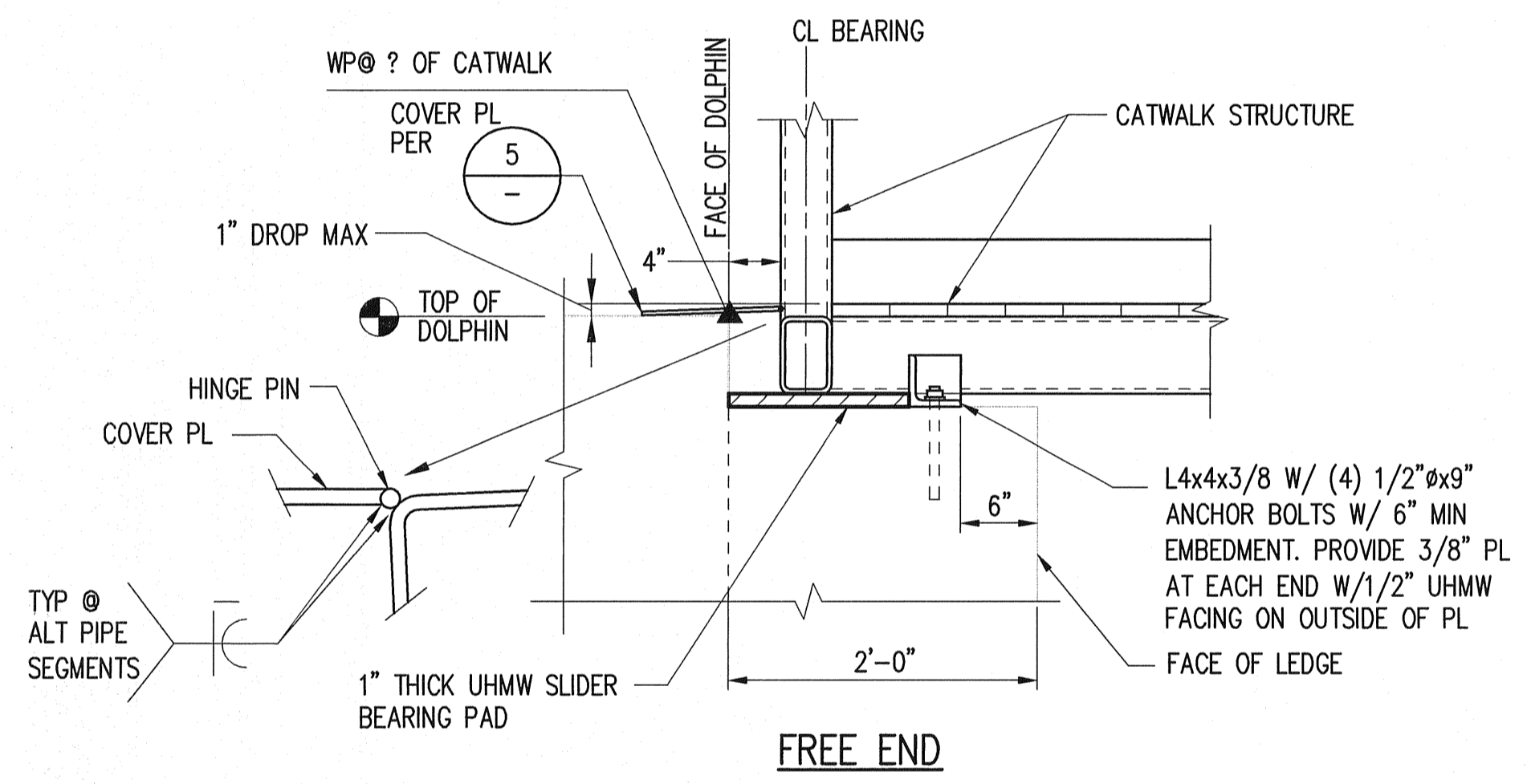
**SECTION - CATWALK 1**  
SCALE: 3/4"=1'-0" S58, S58.1



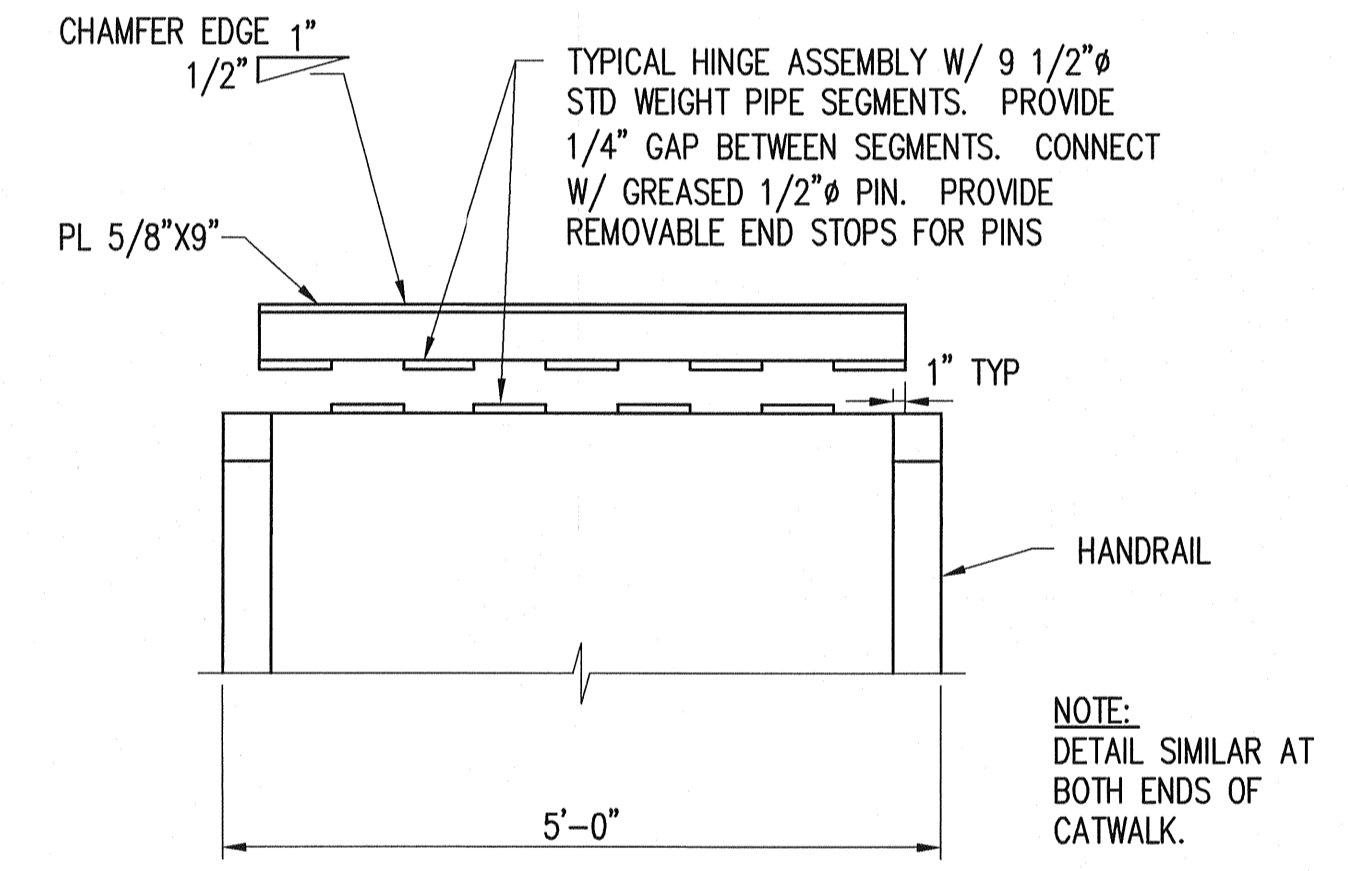
**SECTION - CATWALK 2**  
SCALE: 3/4"=1'-0" S58, S58.1



**CATWALK TYPICAL SECTION 3**  
SCALE: 3/4"=1'-0" S58, S58.1



**SECTION - CATWALK AT DOLPHIN 4**  
SCALE: 1"=1'-0" S58, S58.1



**HINGE AND COVER PLATE 5**  
SCALE: 3/4"=1'-0"

**PORT OF TACOMA**  
P.O. BOX 1837  
TACOMA, WA 98401 253-3833-5841

**PORT OF TACOMA U.S.A.**

**kpf1**  
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1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
(253) 396-0550 Fax (253) 396-0162

APPROVED	<i>H. Adams</i> CHIEF ENGINEER - DATE 2/24/07	DRAWING DATES: 05-01-2007 05-23-07	MARK	REVISION	BY: APPROVED: DATE:

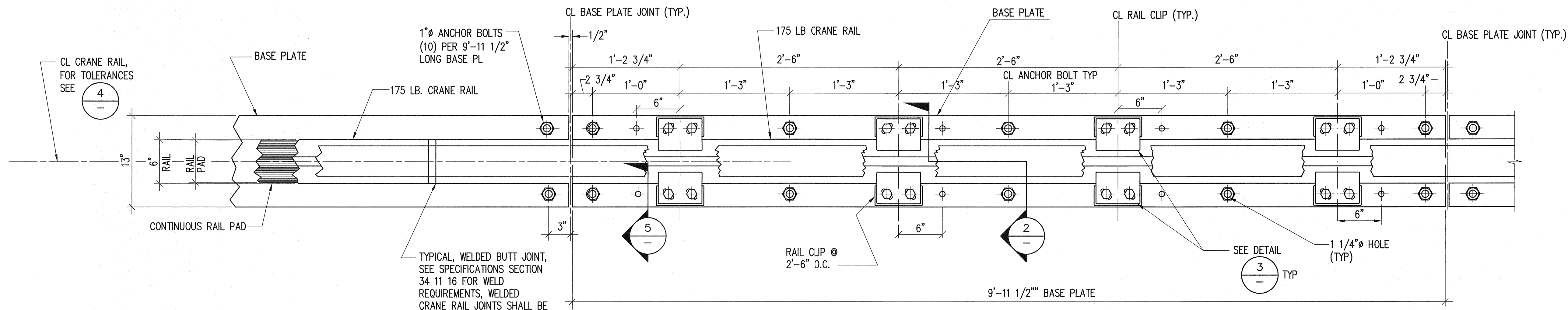
**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
CATWALK DETAILS

**EP-6305**  
**S59.0**  
SHEET 179 OF 215

CONTRACT NUMBER: 068018  
E NUMBER: E2823  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DATUM: HORIZ. VERT.  
DRAWING SCALE: AS SHOWN

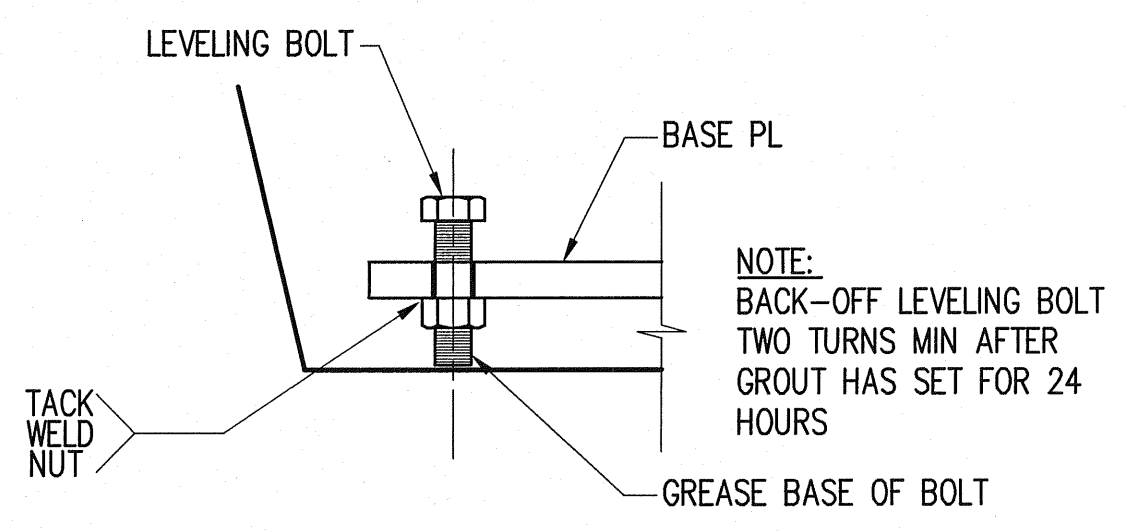
**BID SET**



**PLAN - OUTBOARD AND INBOARD CRANE RAIL ASSEMBLY**  
SCALE: 1 1/2"=1'-0"

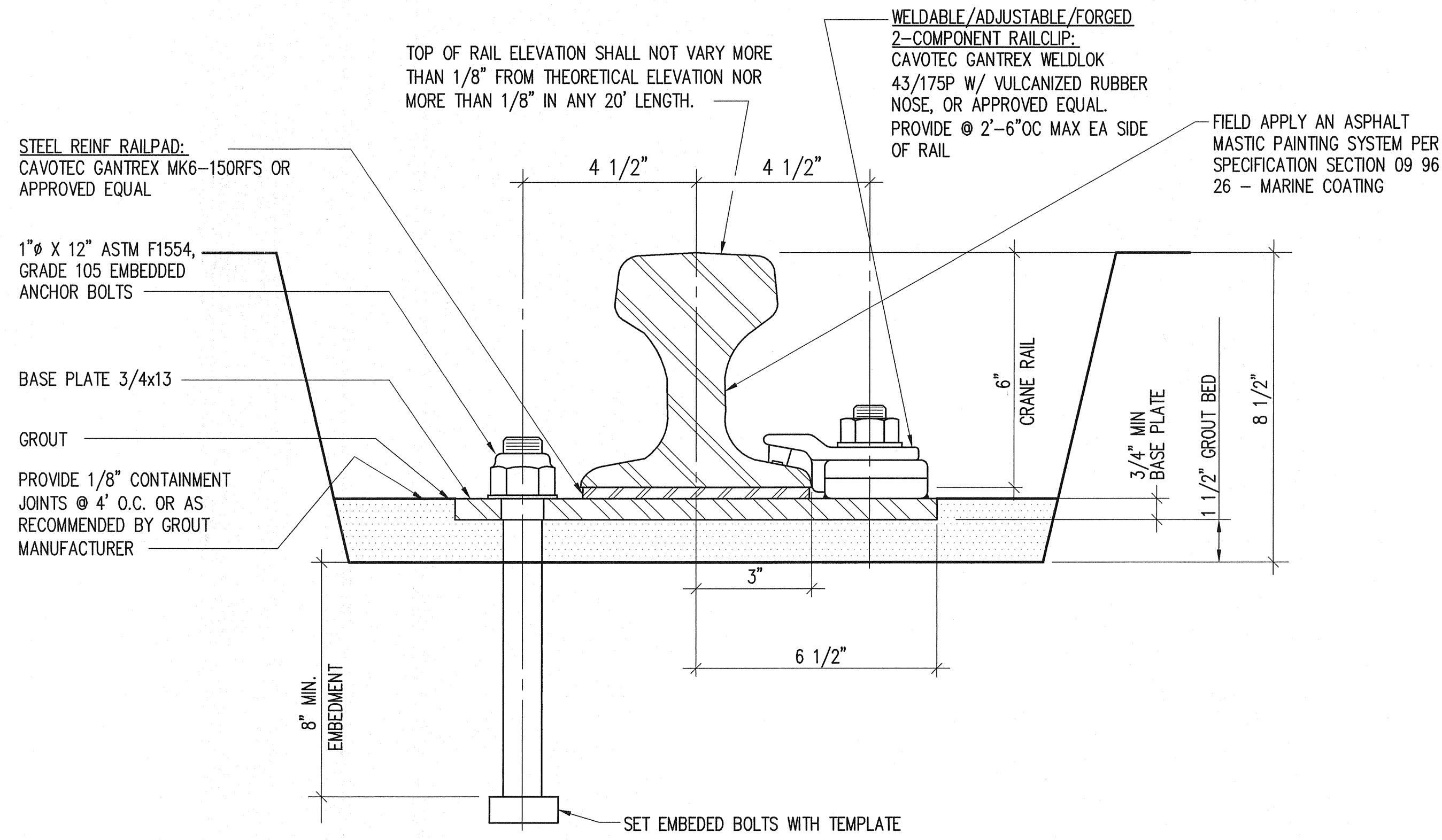
1  
S3

**NOTE:**  
CONTRACTOR SHALL ADJUST BASE PLATE LENGTHS AS NECESSARY AT CRANE RAIL ENDS. MINIMUM NUMBER OF ANCHOR BOLTS PER END SECTION BASE PLATE SHALL BE (6), MINIMUM NUMBER OF RAIL CLIPS PER END SECTION BASE PLATE SHALL BE (4).



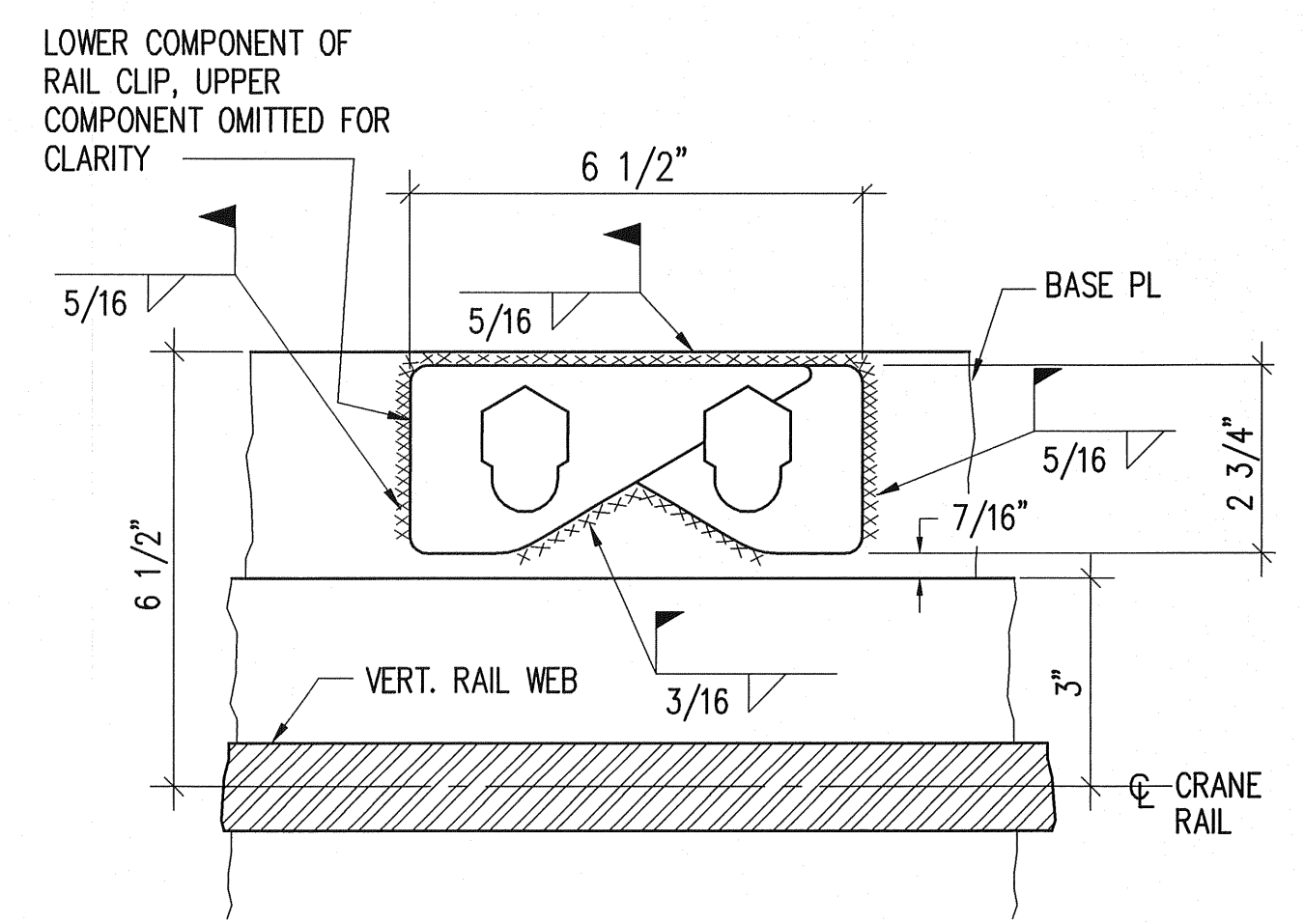
**SECTION - LEVELING BOLT**  
SCALE: 3"=1'-0"

5  
-



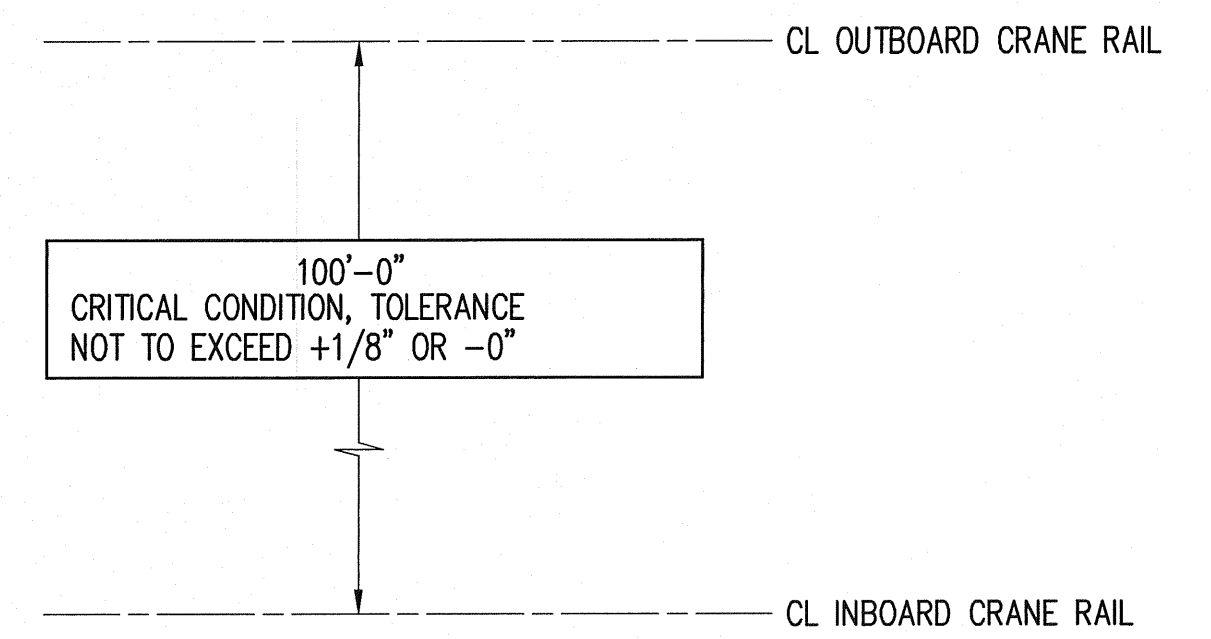
**SECTION - RAIL INSTALLATION**  
SCALE: NTS

2  
-



**DETAIL - RAIL CLIP**  
SCALE: NTS

3  
-



**CRANE RAIL TOLERANCES**  
SCALE: NTS

4  
-

**PORT OF TACOMA**  
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1201 Pacific Avenue, Suite 800  
Tacoma, Washington 98402  
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**kpfi**

APPROVED	<i>H. Adams</i> CHIEF ENGINEER - DATE 2/24/17	DRAWING DATE: 05-21-2007	PROJECT ENGR. - DATE GGN 05/2007	CHECKED BY - DATE RKJ 05/2007	DATE 05/2007
PORT OF TACOMA TACOMA, WA 98401		REVISION		MARK	
PORT PARCEL 17 & 18		E. ALEXANDER AVENUE		BY: APPROVED: DATE:	

**PORT OF TACOMA**  
EAST BLAIR ONE WHARF  
CRANE RAIL DETAILS

**EP-6305**  
**S60.0**  
SHEET 180 OF 215

CONTRACT NUMBER: 068018  
PROJECT NUMBER: E2623  
PHASE: BID SET

TOWNSHIP: 21N RANGE: 3E SECTION: 27  
DALLUM - HORIZ.  
DRAWING SCALE: AS SHOWN

**BID SET**

### PORT PRE-PURCHASED PILING NOTES

THE PORT HAS PRE-ORDERED PILING FOR THE PROJECT AS FOLLOWS:

1. SHEET PILING BELOW THE WHARF CONCRETE BULKHEAD HAS BEEN PRE-PURCHASED AS SHOWN BELOW AND WILL BE STORED WHERE SHOWN ON SHEET C5.0 IN THE "SHEET PILE STAGING AREA". SEE SPECIFICATIONS FOR DELIVERY SCHEDULE OF SHEET PILING.
2. CONCRETE PILING REQUIRED TO CONSTRUCT THE WHARF FROM APPROXIMATELY GRIDS 28 THROUGH 53 HAVE BEEN PRE-ORDERED AS SHOWN BELOW. THESE PILES ARE BEING FABRICATED BY CONCRETE TECHNOLOGY CORPORATION, LOCATED AT 1123 PORT OF TACOMA ROAD. CONCRETE TECHNOLOGY CORPORATION WILL LOAD THE CONCRETE PILING ON THE WHARF CONTRACTOR'S BARGE AT CONCRETE TECHNOLOGY'S FACILITY IN TACOMA. SEE SPECIFICATIONS FOR DELIVERY SCHEDULE OF CONCRETE PILING.

#### PORT PRE-PURCHASED CONCRETE PILING SUMMARY

PILE TYPE	ROW LOCATION	GRID LOCATION	ORDER LENGTH	QUANTITY PROVIDED
24" SOLID OCT - TYPE 1	H, J, K	27-53	143'-0"	(151)
24" SOLID OCT - TYPE 2	E, F, G	27-53	138'-6"	(27)
			140'-6"	(54)
24" SOLID OCT - TYPE 3	A, B, C, D	27-53	141'-0"	(160)

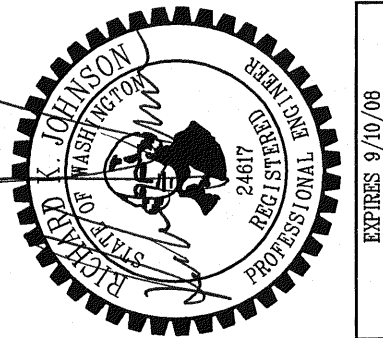
#### PORT PRE-PURCHASED STEEL SHEET PILING

PILE TYPE & MATERIAL	ORDER LENGTH (L)	QUANTITY PROVIDED
PZ22 SHEET PILE PAIRS. ASTM A690, GR 50	40'-0"	(351) WELDED, COATED PAIRS

**BID SET**

EP-6305  
**S61.0**  
SHEET 181 OF 215  
CONTRACT NUMBER: 068018  
DRAWING NUMBER: S61.0  
PHASE: BID SET

PORT OF TACOMA  
EAST BLAIR ONE WHARF  
PORT PREORDERED PILING



APPROVED  
*H. Adams*  
CHIEF ENGINEER - DATE  
23 44707

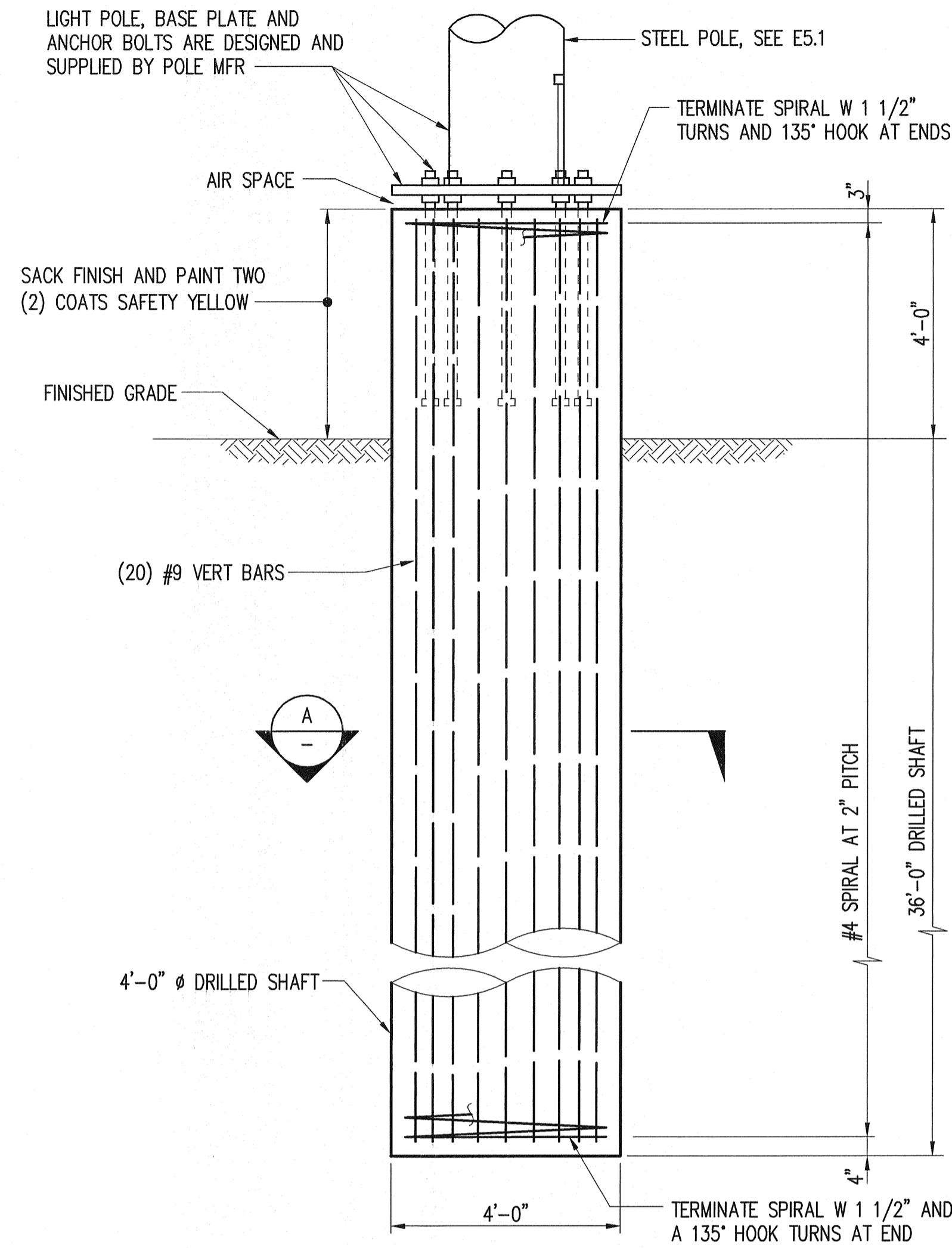
RKJ 05/2007  
CHECKED BY - DATE  
GGN 05/2007  
PROJECT ENGR. - DATE

**PORT OF TACOMA U.S.A.**

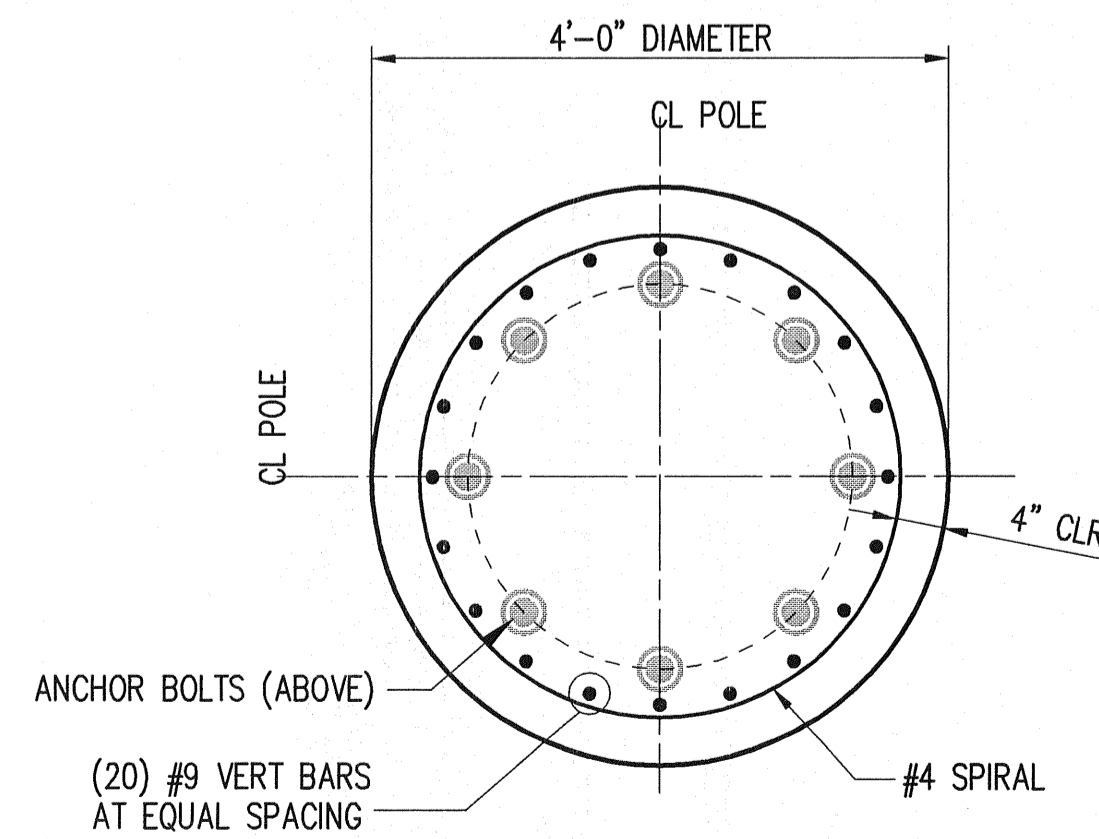
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PORT OF TACOMA CONSULTING ENGINEERS  
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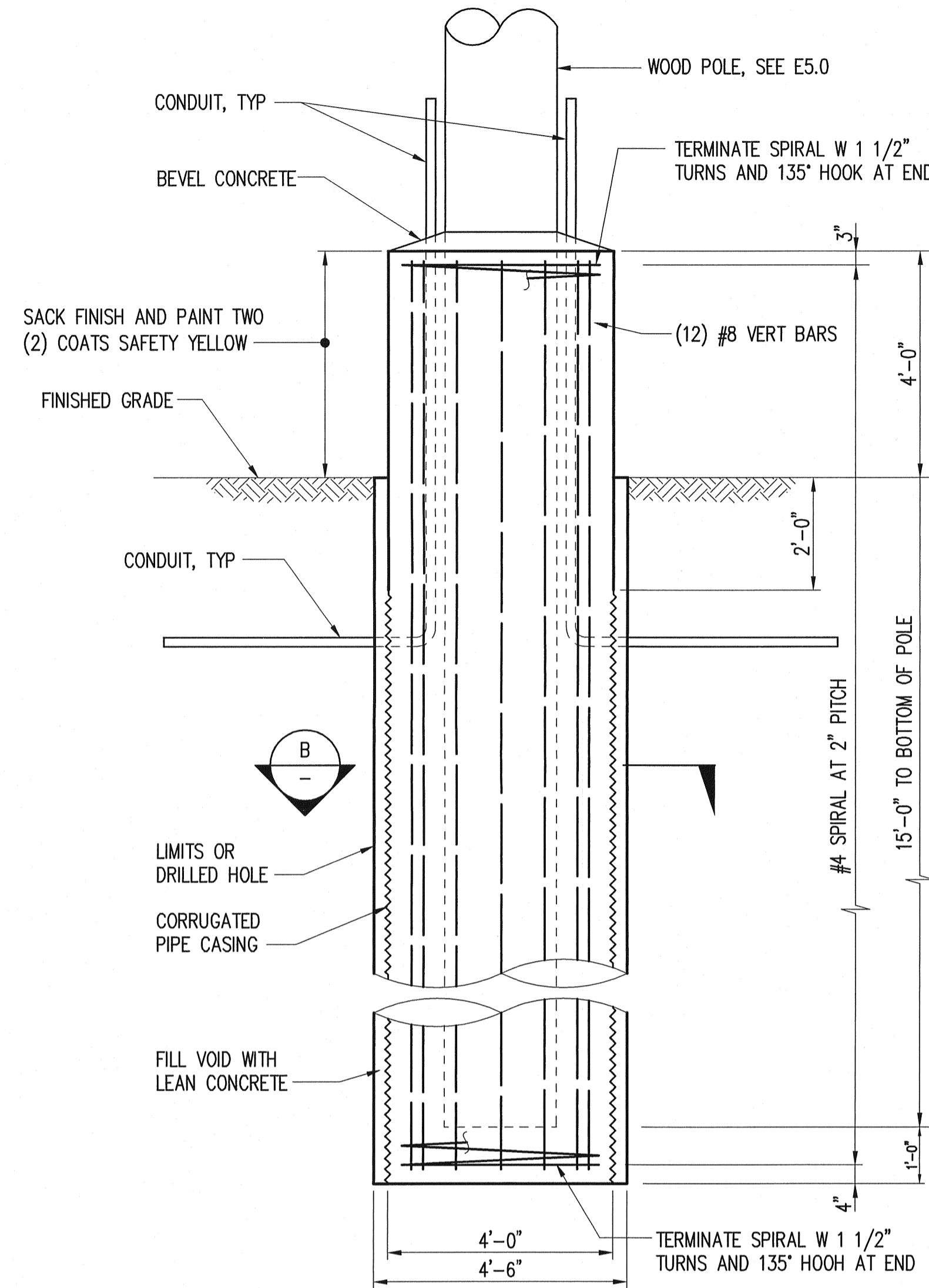
MARK REVISION BY: APPROVED: DATE:



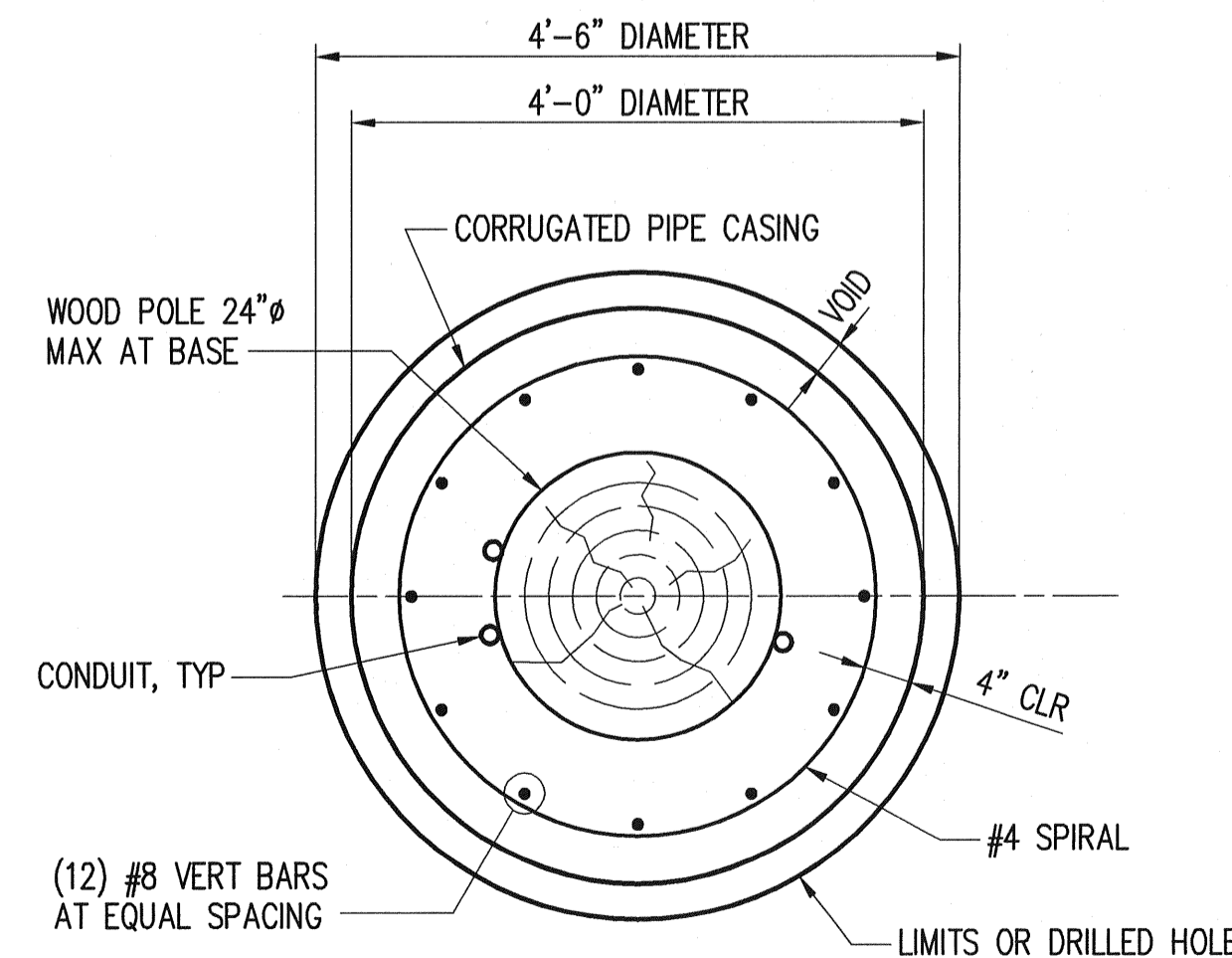
**ELEVATION - SITE LIGHTING POLE FOUNDATION**  
SCALE: 1/2"=1'-0"



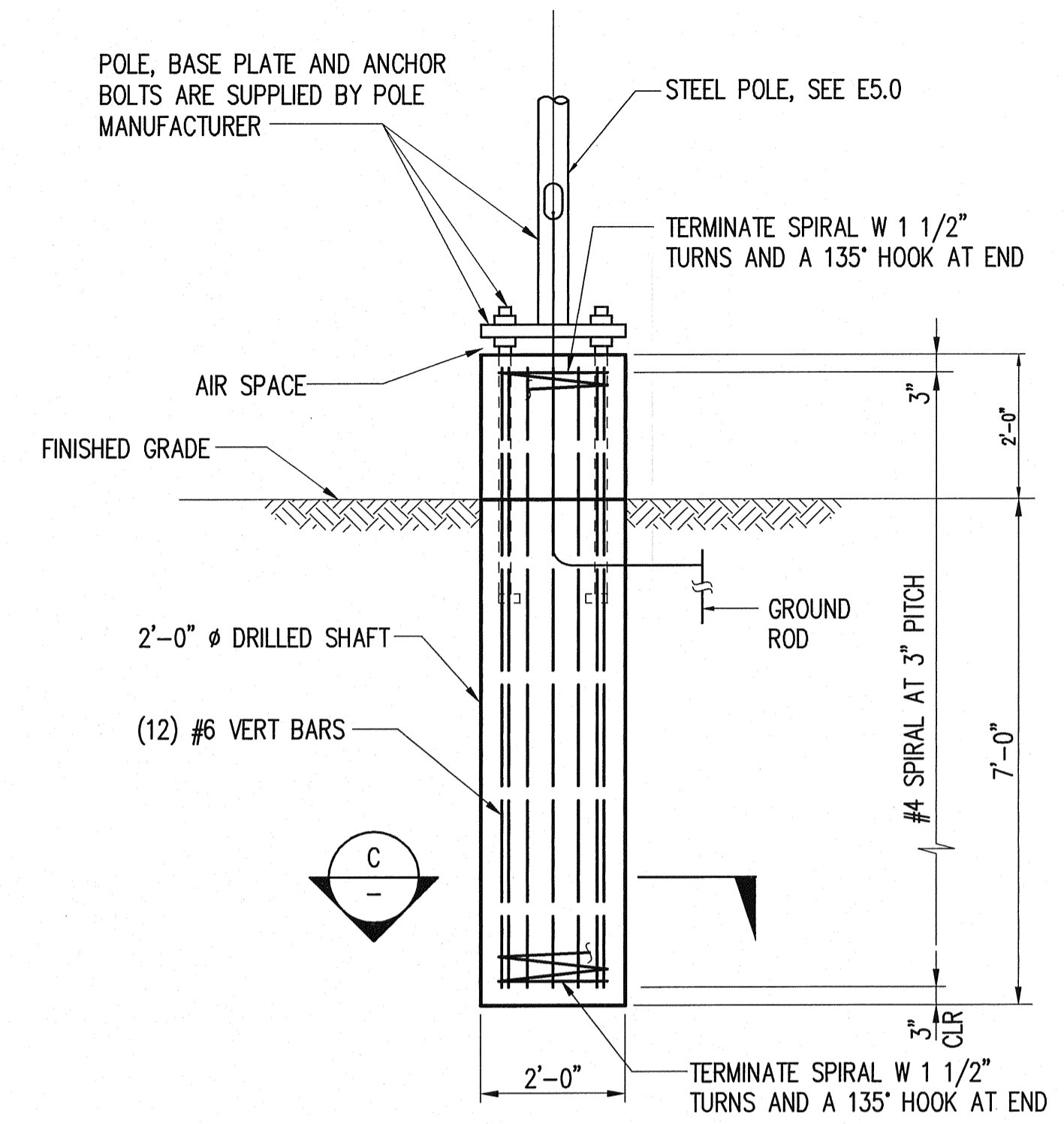
**SECTION A**  
SCALE: 3/4"=1'-0"



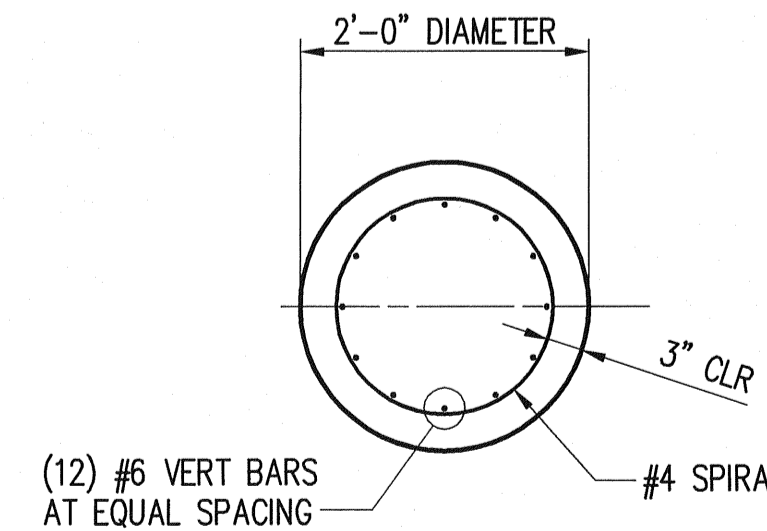
**ELEVATION - COMMUNICATIONS POLE FOUNDATION**  
SCALE: 1/2"=1'-0"



**SECTION B**  
SCALE: 3/4"=1'-0"



**ELEVATION - PARKING AREA LIGHTING POLE FOUNDATION**  
SCALE: 1/2"=1'-0"



**SECTION C**  
SCALE: 3/4"=1'-0"

**NOTES:**

**GENERAL**

- FOR GENERAL NOTES SEE S1.0
- FOR POLES AND ELECTRICAL COMPONENTS SEE E1.7.
- FOR WELD DETAIL AT SPIRAL ENDS SEE 5/S17.0.

**IBC 2003 - EARTHQUAKE DESIGN DATA**

- FOR GENERAL EARTHQUAKE DESIGN DATA SEE S1.1
- BASIC SEISMIC FORCE RESISTING SYSTEM (NONBUILDING STRUCTURE)  
LIGHTING POLES - INVERTED PENDULUM TYPE STRUCTURE  
COMMUNICATIONS POLE - TELECOMMUNICATION TOWER
- DESIGN BASE SHEAR (V):  

SITE LIGHTING POLE	$V_x = V_y = 3.1$ KIP
COMMUNICATIONS POLE	$V_x = V_y = 2.4$ KIP
PARKING AREA LIGHTING POLE	$V_x = V_y = 0.9$ KIP
- SEISMIC RESPONSE COEFFICIENT:  

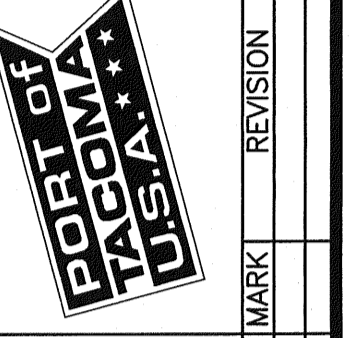
SITE LIGHTING POLE	$C_{sx} = C_{sy} = 0.34$
COMMUNICATIONS POLE	$C_{sx} = C_{sy} = 0.45$
PARKING AREA LIGHTING POLE	$C_{sx} = C_{sy} = 0.34$
- RESPONSE MODIFICATION FACTORS:  

R = 2.0 (LIGHTING POLES)	
= 1.5 (COMMUNICATIONS POLE)	(ASCE 7 TABLE 9.14.5.1.1)
$\rho = 1.0$	REDUNDANCY FACTOR (IBC 1617.2.1)

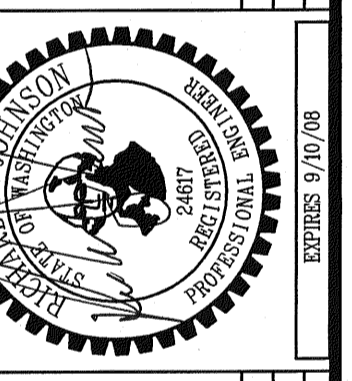
**IBC 2003 - WIND DESIGN DATA SEE NOTES BELOW:**

- FOR GENERAL WIND DESIGN DATA SEE S1.1
- DESIGN WIND PRESSURE  $p = 0.00256 \times K_z \times K_{zt} \times K_d \times V^2 \times I$  (PSF) (ACSE 7 Eq. 6-15)  
 = 24.2 (COMMUNICATIONS POLE)  
 = 19.3 (PARKING AREA LIGHTING POLE)
- REACTIONS DUE TO WIND LOAD AT THE BASE OF THE SITE LIGHTING POLE HAVE BEEN PROVIDED BY THE LIGHT POLE MANUFACTURER. THESE REACTIONS ARE BASED ON A DESIGN WIND SPEED OF 100 MPH.

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APPROVED: *M. Adams*  
CHIEF ENGINEER - DATE: 05/21/2007  
PROJECT ADDRESS: 2340 E. ALEXANDER AVENUE  
PORT PARCEL 17 & 18



PORT OF TACOMA  
EAST BLAIR ONE WHARF  
MISCELLANEOUS FOUNDATION DETAILS

EP-6305  
S62.0  
SHEET 182 OF 215

BID SET