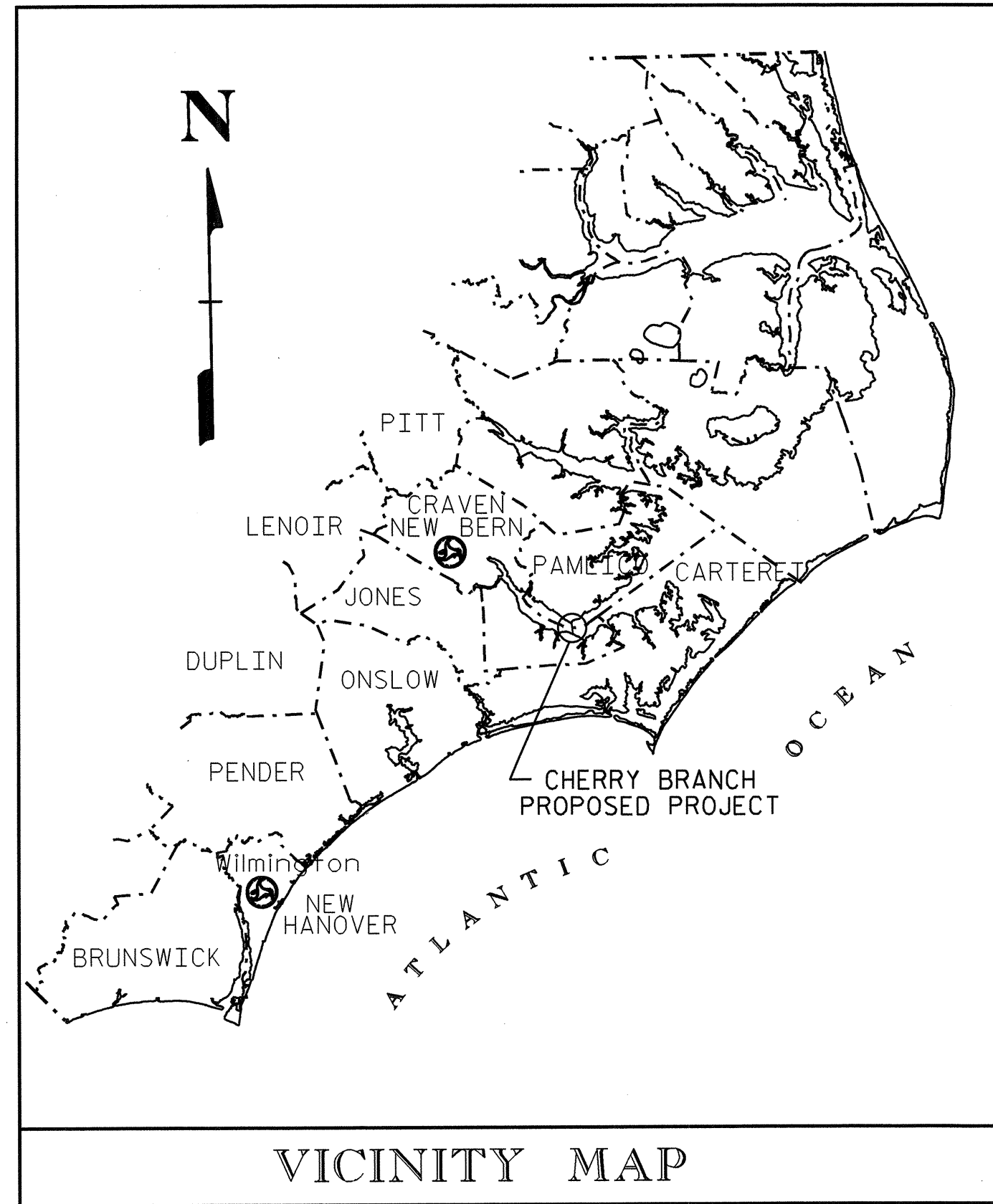


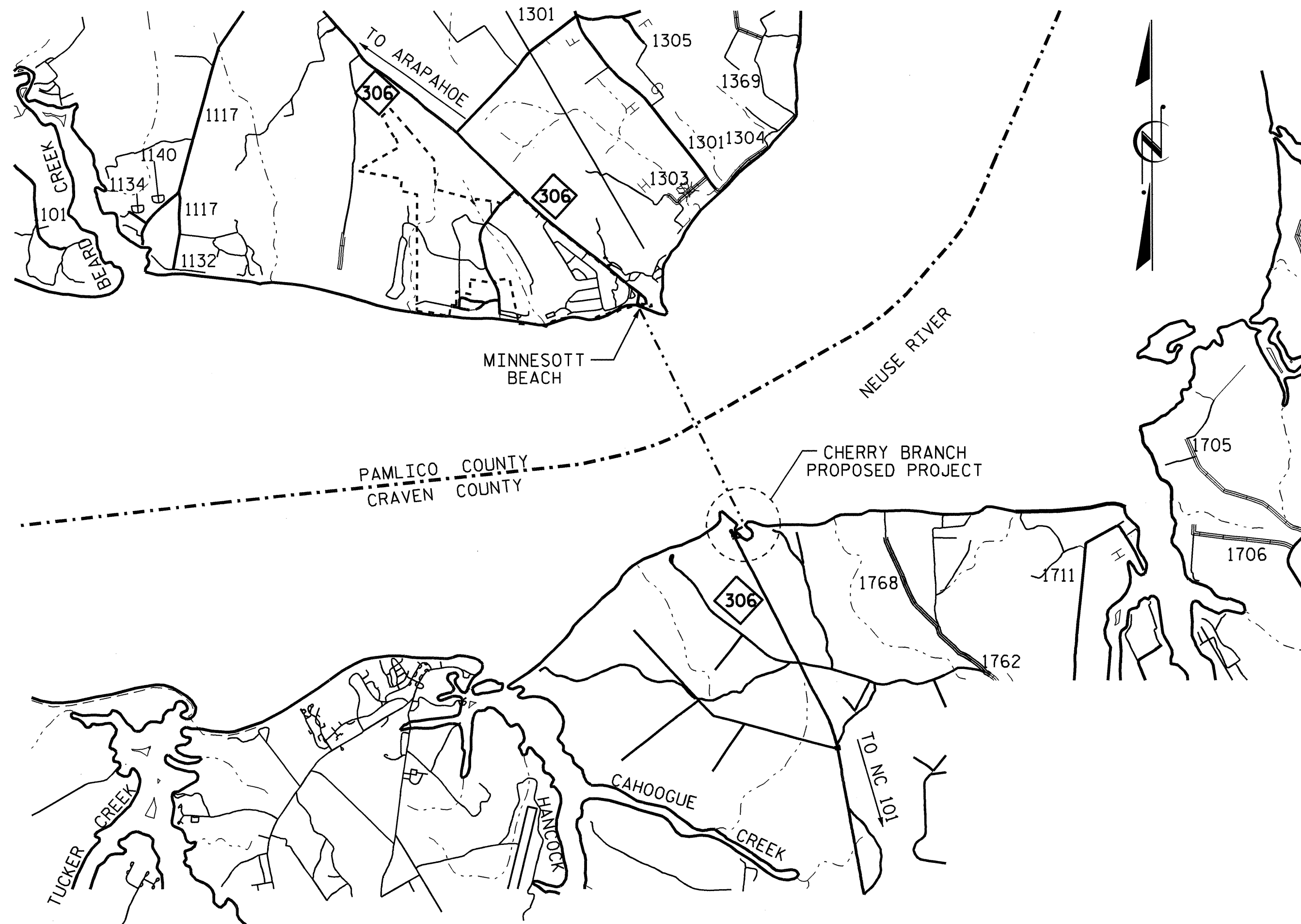
F-5500



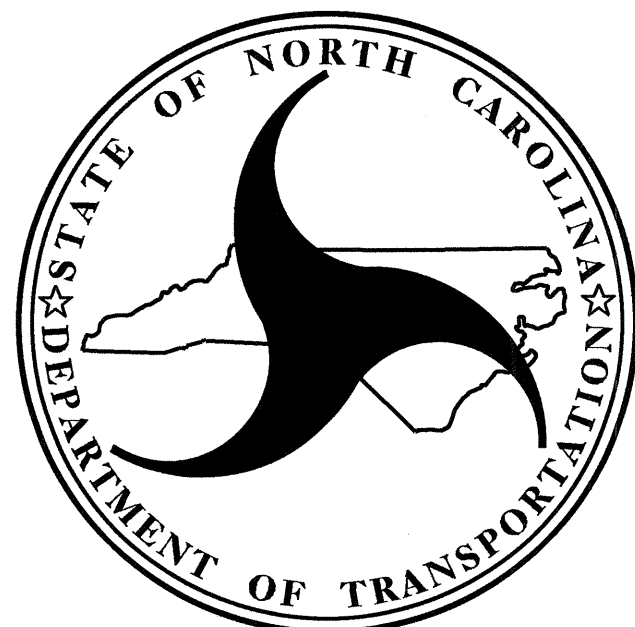
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**CRAVEN COUNTY**

**LOCATION: NC 306 AT CHERRY BRANCH FERRY BASIN**  
**TYPE OF WORK: FERRY RAMP, PIVOT BENT, LIFT BENT, BULKHEAD, TIEBACK SYSTEM AND DOLPHINS.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	F-5500		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45530.1.1	FBD-0306(8)	P.E., CONST.	



STRUCTURES



Prepared In the Office of:  
**DIVISION OF HIGHWAYS**  
 2012 STANDARD SPECIFICATIONS

**LETTING DATE:**  
 DECEMBER 18, 2012

**O. R. AZIZI, P.E.**  
 PROJECT ENGINEER

**A. KEITH PASCHAL, P.E.**  
 PROJECT DESIGN ENGINEER

**STRUCTURES MANAGEMENT UNIT**

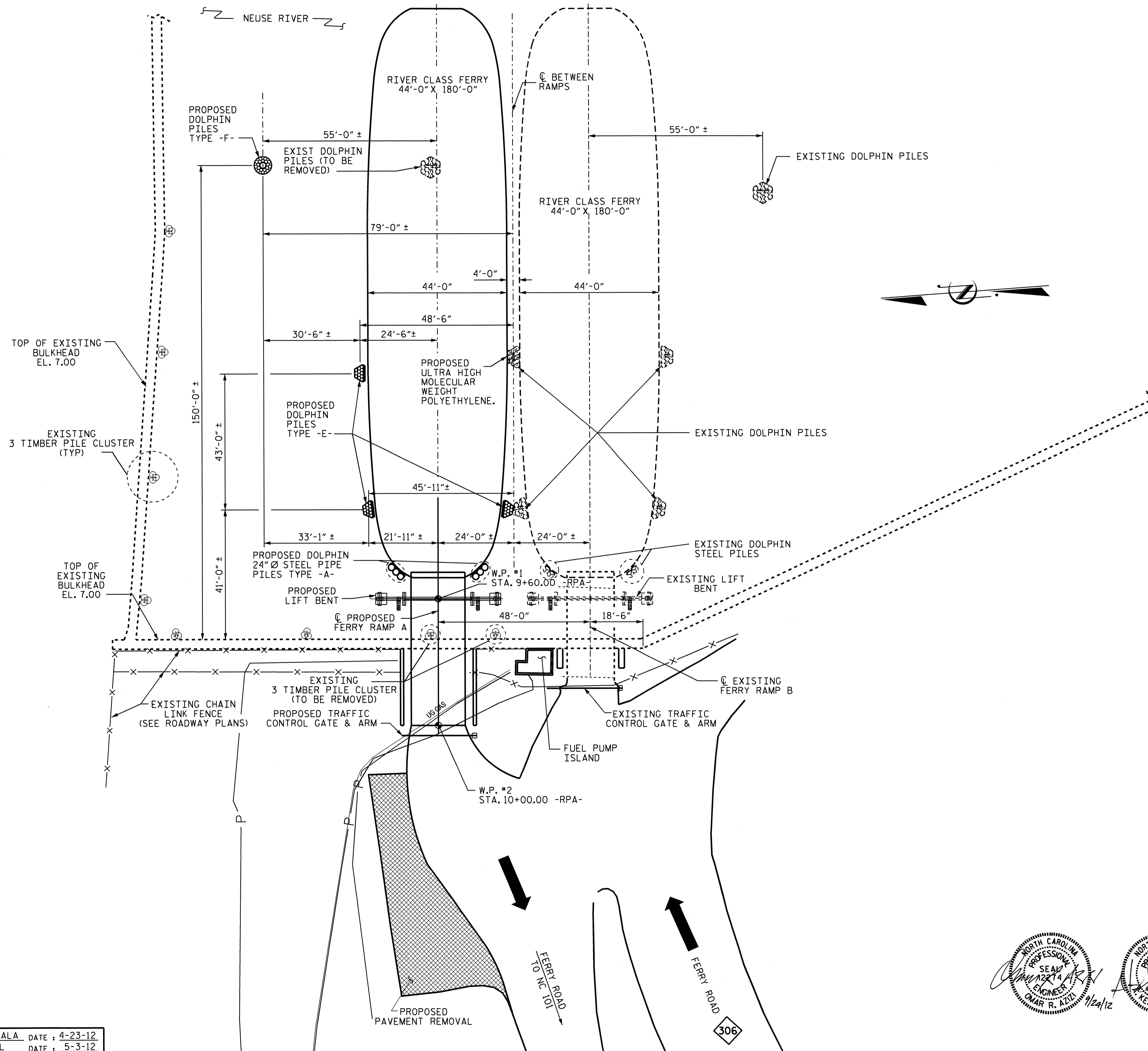
**DIVISION OF HIGHWAYS**  
**STATE OF NORTH CAROLINA**

P.E.  
 STATE DESIGN ENGINEER

**DEPARTMENT OF TRANSPORTATION**  
**FEDERAL HIGHWAY ADMINISTRATION**

APPROVED FOR  
 DIVISION ADMINISTRATOR

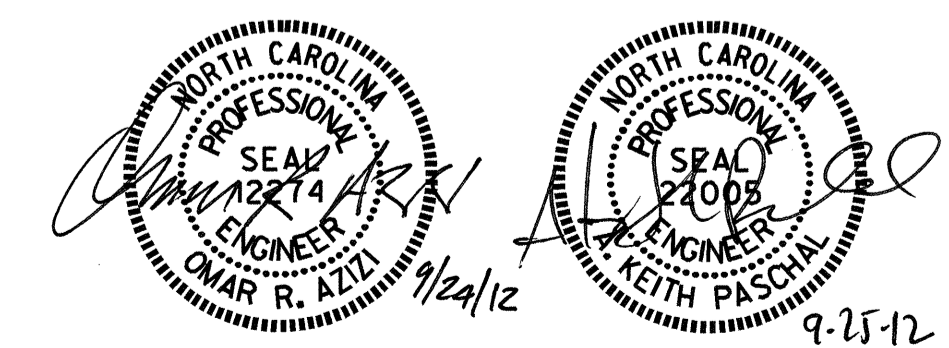
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PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

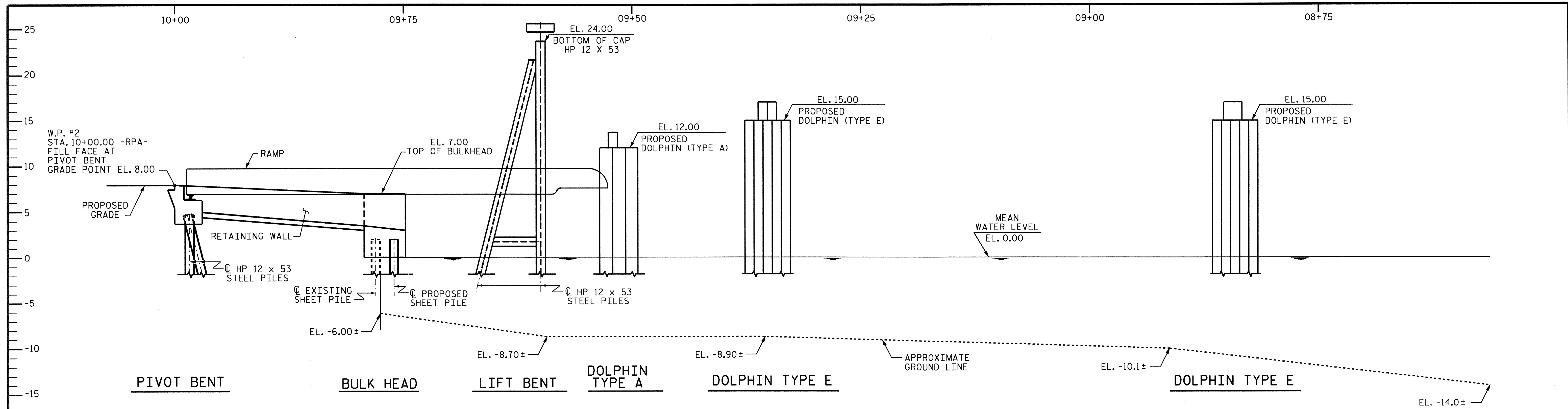
SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 CHERRY BRANCH  
 FERRY BASIN

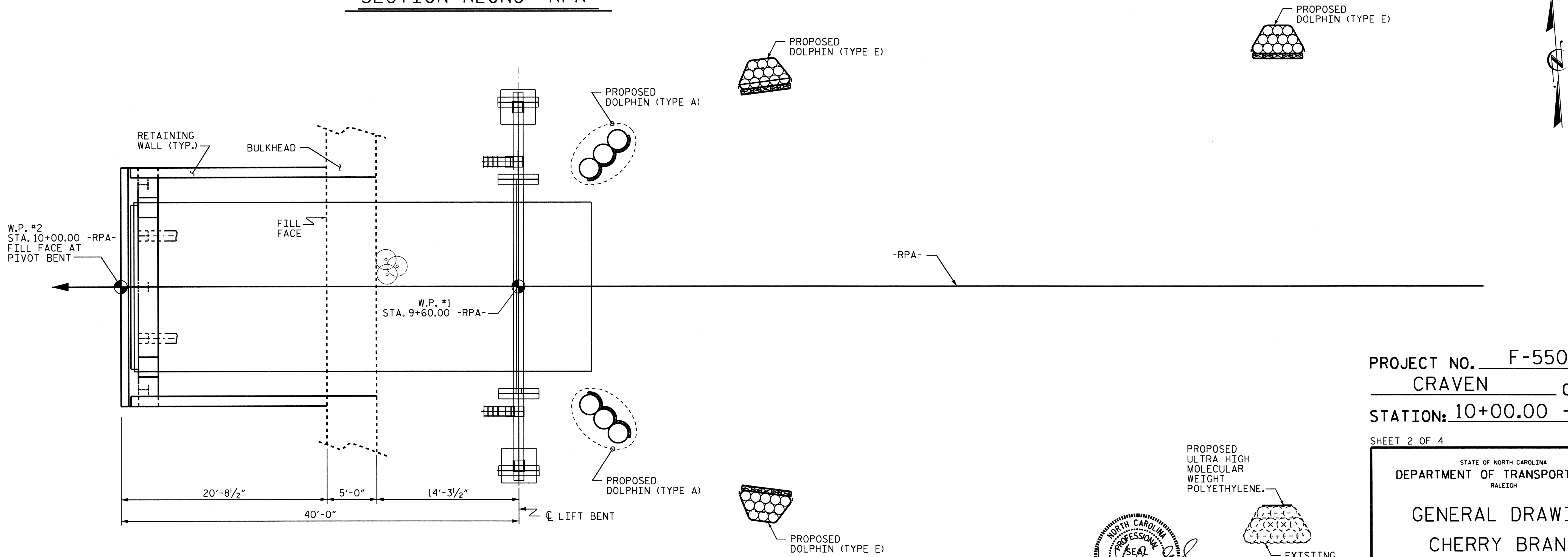


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1	
1			3			TOTAL SHEETS	
2			4			29	

DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : A.K.PASCHAL DATE : 5-3-12



SECTION ALONG -RPA-



PLAN OF RAMP A

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-  
 SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING CHERRY BRANCH FERRY BASIN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-2
					TOTAL SHEETS 29

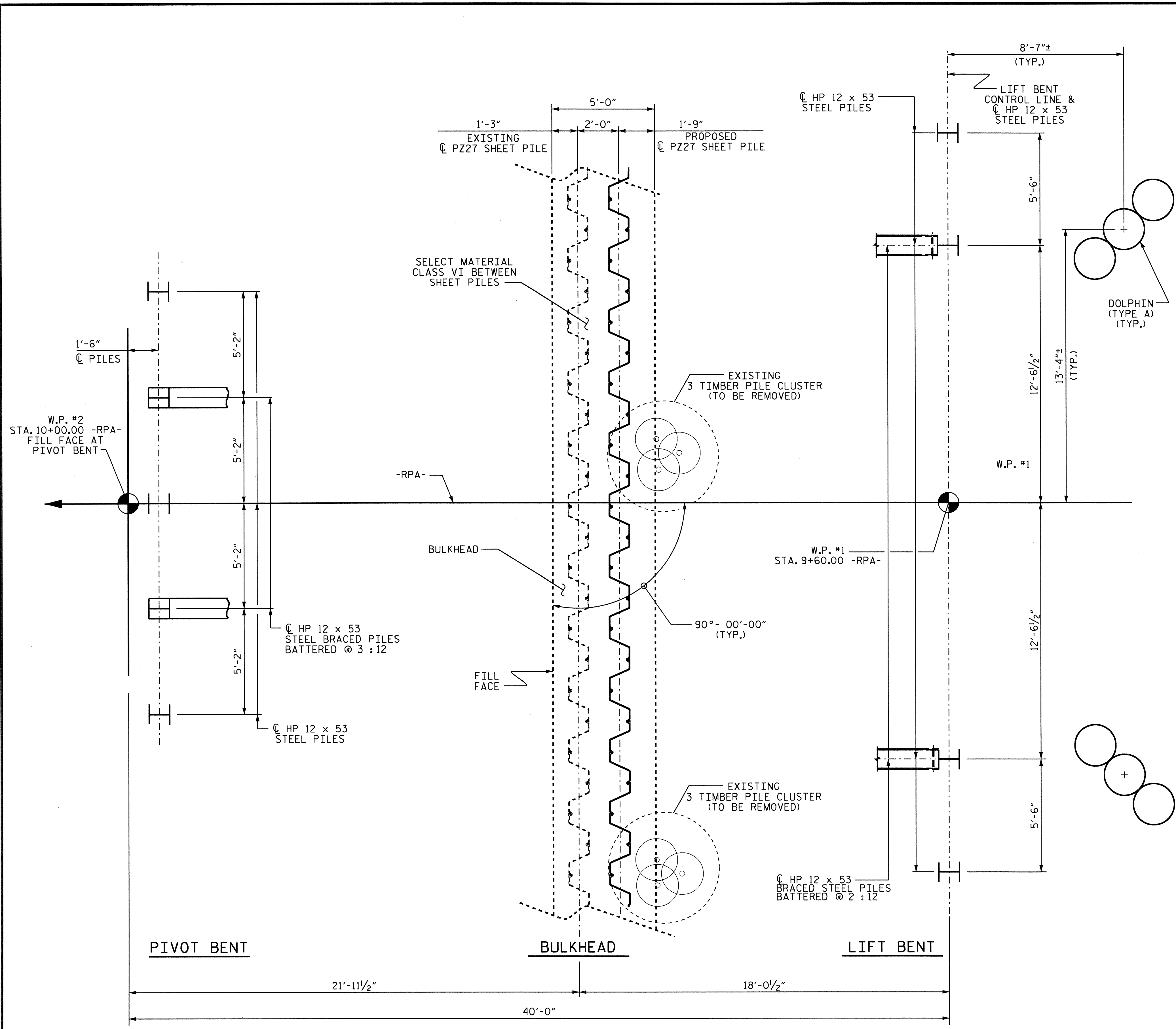
PROPOSED  
ULTRA HIGH  
MOLECULAR  
WEIGHT  
POLYETHYLENE.

EXISTING  
DOLPHIN  
PILES  
(TYPE D)

PROFESSIONAL ENGINEER  
 KEITH PASCUAL  
 9.28.12

DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K.P. SEDA DATE : 6-14-12

24-SEP-2012 10:33  
 S:\DPCI\Keith\Barodawala\Cherry Branch Ramp A.dgn  
 Kpaschal



**NOTES**

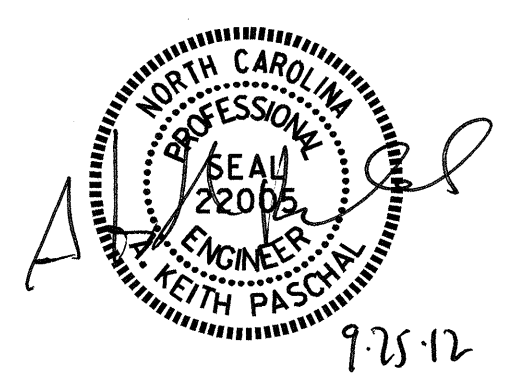
- FOR PILES, SEE SPECIAL PROVISIONS.
- THE ALLOWABLE BEARING CAPACITY FOR PILES AT PIVOT BENT IS 30 TONS PER PILE.
- DRIVE PILES AT PIVOT BENT TO A REQUIRED BEARING CAPACITY OF 60 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.
- THE ALLOWABLE BEARING CAPACITY FOR PILES AT LIFT BENT IS 15 TONS PER PILE.
- DRIVE PILES AT LIFT BENT TO A REQUIRED BEARING CAPACITY OF 80 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWDRAG OR NEGATIVE SKIN FRICTION AND SCOUR.
- INSTALL HP 12X53 STEEL PILES AT LIFT BENT TO A TIP ELEVATION NO HIGHER THAN -50 FT.
- INSTALL PP 24"X0.5" STEEL PIPE PILE DOLPHINS TO A TIP ELEVATION NO HIGHER THAN -58 FT.
- INSTALL 14" MINIMUM BUTT DIAMETER TREATED TIMBER PILE DOLPHINS TO A TIP ELEVATION NO HIGHER THAN -35 FT.
- THE SCOUR CRITICAL ELEVATION FOR LIFT BENT IS ELEVATION -30 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 20 TO 25 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BOTH PIVOT AND LIFT BENTS. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.
- STEEL SHEET PILE SHALL BE INSTALLED TO AN ELEVATION NO HIGHER THAN -59.50 FT. FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.
- BOTH VERTICAL AND BATTERED HP 12 X 53 STEEL PILES SHALL BE INSTALLED TO A MINIMUM TIP ELEVATION OF -50 FT. AND 15 TONS/PILE BEARING AT THE LIFT BENT.
- FOR LOCATION OF PROPOSED TIMBER DOLPHINS TYPE E & TYPE F SEE SHEET 1 OF 4.

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-  
 SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**FOUNDATION LAYOUT**  
**CHERRY BRANCH FERRY BASIN**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			29



DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K.P. SEDA DATE : 6-25-12

24-SEP-2012 10:33  
 S:\DPCI\Keith\Barodawala\Cherry Branch Ramp A.dgn  
 kpaschal

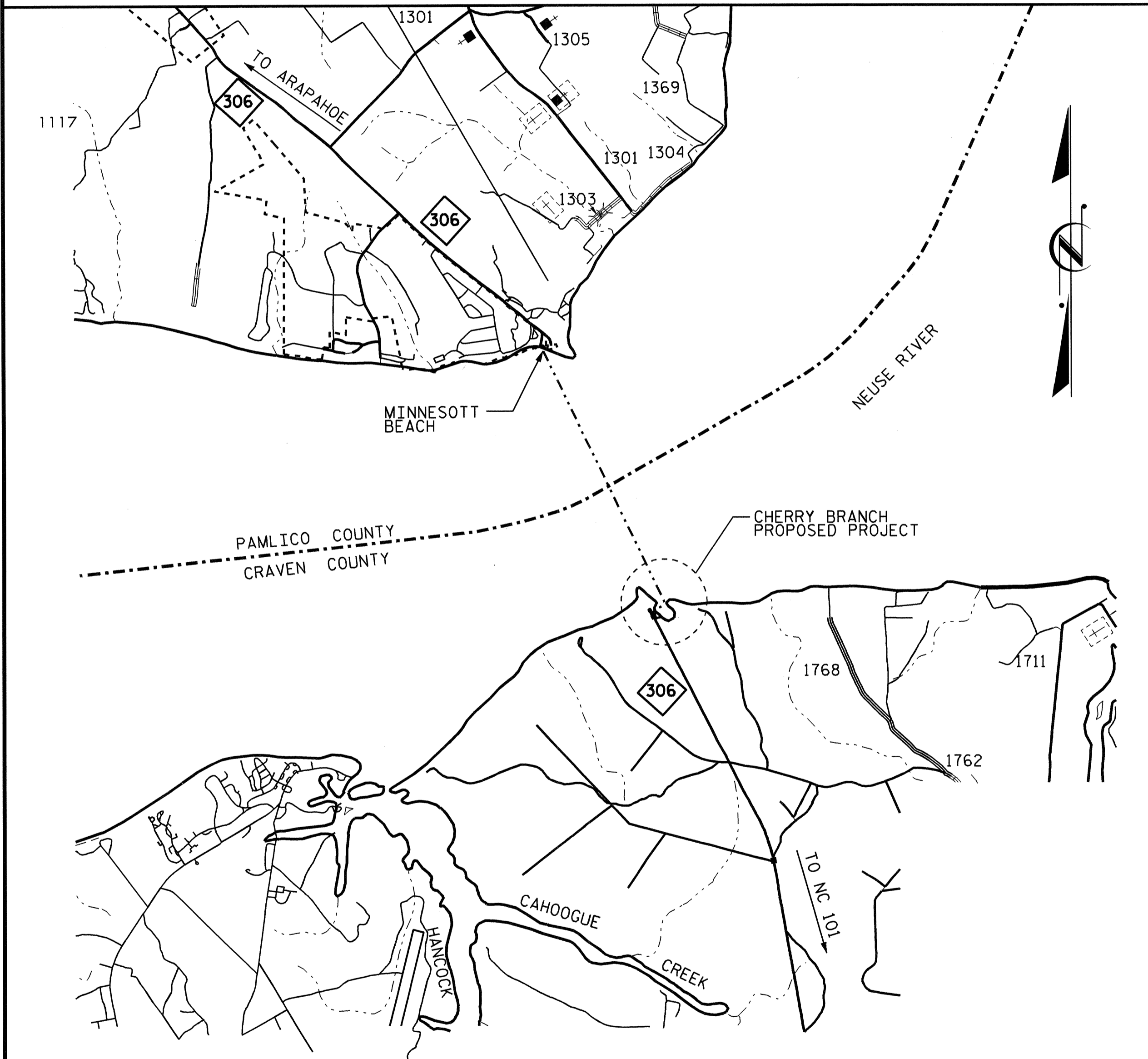
**TOTAL BILL OF MATERIAL**

	STRUCTURAL STEEL	CLASS "AA" CONCRETE	EPOXY COATED REINFORCING STEEL	REMOVAL OF EXISTING BULKHEAD	TIEBACK SYSTEM ANCHOR RODS	HP 12X53 STEEL PILES	12" PRESTRESSED CONCRETE PILES	24" PRESTRESSED CONCRETE PILES	PAINTING STEEL PILES	STEEL SHEET PILES	RAMP LIFT AND LUBRICATION SYSTEM	ELECTRICAL SYSTEM	TREATED TIMBER PILES	24" Ø STEEL PIPE PILES	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE	UNTREATED STRUCTURAL TIMBER	REMOVAL OF EXISTING PILES	1/4" Ø STEEL PIPE RAIL	PILE REDRIVES	SELECT MATERIAL CLASS III	SELECT MATERIAL CLASS VI	6" CONCRETE SLOPE PROTECTION					
	APPROX. LBS.	CU. YDS.	LBS.	LUMP SUM	LIN. FT.	NO.	LIN. FT.	NO.	LIN. FT.	NO.	LIN. FT.	LUMP SUM	SO. FT.	NO.	LIN. FT.	NO.	LIN. FT.	SO. FT.	SO. FT.	M.B.F.	LUMP SUM	LIN. FT.	EA.	CU. YDS.	TONS	SO. YD.		
BULKHEAD		43.0	6945																						250	43.3		
RAMP A	52386																			0.073		92						
PIVOT BENT		8.9	1722			5	250																2					
LIFT BENT	6068	6.9	57			6	450																3					
DOLPHINS		3.7											54	2712	7	527		134	205	0.990								
TIEBACK SYSTEM		15.4	986		540		5	150	8	200														1000				
<b>TOTAL</b>	<b>58454</b>	<b>77.9</b>	<b>9710</b>	<b>LUMP SUM</b>	<b>540</b>	<b>11</b>	<b>700</b>	<b>5</b>	<b>150</b>	<b>8</b>	<b>200</b>	<b>LUMP SUM</b>	<b>3705</b>	<b>LUMP SUM</b>	<b>LUMP SUM</b>	<b>54</b>	<b>2712</b>	<b>7</b>	<b>527</b>	<b>134</b>	<b>205</b>	<b>1.063</b>	<b>LUMP SUM</b>	<b>92</b>	<b>5</b>	<b>1000</b>	<b>250</b>	<b>43.3</b>

**NOTES**

- ASSUME LIVE LOAD = HS 20 OR ALTERNATE LOADING
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- ALL REINFORCING STEEL SHALL BE GRADE 60.
- ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 36.
- FOR COORDINATION WITH FERRY DIVISION, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING BULKHEAD HAS TIEBACKS.
- THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.
- CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE CONCRETE, AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- THE CONCRETE IN THE BULKHEAD SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.
- FOR CORROSION PROTECTION OF ANCHOR RODS, SEE SPECIAL PROVISIONS FOR PERMANENT ANCHOR TIEBACK SYSTEM.
- FOR CORROSION PROTECTION OF STEEL SHEET PILES, STEEL PIPE PILES, AND STEEL H PILES, SEE SPECIAL PROVISIONS FOR PAINTING STEEL PILES.
- FOR TRAFFIC CONTROL GATES AND ARMS, SEE ELECTRICAL SPECIFICATIONS SPECIAL PROVISIONS.
- FOR REMOVAL OF EXISTING BULKHEAD IN AREA OF PROPOSED RAMP A, SEE SPECIAL PROVISIONS.
- FOR REMOVAL OF EXISTING PILES, SEE SPECIAL PROVISIONS.
- NO SEPARATE PAYMENT WILL BE MADE FOR ANY NECESSARY EXCAVATION AS THIS IS CONSIDERED INCIDENTAL TO THE REMOVAL OF THE EXISTING BULKHEAD.
- THE FINAL GRADE OF BACKFILL SHALL BE GRADED TO PROVIDE ADEQUATE DRAINAGE AS DIRECTED BY THE ENGINEER. THE FINAL GRADE SHALL PROVIDE 12" MIN. COVER TO THE 1/4" Ø ANCHOR RODS.
- JETTING IS NOT ALLOWED.
- ALL BAR SUPPORTS USED IN THE PIVOT BENT CAP, PILE CAPS BULKHEAD AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- FOR ELECTRICAL SPECIFICATIONS, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR DOLPHINS, SEE SPECIAL PROVISIONS.
- FOR RAMP LIFT AND LUBRICATION SYSTEM, SEE MECHANICAL SPECIFICATIONS SPECIAL PROVISION.
- FOR CONCRETE COUNTERWEIGHTS, SEE SPECIAL PROVISIONS.
- FOR 1/4" Ø STEEL PIPE RAIL, SEE SPECIAL PROVISIONS.
- FOR UNTREATED WHITE OAK TIMBER, SEE SPECIAL PROVISIONS FOR DOLPHINS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.
- FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.
- FOR SCOPE OF WORK, SEE SPECIAL PROVISIONS.
- FOR CONSTRUCTION PROCEDURES, SEE SPECIAL PROVISIONS.

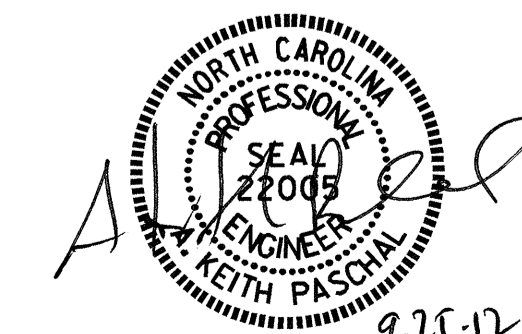
**B.M. : N. C. GEO. MARKER CRA-99 1987 DISC IN CONCRETE ANTENNA PLATFORM**



**LOCATION SKETCH**

DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K.P. SEDA DATE : 6-14-12

25-SEP-2012 12:07  
 S:\DPCI\Keith\Barodawala\Cherry Branch Ramp A.dgn  
 kpaschal



PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 4 OF 4

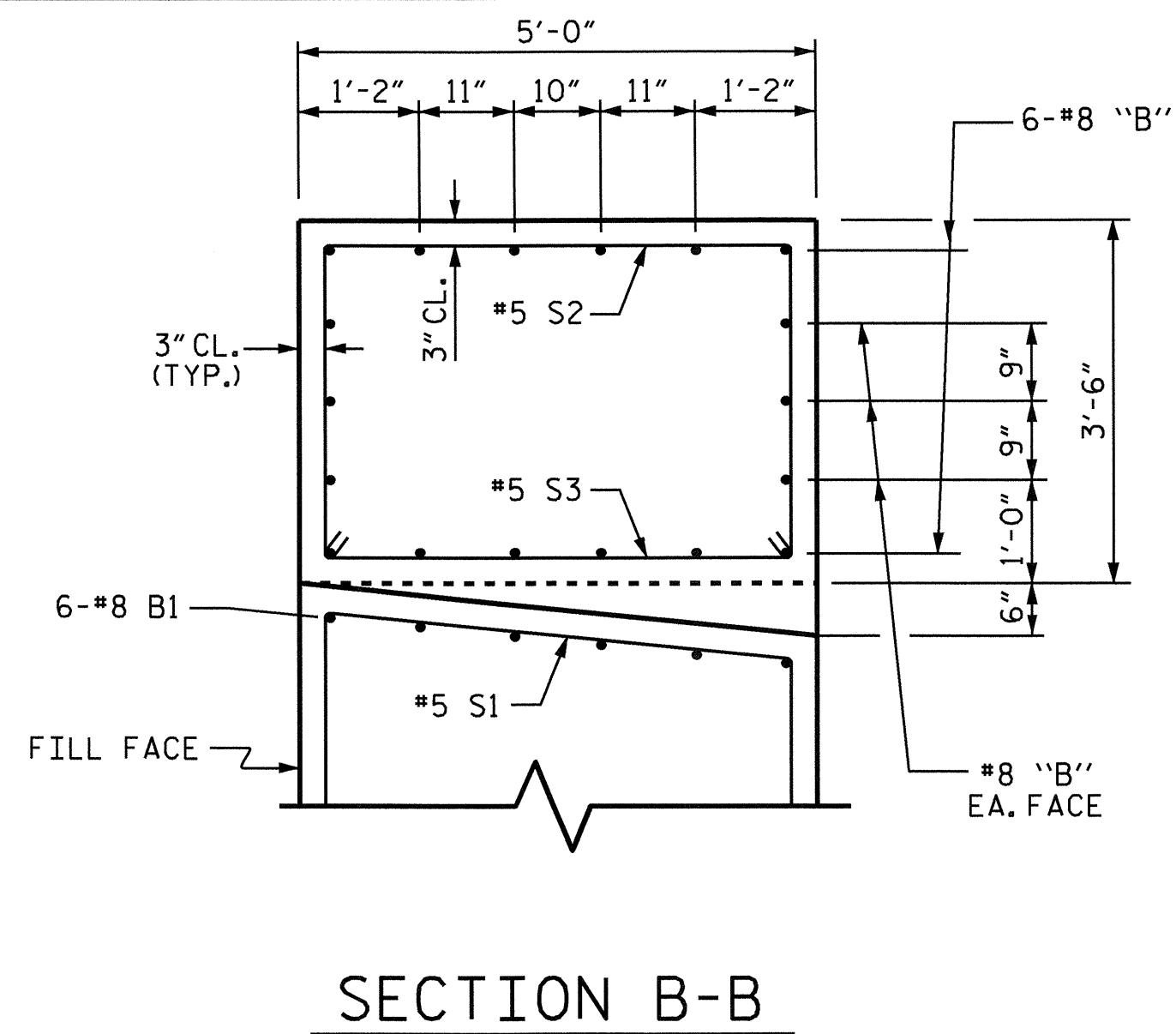
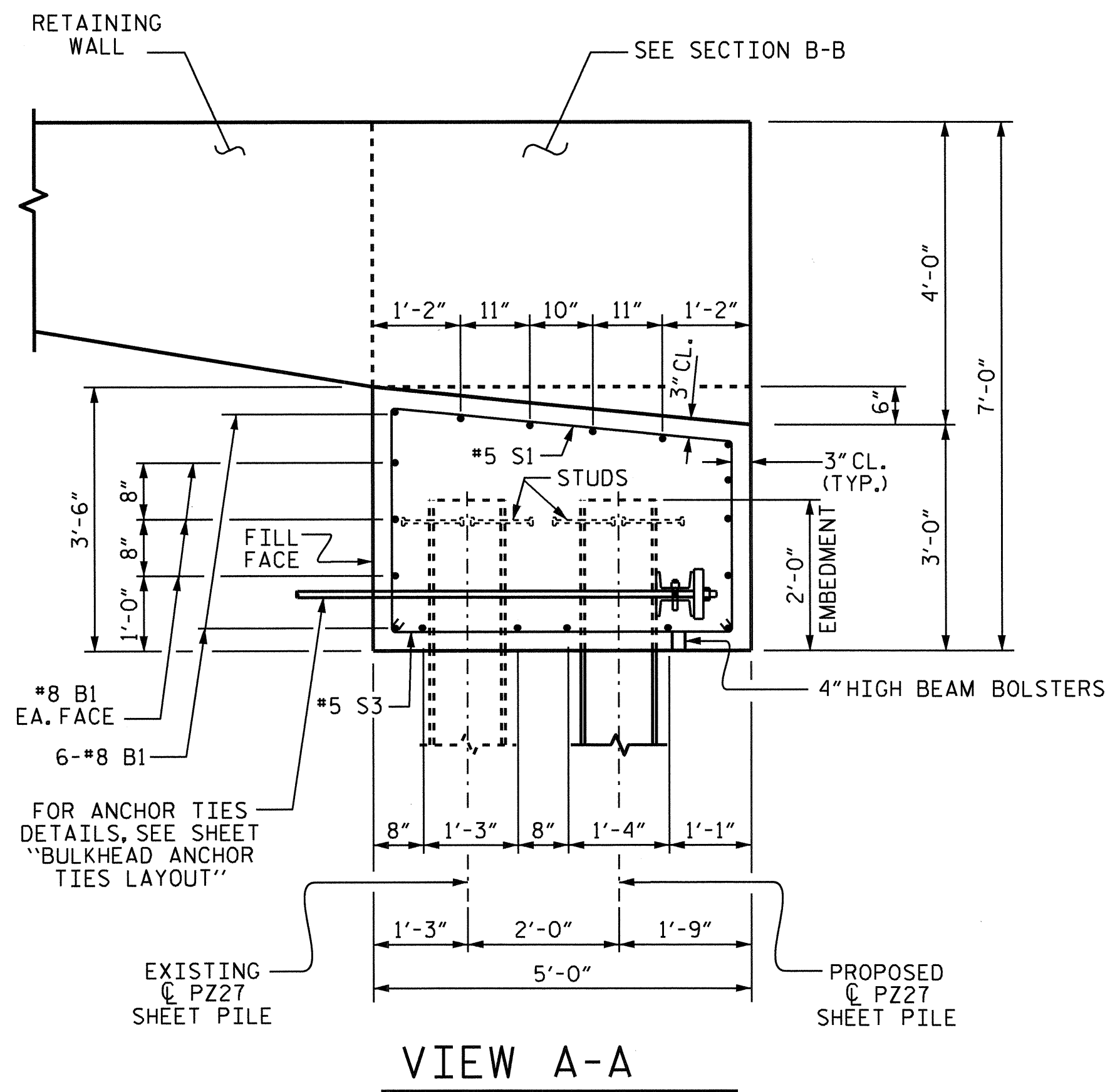
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

**CHERRY BRANCH  
 FERRY BASIN**

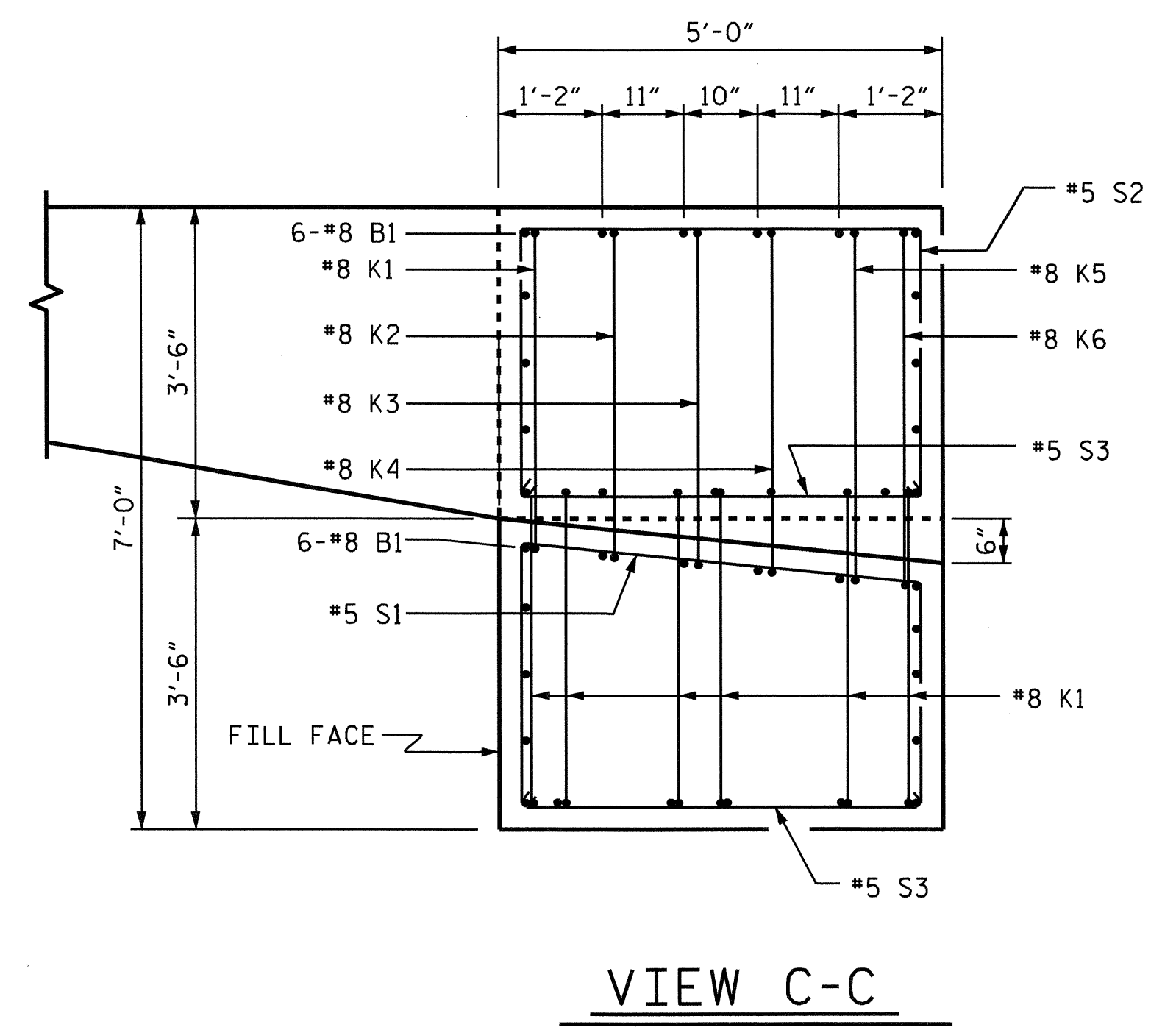
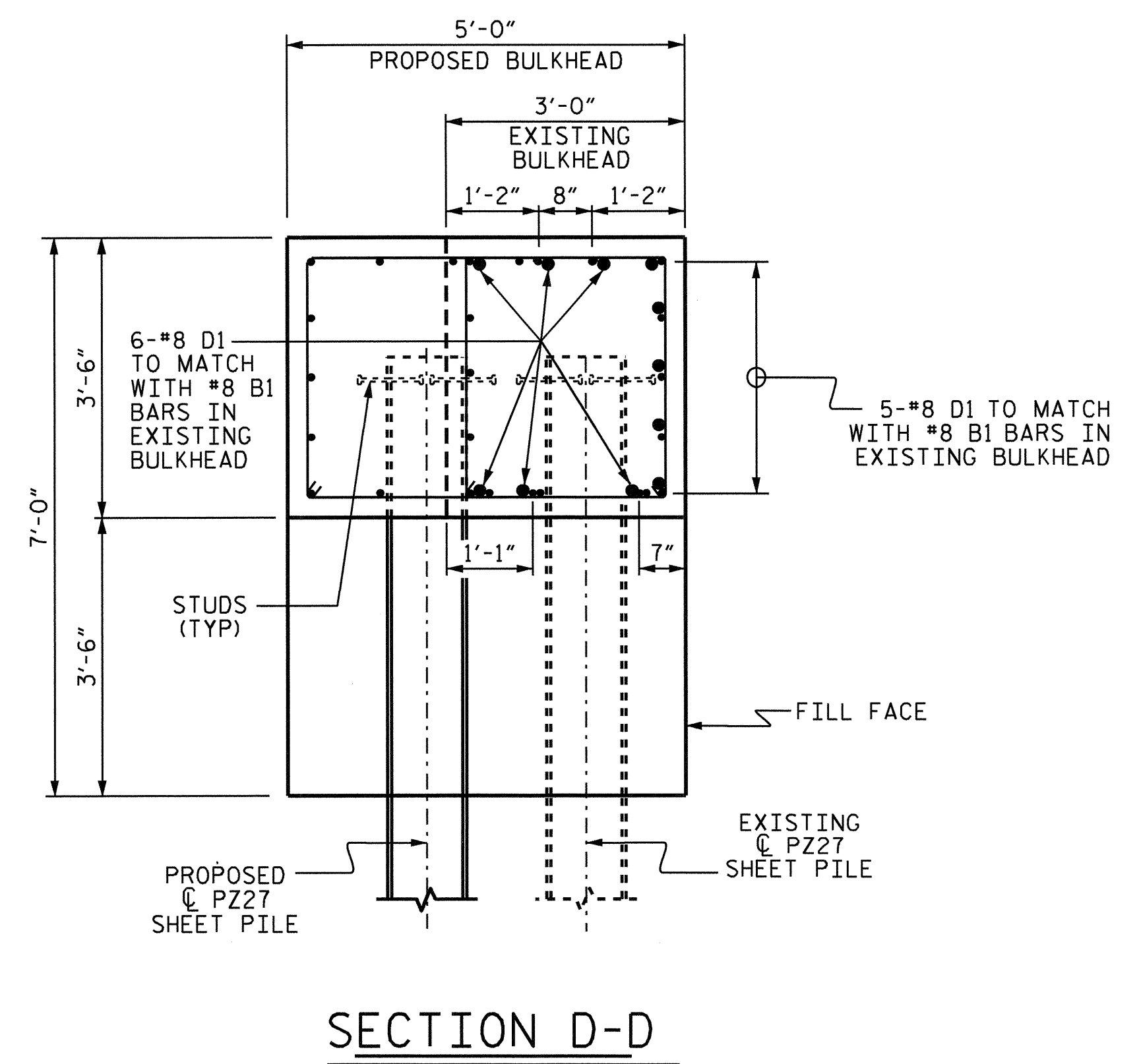
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			29





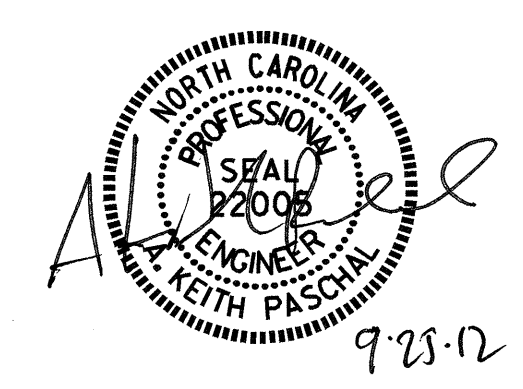
**NOTE:**  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR TIES.  
 FOR ANCHOR RODS AND ANCHOR STUDS DETAILS, SEE SHEET 1 OF 4 "TIEBACK SYSTEM"  
 FOR SELECT MATERIAL, SEE SPECIAL PROVISIONS.

- CONSTRUCTION SEQUENCE:**
- 1) REMOVE THE EXISTING COPING FROM 20 FT ± LT. -RAMP A- TO 40 FT ± RT. -RAMP A- WHILE LEAVING TIEROD CONNECTION UNDEAMAGED.
  - 2) INSTALL PROPOSED 65 FT. LONG SHEET PILE WALL AS CLOSE AS POSSIBLE TO THE EXISTING SHEET PILE WALL FROM 20 FT ± LT. -RAMP A- TO 40 FT ± RT. -RAMP A-.
  - 3) PLACE CLASS VI SELECT MATERIAL IN GAP BETWEEN THE EXISTING AND THE PROPOSED SHEET PILE WALLS. SEE STANDARD SPECIFICATIONS ARTICLE 1016-3 FOR CLASS VI SELECT MATERIAL DESCRIPTION.
  - 4) REMOVE THE WALL BACKFILL ALONG THE EXISTING AND PROPOSED ANCHOR RODS TO A DEPTH JUST BELOW ANCHOR ROD ELEVATIONS.
  - 5) INSTALL PROPOSED DEADMAN PILES.
  - 6) INSTALL PROPOSED ANCHOR RODS WITH A LOCKOFF LOAD OF 20% OF DESIGN LOAD, WHICH IS 8817 LBS PER FT ALONG THE LENGTH OF THE BULKHEAD.
  - 7) REMOVE EXISTING ANCHOR RODS AT PROPOSED RAMP LOCATION, PREFERABLY ONE AT A TIME. LOWER AND RECONNECT WITH NEW ANCHOR RODS TO BOTH WALLS WITH A LOCKOFF LOAD OF 10% OF DESIGN LOAD AS DESCRIBED IN STEP 6 ABOVE.
  - 8) CUT TO ADJUST TOP ELEVATION OF SHEET PILE WALLS TO ACCOMMODATE PROPOSED RAMP.
  - 9) INSTALL CAST-IN-PLACE CONCRETE COPING TO TIE BOTH EXISTING AND PROPOSED SHEET PILE WALLS.
  - 10) PLACE WALL BACKFILL IN ANCHOR AREA AND COMPACT.

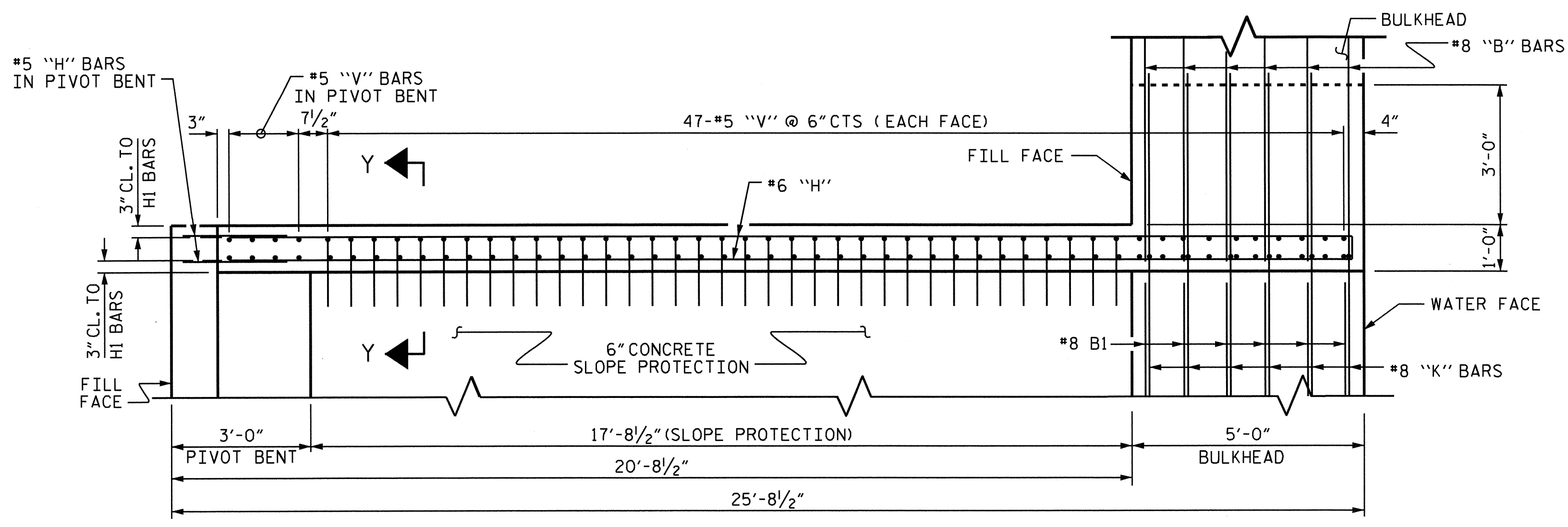


PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-  
 SHEET 2 OF 3

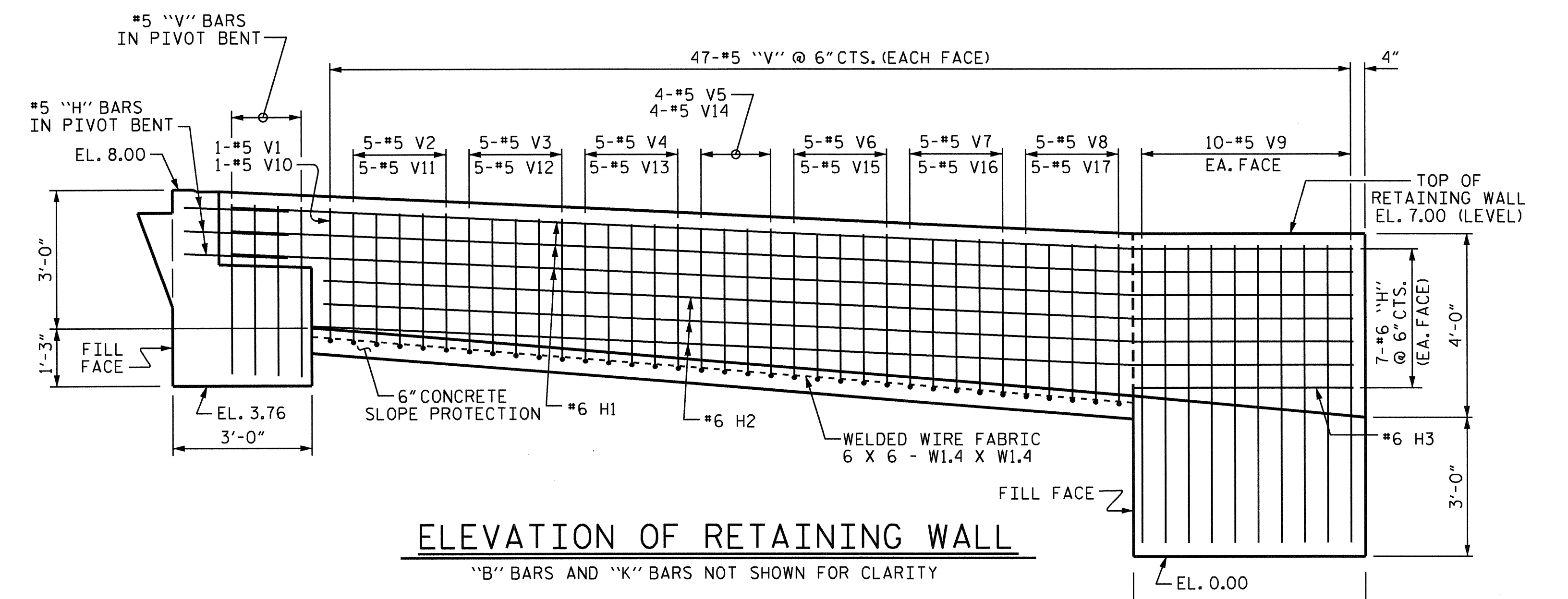
STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
BULKHEAD DETAILS					
CHERRY BRANCH FERRY BASIN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-6					TOTAL SHEETS 29



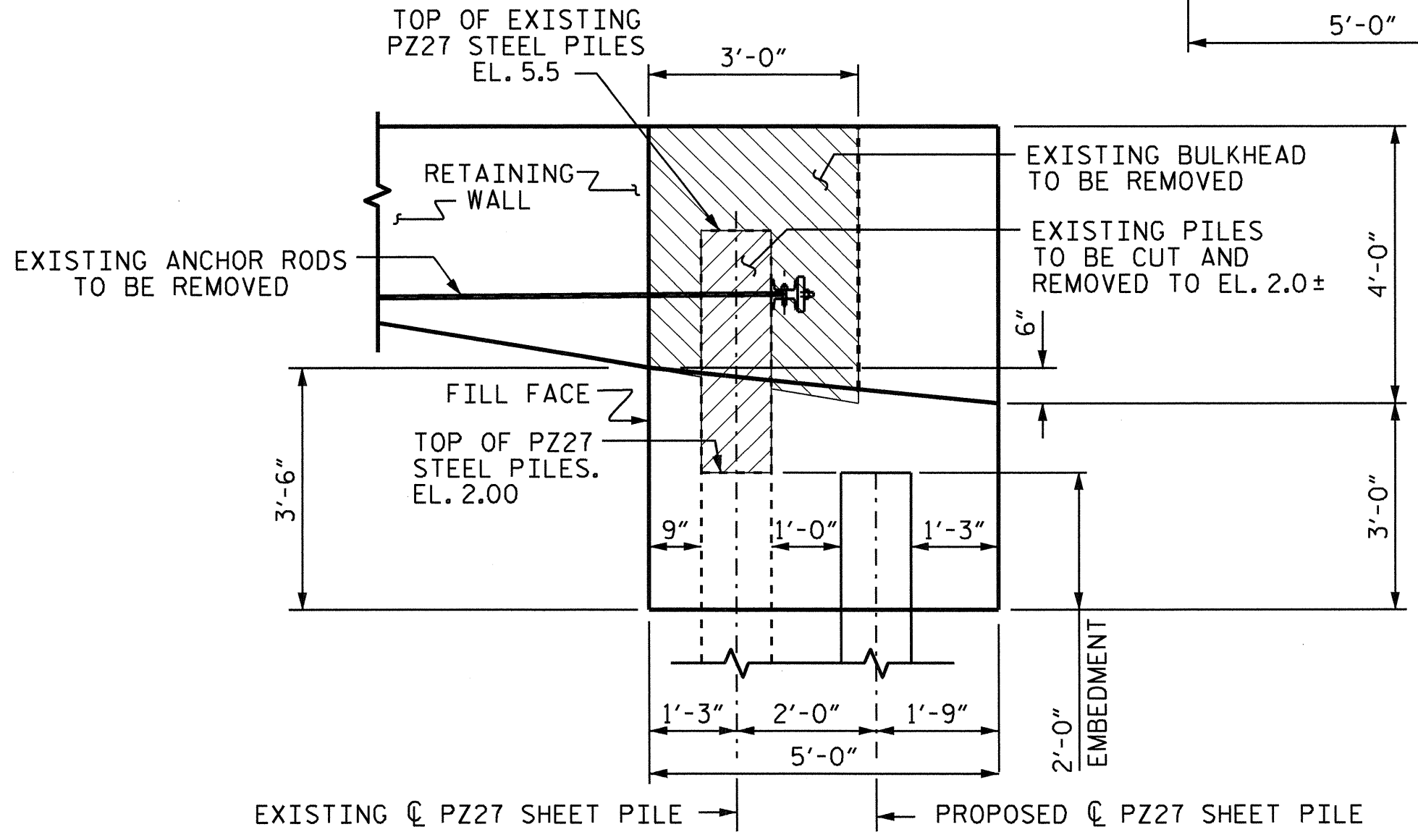
DRAWN BY: B.N. BARODAWALA DATE: 4-23-12  
 CHECKED BY: K.P. SEDA DATE: 6-14-12



**PLAN OF RETAINING WALL**  
LEFT SIDE SHOWN, RIGHT SIDE SIMILAR.

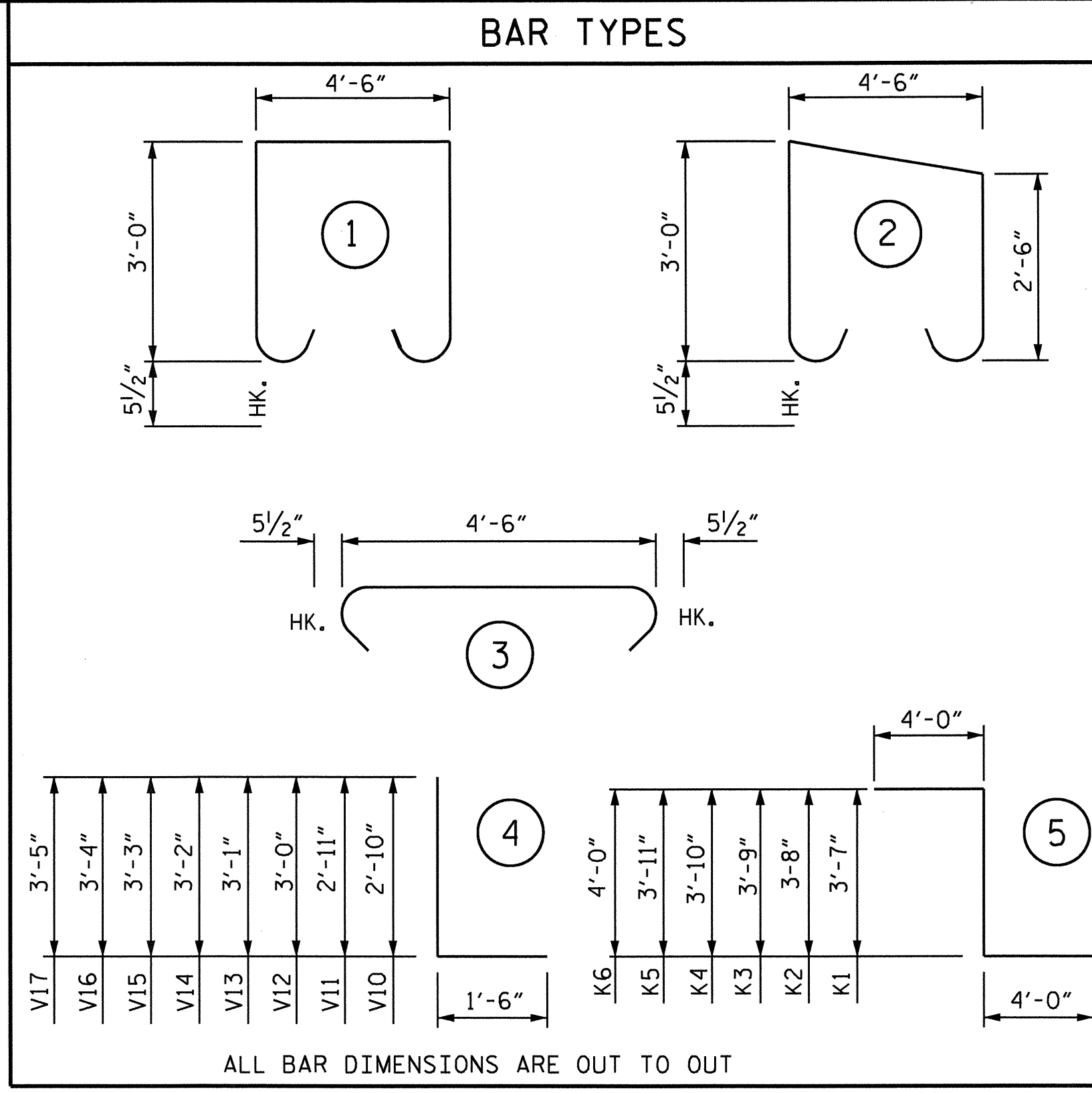


**ELEVATION OF RETAINING WALL**  
"B" BARS AND "K" BARS NOT SHOWN FOR CLARITY



**BULK HEAD REMOVAL DETAIL**

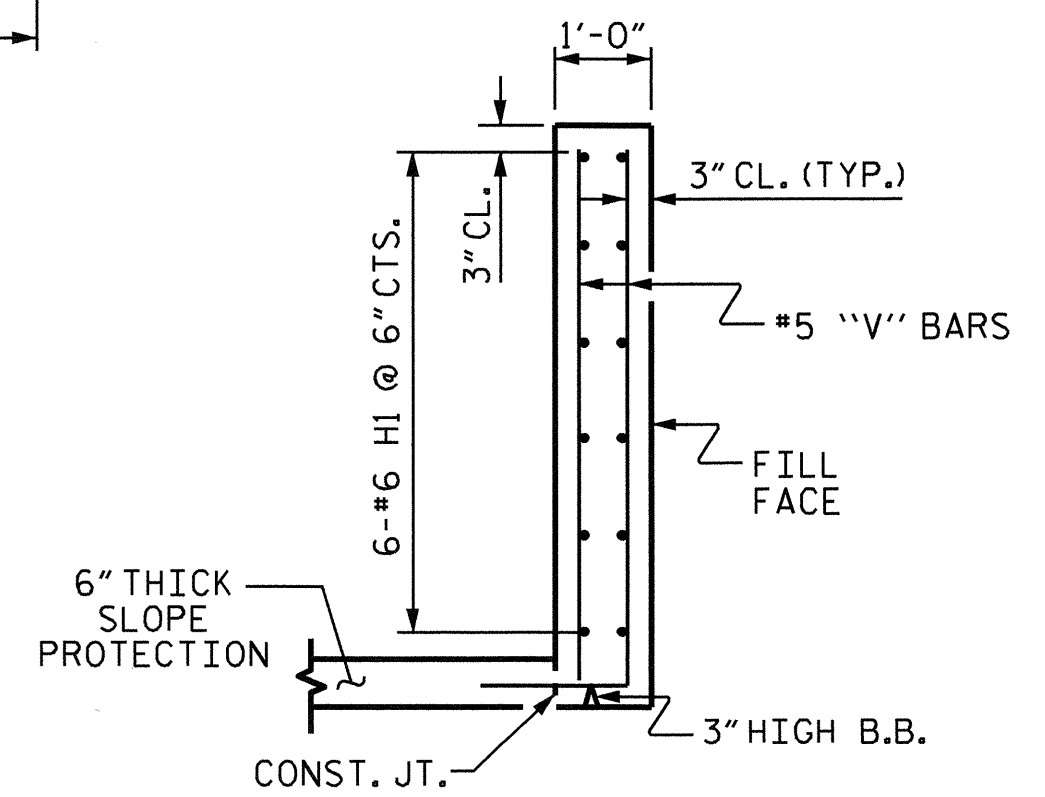
NOTES:  
LIMITS OF REMOVAL OF THE EXISTING BULKHEAD SHALL BE DIRECTED BY THE ENGINEER.



NOTES  
SLOPE PROTECTION CONSIST OF 6" CAST-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4. THE COST OF THE WELDED WIRE FABRIC SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

	6" CONCRETE SLOPE PROTECTION		WELDED WIRE FABRIC	
	SQUARE YARDS		SQUARE YARDS	
RAMP A	43.3		43.3	

BILL OF MATERIALS					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	18	#8	STR	29'-6"	1418
B2	18	#8	STR	25'-0"	1202
B3	18	#8	STR	10'-0"	481
D1	22	#8	STR	3'-0"	176
H1	12	#6	STR	24'-2"	436
H2	12	#6	STR	22'-2"	400
H3	4	#6	STR	4'-9"	29
K1	14	#8	5	11'-7"	433
K2	2	#8	5	11'-8"	62
K3	2	#8	5	11'-9"	63
K4	2	#8	5	11'-10"	63
K5	2	#8	5	11'-11"	64
K6	2	#8	5	12'-0"	64
S1	33	#5	2	10'-11"	376
S2	35	#5	1	11'-5"	417
S3	68	#5	3	5'-5"	384
V1	2	#5	STR	2'-10"	6
V2	10	#5	STR	2'-11"	30
V3	10	#5	STR	3'-0"	31
V4	10	#5	STR	3'-1"	32
V5	8	#5	STR	3'-2"	26
V6	10	#5	STR	3'-3"	34
V7	10	#5	STR	3'-4"	35
V8	10	#5	STR	3'-5"	36
V9	40	#5	STR	6'-6"	271
V10	2	#5	4	4'-4"	45
V11	10	#5	4	4'-5"	46
V12	10	#5	4	4'-6"	47
V13	10	#5	4	4'-7"	48
V14	8	#5	4	4'-8"	39
V15	10	#5	4	4'-9"	50
V16	10	#5	4	4'-10"	50
V17	10	#5	4	4'-11"	51
EPOXY COATED REINFORCING STEEL					6945 LBS.
CLASS AA CONCRETE TOTAL					
BULK HEAD					38.6 CY.
RETAINING WALL					4.4 CY.
TOTAL					43.0 CY.
STEEL SHEET PILES					
NO. 38					3705 SO. FT.
SELECT MATERIAL CLASS VI					250 TONS



**SECTION Y-Y**

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-  
 SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BULKHEAD CHERRY BRANCH FERRY BASIN					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 29



DRAWN BY: B.N. BARODAWALA DATE: 4-23-12  
 CHECKED BY: K. P. SEDAI DATE: 6-14-12



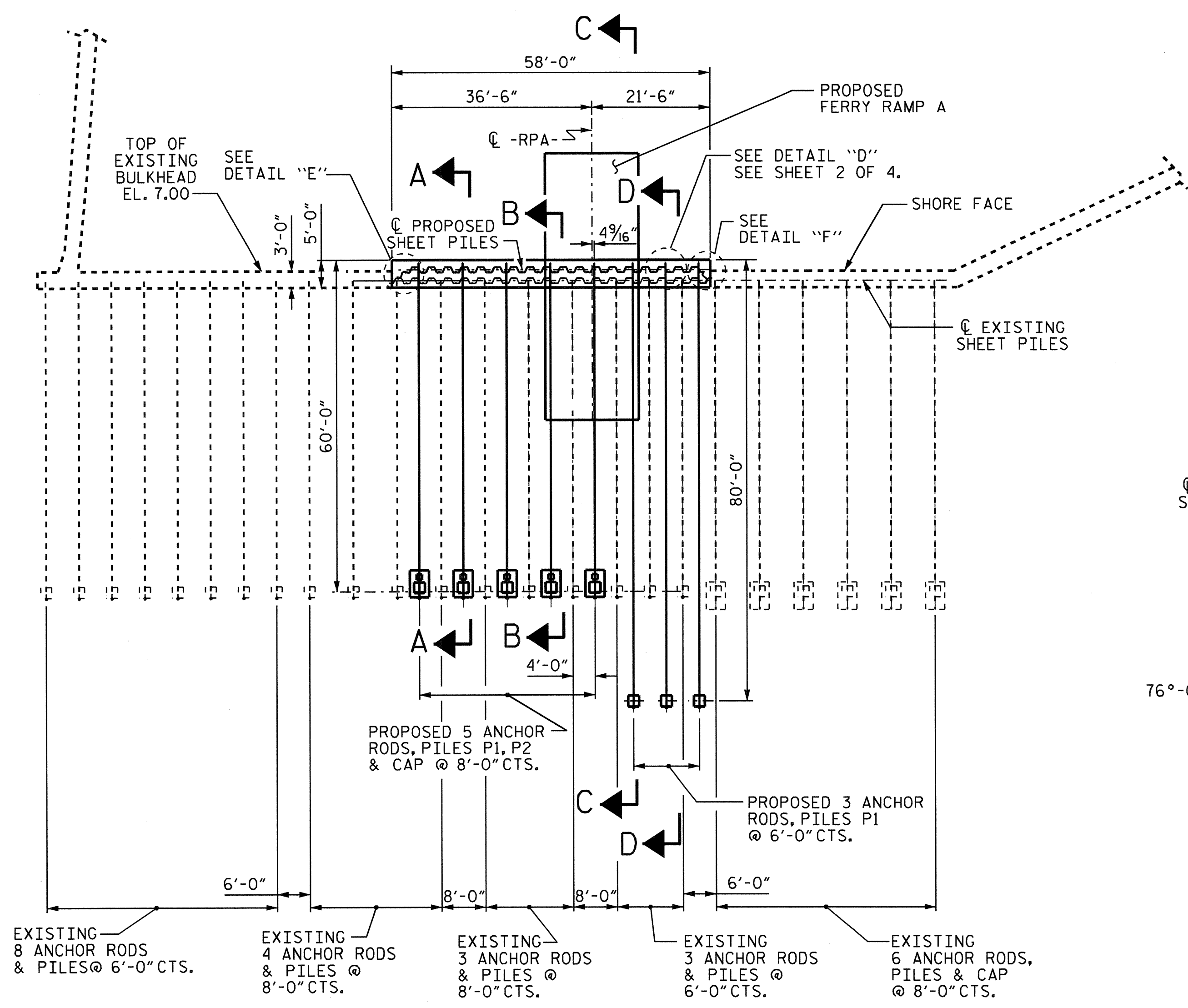
NOTES

THE CONTRACTOR SHALL LOCATE THE EXISTING ANCHOR RODS. THE CONTRACTOR SHALL BE REQUIRED TO REPAIR ANY DAMAGE DONE DURING EXCAVATION AND PLACEMENT OF PROPOSED 1/4" Ø ANCHOR RODS.

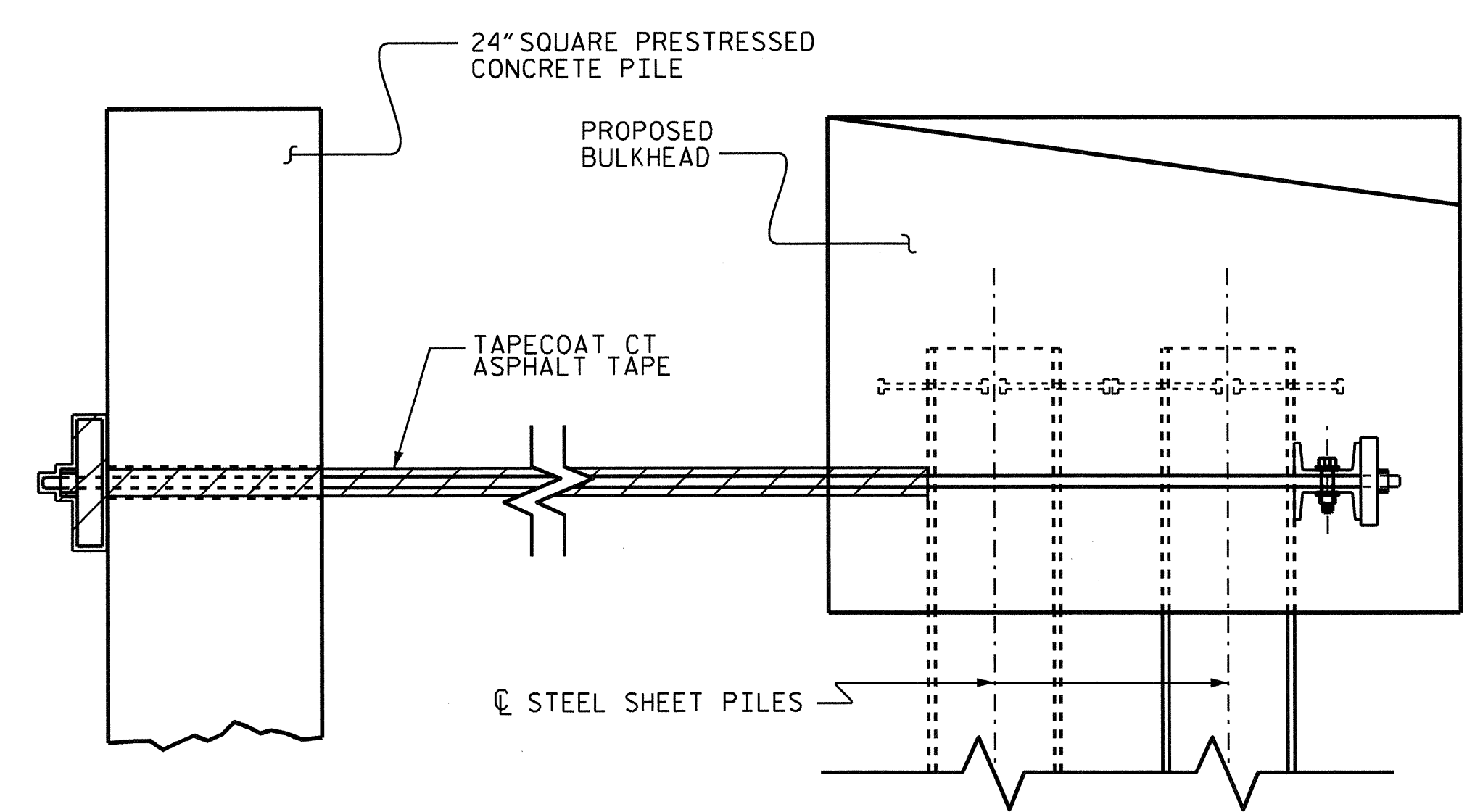
THE TIEBACK SYSTEM SHALL INCLUDE 1/2" X 8" X 8" GALVANIZED PLATE NUTS, BOLTS, WASHER, MC6 X 16.3, STUDS, 3/4" Ø X 2" GALVANIZED PIPE SPACER, 1/4" Ø ANCHOR ROD. FOR ADDITIONAL INFORMATION ON THE TIEBACK SYSTEM, SEE SPECIAL PROVISIONS FOR PERMANENT ANCHOR TIEBACK SYSTEM.

1/4" Ø ANCHOR RODS ARE TO BE INSTALLED BEFORE SELECT MATERIAL CLASS III IS PLACED BEHIND THE STEEL SHEET PILES.

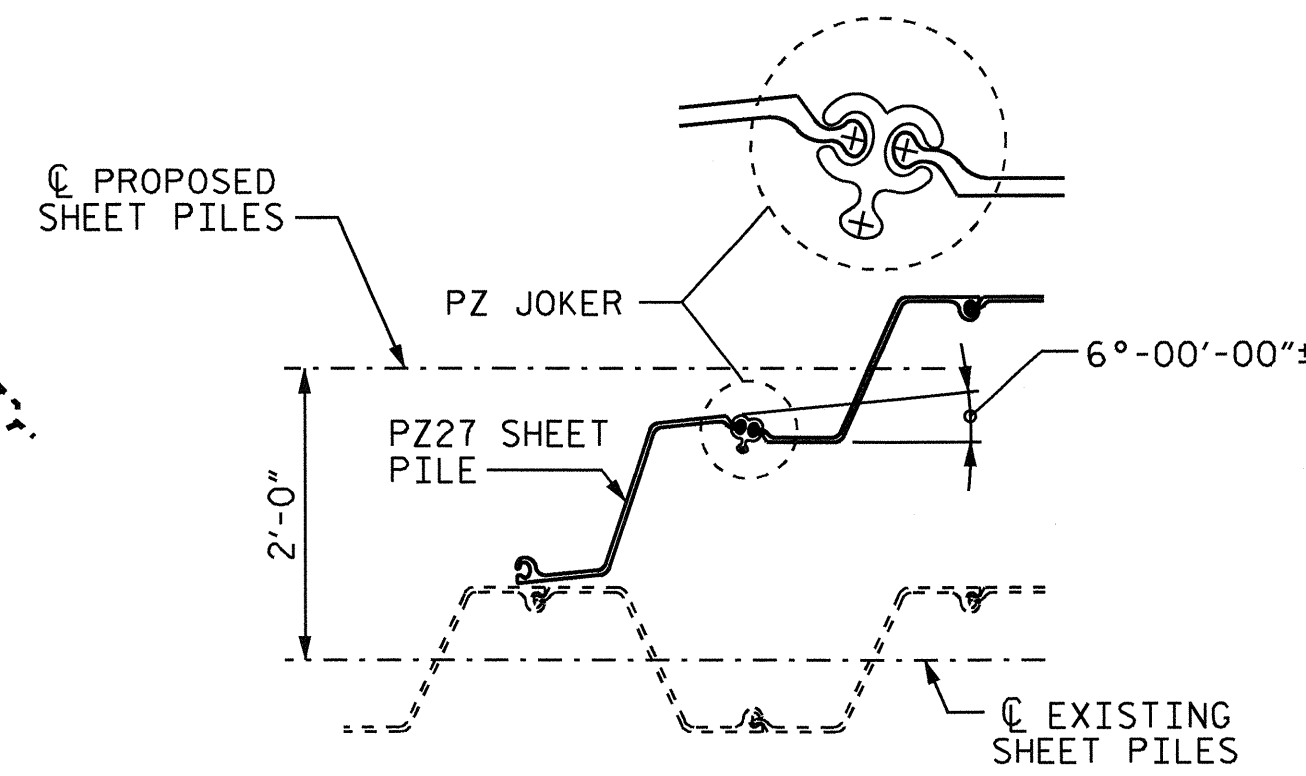
IF AN ANCHOR ROD MUST BE RELOCATED TO AVOID ANY OBSTRUCTION, THEN THAT RELOCATION SHALL RESULT IN CLOSER SPACINGS IN THE DIRECTION OF CLOSER PROXIMITY TO THE RAMP A. HOWEVER, NO ANCHORS RODS SHALL BE SPACED LESS THAN 6'-0" APART.



PLAN OF ANCHOR RODS LAYOUT

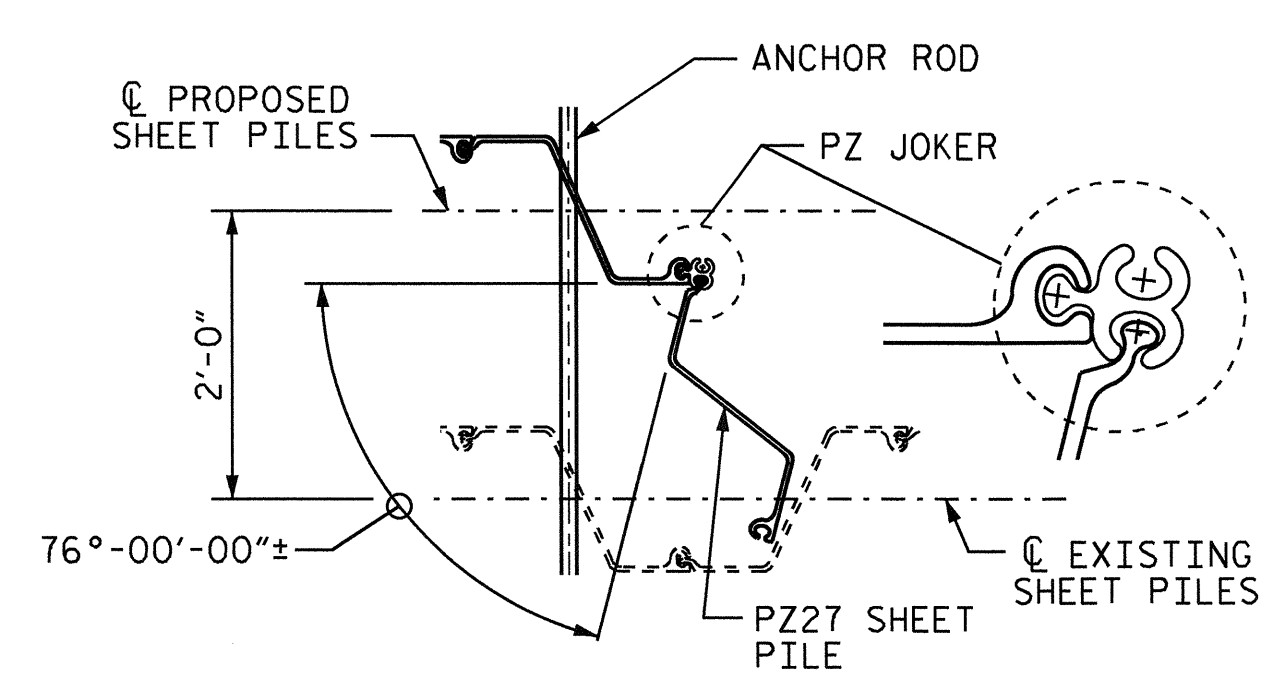


CORROSION PROTECTION DETAIL



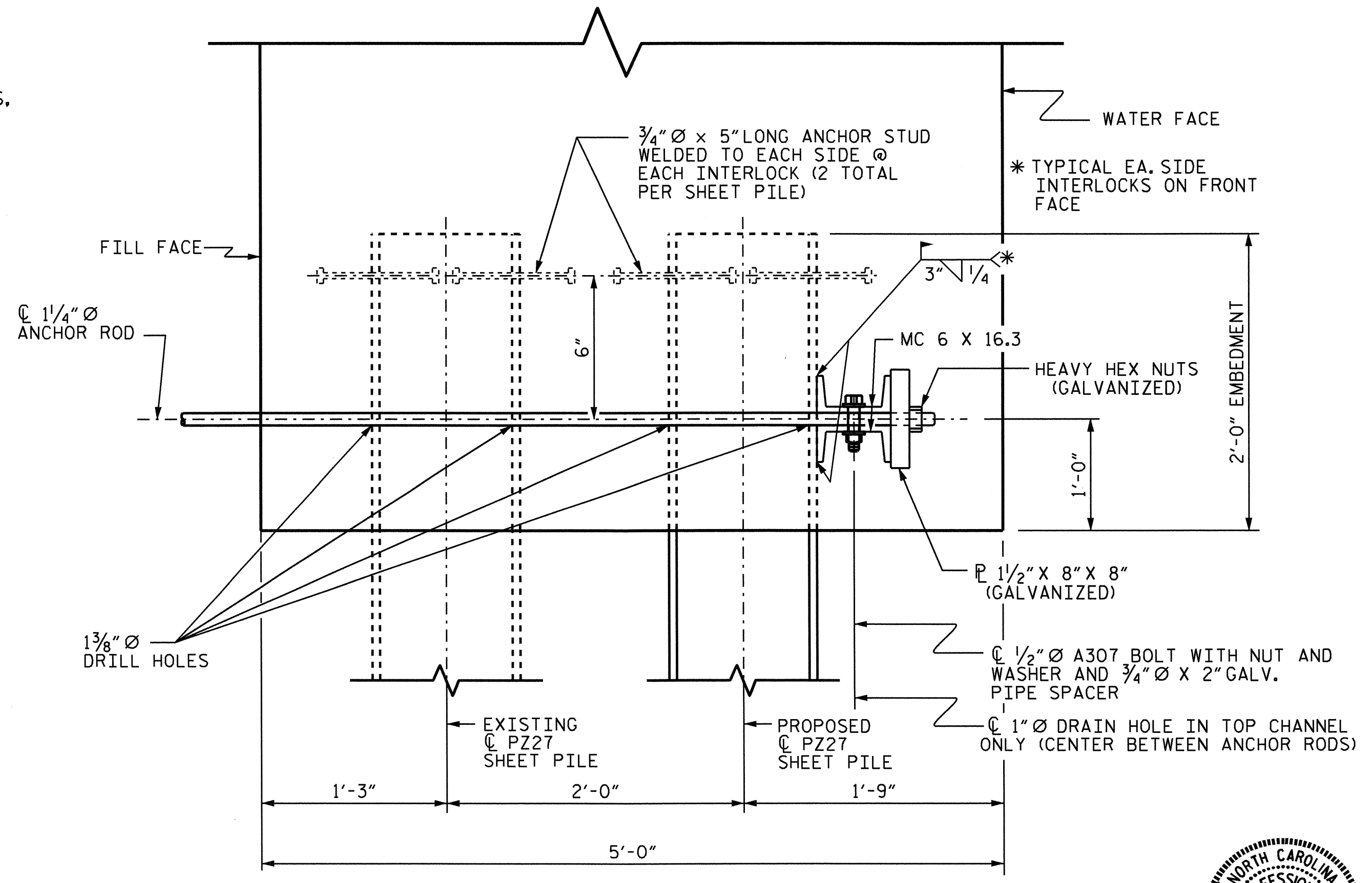
DETAIL "E"

THE PZ JOKER IN THE SHEET PILE SHALL BE DETERMINED BY THE FABRICATOR.



DETAIL "F"

THE PZ JOKER IN THE SHEET PILE SHALL BE DETERMINED BY THE FABRICATOR.



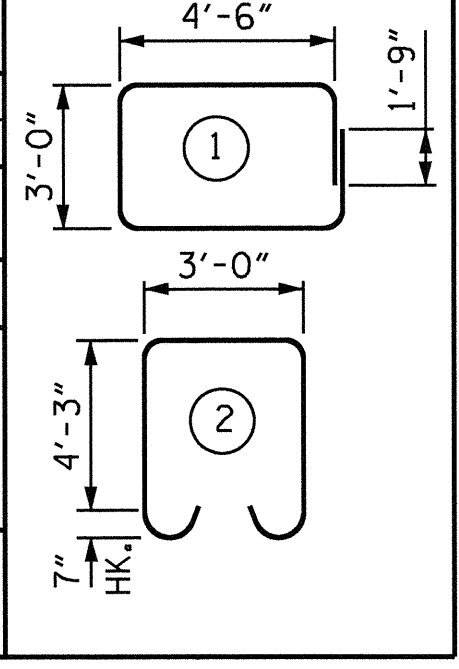
DETAIL "A"

(SHOWING ROD ANCHORAGE SYSTEM)

BILL OF MATERIALS

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
S1	30	#5	1	16'-9"	524
S2	35	#5	2	12'-8"	462
EPOXY COATED REINFORCING STEEL				986 LBS.	
CLASS AA CONCRETE				15.4 C.Y.	
CONCRETE SQUARE PILES					
P1 24" SQ. (VERTICAL) NOS. 8				200.0 LFT.	
P2 12" SQ. (BATTER 4:12) NOS. 5				150.0 LFT.	
SELECT MATERIAL CLASS III				1000 CU. YDS.	

BAR TYPES



ANCHOR RODS TOTALS

TIEBACK SYSTEM ANCHOR RODS	TOTAL LIN. FT. 540
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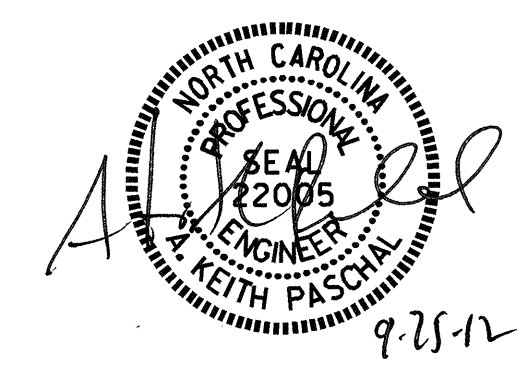
PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 1 OF 4

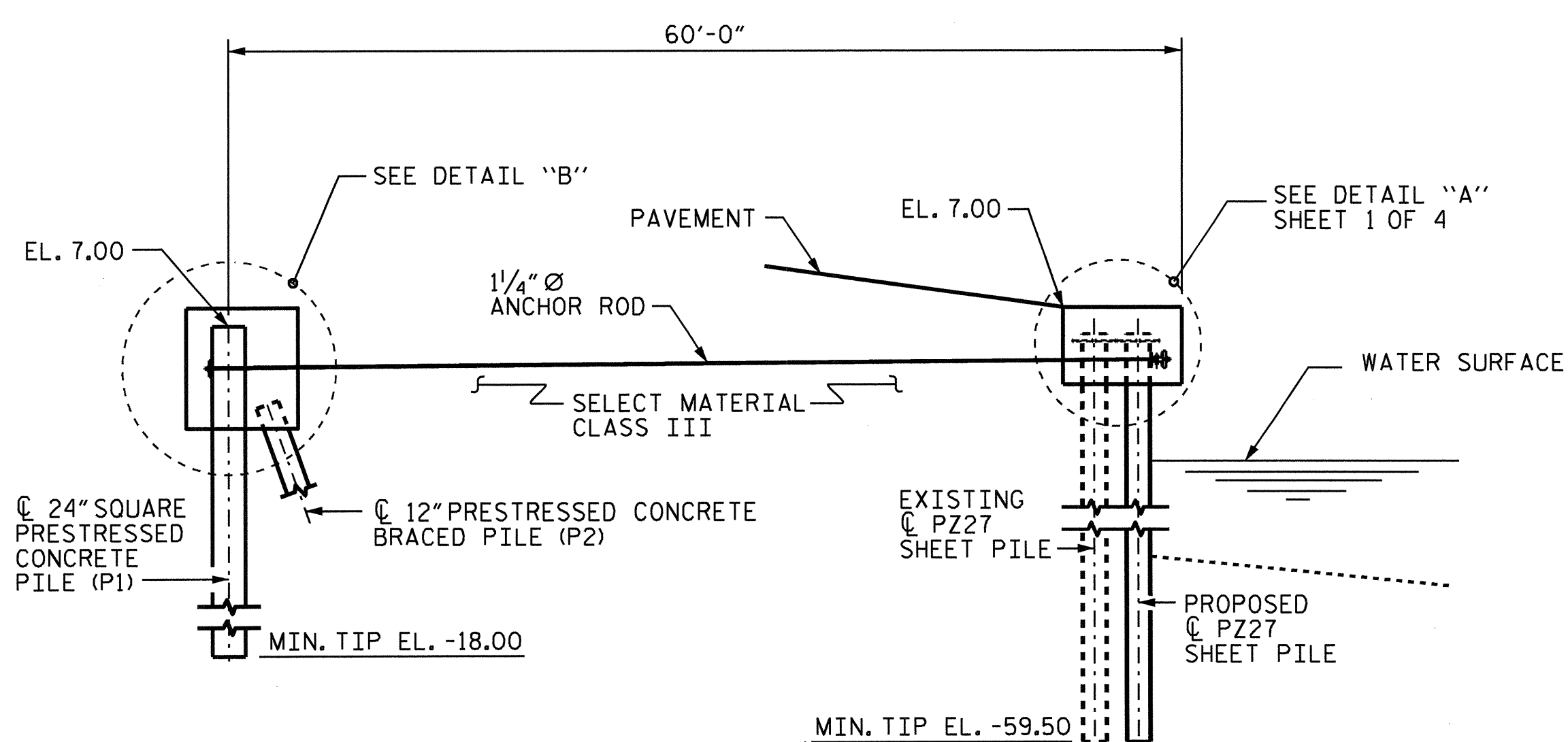
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

TIEBACK SYSTEM

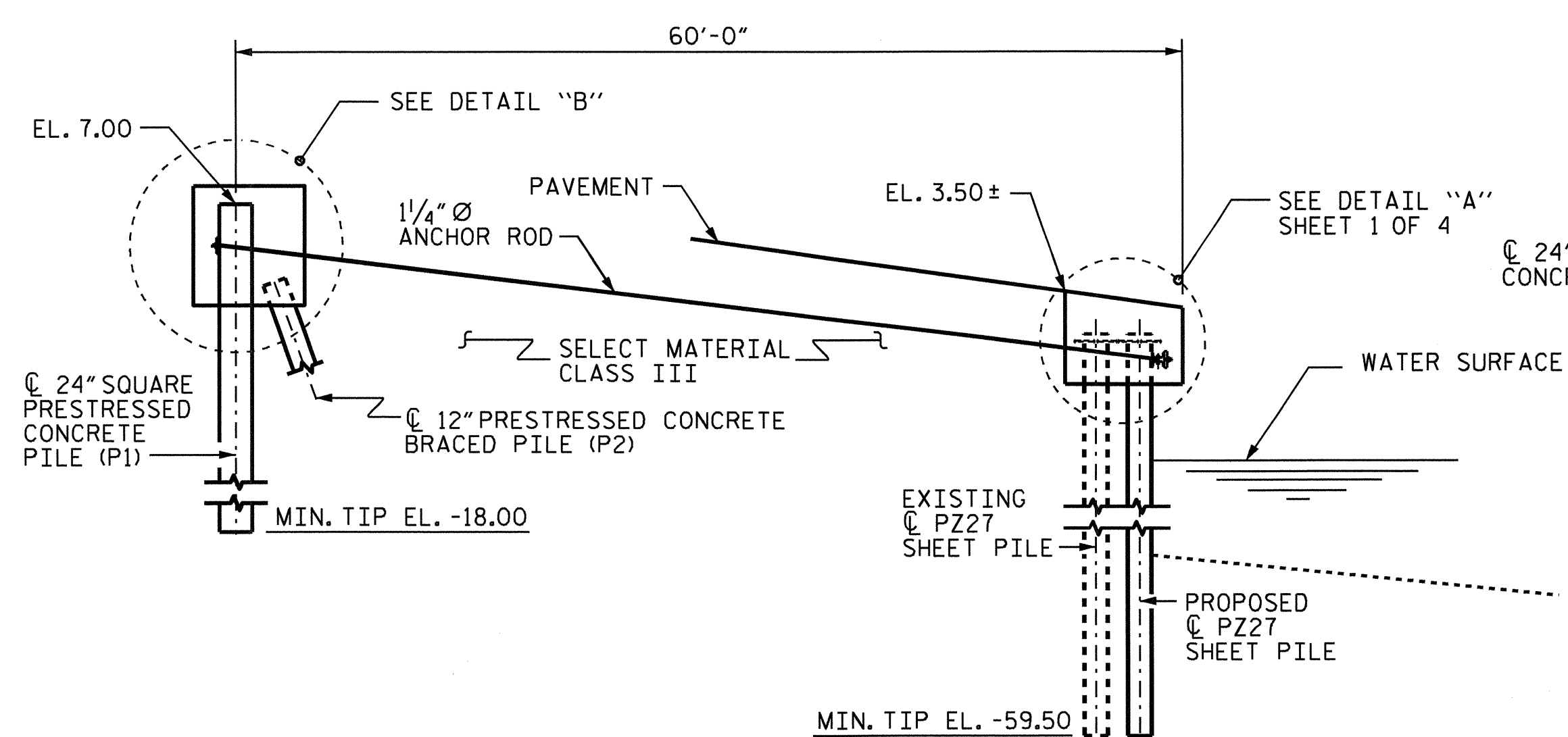
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS 29
2			4			



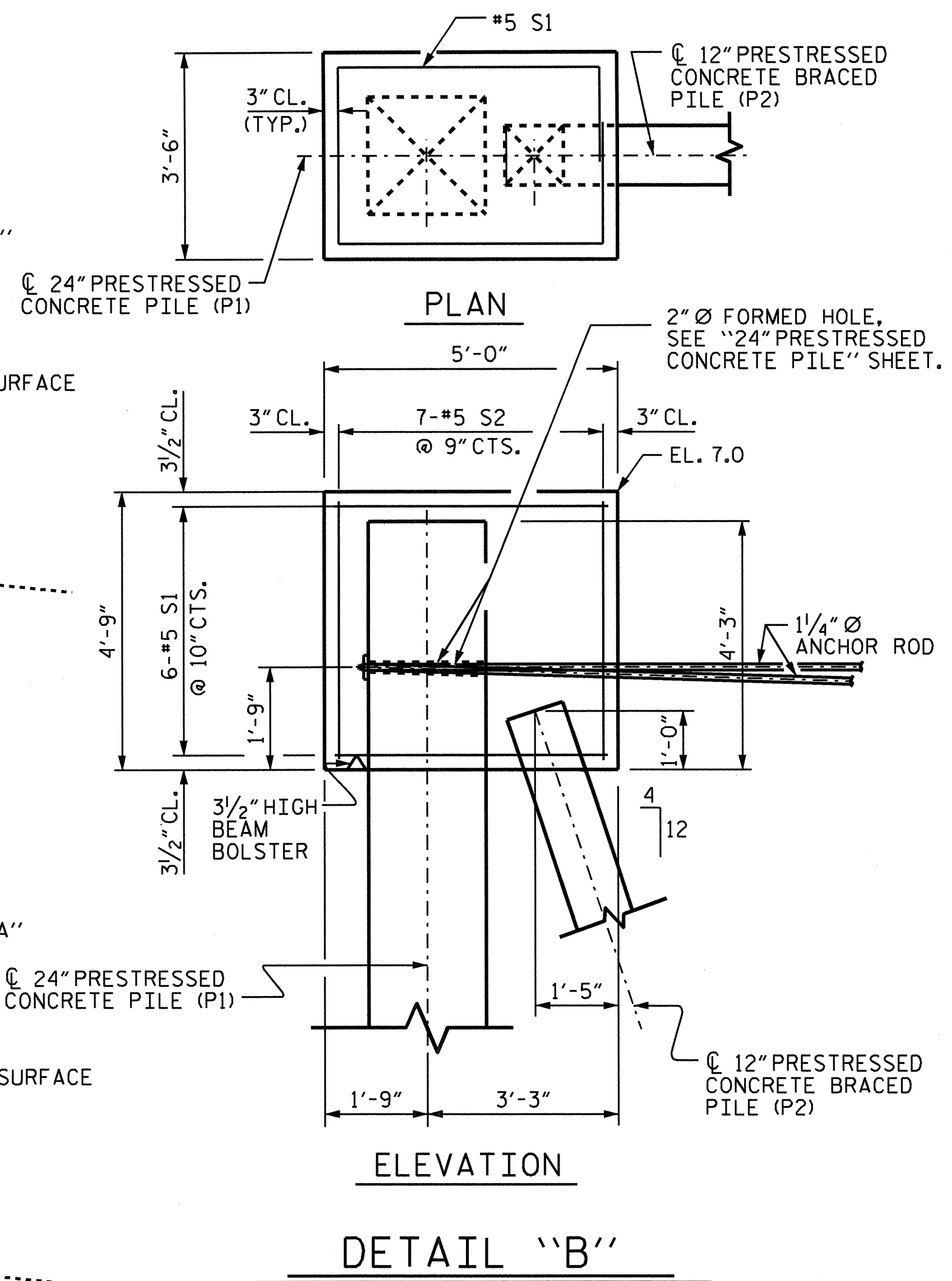
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 CHECKED BY : K. P. SEDA DATE : 6-14-12



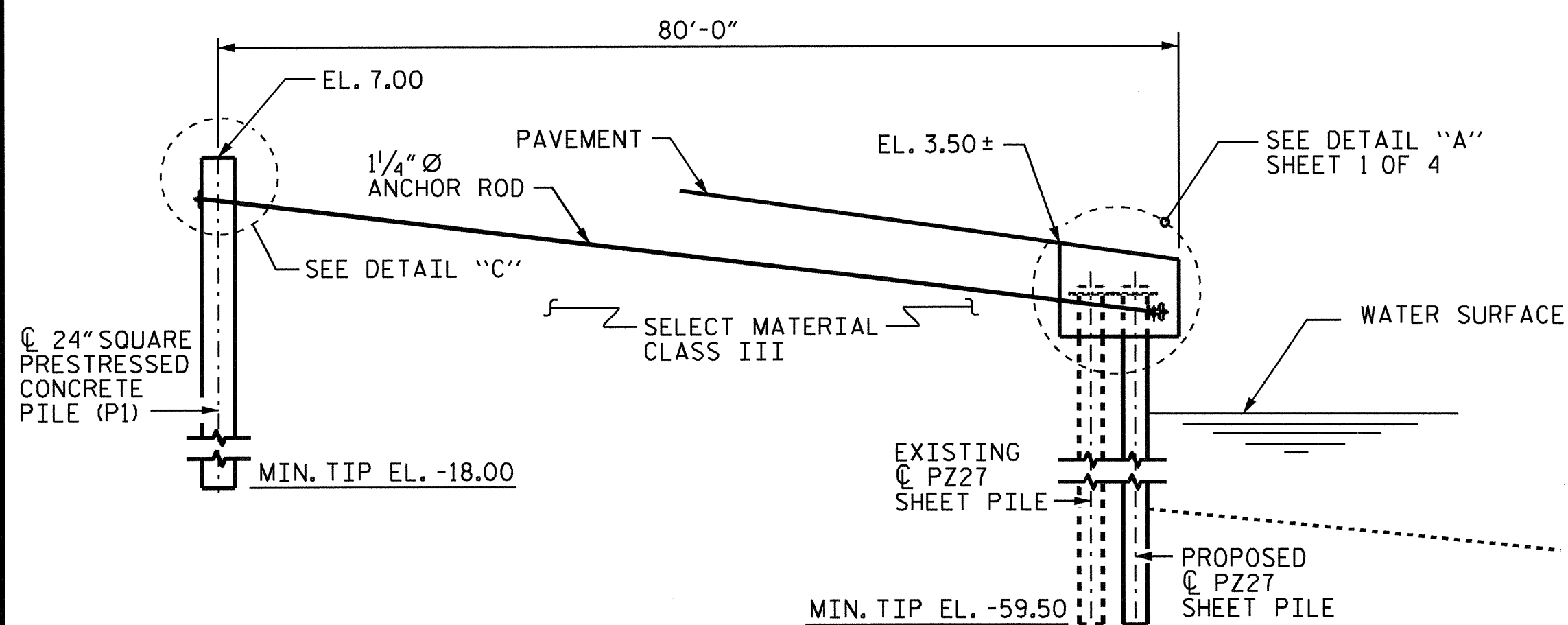
SECTION A-A



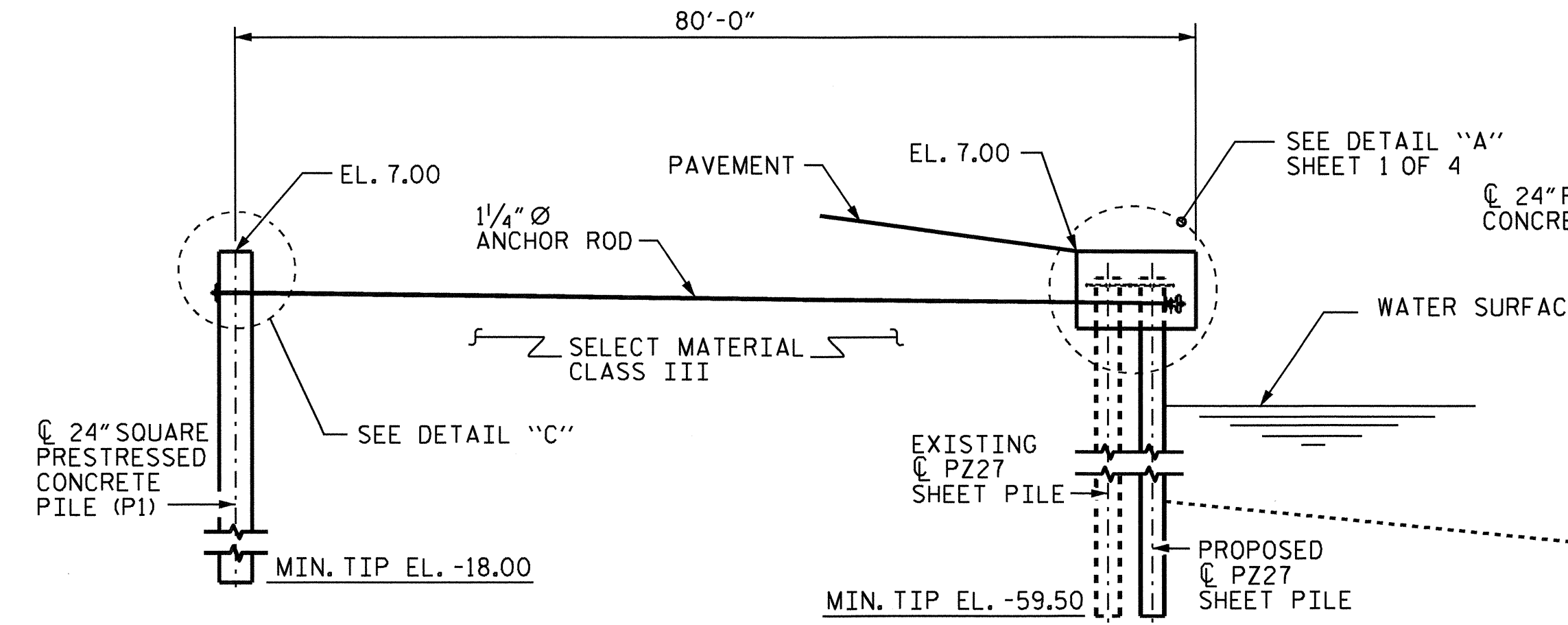
SECTION B-B



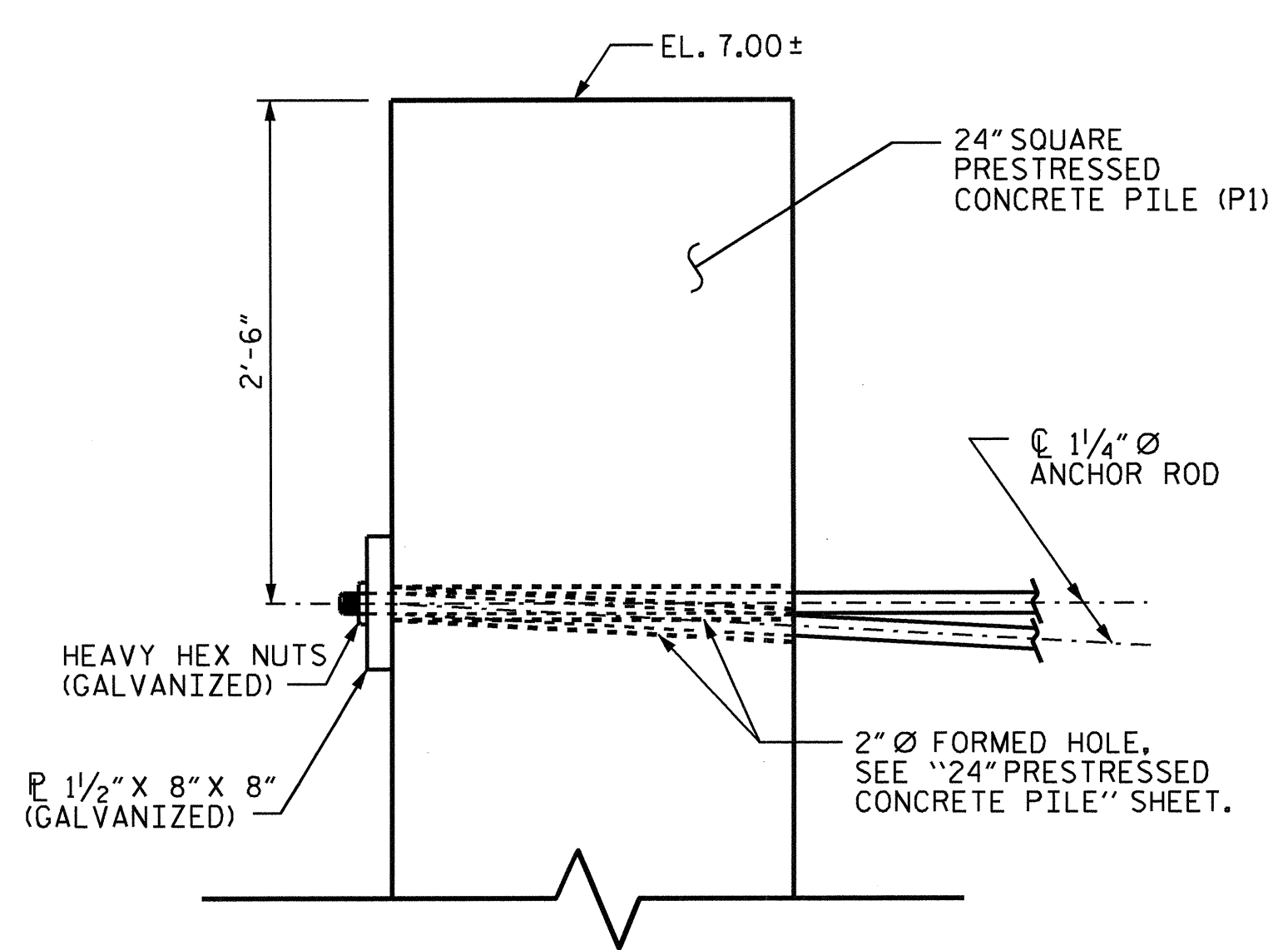
DETAIL "B"



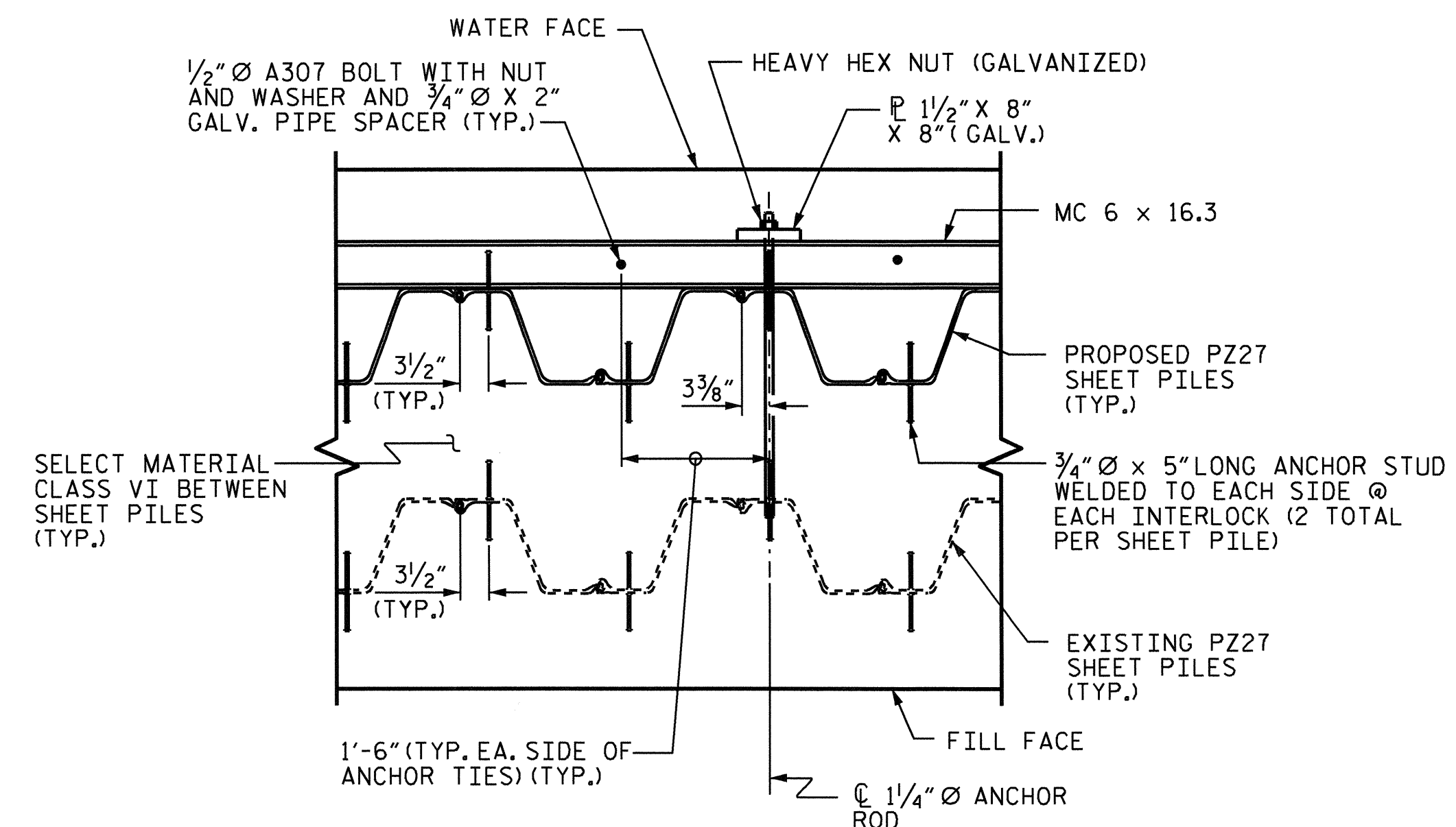
SECTION C-C



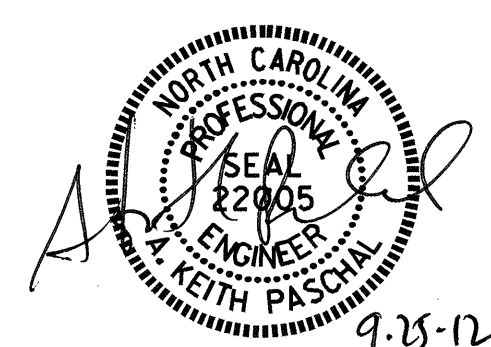
SECTION D-D



DETAIL "C"



DETAIL "D"



PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-  
 SHEET 2 OF 4

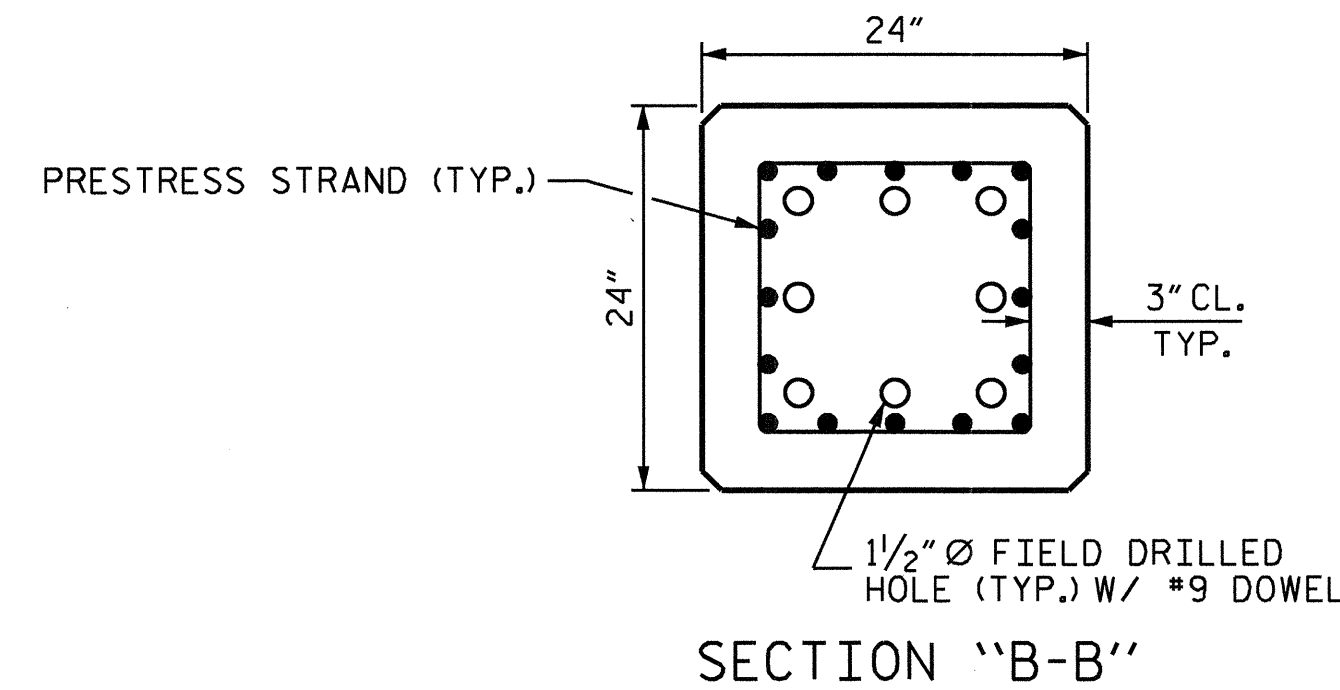
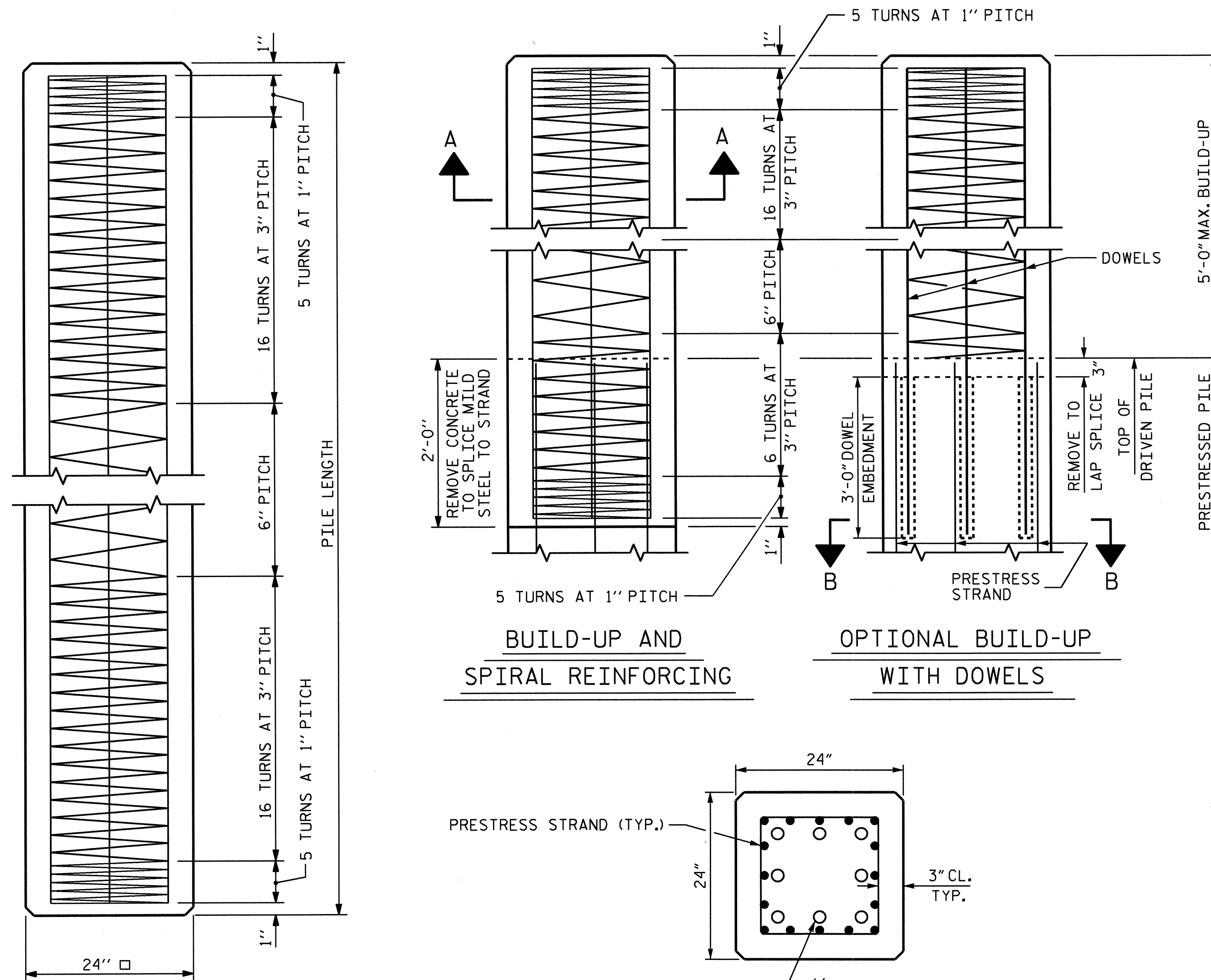
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

TIEBACK SYSTEM

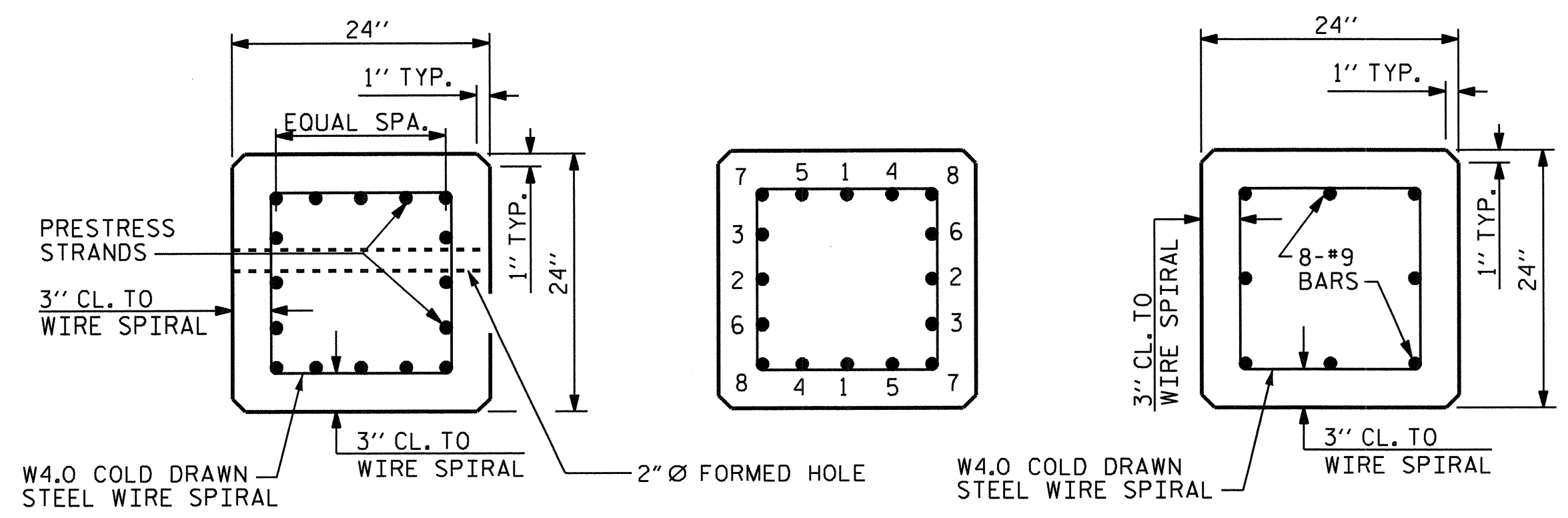
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

DRAWN BY: B.N.BARODAWALA DATE: 4-23-12  
 CHECKED BY: K.P. SEDA DATE: 6-14-12

25-SEP-2012 12:08  
 S:\DPCG\Keith\Barodawala\Cherry Branch Ramp A.dgn  
 kpaschal



(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



TYPICAL SECTION FOR BURNING STRANDS  
SECTION A-A  
1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

**DOWEL INSTALLATION FOR OPTIONAL BUILD-UP**

GROUT COMPRESSIVE STRENGTH:  $f'_c = 5,000$  PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

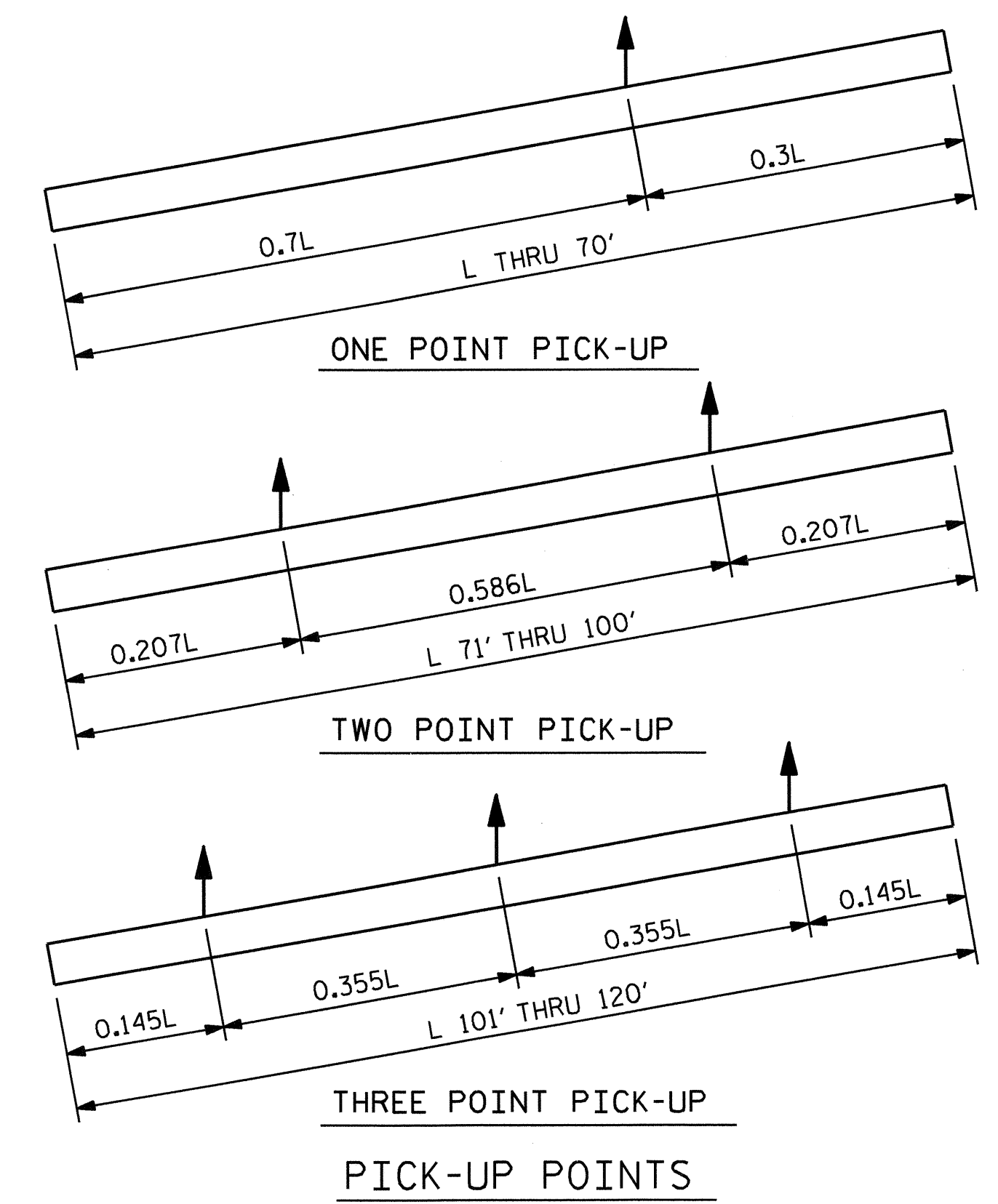
DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	QUANTITIES FOR ONE 24" SQUARE PILE					
			ONE POINT PICK-UP 0.3L	ONE POINT PICK-UP 0.7L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L	THREE POINT PICK-UP 0.145L	THREE POINT PICK-UP 0.355L
25'-0"	3.69	7.47	7'-6"	17'-6"				
30'-0"	4.43	8.97	9'-0"	21'-0"				
35'-0"	5.17	10.46	10'-6"	24'-6"				
40'-0"	5.91	11.96	12'-0"	28'-0"				
45'-0"	6.64	13.45	13'-6"	31'-6"				
50'-0"	7.38	14.95	15'-0"	35'-0"				
55'-0"	8.12	16.44	16'-6"	38'-6"				
60'-0"	8.86	17.94	18'-0"	42'-0"				
65'-0"	9.60	19.43	19'-6"	45'-6"				
70'-0"	10.33	20.93	21'-0"	49'-0"				
75'-0"	11.07	22.42			15'-6 1/2"	43'-11"		
80'-0"	11.81	23.92			16'-6 1/2"	46'-11"		
85'-0"	12.55	25.41			17'-7"	49'-10"		
90'-0"	13.29	26.91			18'-7 1/2"	52'-9"		
95'-0"	14.03	28.40			19'-8"	55'-8"		
100'-0"	14.76	29.90			20'-8 1/2"	58'-7"		
105'-0"	15.50	31.39					15'-3"	37'-3"
110'-0"	16.24	32.89					15'-11 1/2"	39'-0 1/2"
115'-0"	16.98	34.38					16'-8"	40'-10"
120'-0"	17.72	35.87					17'-5"	42'-7"



**NOTES**

PRESTRESSED CONCRETE STRENGTH :  $f'_c = 7,500$  PSI  
 BUILD-UP CONCRETE STRENGTH :  $f'_c = 7,500$  PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	0.153	41,300# PER STRAND	30,980# PER STRAND
0.6"	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN THE STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

THE CONCRETE IN THE PRECAST SECTIONS AND BUILT-UP SECTIONS OF THE PILE SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

CONCRETE IN THE PRECAST SECTIONS AND BUILT-UP SECTIONS OF THE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE WATER CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

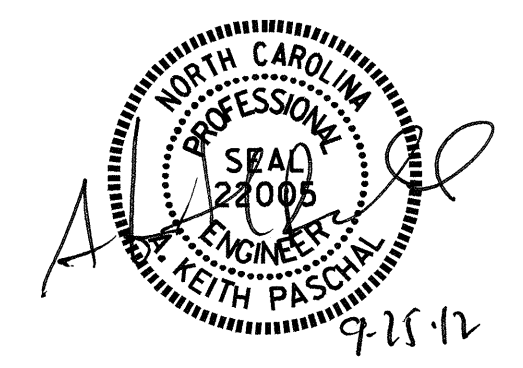
PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

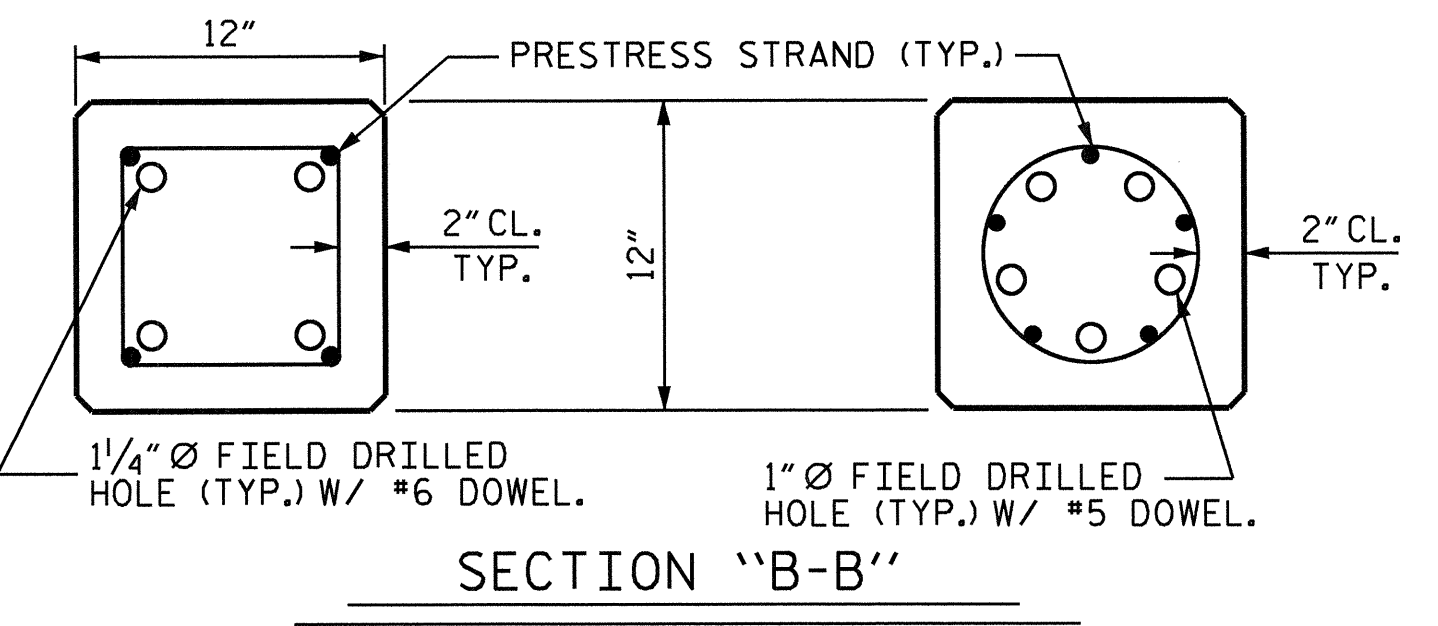
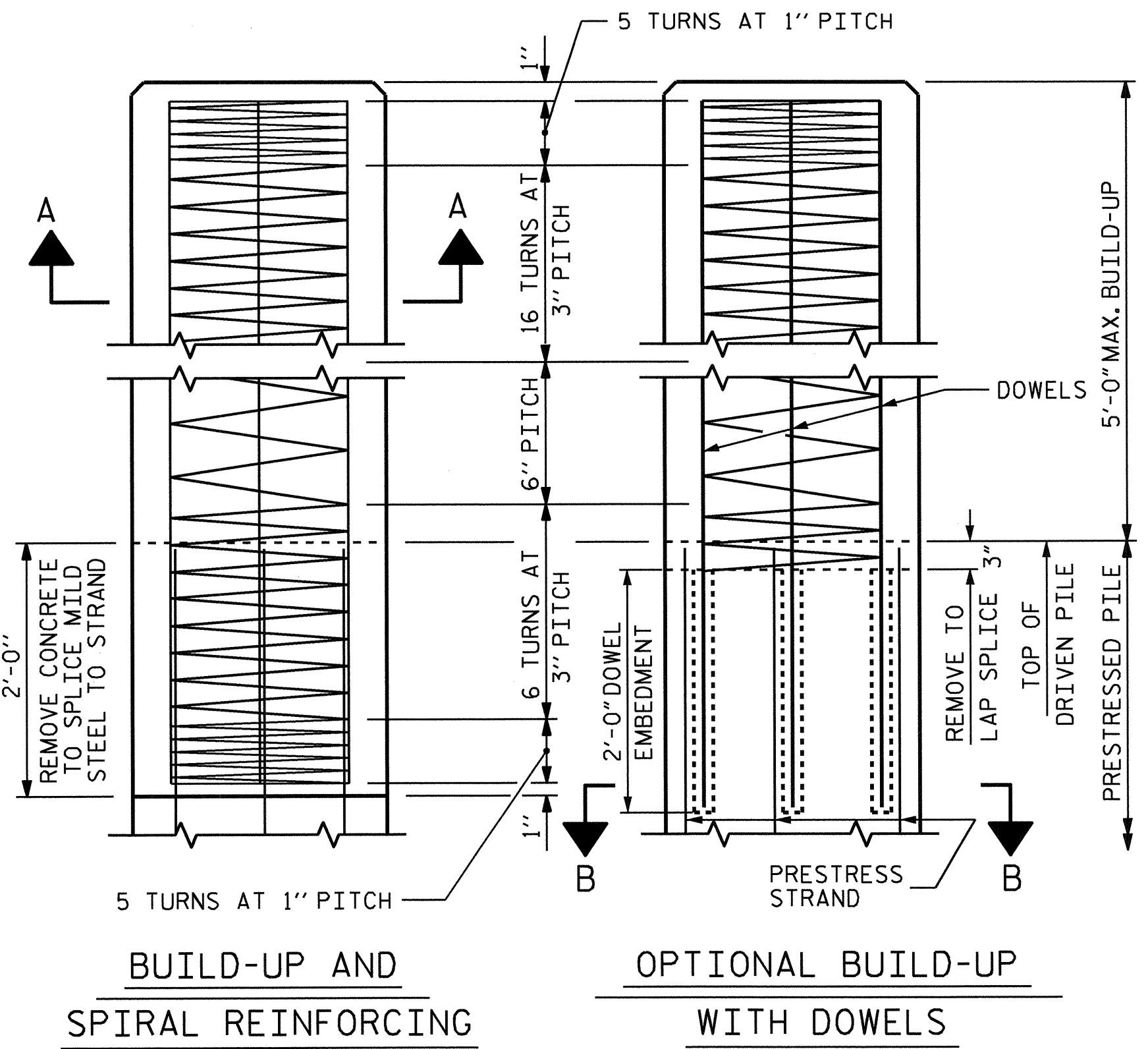
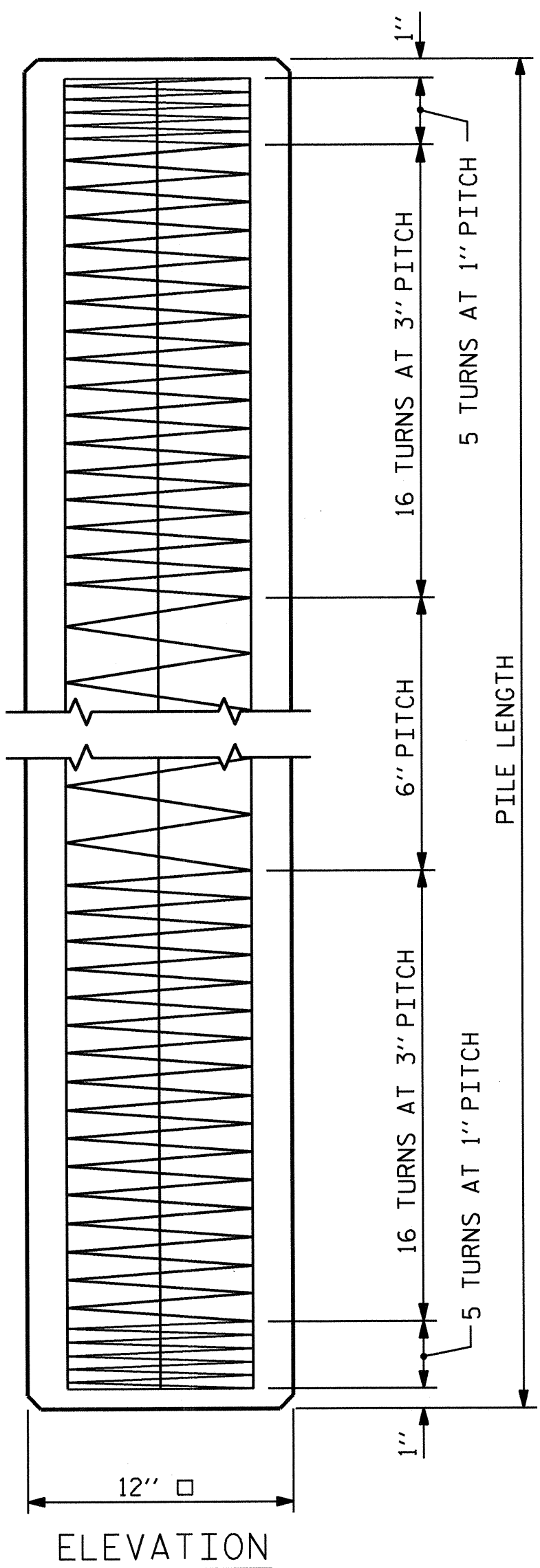
STANDARD  
 24" PRESTRESSED  
 CONCRETE PILE

REVISIONS			SHEET NO. S-10
NO.	BY:	DATE:	
1			TOTAL SHEETS 29
2			

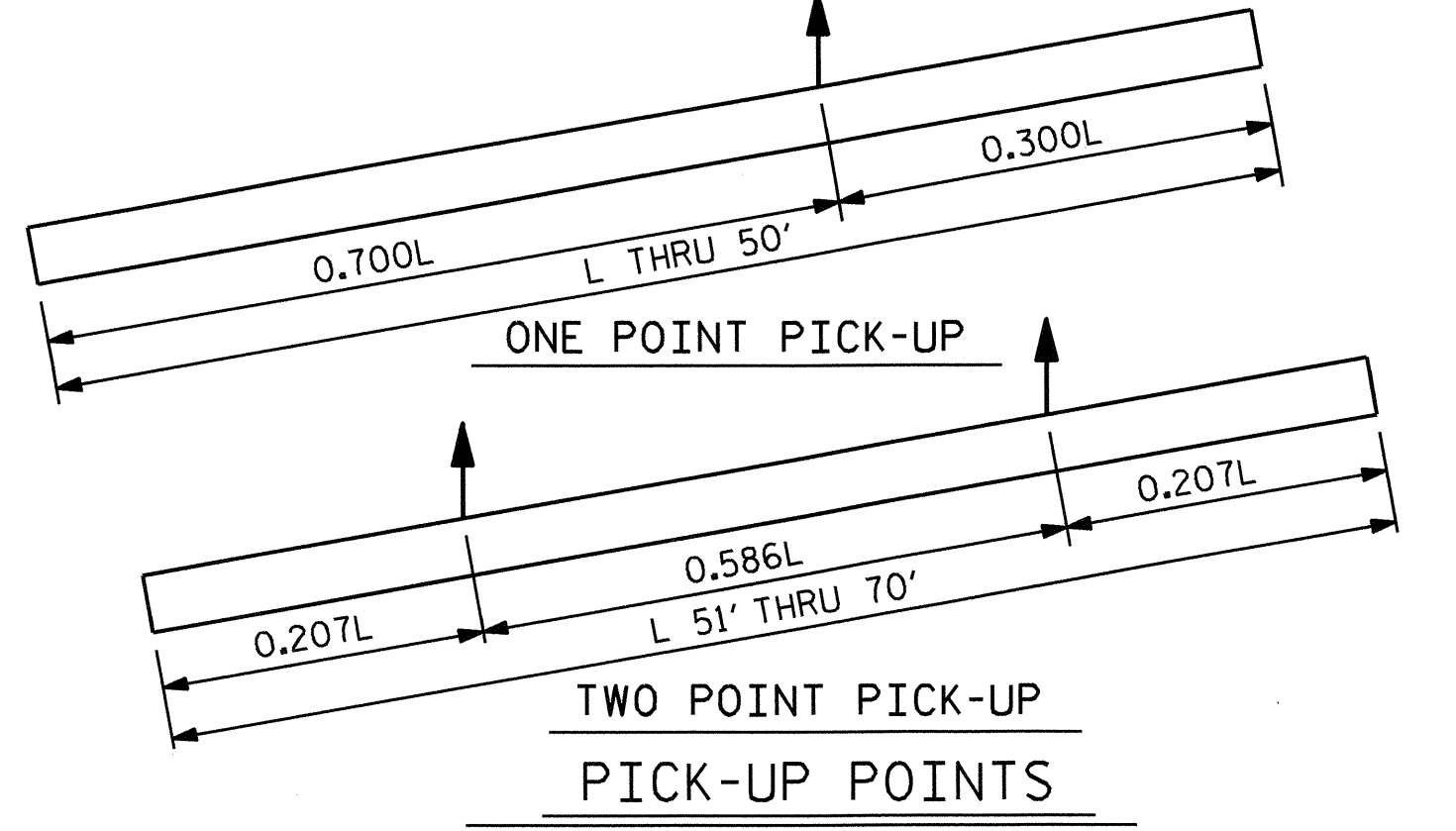
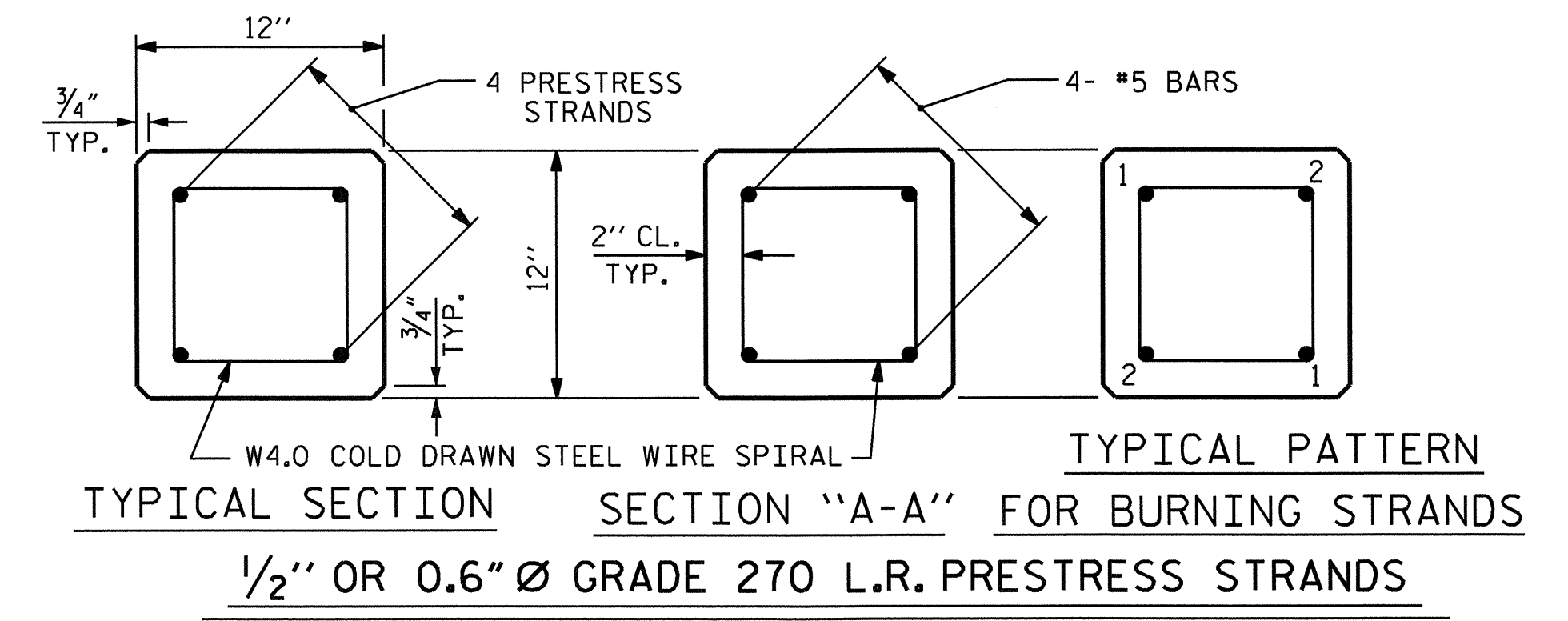
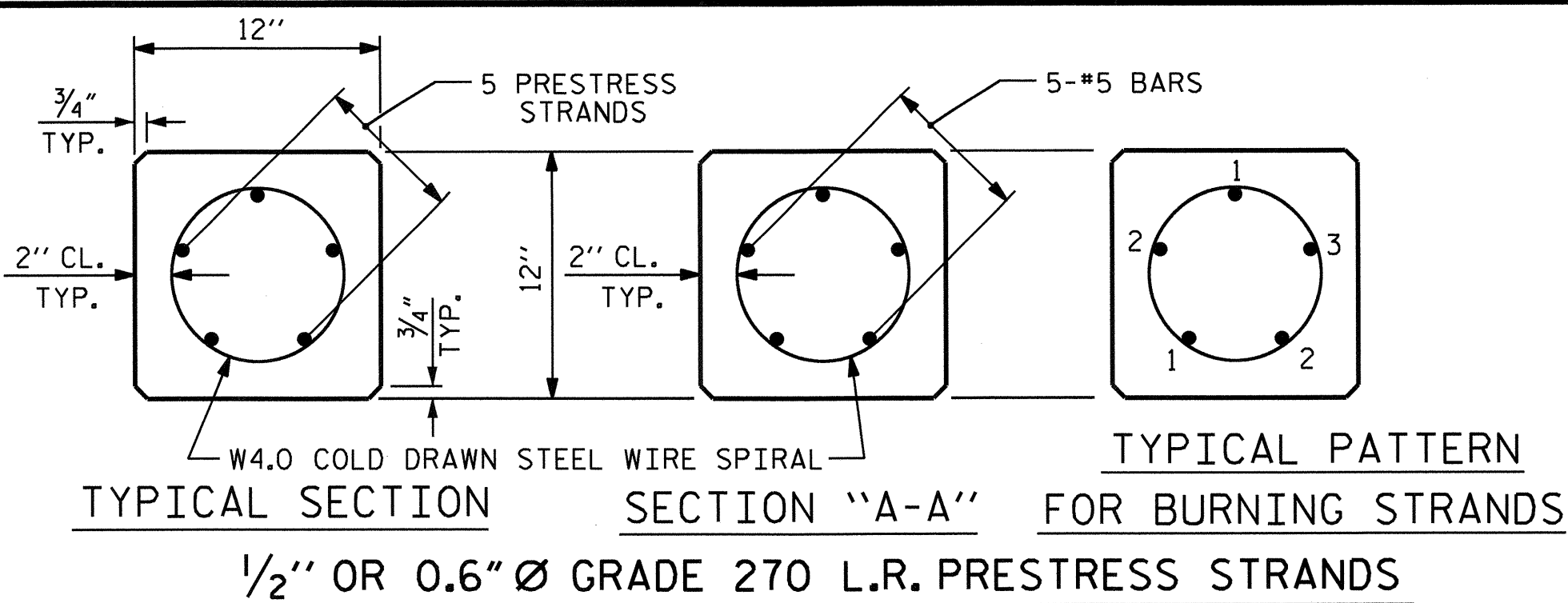


ASSEMBLED BY : B.N. BARODAWAL DATE : 4-23-12  
 CHECKED BY : K. P. SEDAI DATE : 6-14-12  
 DRAWN BY : WJH 1/89  
 CHECKED BY : CRK 3/89

REV. 5/1/06R TLA/GM  
 REV. 11/30/10 WMC/GM  
 REV. 10/1/11 MAA/GM



(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



**DOWEL INSTALLATION FOR OPTIONAL BUILD-UP**

GROUT COMPRESSIVE STRENGTH:  $f'_c = 5,000$  PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

QUANTITIES FOR ONE 12" PRESTRESSED PILE						
LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.72	15'-0"	35'-0"		
55'-0"	2.01	4.09			11'-4 1/2"	32'-3"
60'-0"	2.19	4.46			12'-5"	35'-2"
65'-0"	2.38	4.81			13'-5 1/2"	38'-1"
70'-0"	2.57	5.18			14'-6"	41'-0"

**NOTES**

PRESTRESSED CONCRETE STRENGTH :  $f'_c = 7,500$  PSI  
 BUILD-UP CONCRETE STRENGTH :  $f'_c = 7,500$  PSI  
 STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	0.153	41,300* PER STRAND	30,980* PER STRAND
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ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN EITHER THE 4 OR 5 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

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CONCRETE IN THE PRECAST SECTIONS AND BUILT-UP SECTIONS OF THE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE WATER CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

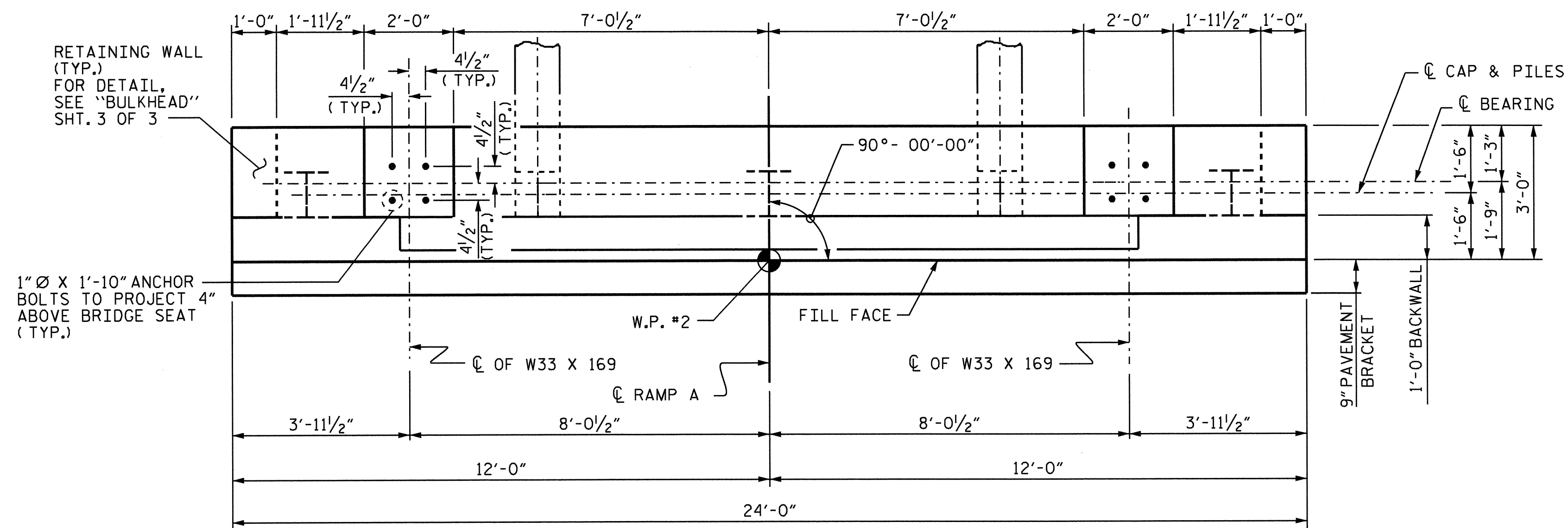
STANDARD  
 12" PRESTRESSED  
 CONCRETE PILE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-11
1			3			TOTAL SHEETS 29
2			4			

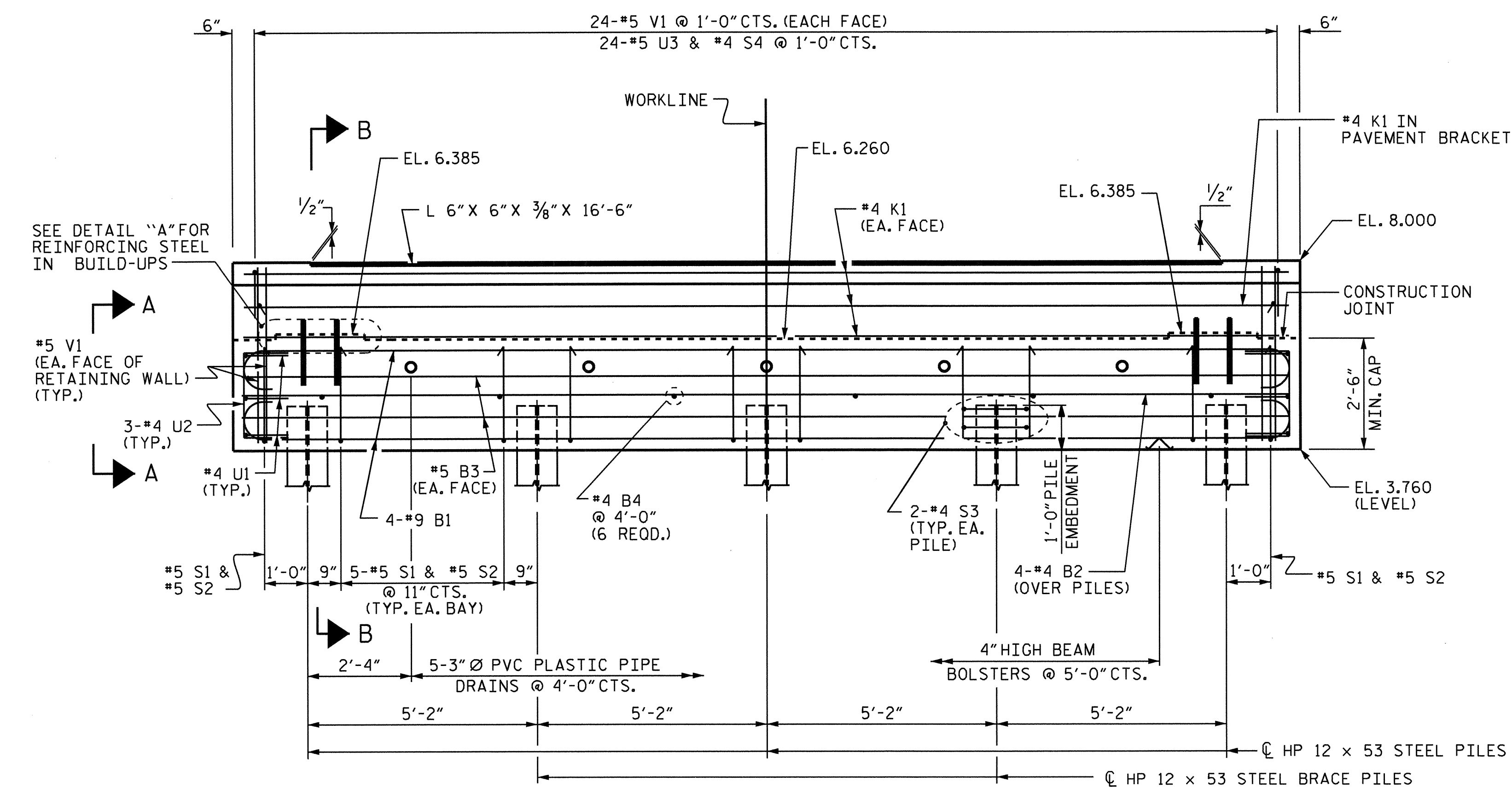


ASSEMBLED BY : B.N. BARODAWALA DATE : 4-23-12  
 CHECKED BY : K. P. SEDAI DATE : 6-14-12  
 DRAWN BY : FCJ 7/88  
 CHECKED BY : CRK 3/89

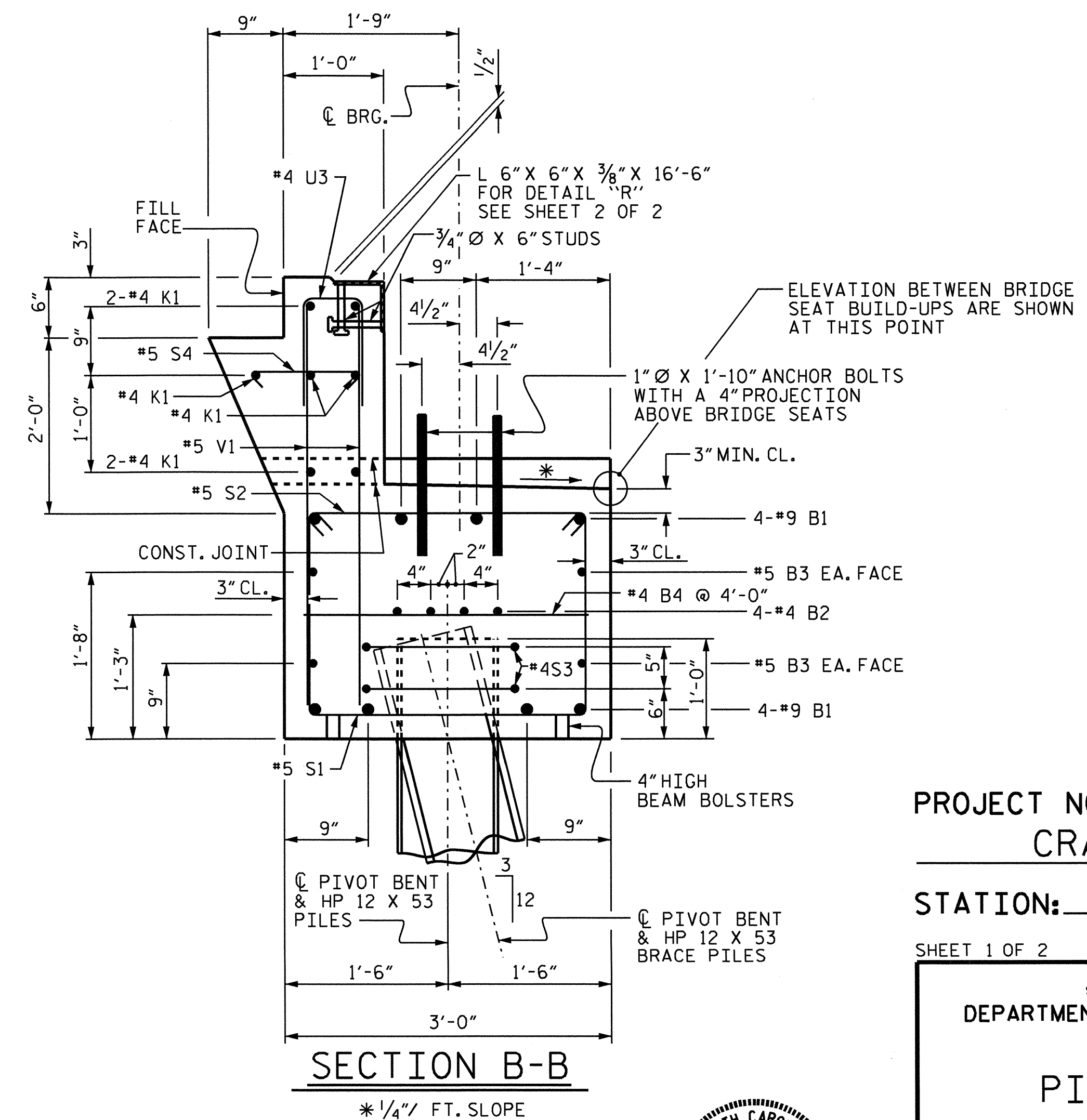
REV. 5/1/06R TLA/GM  
 REV. 11/30/10 WMC/GM  
 REV. 10/1/11 MAA/GM



PLAN



ELEVATION



SECTION B-B

\* 1/4" FT. SLOPE

NOTES:

FOR PILE SPLICE DETAIL, SEE "LIFT BENT" SHEET 3 OF 4.

THE 6" X 6" X 3/8" ANGLE FOR PIVOT BENTS IS TO BE PAID FOR UNDER THE CONTRACT UNIT BID PRICE FOR STRUCTURAL STEEL. FOR DETAILS OF THE ANGLES, SEE SHEET 2 OF 2.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

ALL REINFORCING STEEL SHALL BE GRADE 60.

STIRRUPS IN CAP MAY BE SHIFTED SLIGHTLY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE PIVOT BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE AREAS OF THE PIVOT BENT CAP, EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSLY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 1/4" PER FOOT.

FOR PAINTING STEEL PILES, SEE SPECIAL PROVISIONS.

EPOXY COAT THE PIVOT BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUTED.

PROJECT NO. F-5500  
 CRAVEN COUNTY  
 STATION: 10+00.00-RPA-

SHEET 1 OF 2

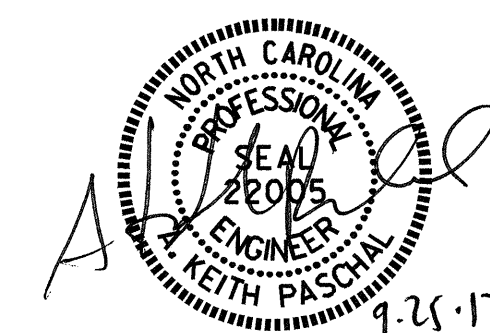
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

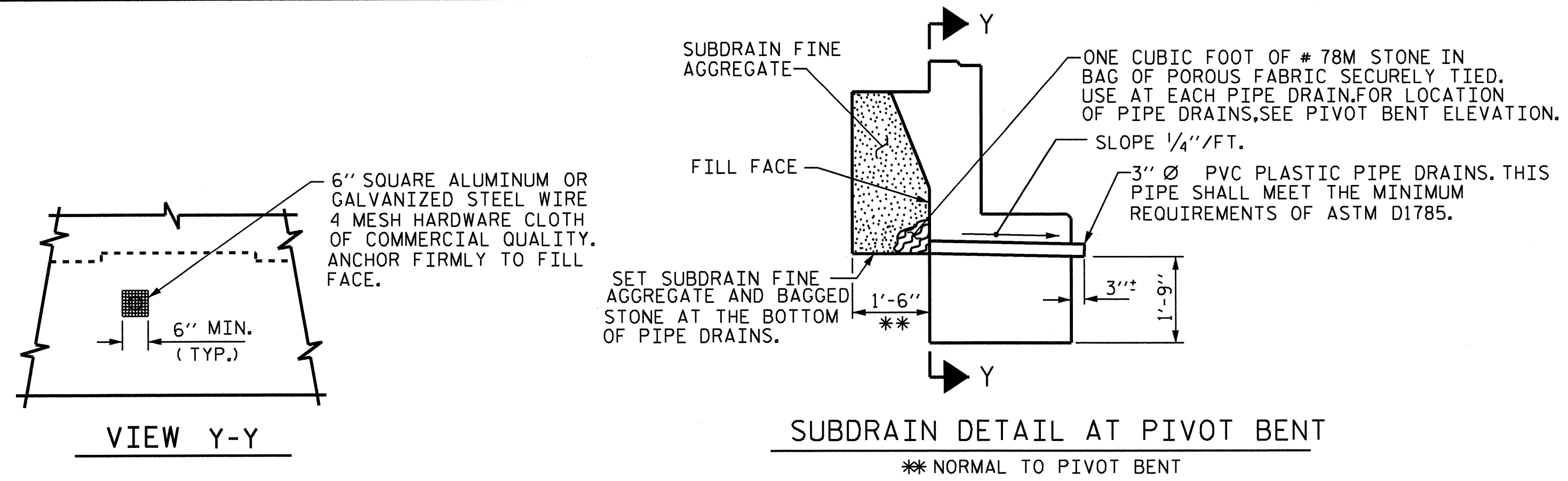
PIVOT BENT  
 CHERRY BRANCH  
 FERRY BASIN

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					29

DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K.P.SEDAII DATE : 6-14-12

24-SEP-2012 10:30  
 S:\NCPG1\Keith\Barodawala\Cherry Branch Ramp A.dgn  
 kpaschal





**PIPE DRAIN DETAILS**

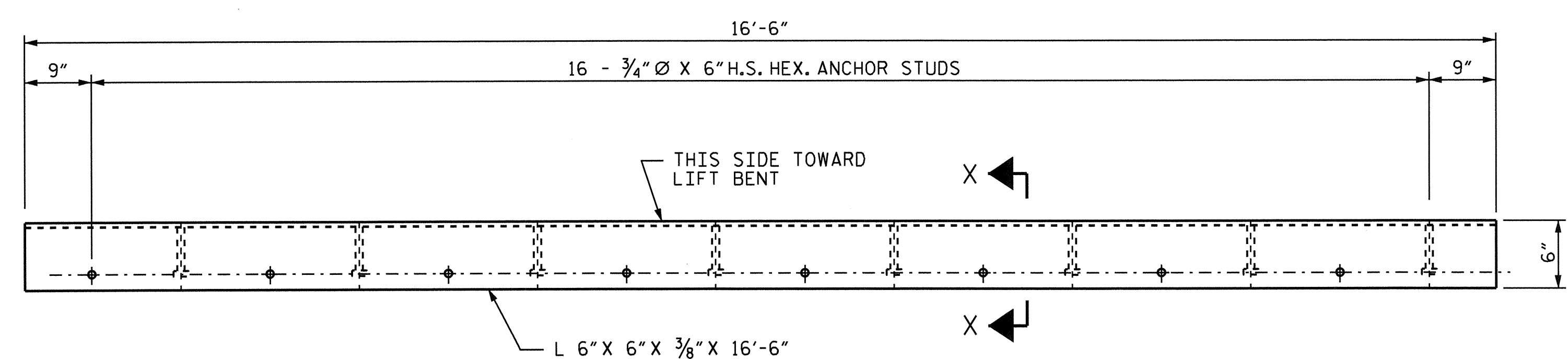
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS HARDWARE CLOTH, AND FASTENERS.

THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

SUBDRAIN FINE AGGREGATE IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM END OF CAP TO END OF CAP.

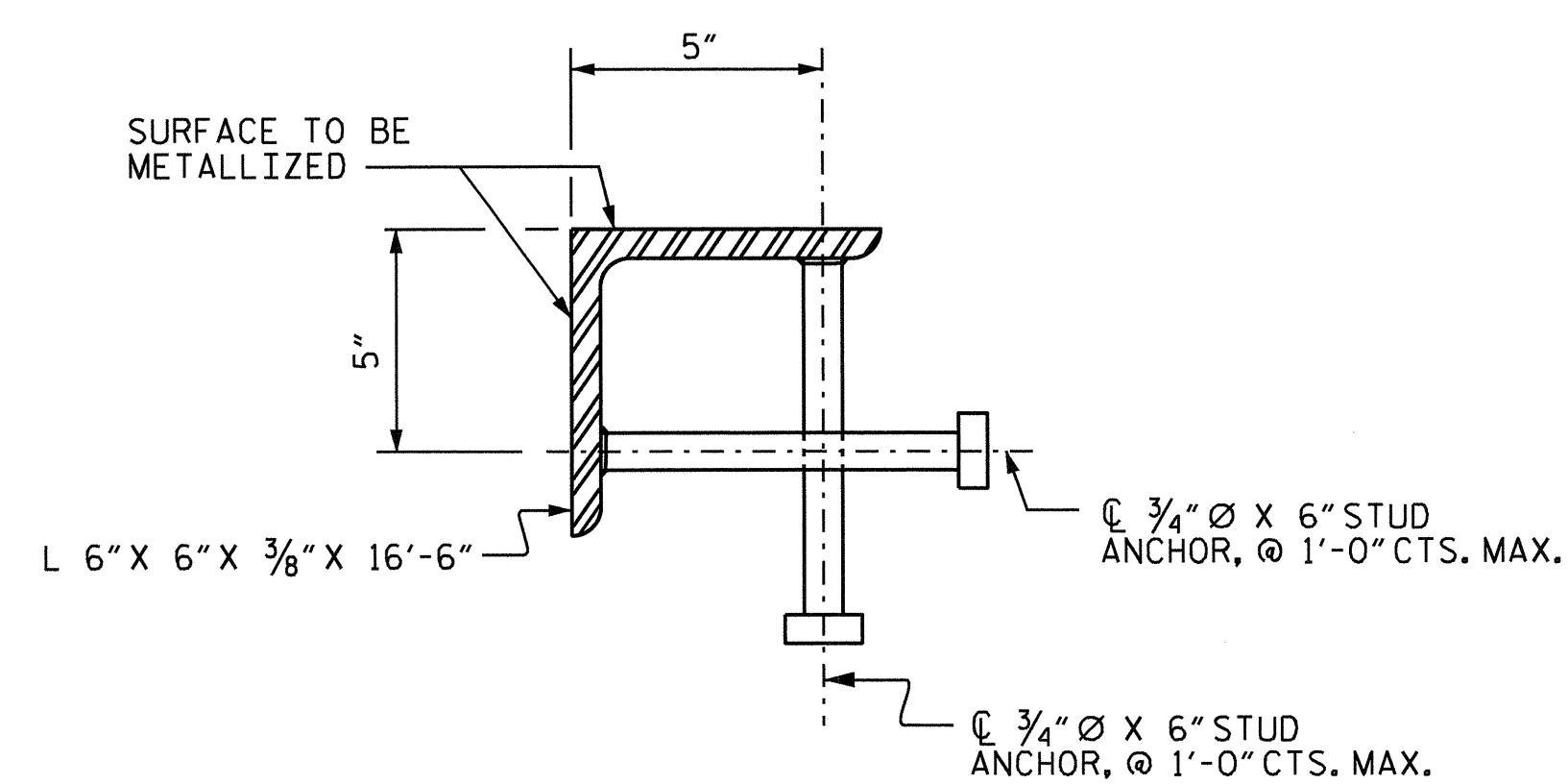
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND PLACING FINE AGGREGATE AND STONE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

PIPE DRAINS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL.



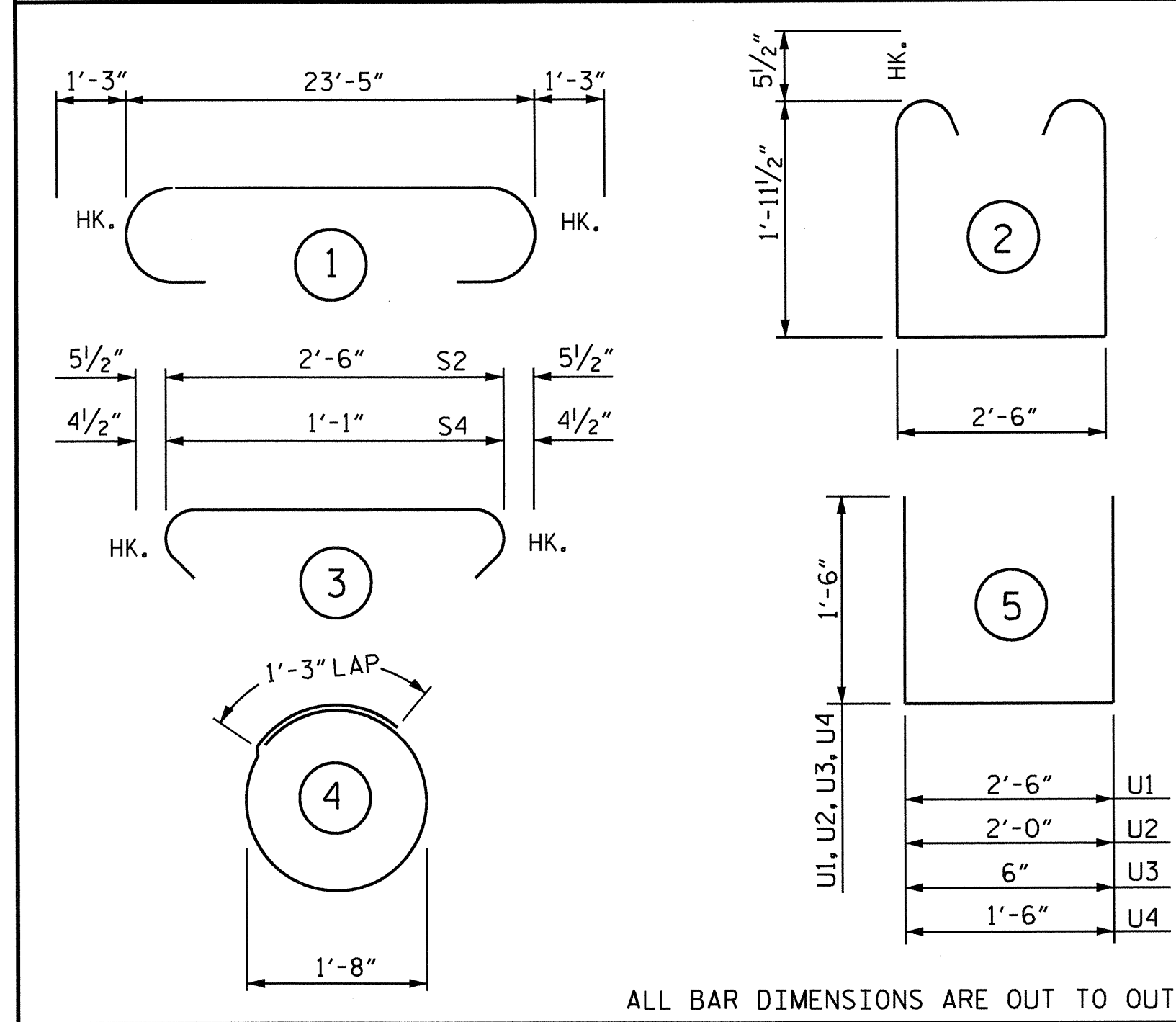
**PLAN**

**DETAIL "R"**



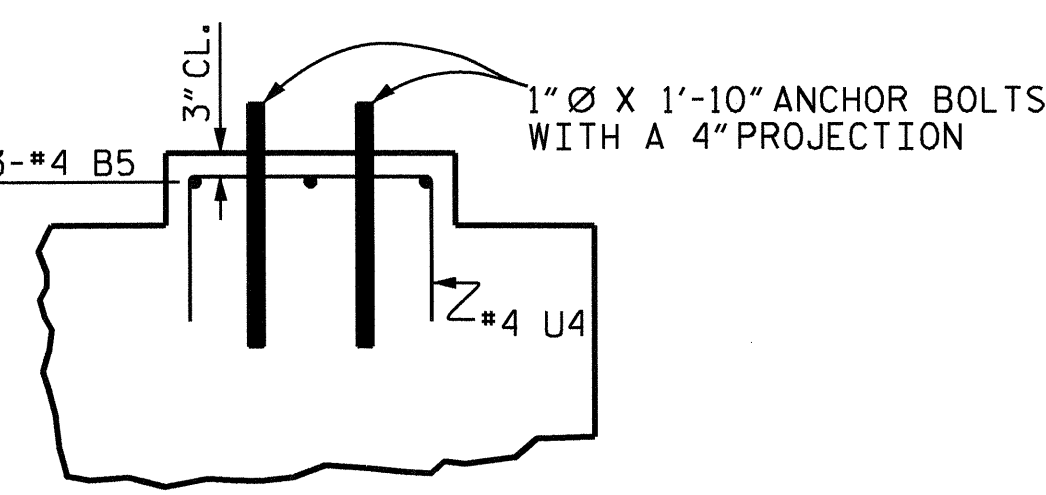
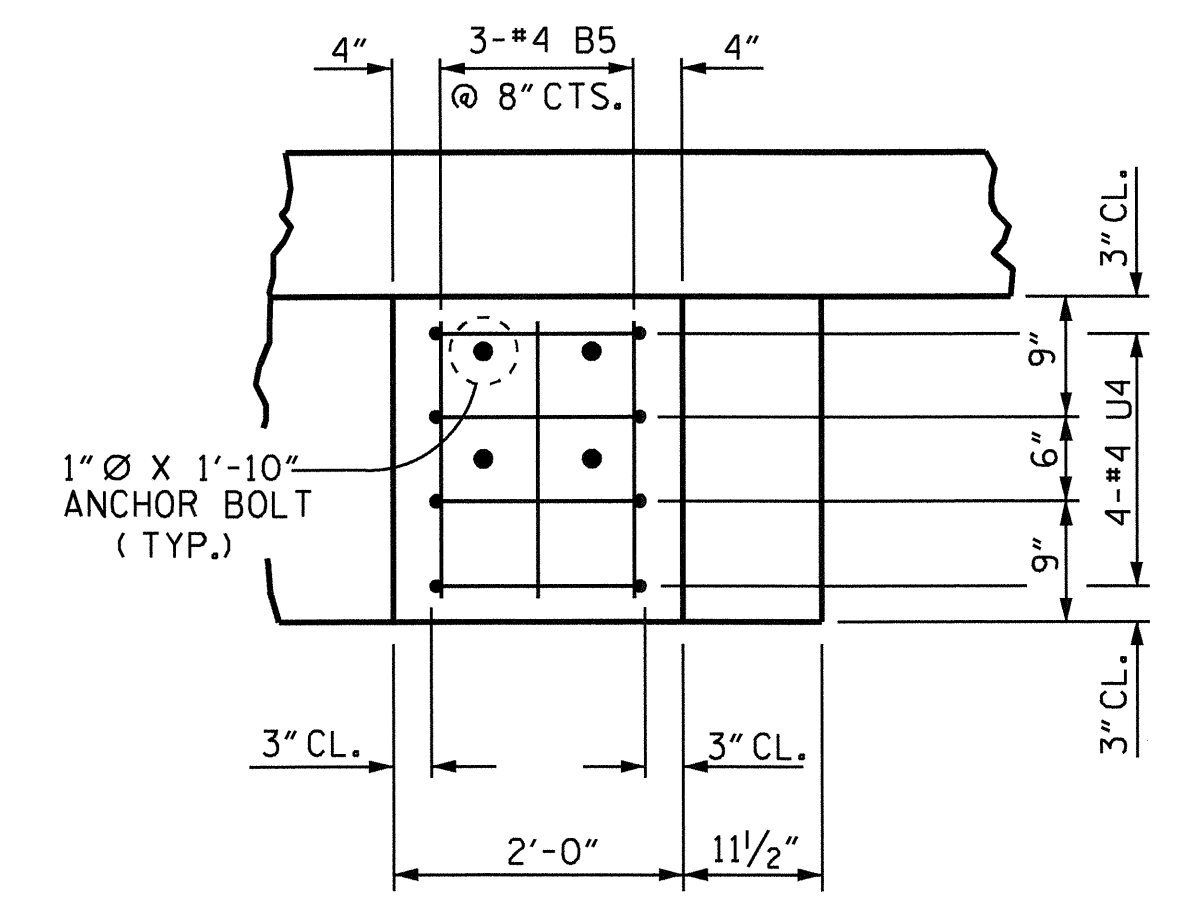
**SECTION X-X**

**BAR TYPES**



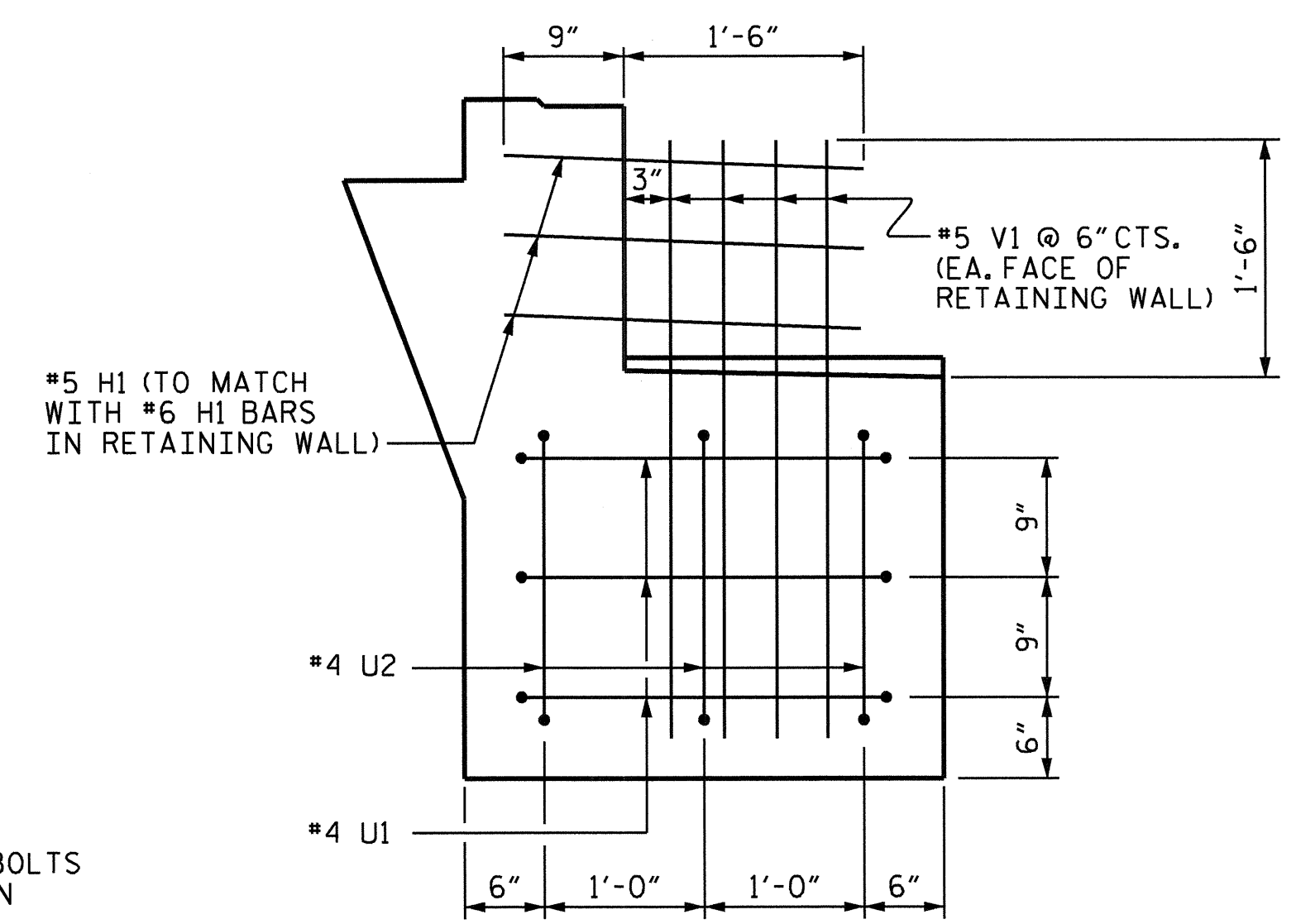
**BILL OF MATERIALS**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	25'-11"	705
B2	4	#4	STR	23'-6"	63
B3	4	#5	STR	23'-6"	98
B4	6	#4	STR	2'-6"	10
B5	6	#4	STR	1'-6"	6
H1	12	#5	STR	2'-3"	28
K1	7	#4	STR	23'-6"	110
S1	22	#5	2	7'-4"	168
S2	22	#5	3	3'-5"	78
S3	10	#4	4	6'-6"	43
S4	24	#5	3	1'-10"	46
U1	6	#4	5	5'-6"	22
U2	6	#4	5	5'-0"	20
U3	24	#4	5	3'-6"	56
U4	8	#4	5	4'-6"	24
V1	64	#5	STR	3'-8"	245
EPOXY COATED REINFORCING STEEL					1,722 LBS.
CLASS AA CONCRETE TOTAL					8.9 CY.
HP 12 x 53 STEEL PILES					
NO. 5 LIN FT. 250					



**DETAIL "A"**

(TYP. @ EACH BUILD-UP)



**VIEW A-A**

(TYP. @ EACH END OF CAP)

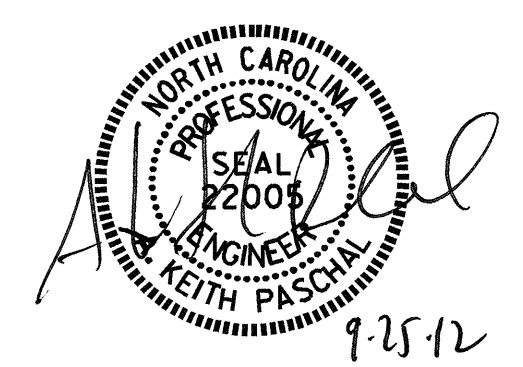
PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00-RPA-

SHEET 2 OF 2

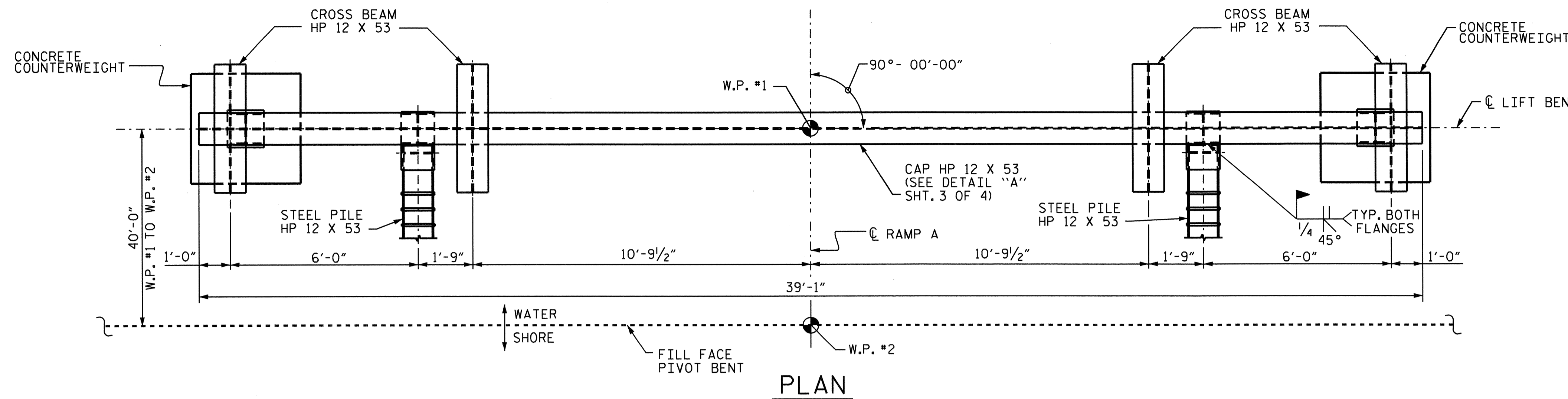
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PIVOT BENT  
 CHERRY BRANCH  
 FERRY BASIN**

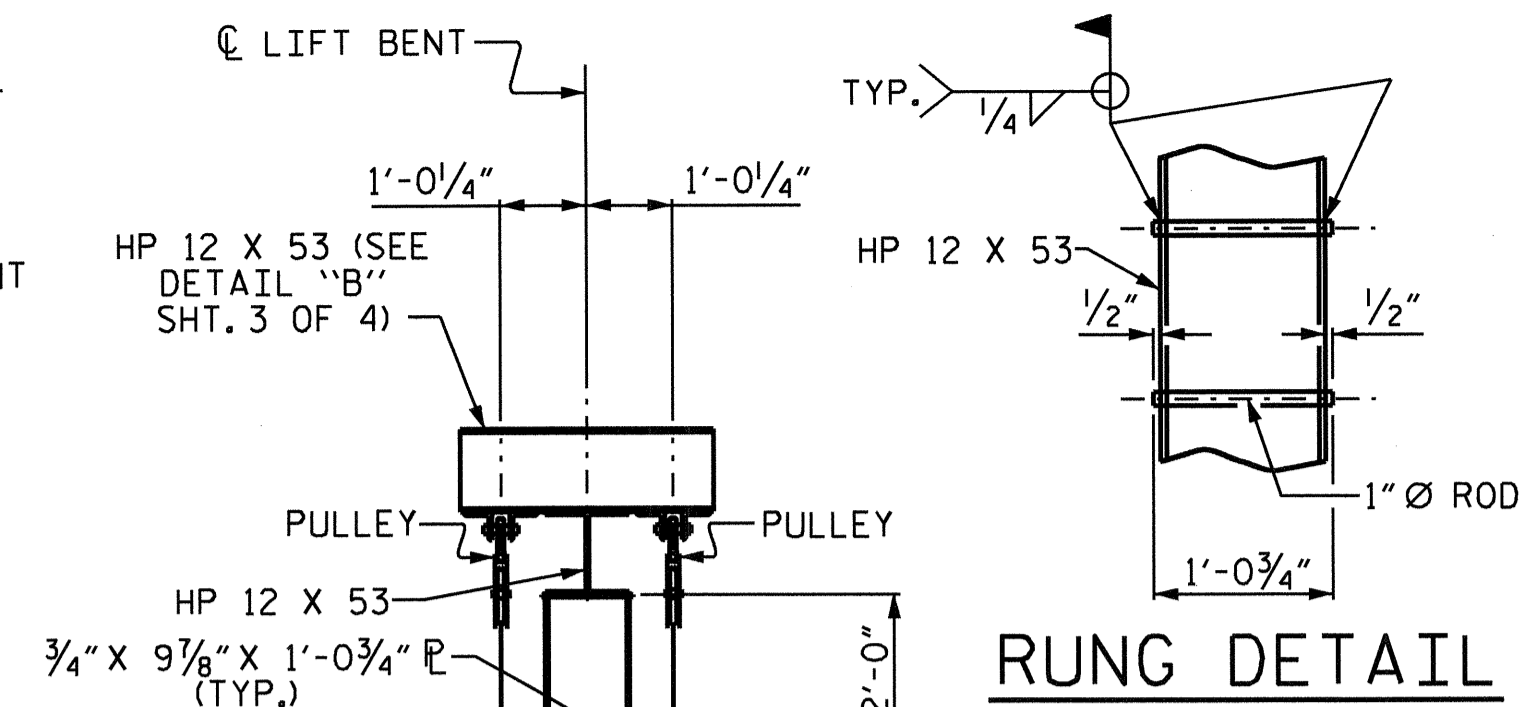
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 29
2			4			



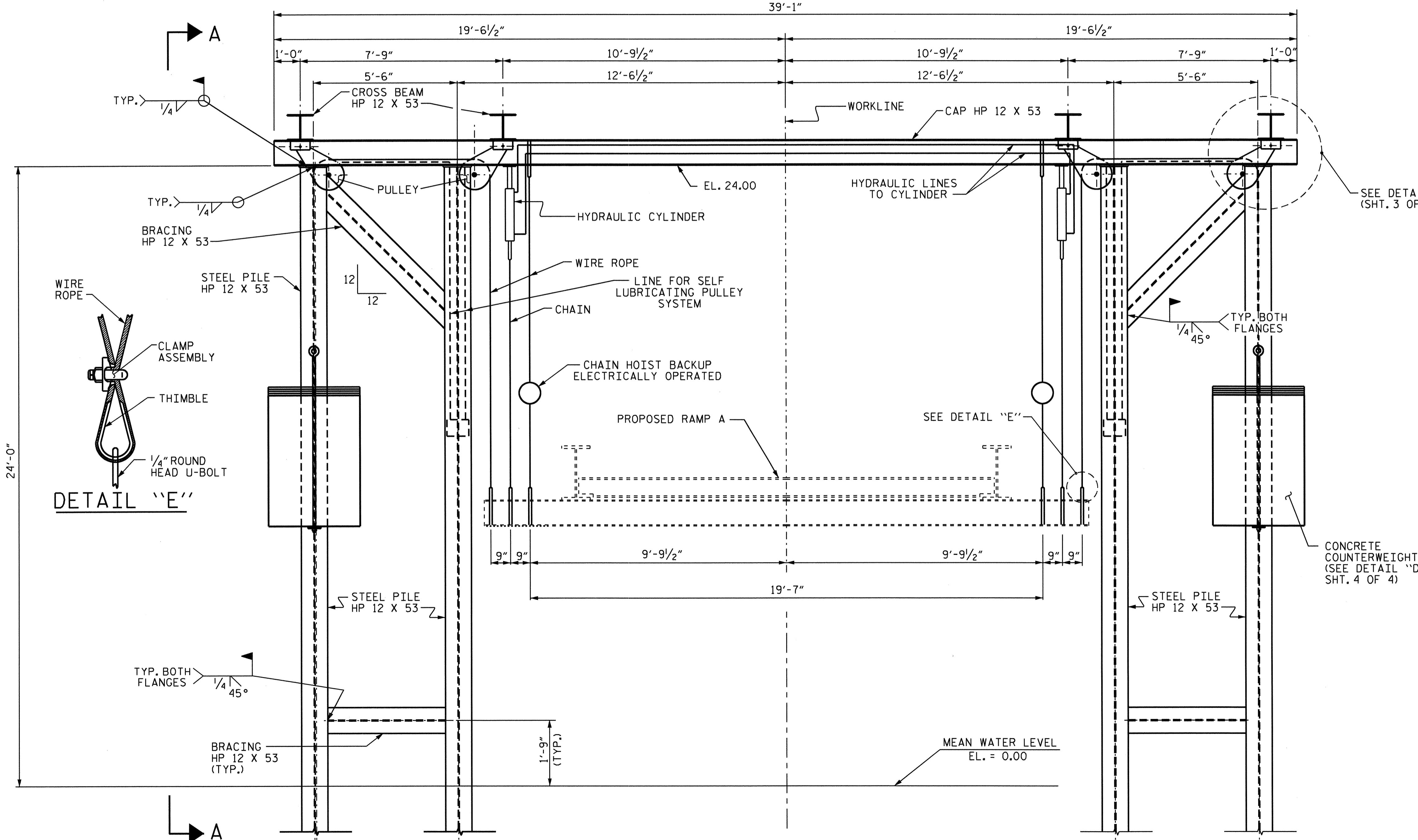
DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K. P. SEDAI DATE : 6-14-12



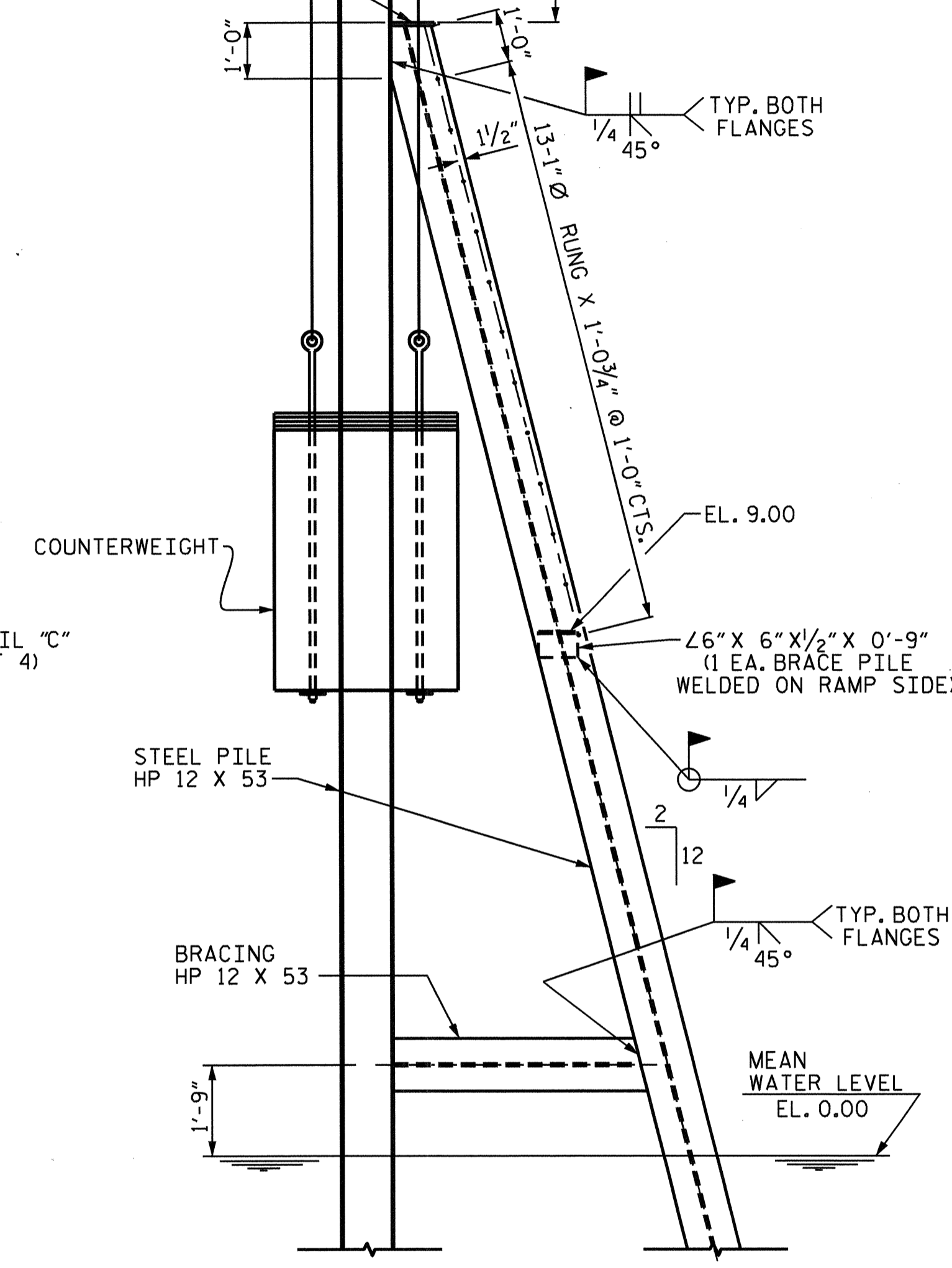
**PLAN**



**RUNG DETAIL**



**ELEVATION**  
(VIEW FROM WATER)

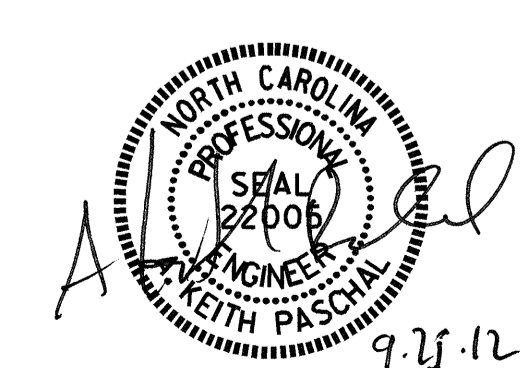


**VIEW A-A**

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
LIFT BENT CHERRY BRANCH FERRY BASIN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K.P. SEDAI DATE : 6-14-12

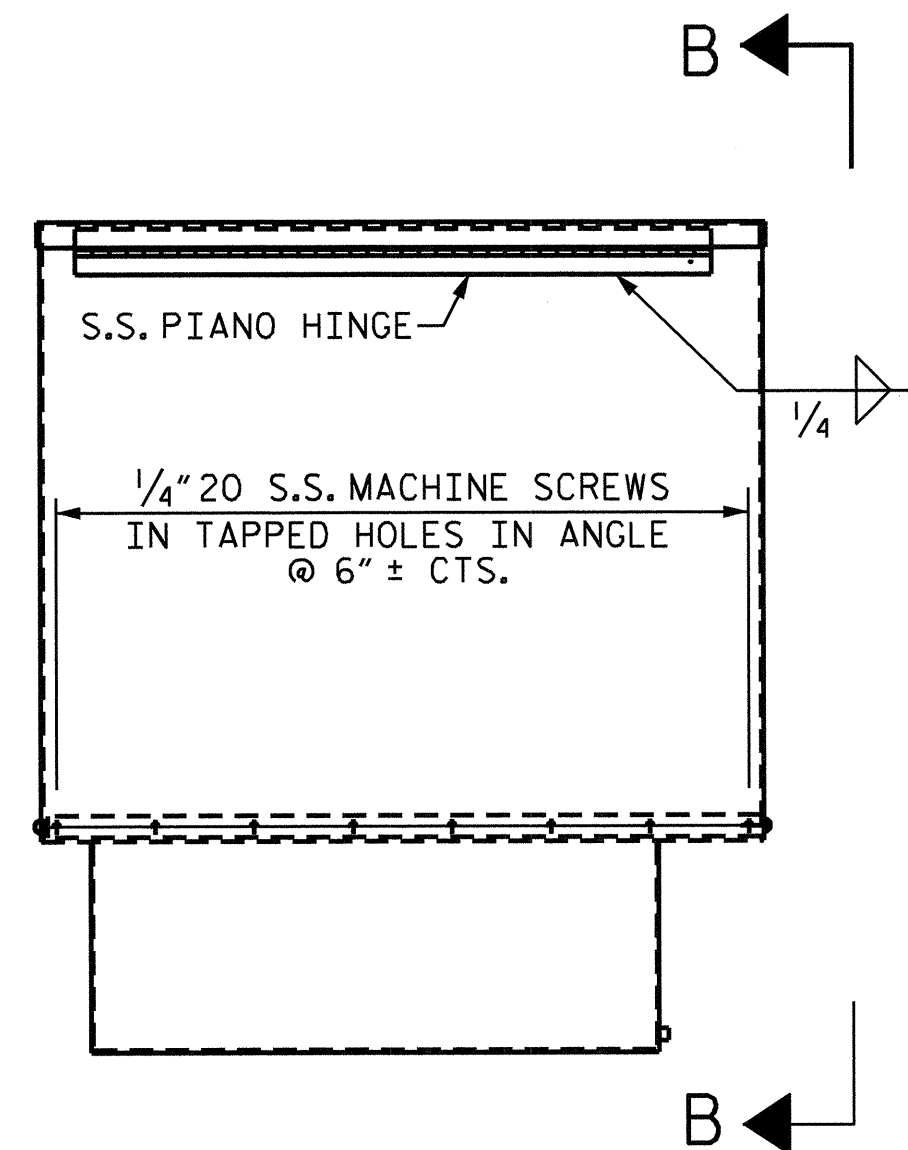
24-SEP-2012 10:30  
 S:\DPCI\Keith\Barodawala\Cherry Branch Ramp A.dgn  
 kpaschal

**NOTES**

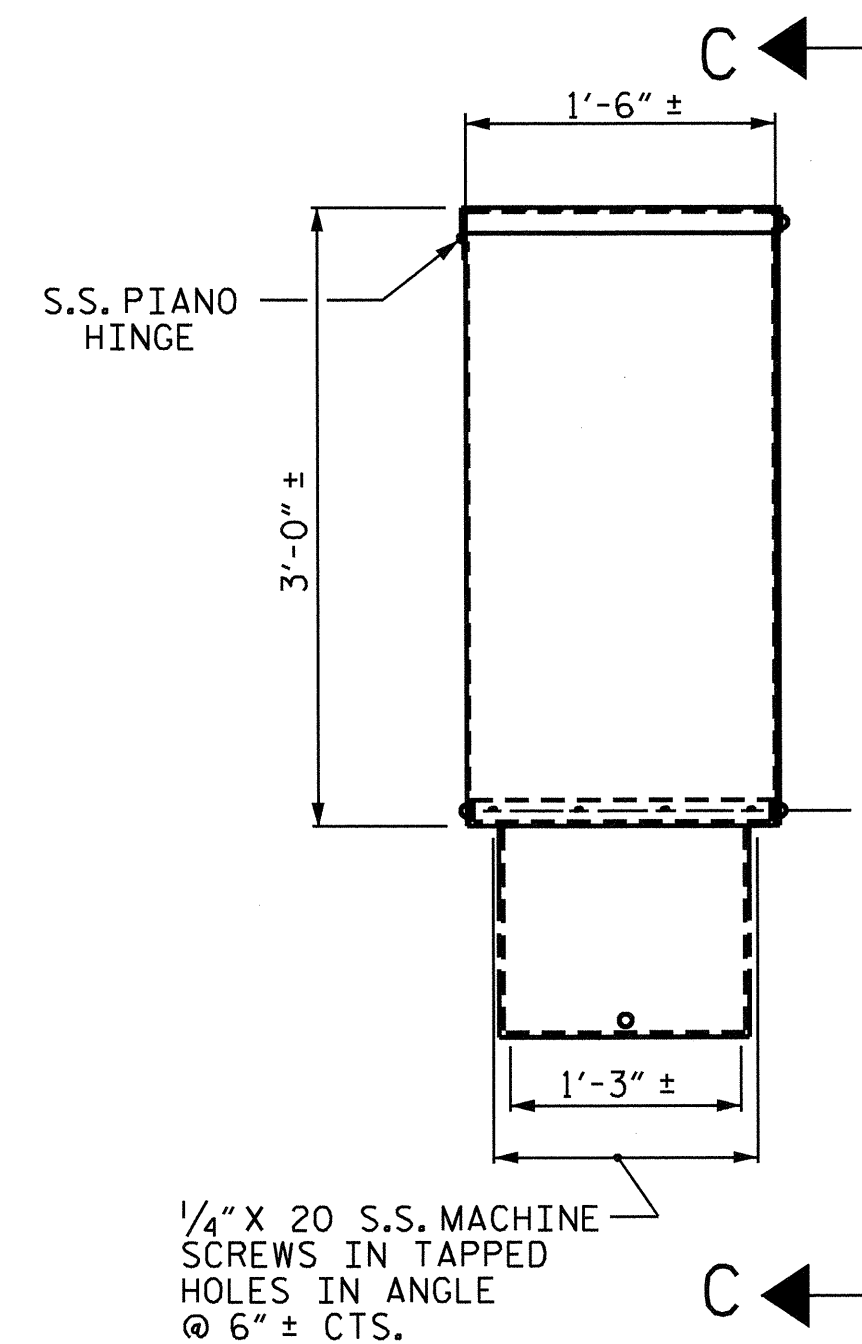
ALL DIMENSIONS ARE TO BE VERIFIED BY CONTRACTOR TO INSURE HYDRAULIC UNIT PROPOSED WILL BE COMPATABLE WITH BOX SIZE.

ALL TUBING MATERIALS FOR RAMP LIFT AND LUBRICATION SYSTEM TO BE STAINLESS STEEL, SEE SPECIAL PROVISION FOR MECHANICAL SPECIFICATIONS.

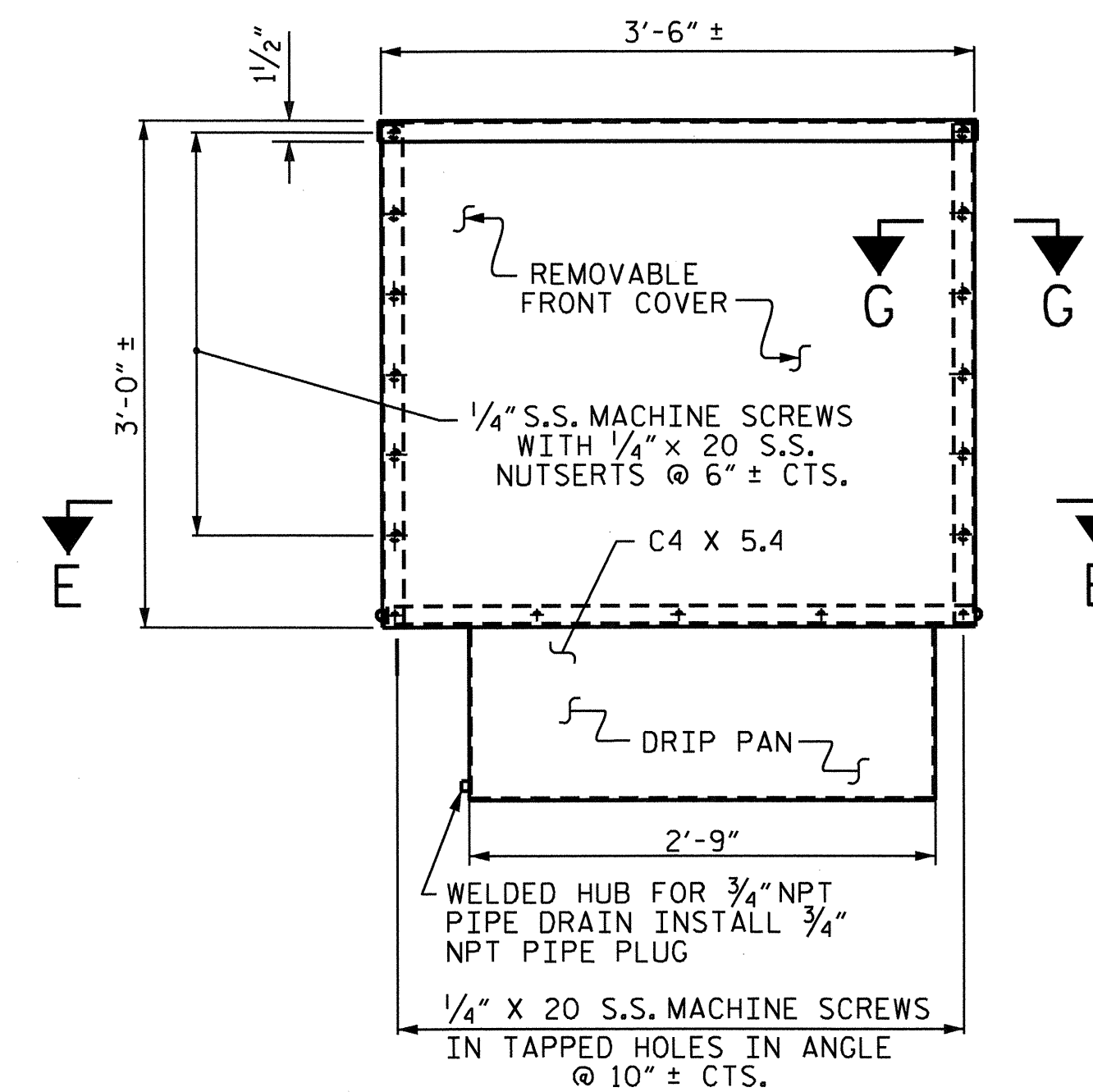
FOR HYDRAULIC SYSTEM, SEE SPECIAL PROVISION FOR MECHANICAL SPECIFICATIONS.



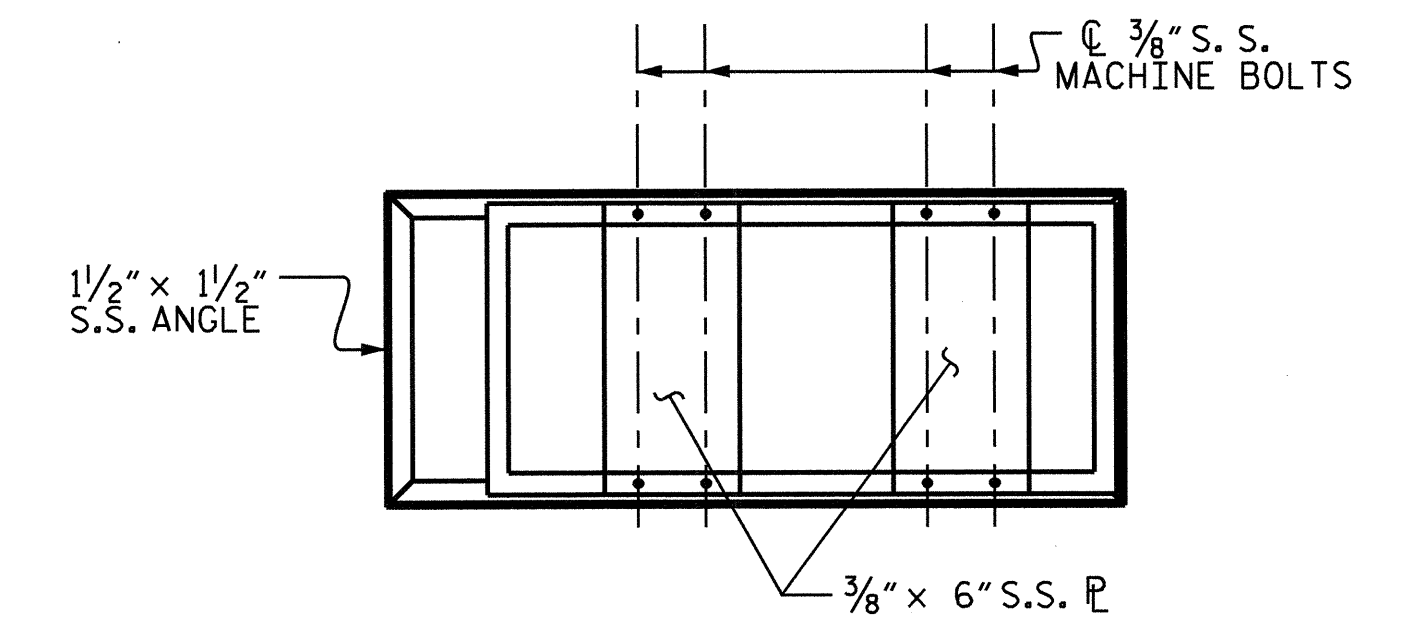
**ELEVATION**



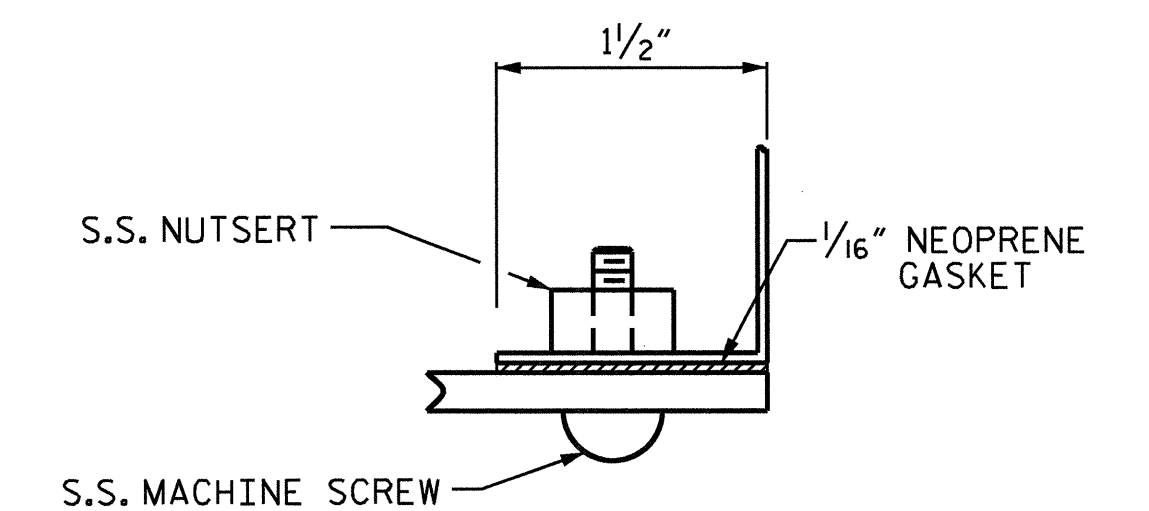
**VIEW B-B**



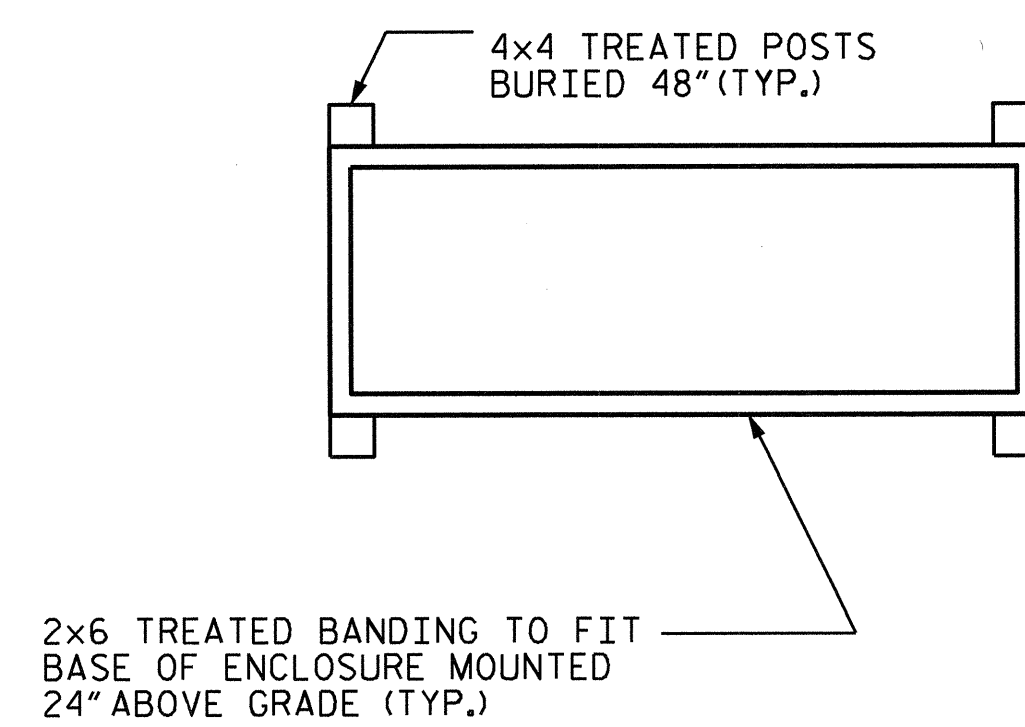
**VIEW C-C**



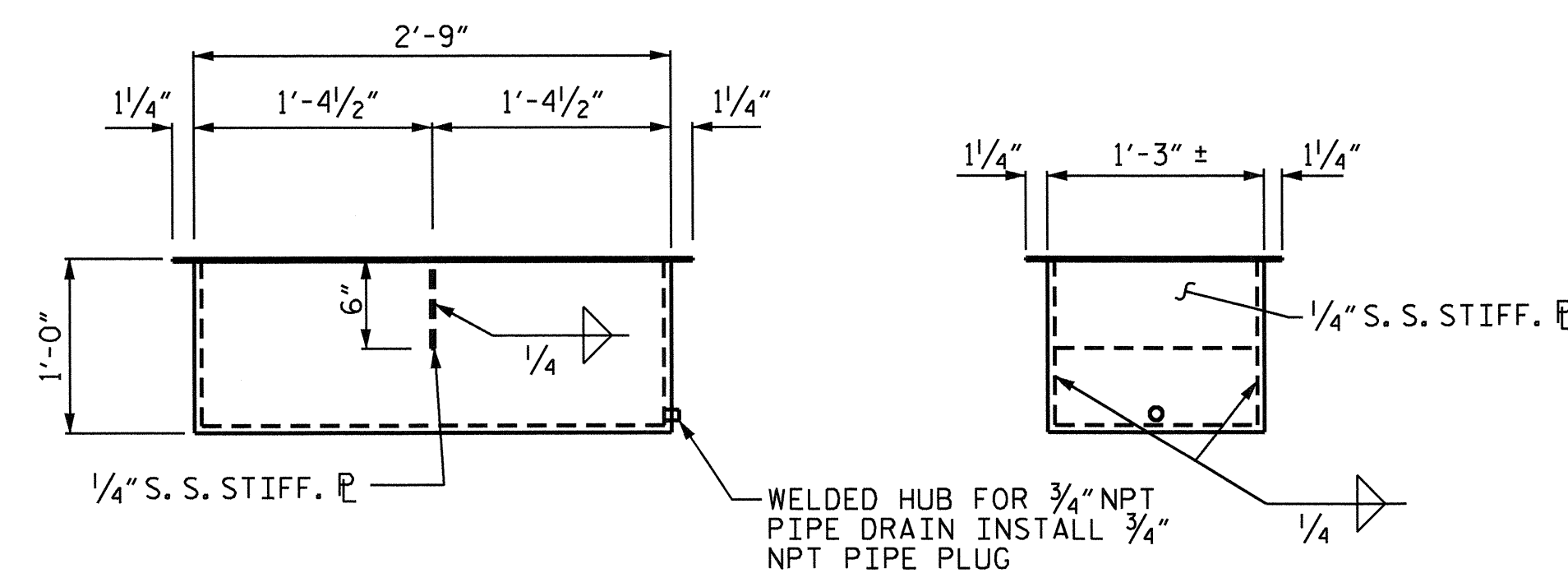
**SECTION E-E**



**SECTION G-G**



**POWER UNIT STAND**



**DRIP PAN DETAIL**

**HYDRAULIC UNIT ENCLOSURE**

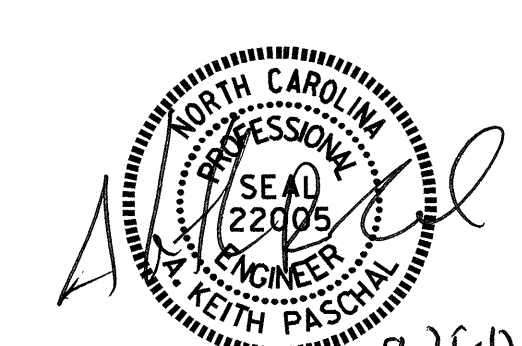
PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

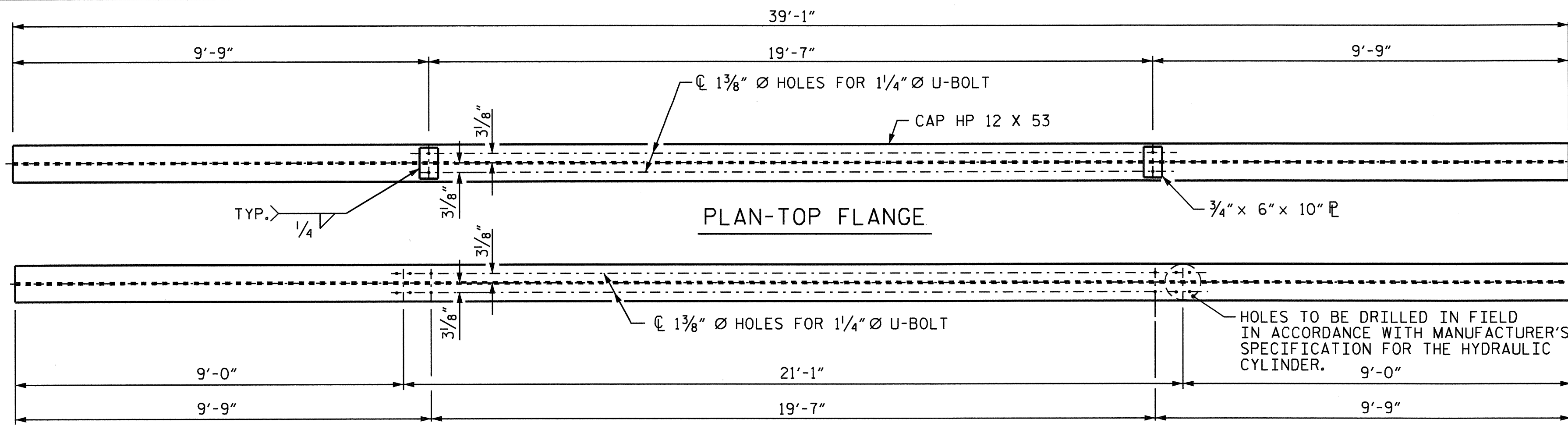
LIFT BENT

CHERRY BRANCH  
 FERRY BASIN

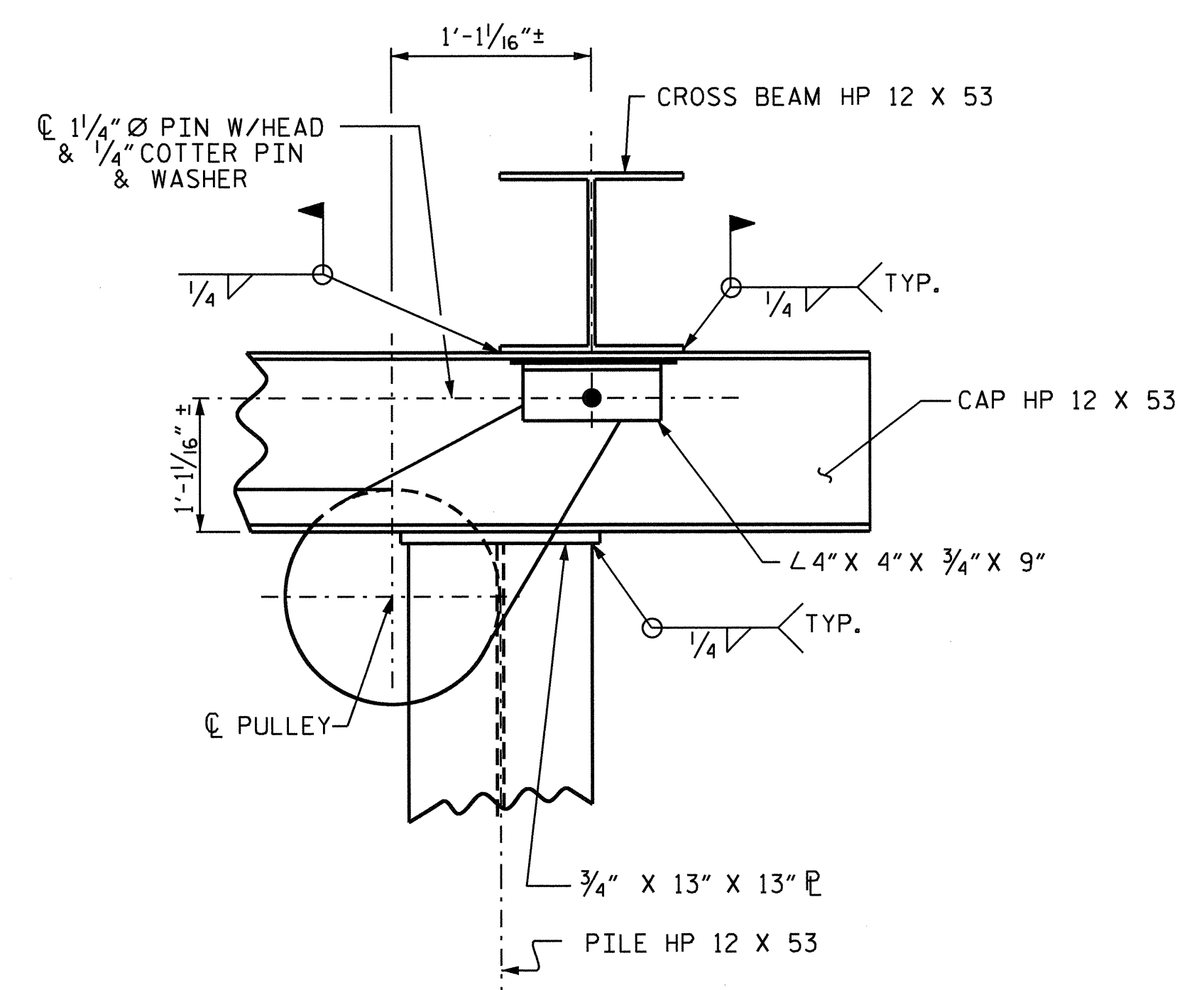


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
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2			4			29

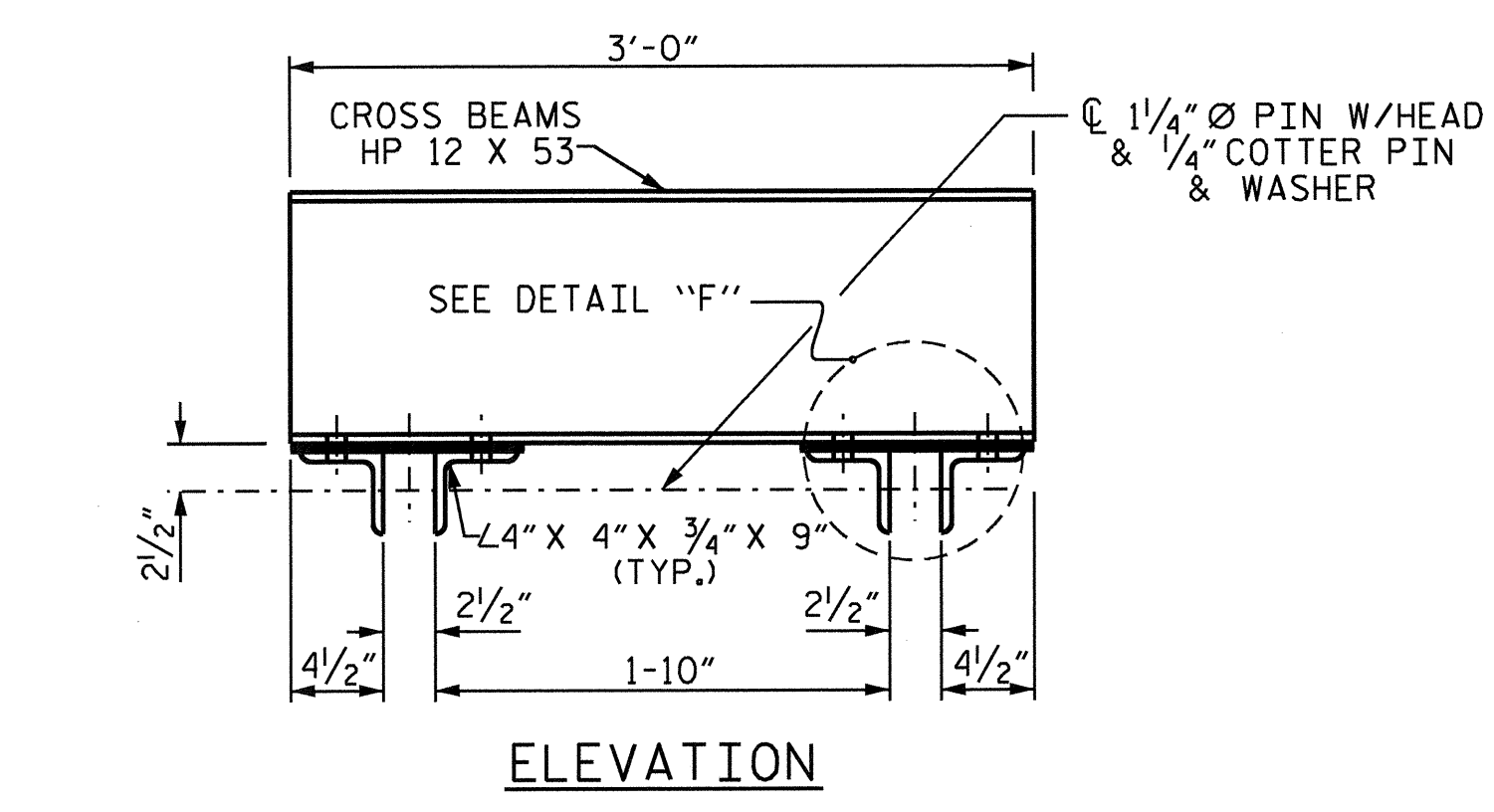




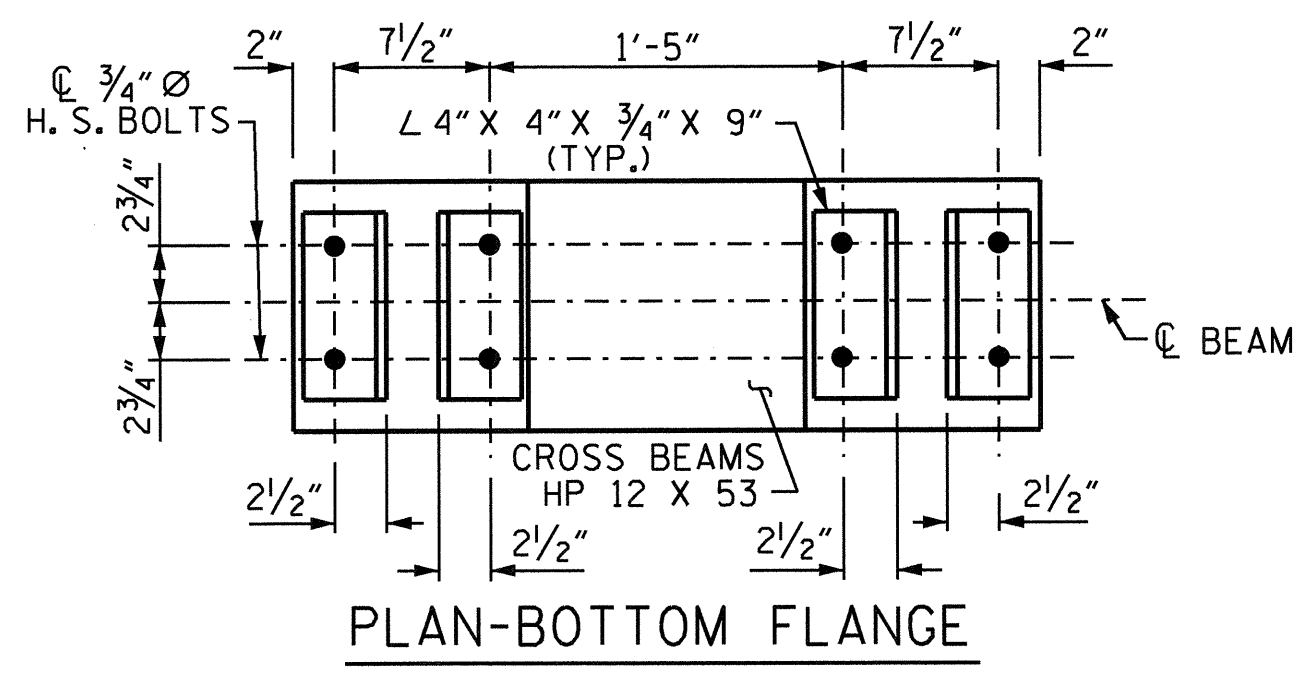
DETAIL "A"



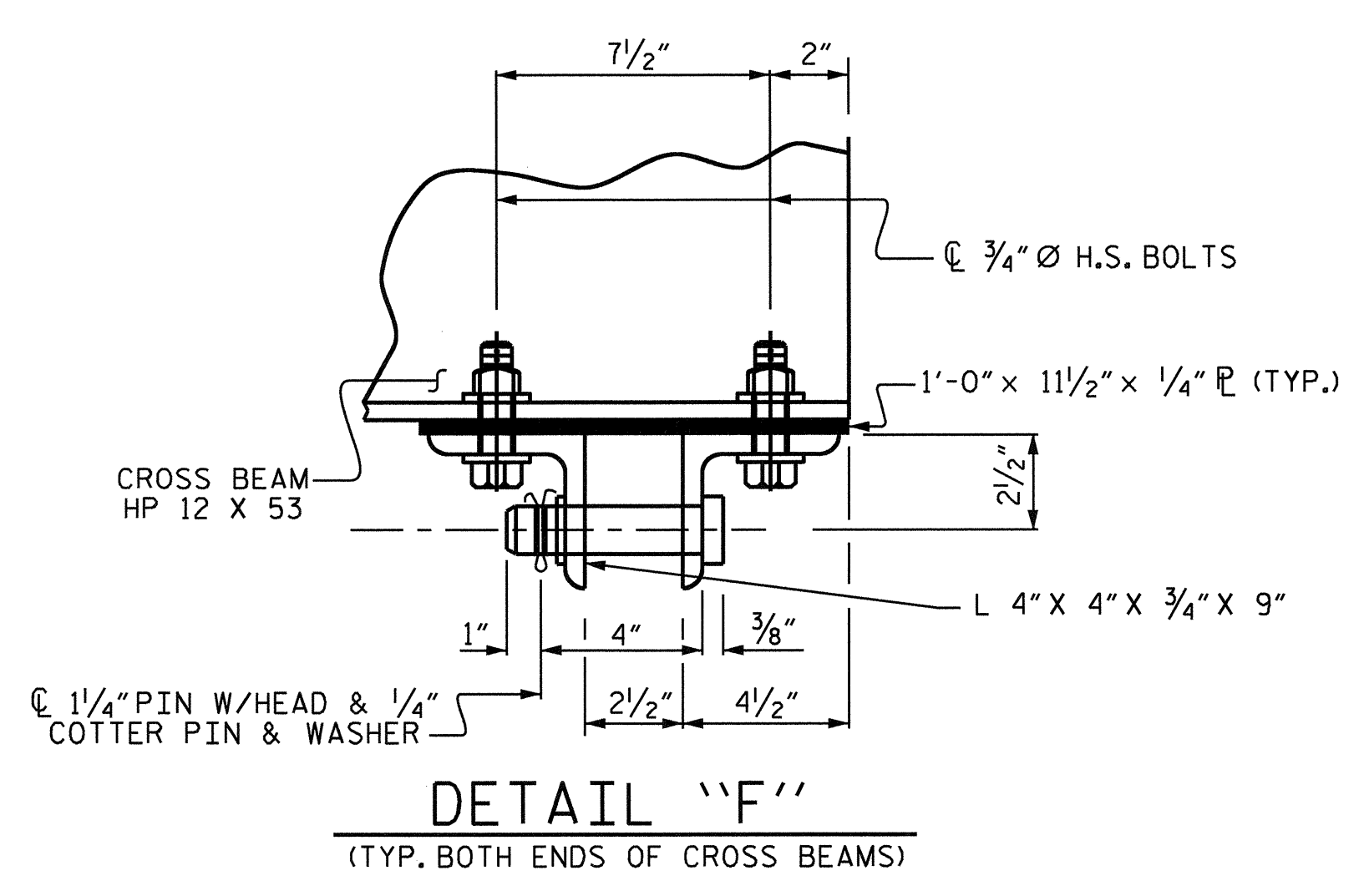
DETAIL "C"



ELEVATION



DETAIL "B"



DETAIL "F"

**NOTES**

STRUCTURAL STEEL INCLUDES CAP, ANGLES, BRACING, PLATES, CROSS BEAMS, PINS, BOLTS, ROUND RODS FOR STEPS ON BRACE PILE, AND ALL HP 12 X 53 PILES ABOVE ELEVATION 0.00.

PINS AND BOLTS SHALL BE GALVANIZED, AND THIS COST WILL BE INCLUDED IN THE CONTRACT BID PRICE FOR APPROXIMATE POUNDS STRUCTURAL STEEL.

ALL STRUCTURAL STEEL SHALL BE PAINTED IN ACCORDANCE WITH "PAINTING STEEL PILES". SEE SPECIAL PROVISION FOR "PAINTING STEEL PILES".

HP 12 X 53 VERTICAL AND BRACED STEEL PILES TO BE PAINTED. SEE SPECIAL PROVISIONS FOR "PAINTING STEEL PILES".

FOR RAMP LIFT AND LUBRICATION SYSTEM, SEE SPECIAL PROVISION FOR MECHANICAL SPECIFICATIONS.

FOR CONCRETE COUNTERWEIGHT, SEE SPECIAL PROVISIONS.

ALL STEEL M270 GRADE 36 UNLESS NOTED OTHERWISE.

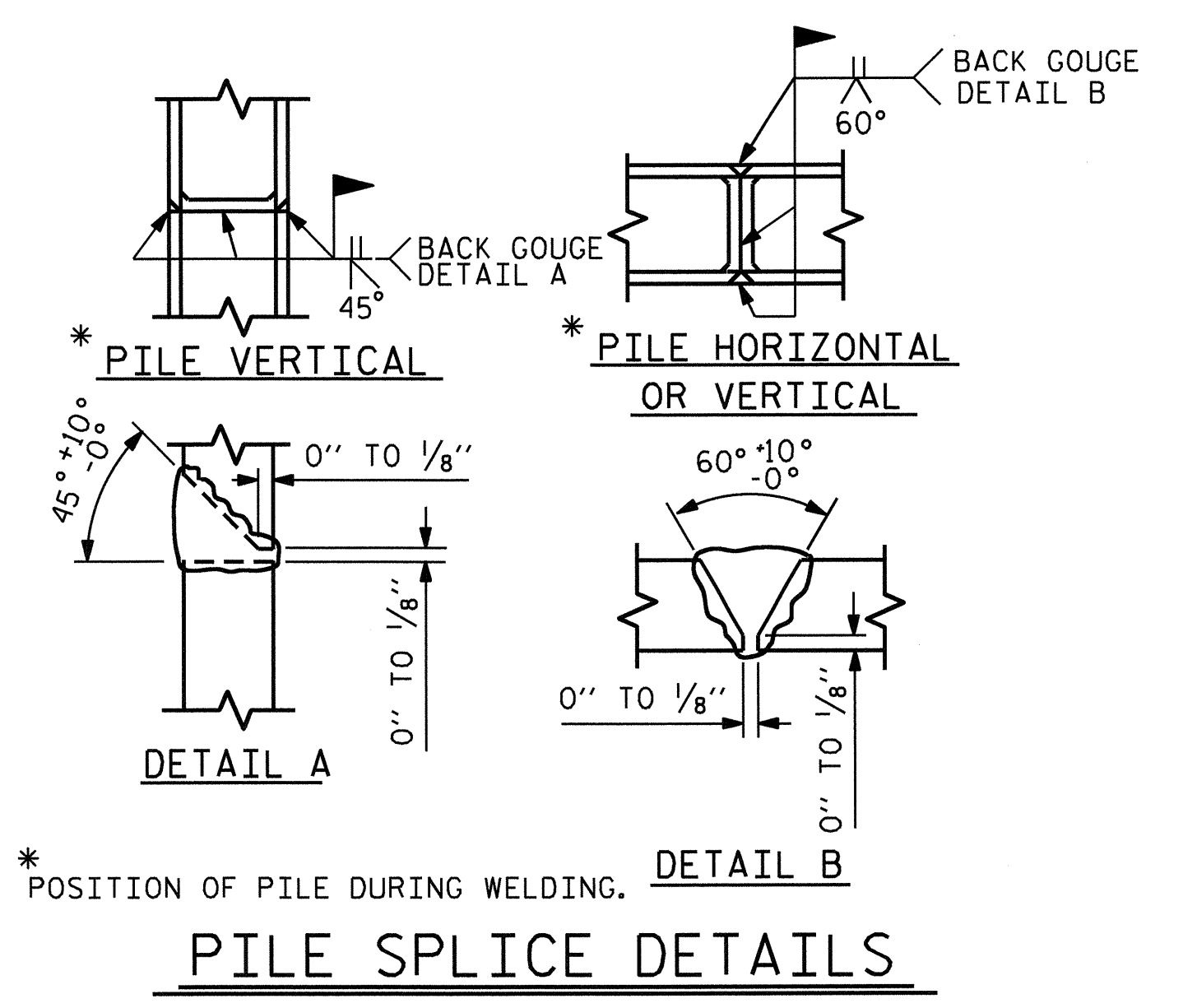
1/2 RAMP REACTION AT LIFT BENT APPROXIMATELY=14,200 LBS.

APPROXIMATE WEIGHT OF ONE COUNTERWEIGHT (MADE UP OF CONCRETE AND STEEL PLATES) IS BASED ON CONCRETE WEIGHT OF 150 LBS. PER CUBIC FOOT= 12,700 LBS.

REACTION ON ONE HYDRAULIC CYLINDER APPROXIMATELY=1,500 LBS.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS AND DOWELS, SEE STANDARD SPECIFICATIONS.

BOTH VERTICAL AND BRACED HP 12 X 53 STEEL PILES SHALL BE INSTALLED TO A MINIMUM TIP ELEVATION OF -50 FT. AND 15.0 TONS/PILE BEARING.



PROJECT NO. F-5500

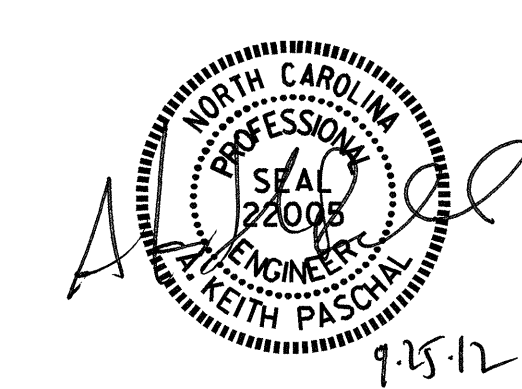
CRAVEN COUNTY

STATION: 10+00.00 -RPA-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

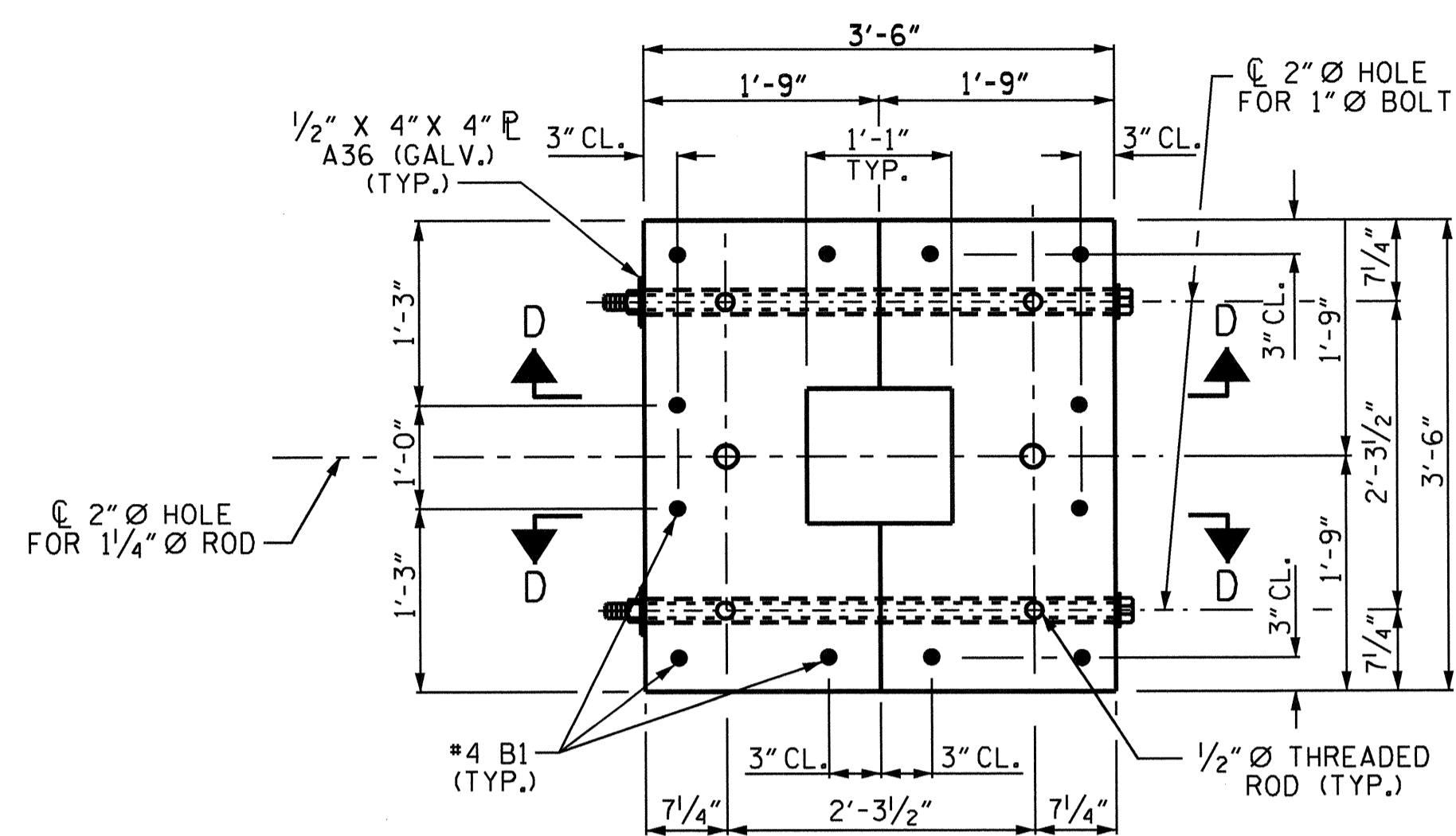
LIFT BENT  
CHERRY BRANCH  
FERRY BASIN



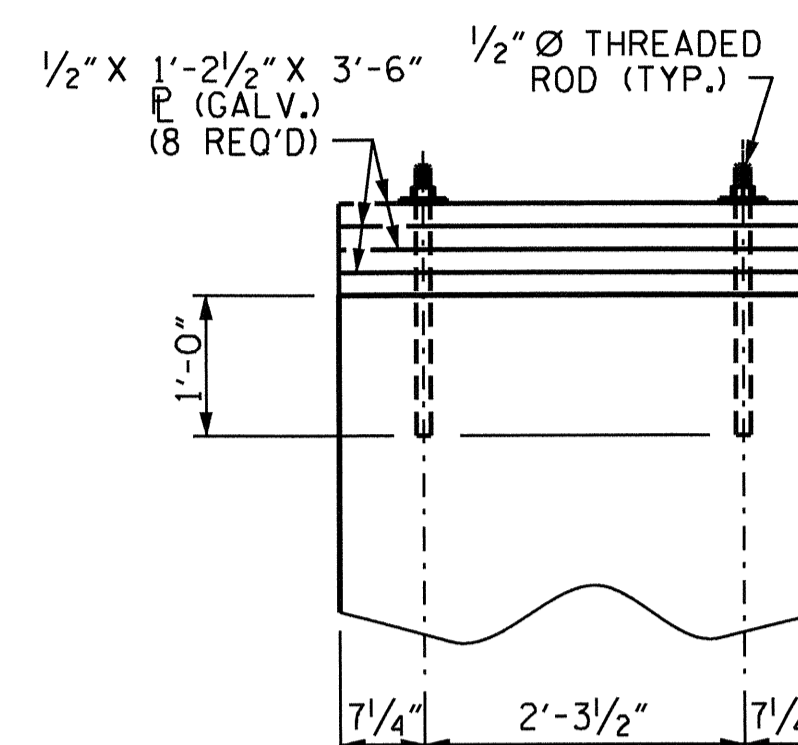
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DRAWN BY : B.N.BARODAWALA DATE : 4-23-12

CHECKED BY : K.P. SEDA DATE : 6-14-12

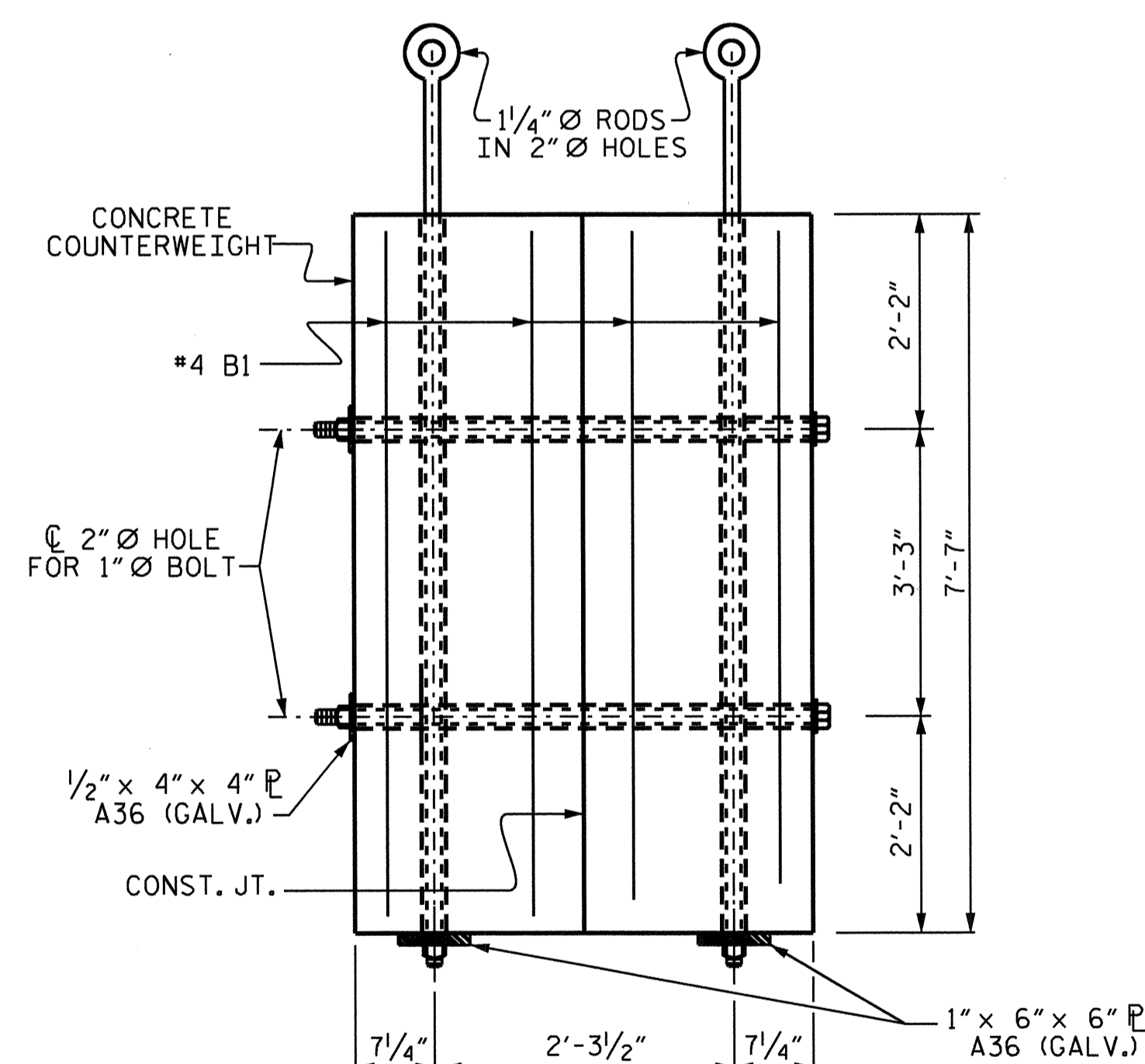


PLAN



SECTION D-D

NOTE: ESTIMATED NUMBER OF PLATES SHOWN. ADDITIONAL PLATES MAY BE NEEDED TO MEET REQUIRED WEIGHT.



ELEVATION

(FOR ADDITIONAL PLATES AND THREADED RODS SEE SECTION D-D)

DETAIL "D"

(COUNTERWEIGHT DETAILS, ALL HARDWARE TO BE GALV.)  
THE 1/4" Ø ROD, 1/2" Ø THREADED ROD & 1" Ø BOLT FOR THE COUNTERWEIGHT SHALL BE IN ACCORDANCE WITH ASTM F-593 GROUP 2 (TYPE 316 STAINLESS STEEL.)

BILL OF MATERIAL

STRUCTURAL STEEL	6068 LBS.
HP 12 X 53 PILES	NO. 6 450 LIN FT.
CLASS AA CONCRETE	6.9 CU. YDS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	12	#4	STR	7'-1"	57

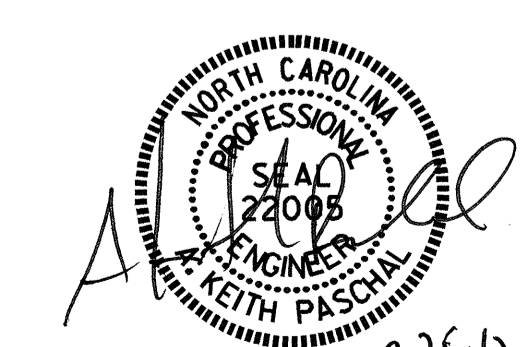
\* EPOXY COATED REINFORCING STEEL

PROJECT NO. F-5500  
CRAVEN COUNTY  
STATION: 10+00.00 -RPA-

SHEET 4 OF 4

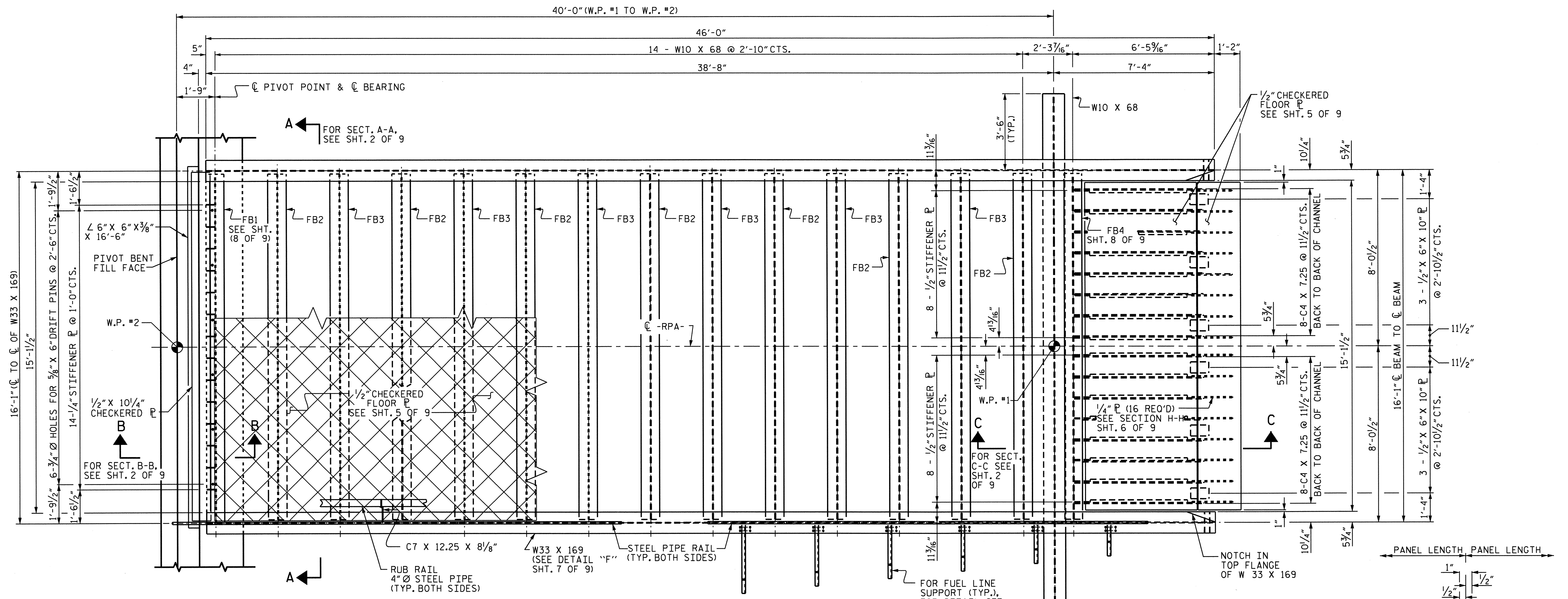
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

LIFT BENT  
CHERRY BRANCH  
FERRY BASIN



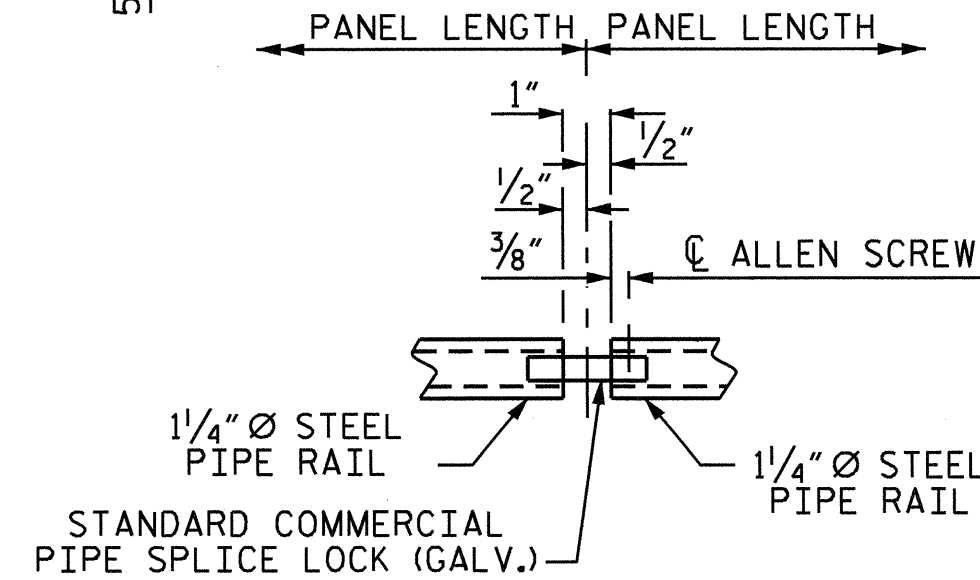
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
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CHECKED BY : K. P. SEDAI DATE : 6-14-12

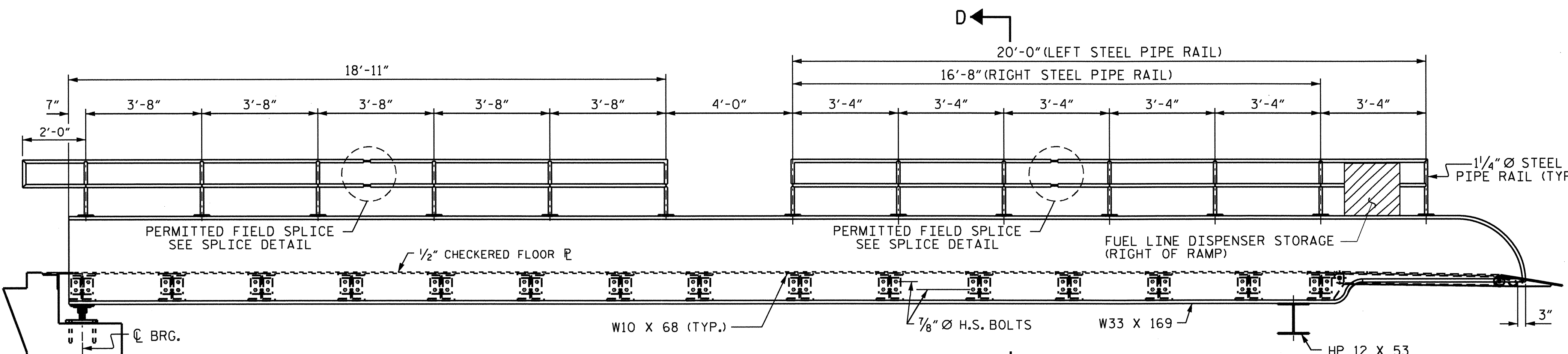


**PLAN**

PIVOT BENT PILES NOT SHOWN FOR CLARITY



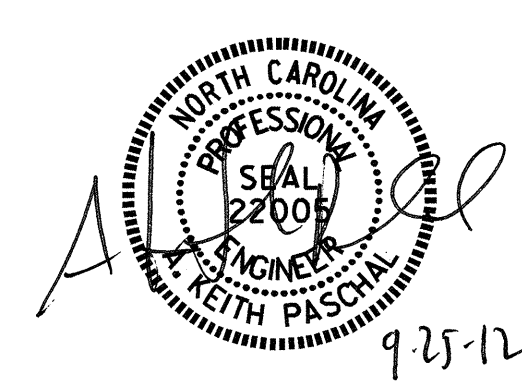
**SPLICE DETAIL**



**ELEVATION**

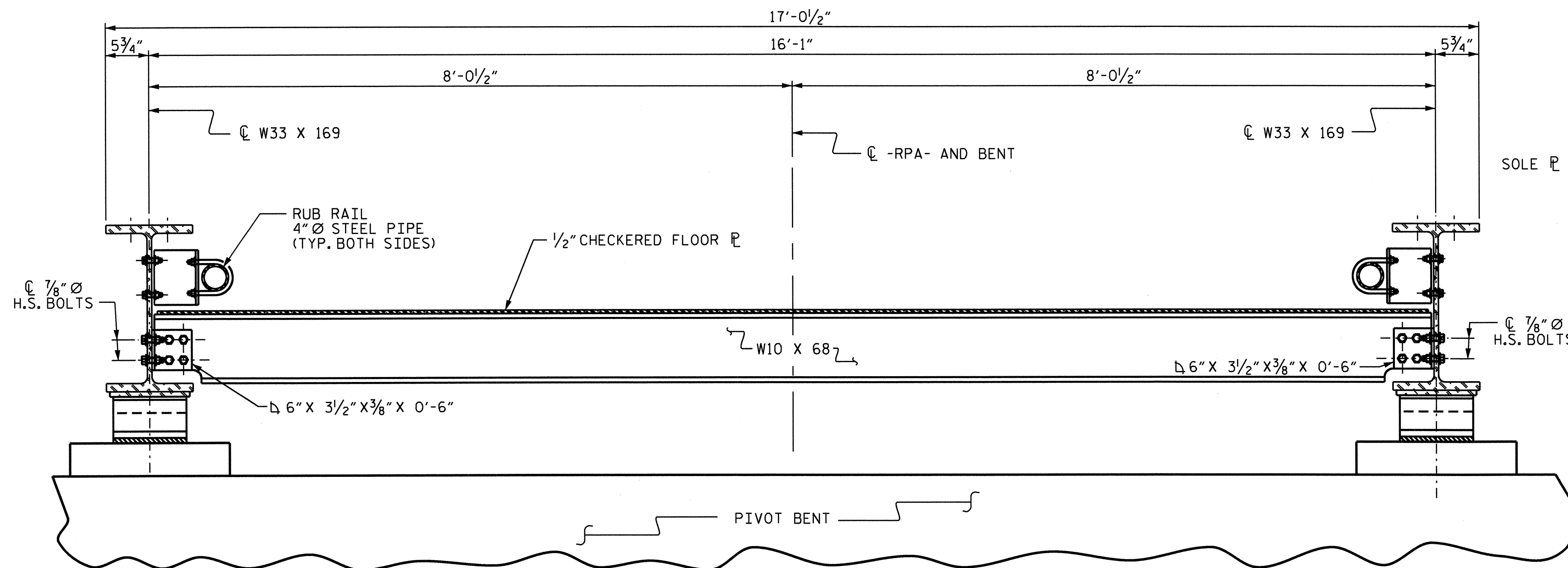
PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-  
 SHEET 1 OF 9

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>CHERRY BRANCH FERRY RAMP</b>					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-18 TOTAL SHEETS 29

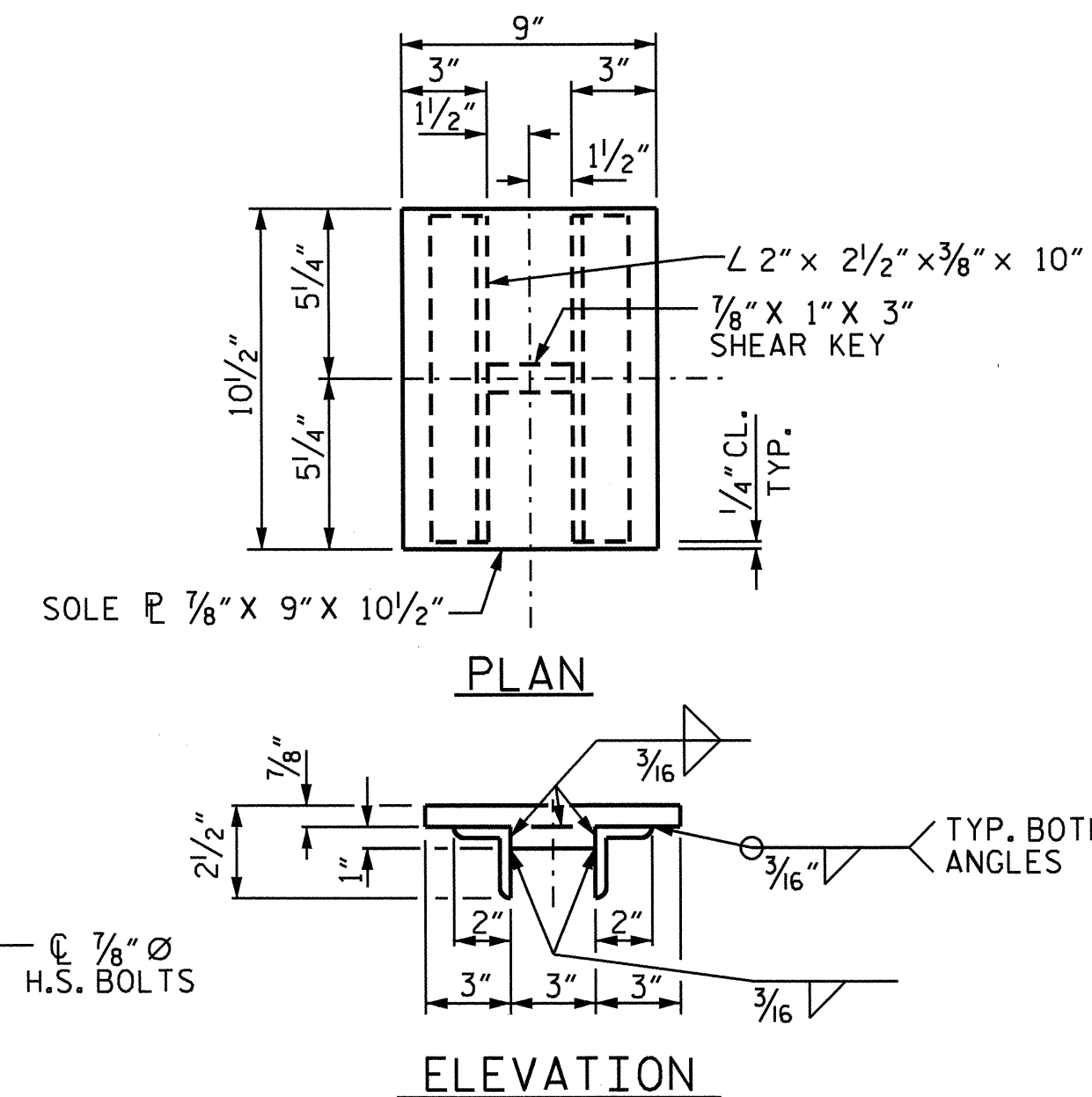


DRAWN BY: B.N.BARODAWALA DATE: 4-23-12  
 CHECKED BY: K.P. SEDAI DATE: 6-14-12

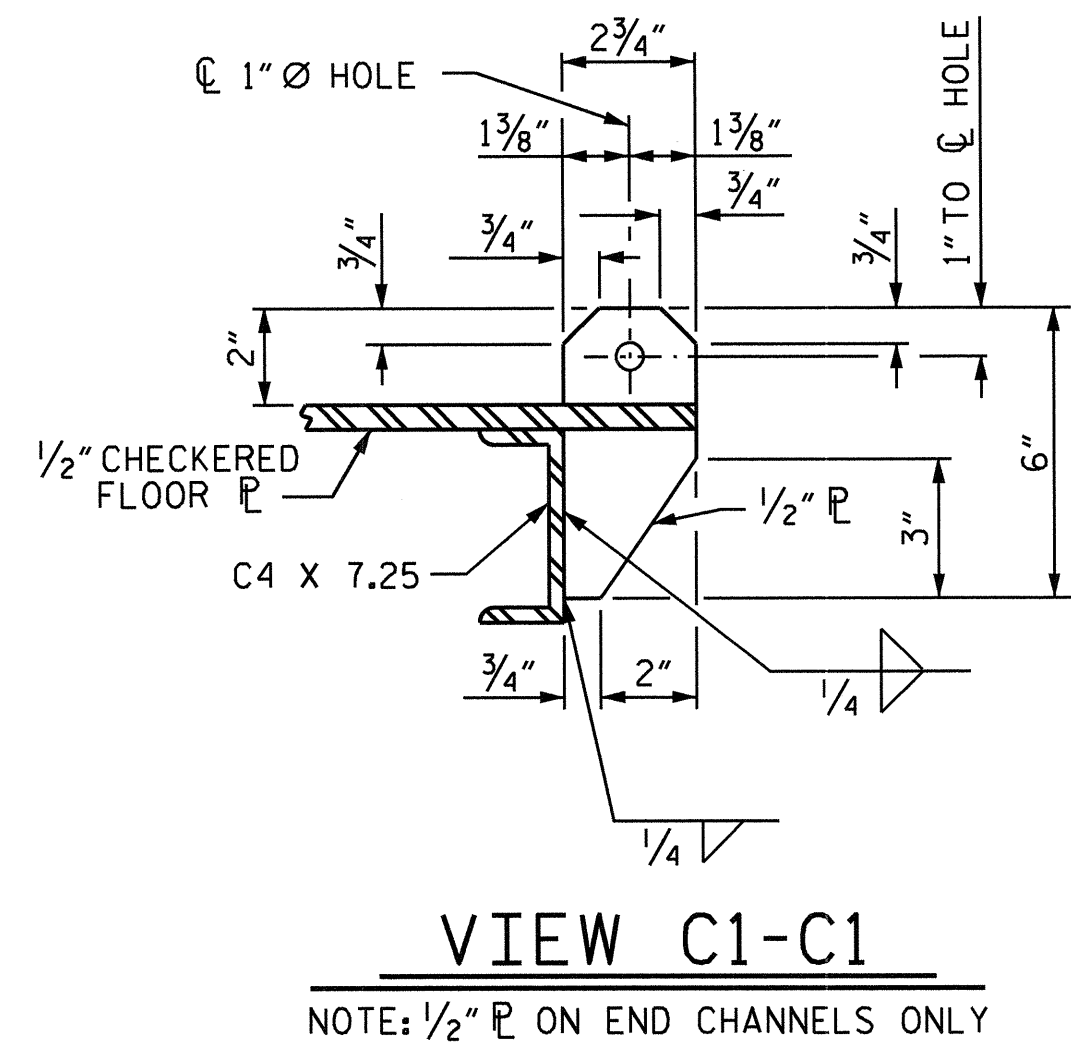
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 kpaschal



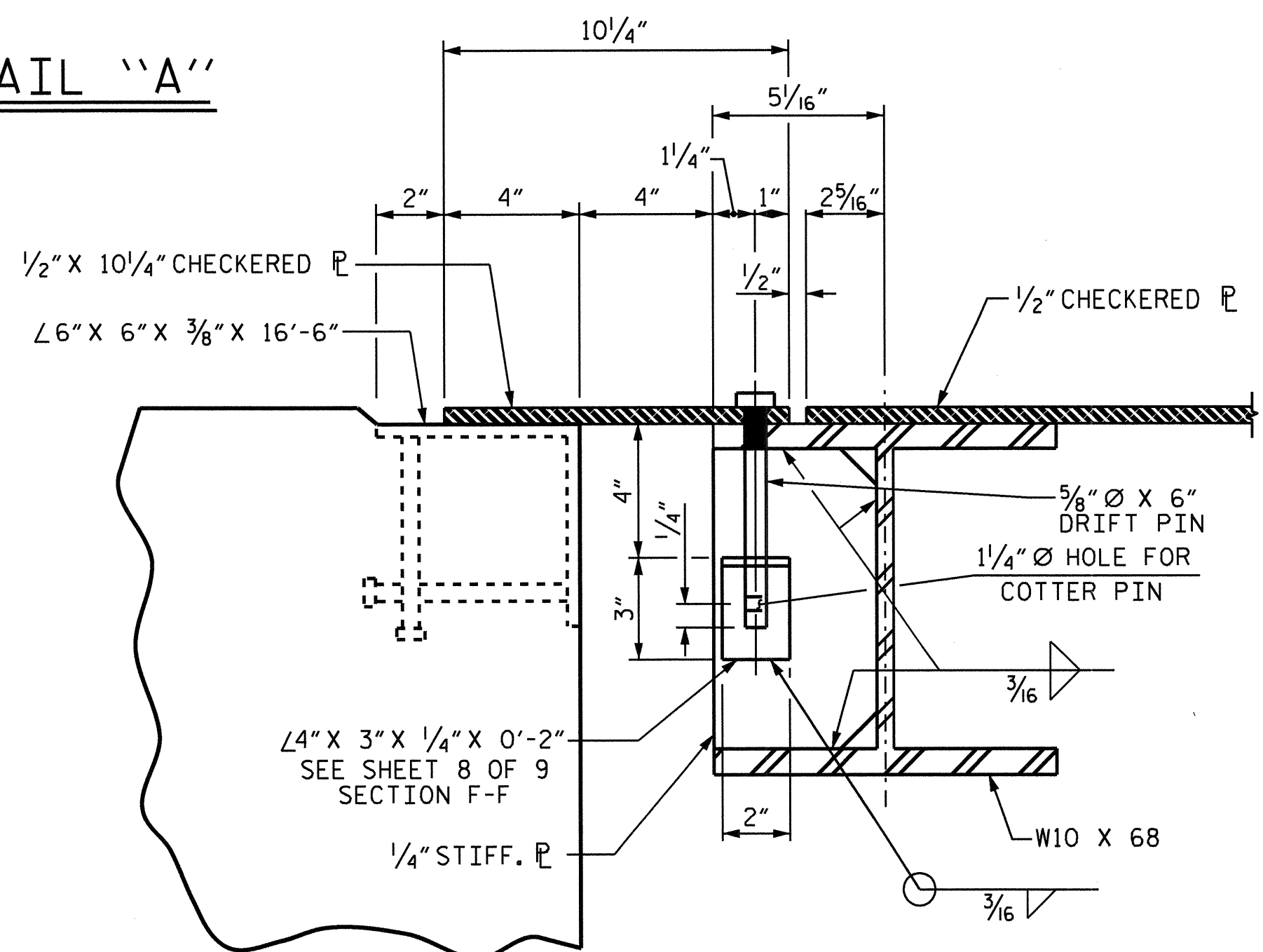
SECTION A-A



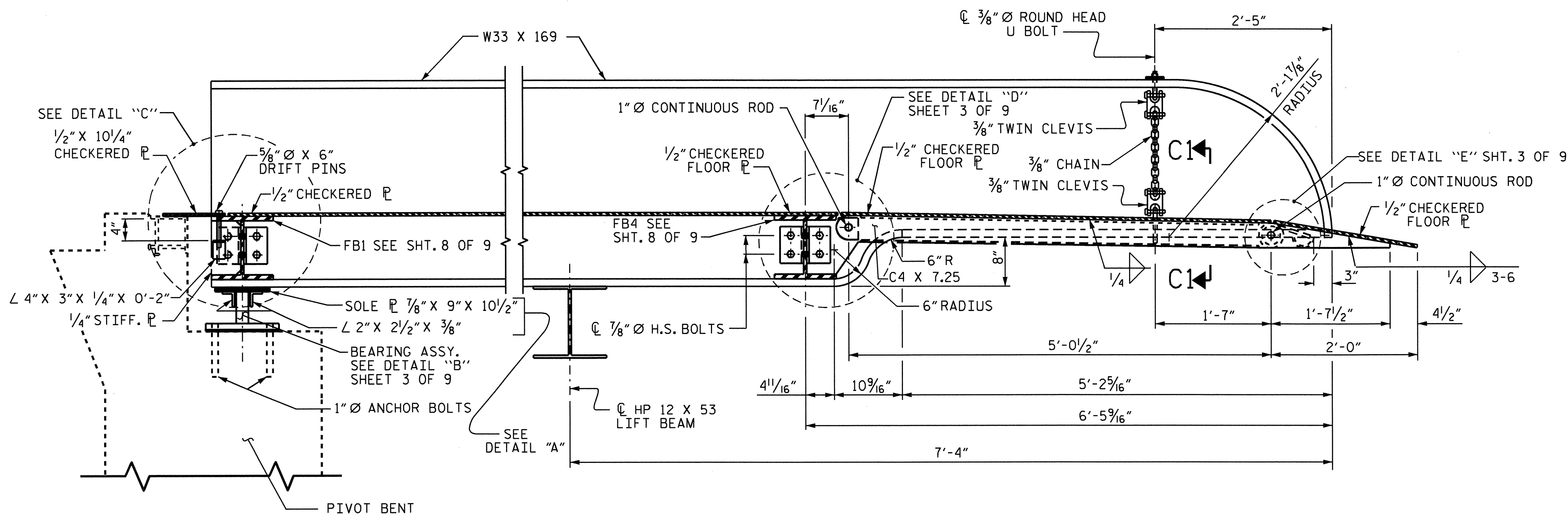
DETAIL "A"



VIEW C1-C1



DETAIL "C"



SECTION B-B

SECTION C-C

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 2 OF 9

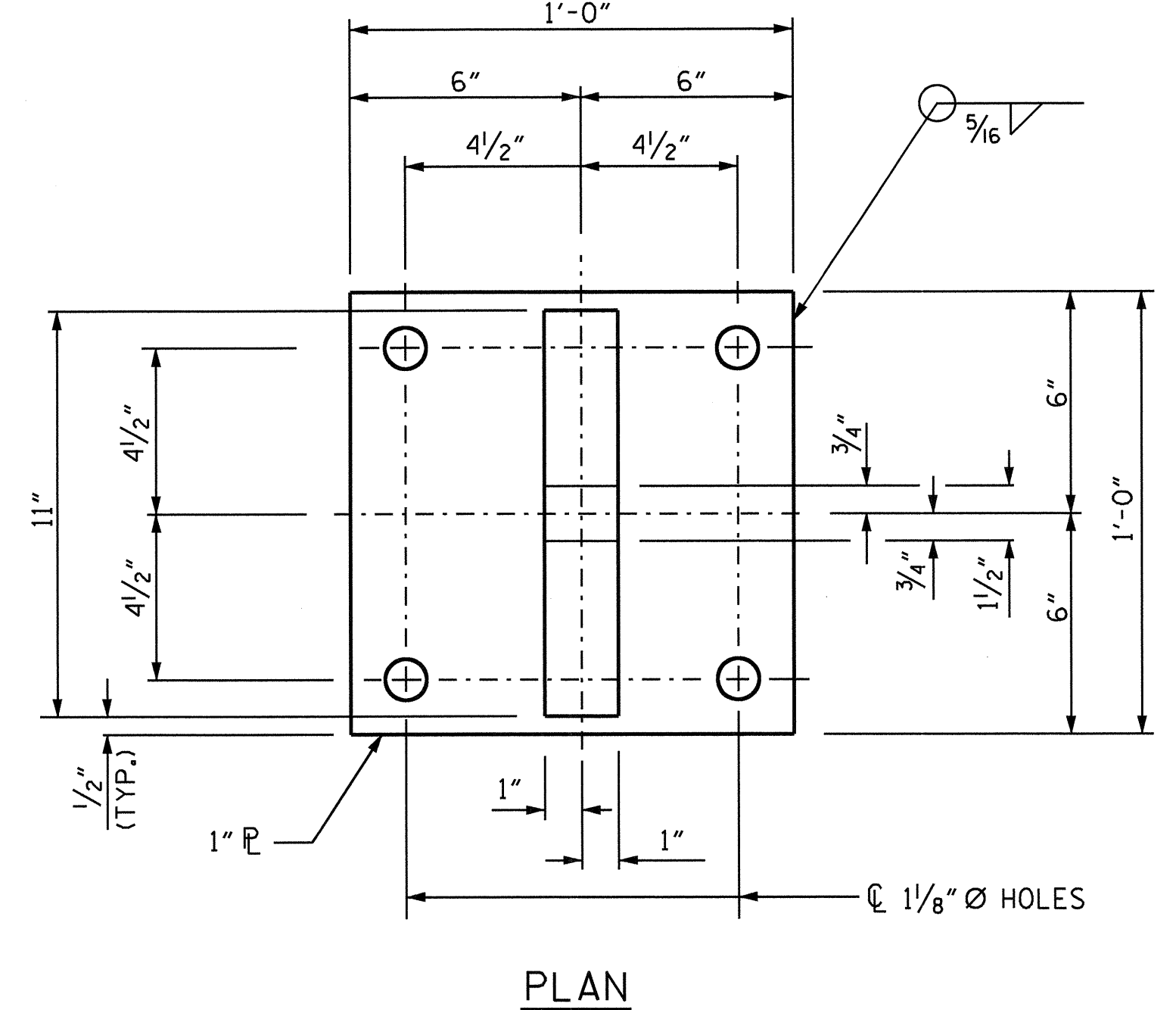
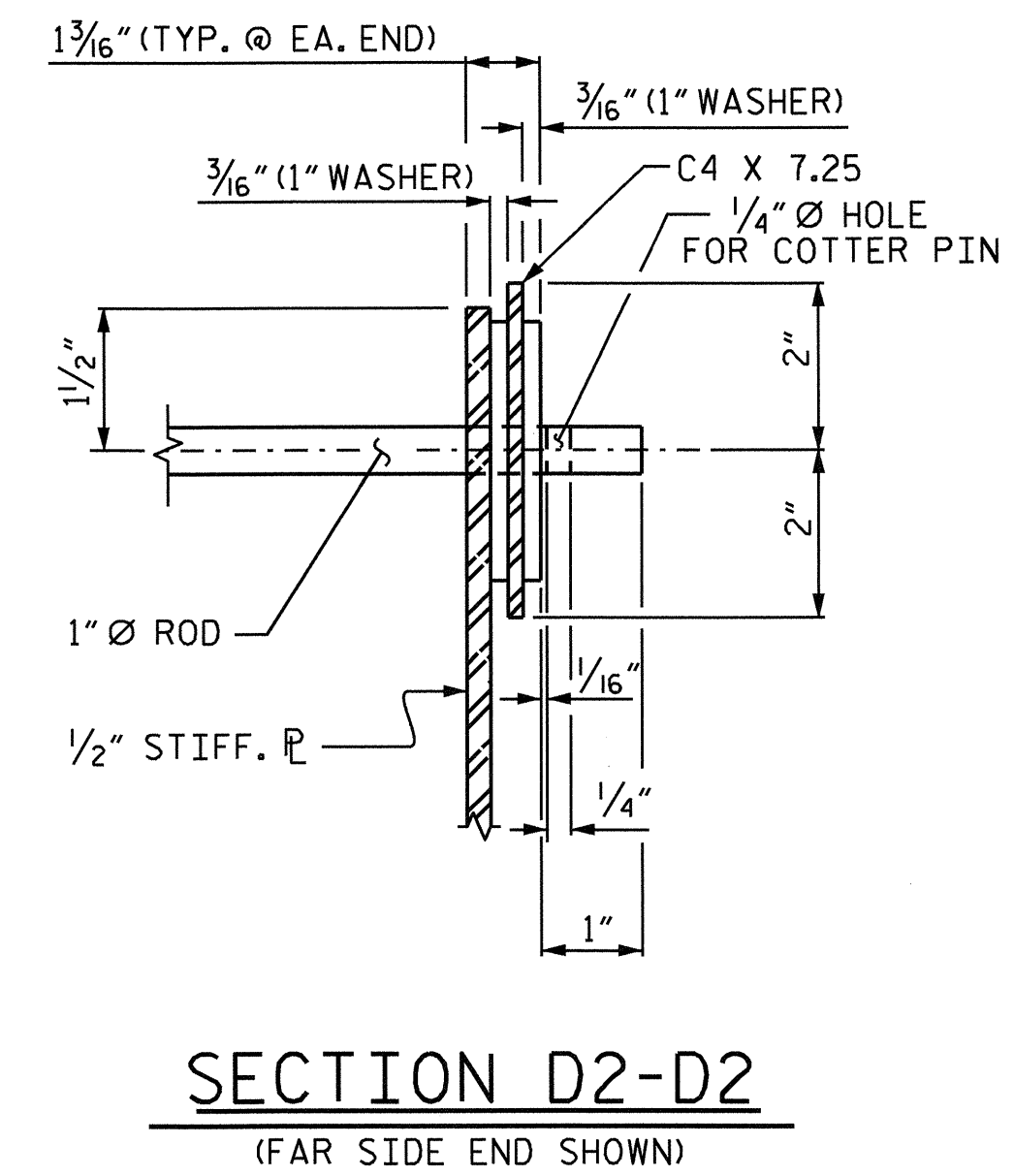
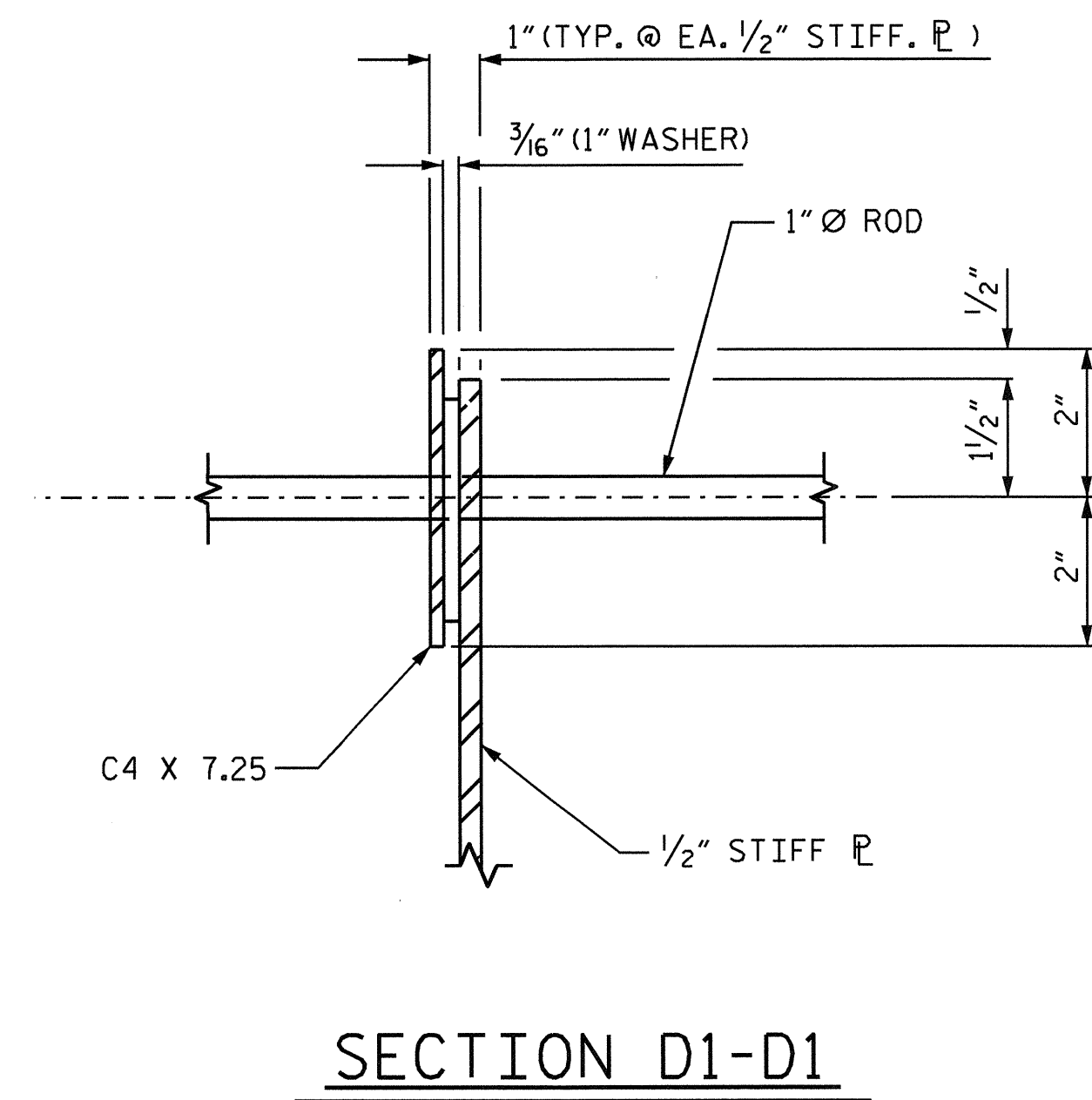
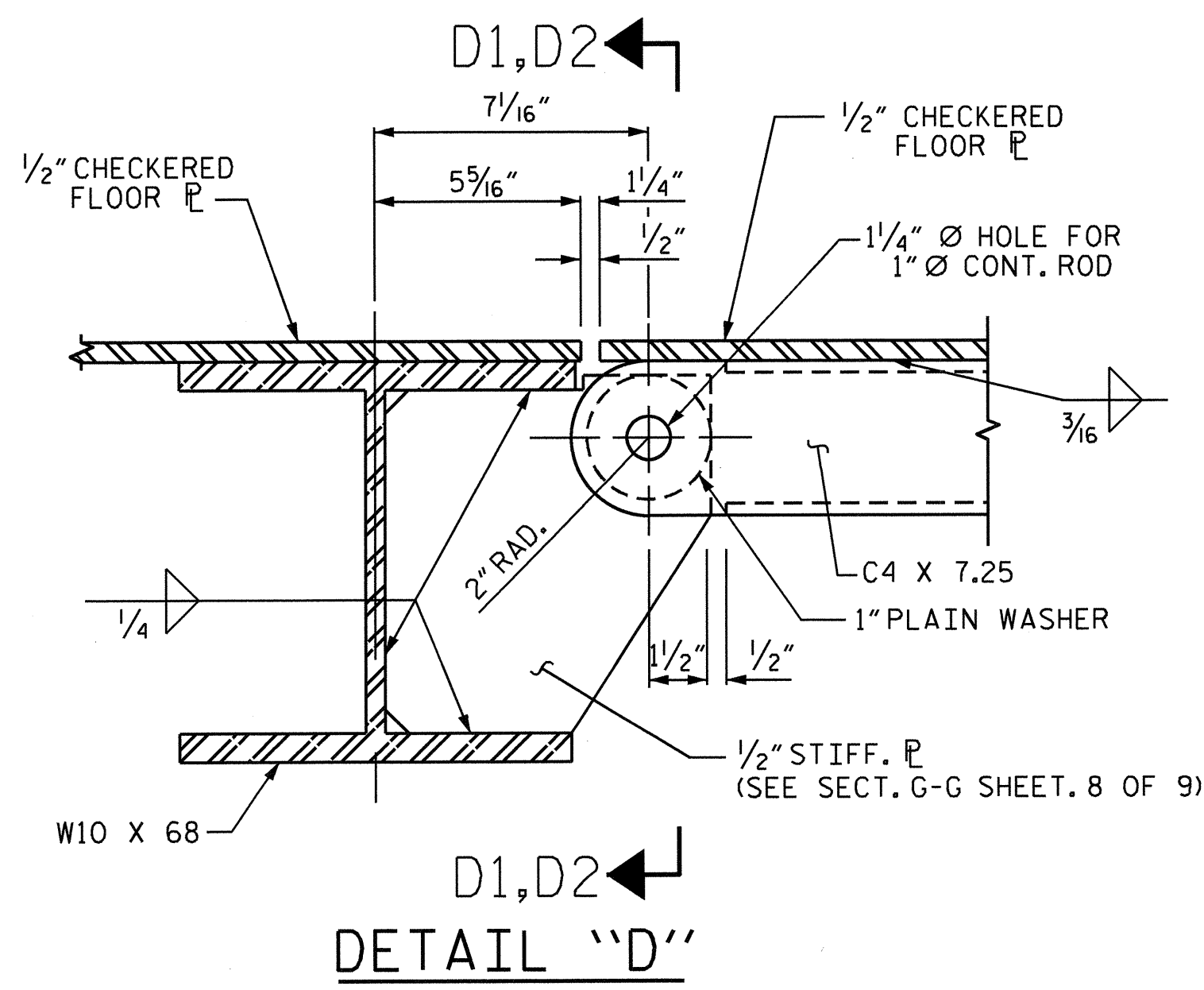
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CHERRY BRANCH  
 FERRY RAMP



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS 29
2			4			

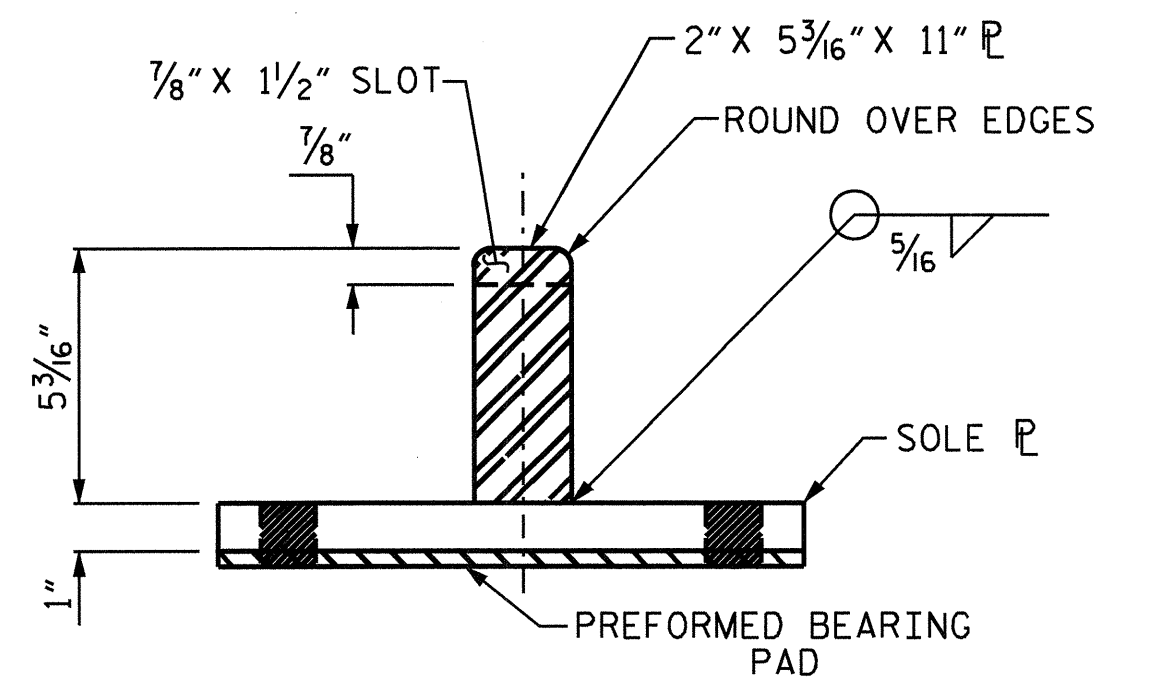
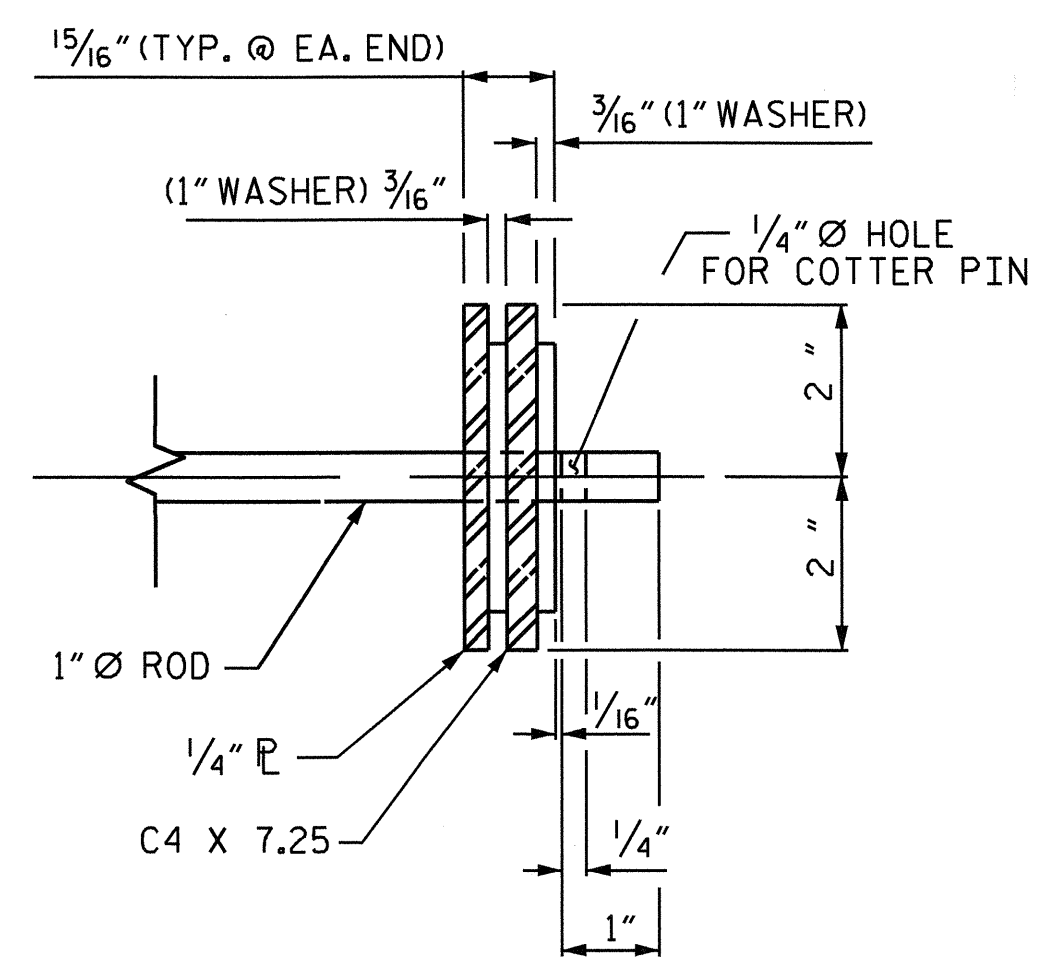
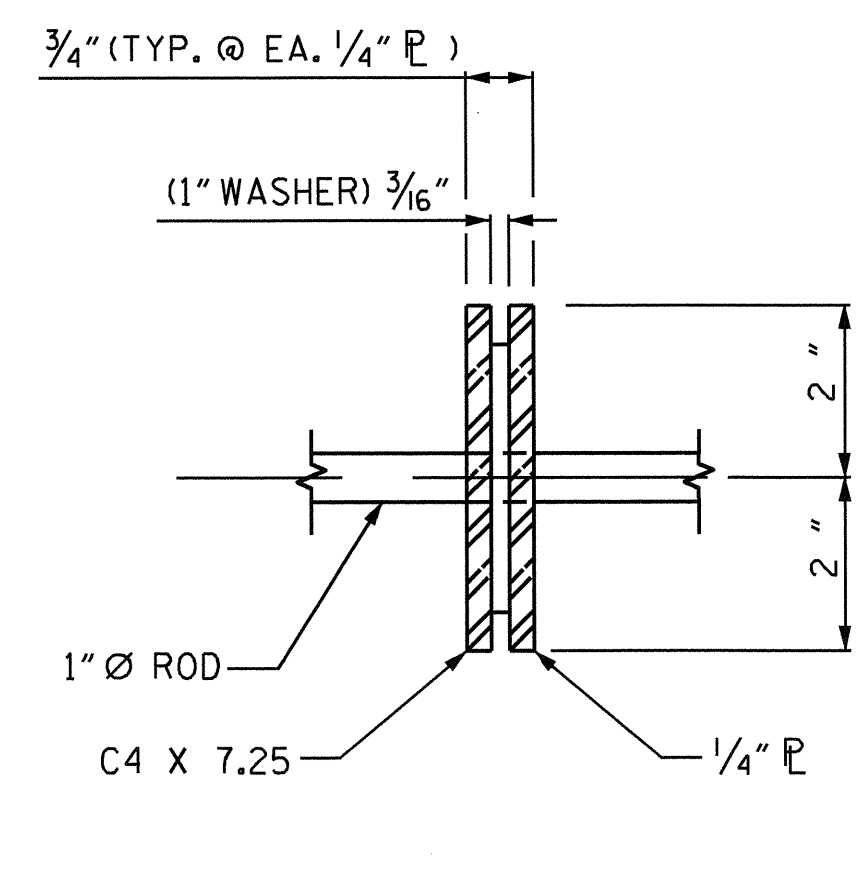
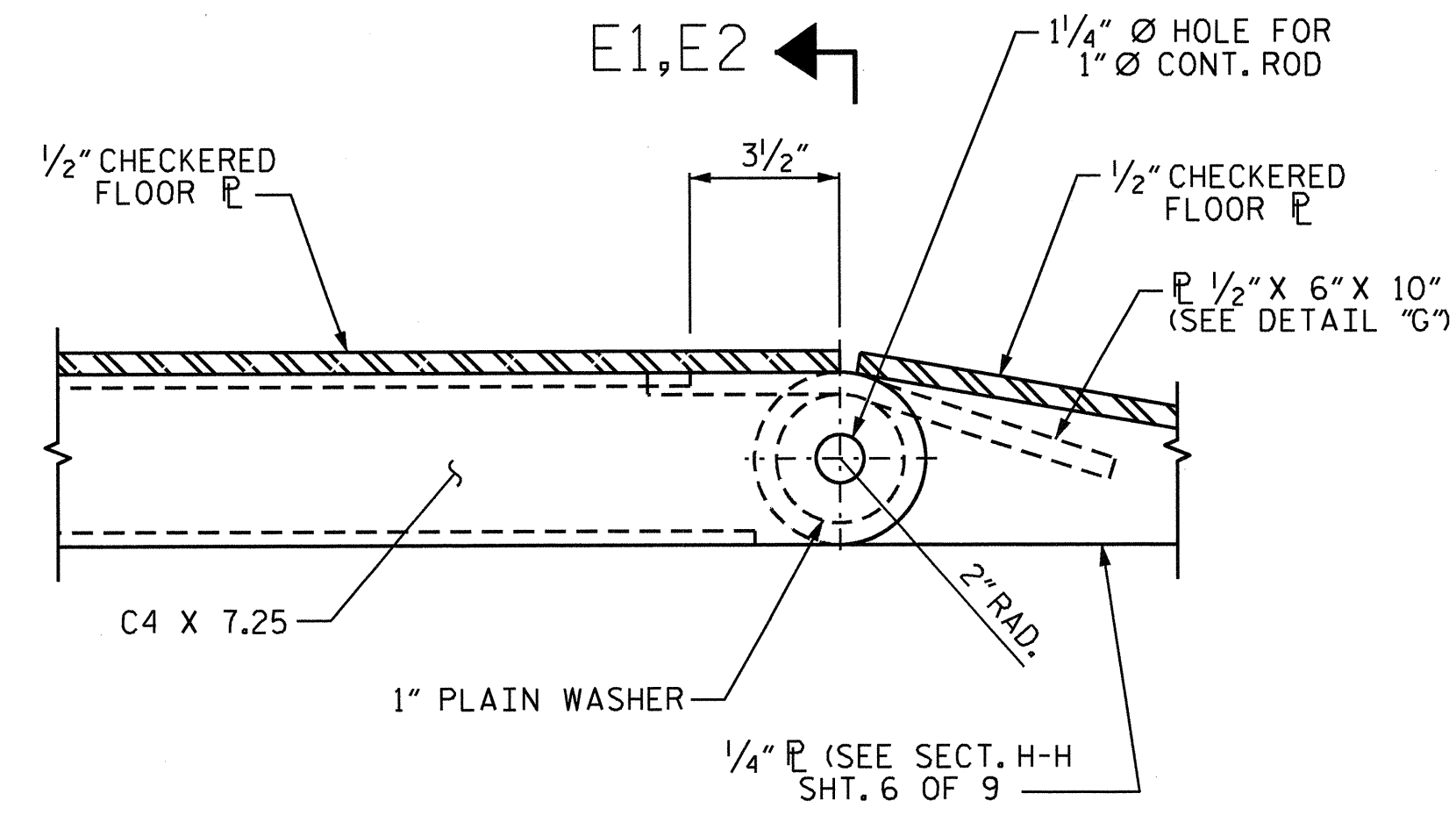
DRAWN BY: B.N.BARODAWALA DATE: 4-23-12  
 CHECKED BY: K.P. SEDAI DATE: 6-14-12



DETAIL "D"

SECTION D1-D1

SECTION D2-D2  
(FAR SIDE END SHOWN)



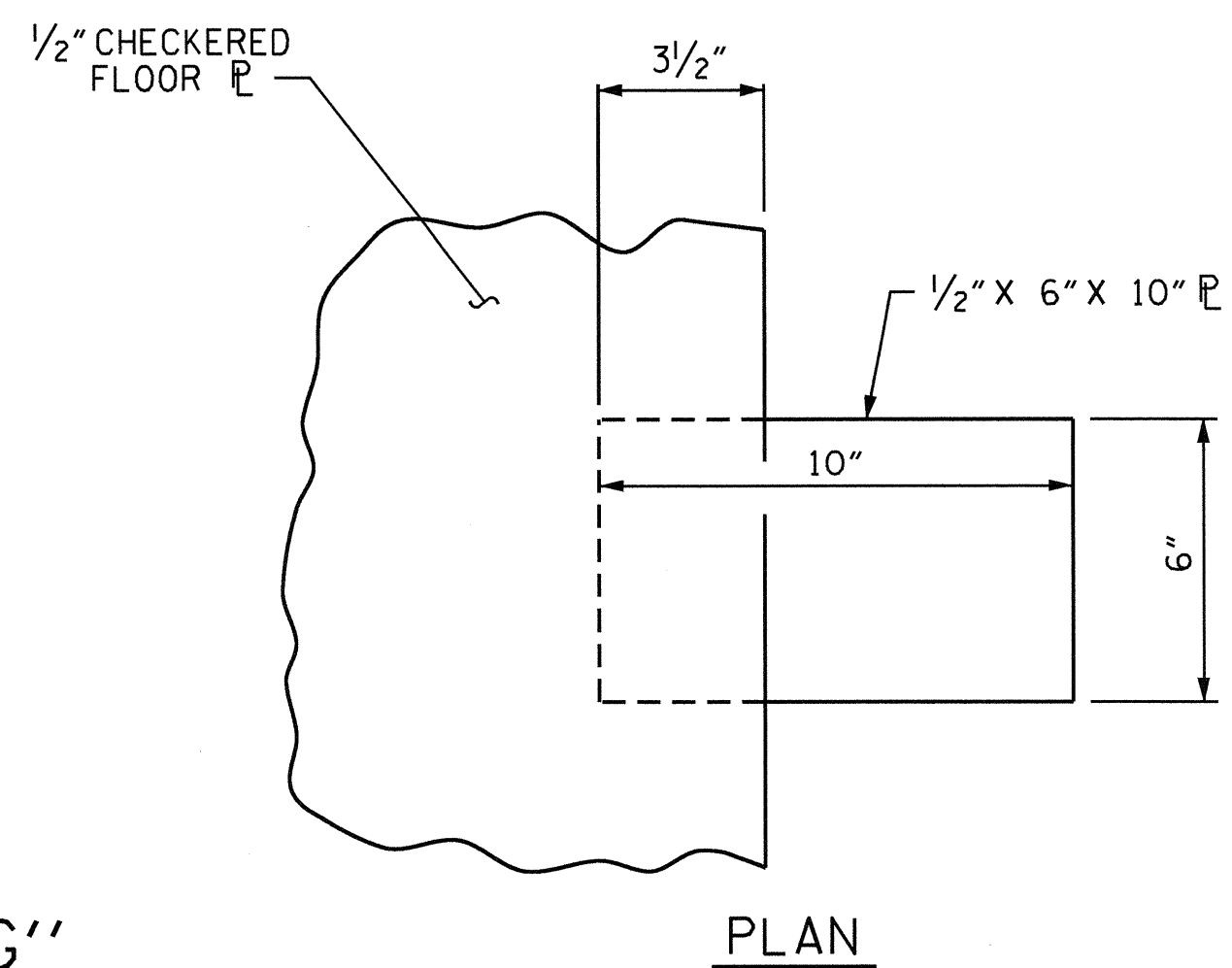
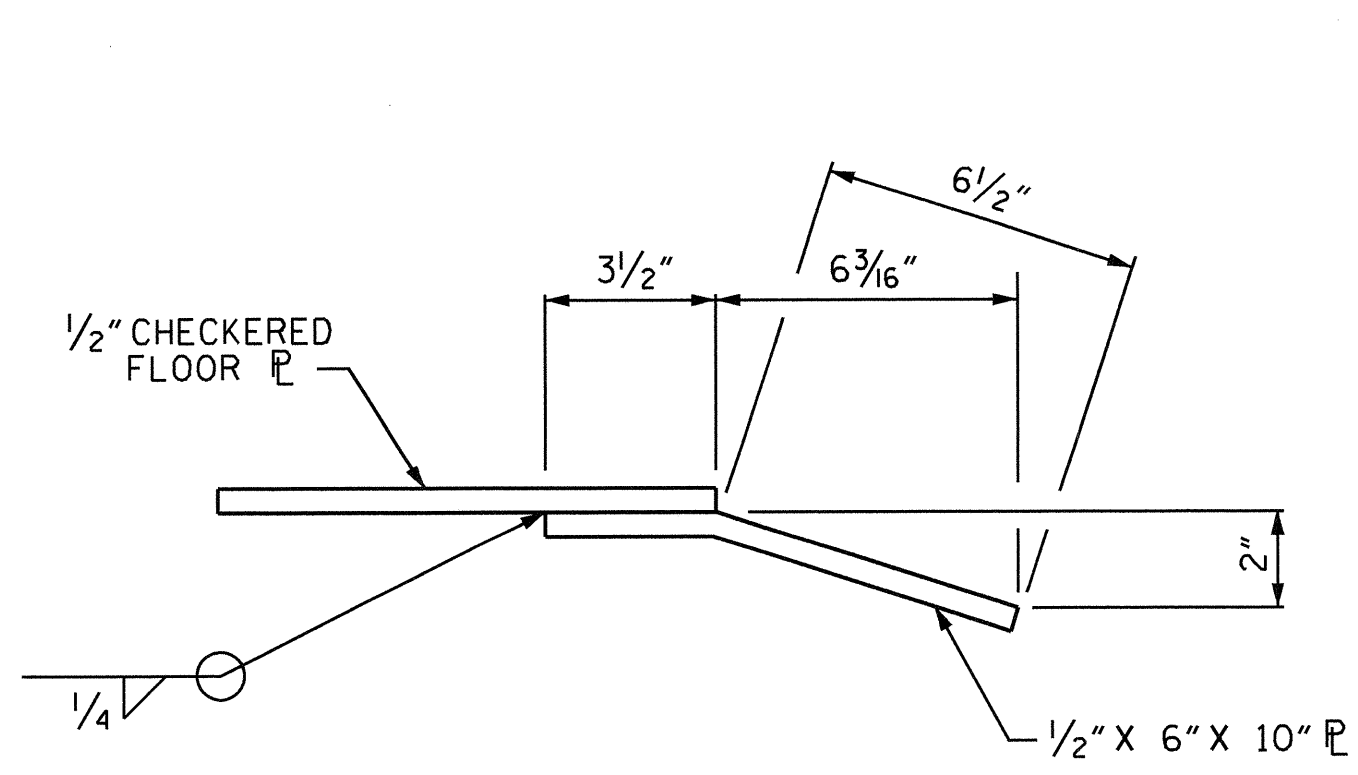
DETAIL "E"

SECTION E1-E1

SECTION E2-E2  
(FAR SIDE END SHOWN)

ELEVATION

DETAIL "B"  
(BEARING ASSEMBLY)



ELEVATION

DETAIL "G"

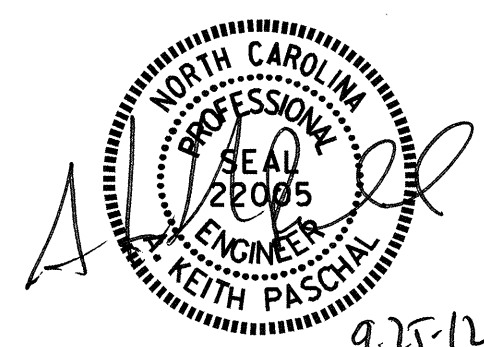
PLAN

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 3 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

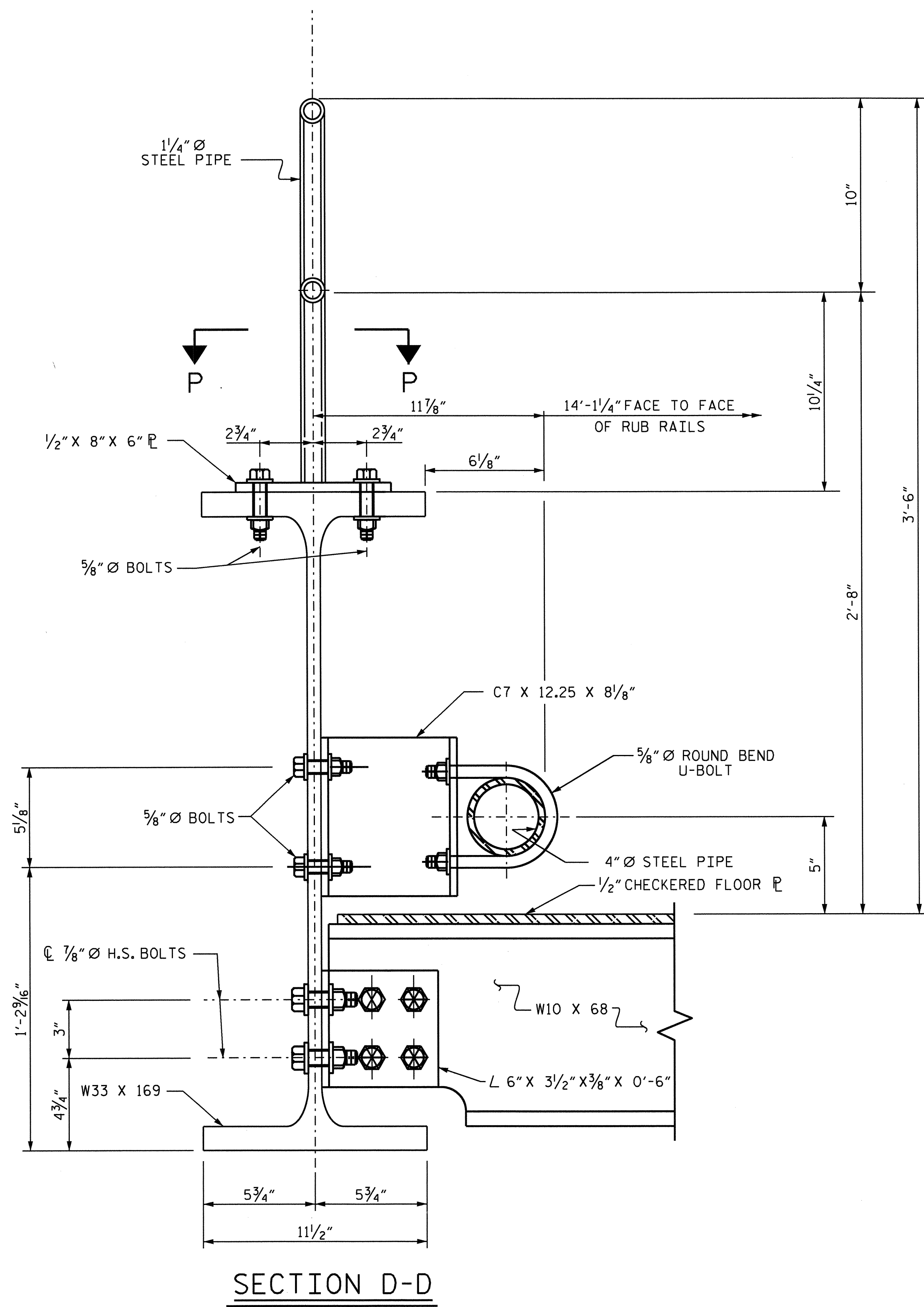
CHERRY BRANCH  
 FERRY RAMP



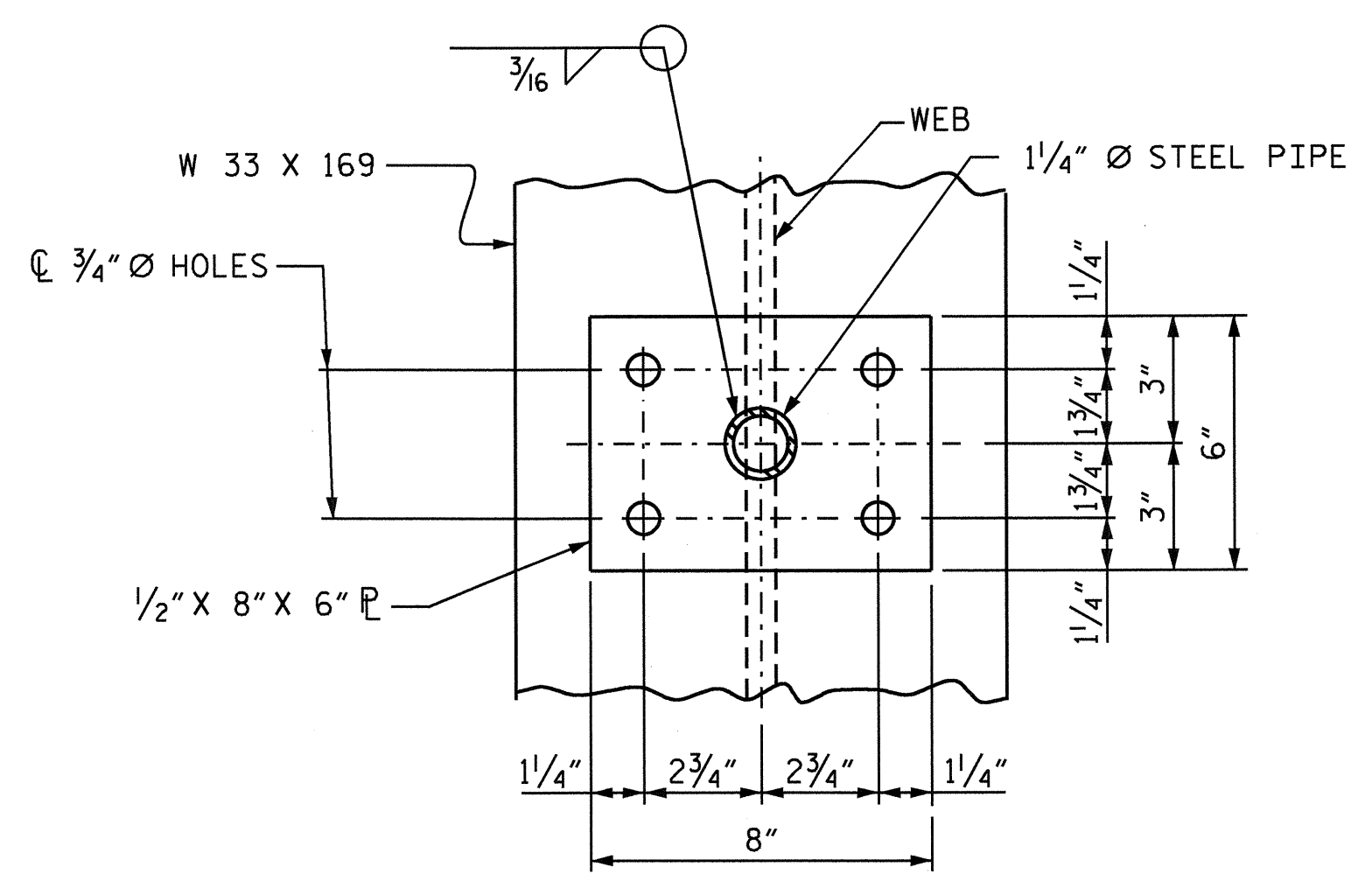
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
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2			4			29

DRAWN BY: B.N.BARODAWALA DATE: 4-23-12  
 CHECKED BY: K.P. SEDAI DATE: 6-14-12

24-SEP-2012 10:28  
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 kpaschal



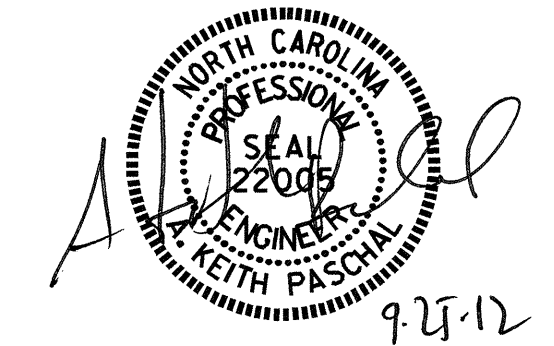
**SECTION D-D**



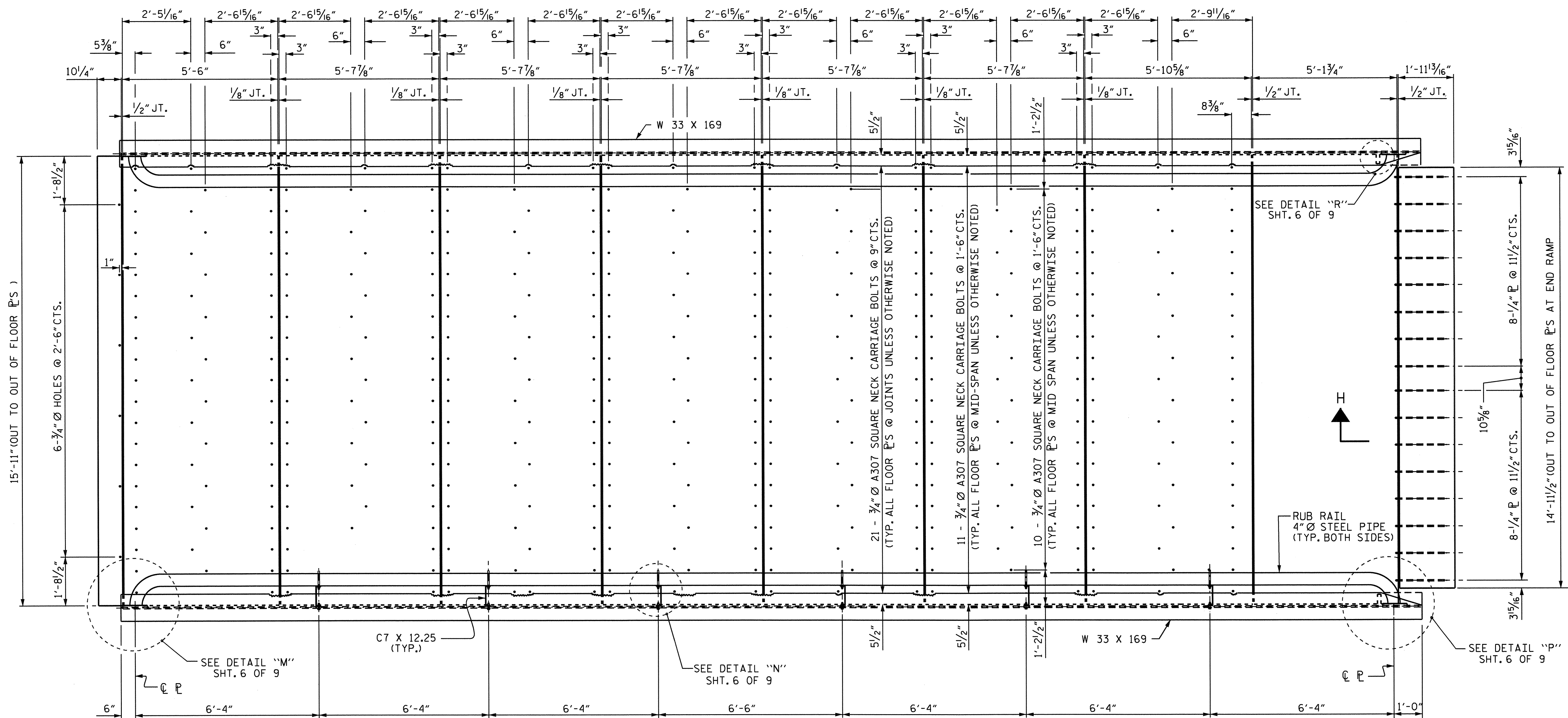
**VIEW P-P**

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-  
 SHEET 4 OF 9

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CHERRY BRANCH FERRY RAMP					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					29



DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K. P. SEDAI DATE : 6-14-12



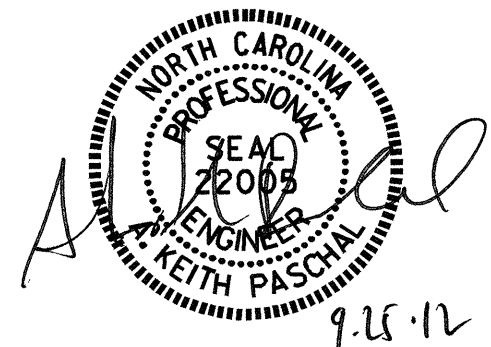
CHECKERED FLOOR PLATE AND RUB RAIL LAYOUT

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 5 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

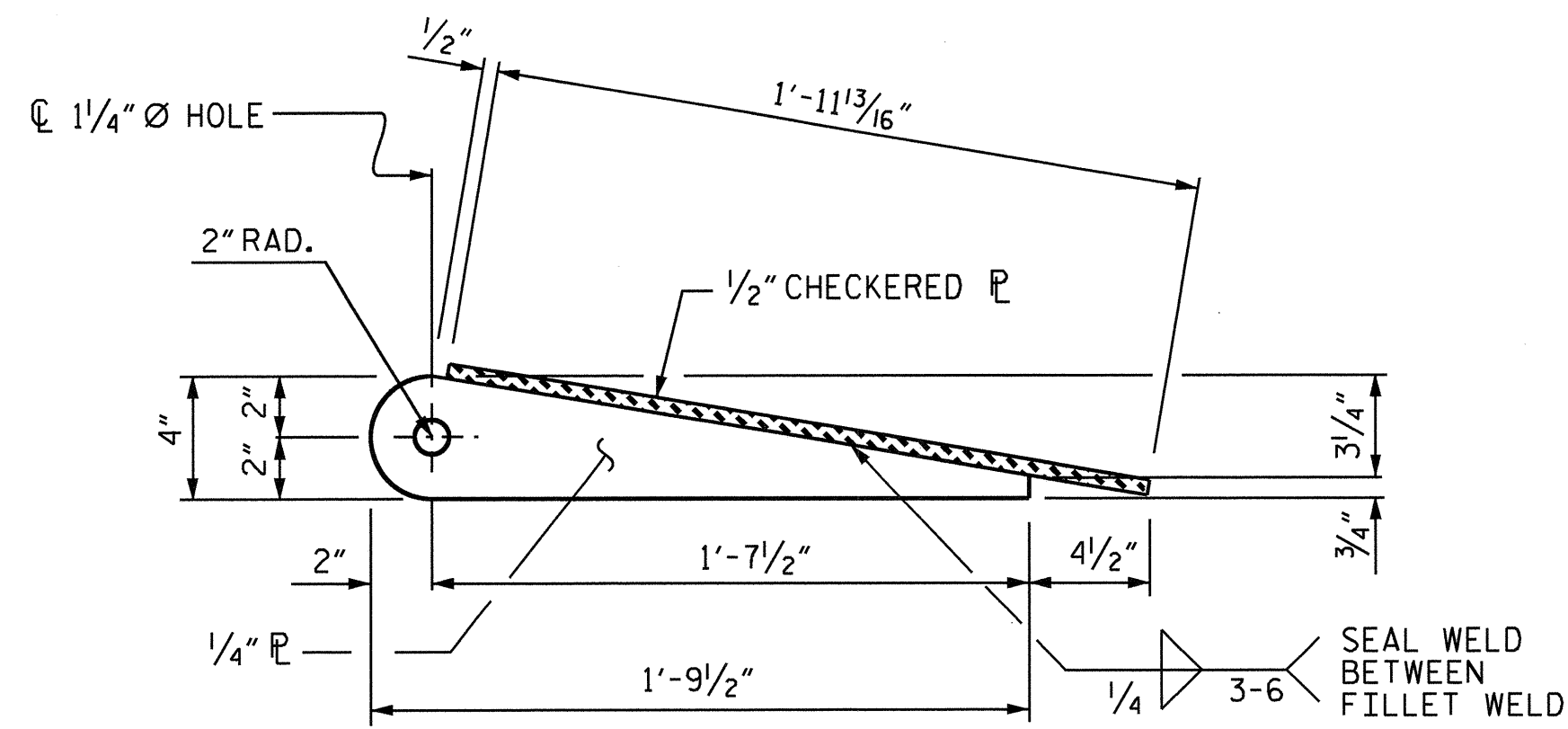
CHERRY BRANCH  
 FERRY RAMP



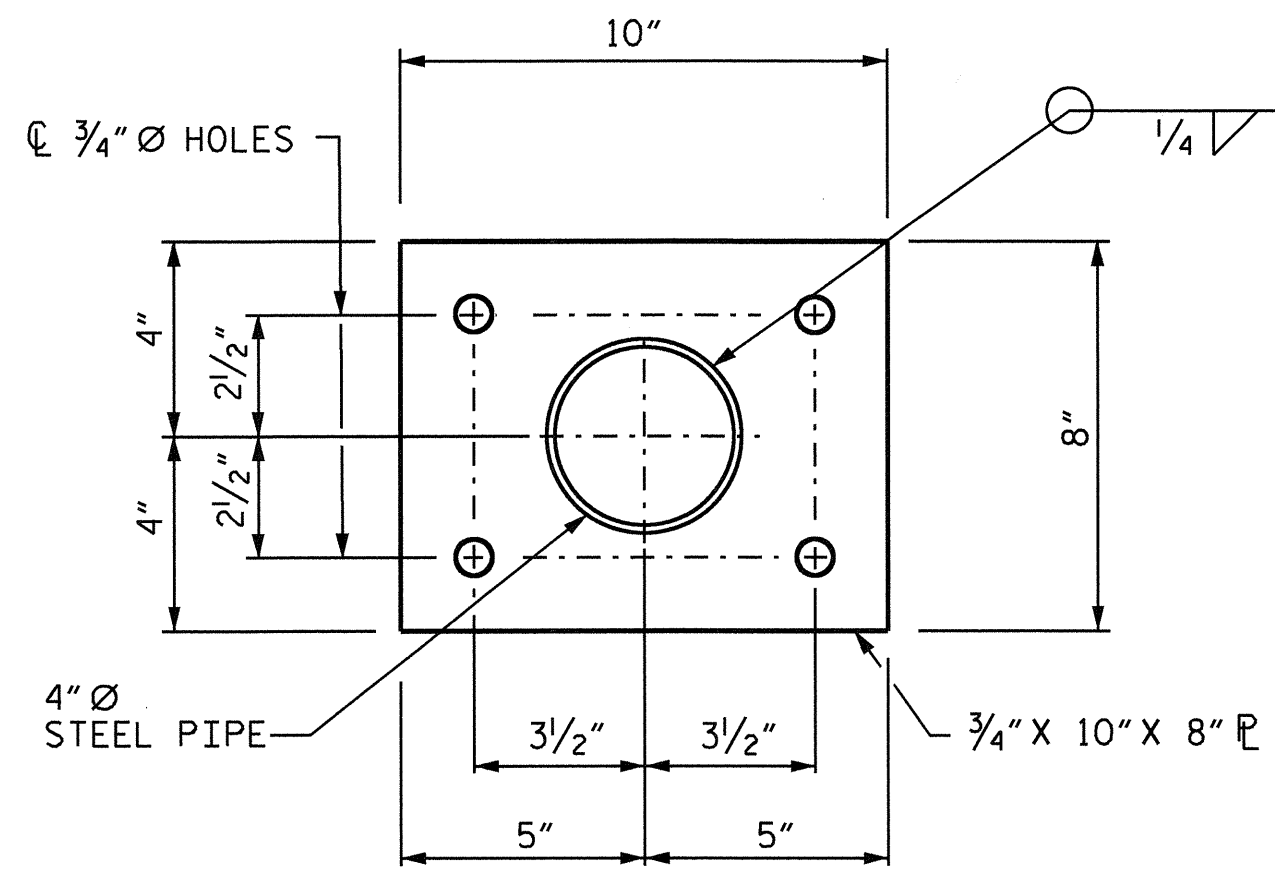
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-22	
1			3			TOTAL SHEETS	29
2			4				

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 CHECKED BY : K. P. SEDAI DATE : 6-14-12

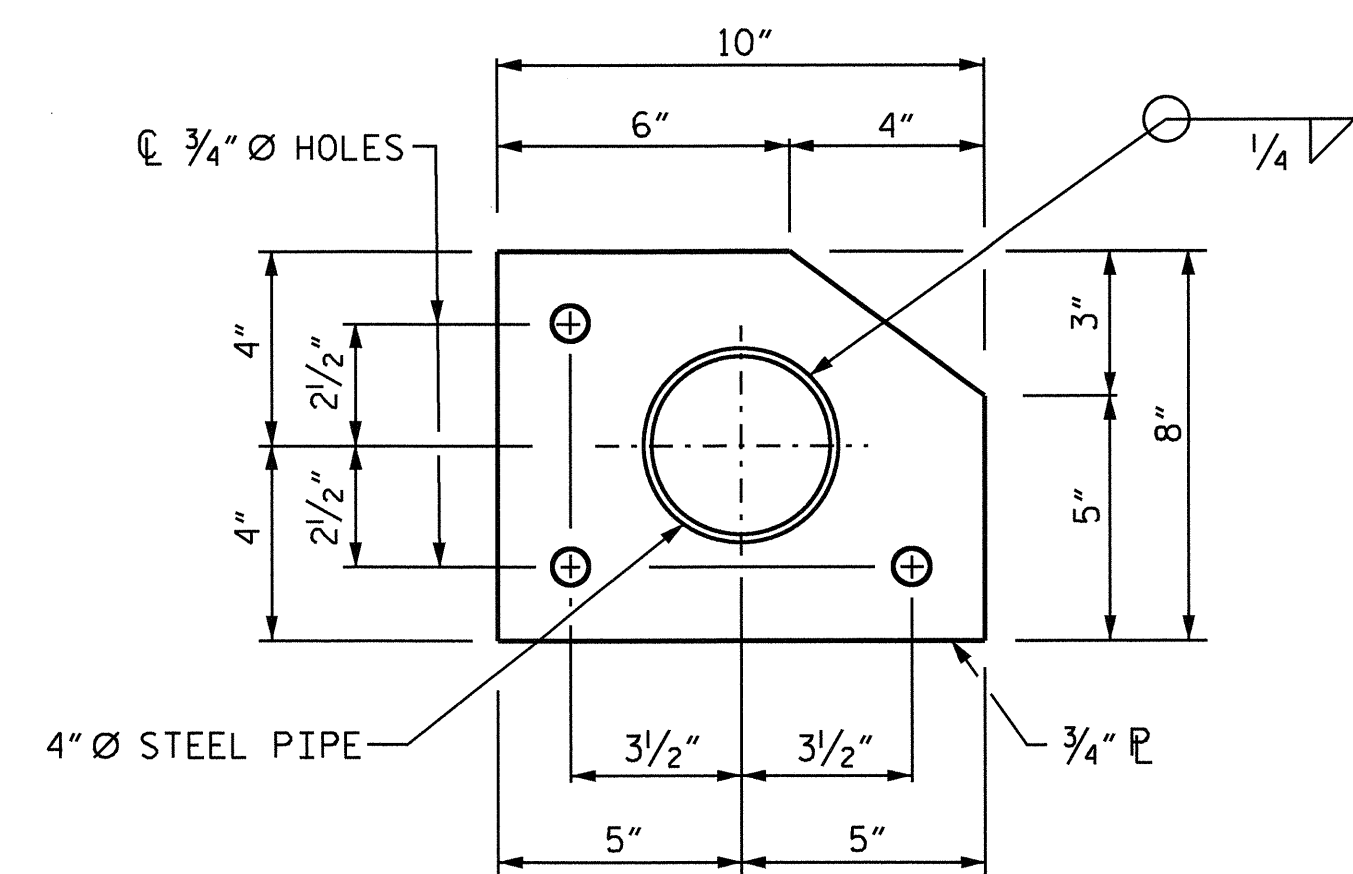
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 Kpaschal



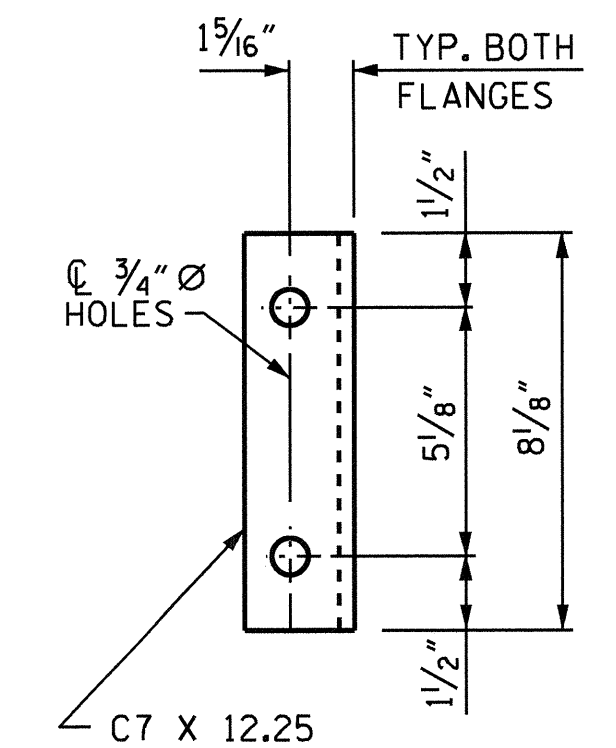
SECTION H-H



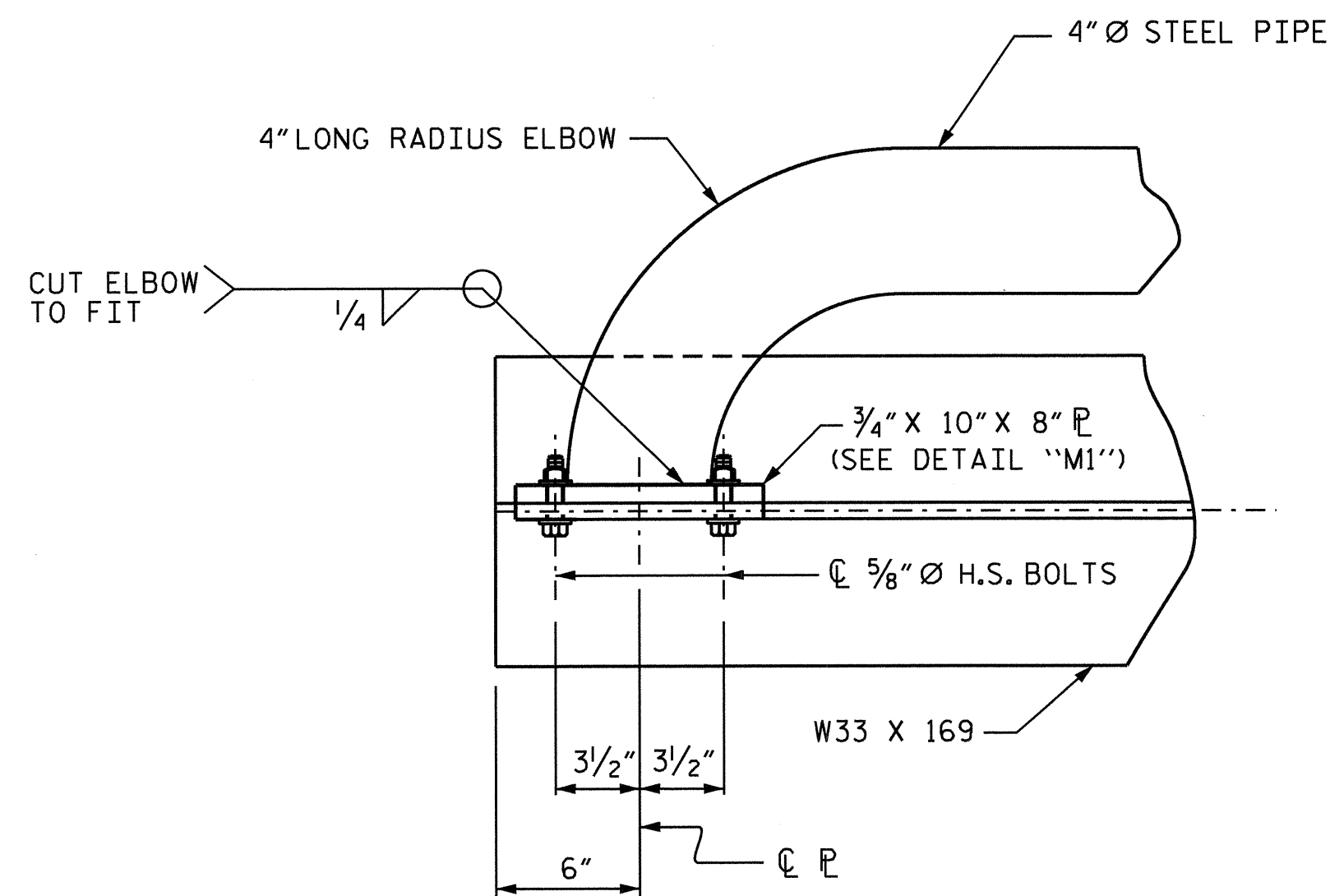
DETAIL "M1"



DETAIL "P1"

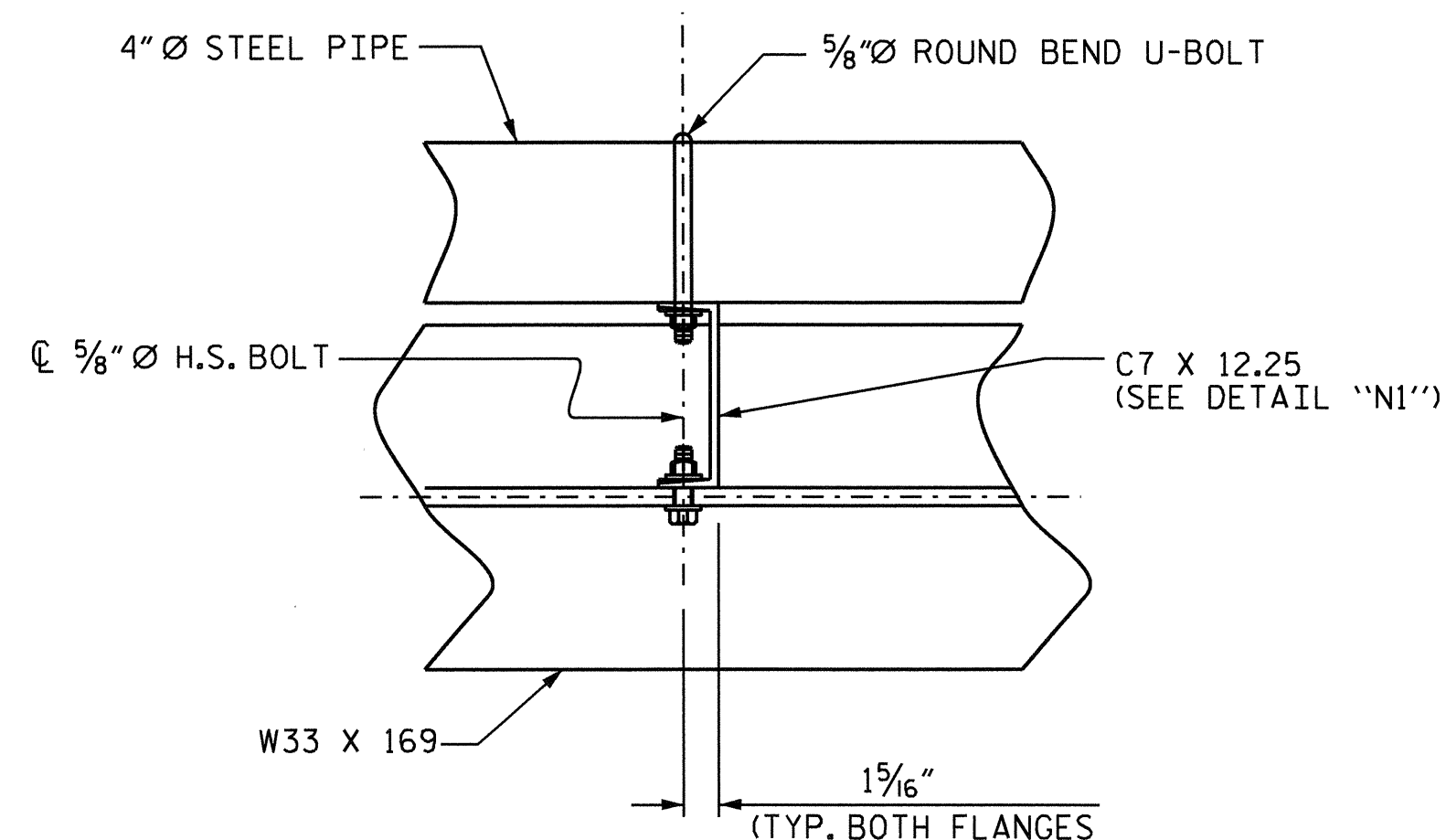


DETAIL "N1"



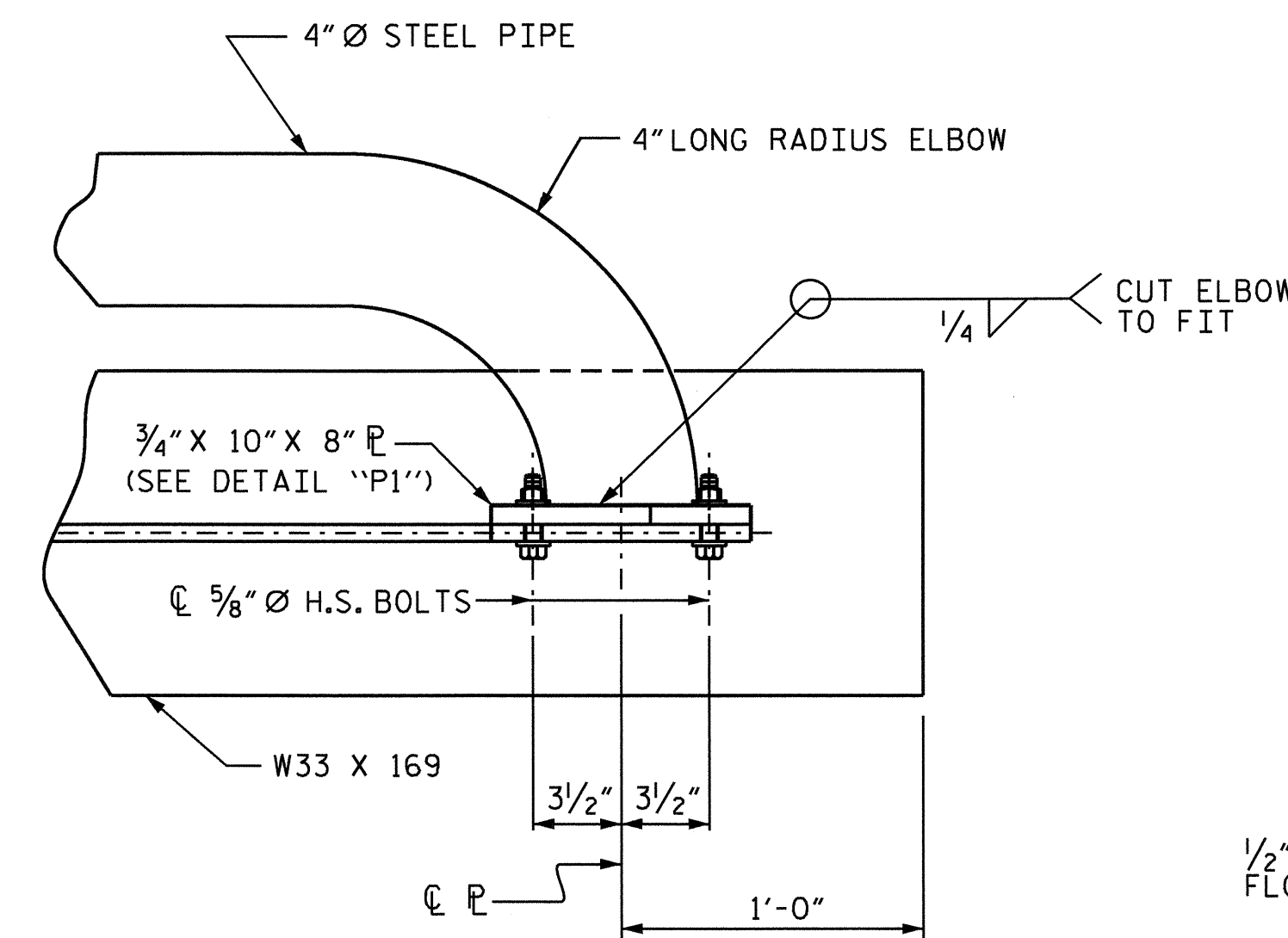
DETAIL "M"

(TOP FLANGE NOT SHOWN FOR CLARITY)



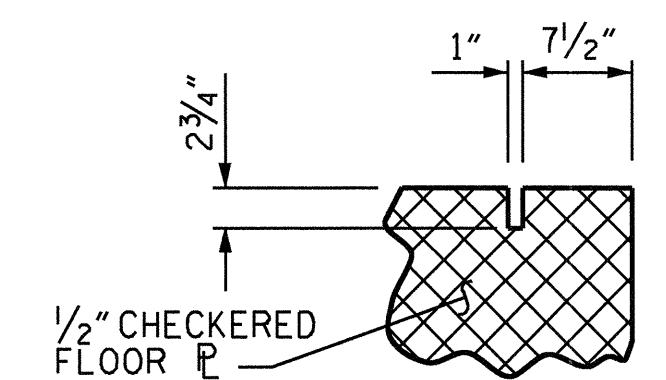
DETAIL "N"

(TOP FLANGE NOT SHOWN FOR CLARITY)



DETAIL "P"

(TOP FLANGE NOT SHOWN FOR CLARITY)



DETAIL "R"

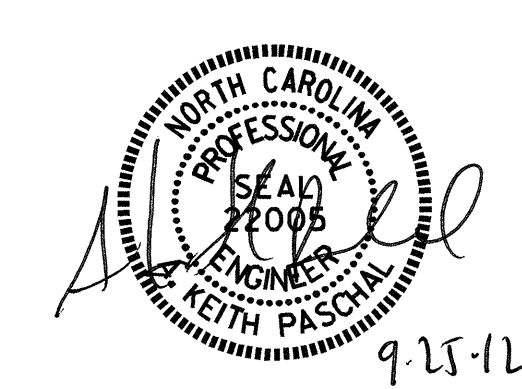
(TYP. BOTH SIDES OF P)

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 6 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CHERRY BRANCH  
 FERRY RAMP



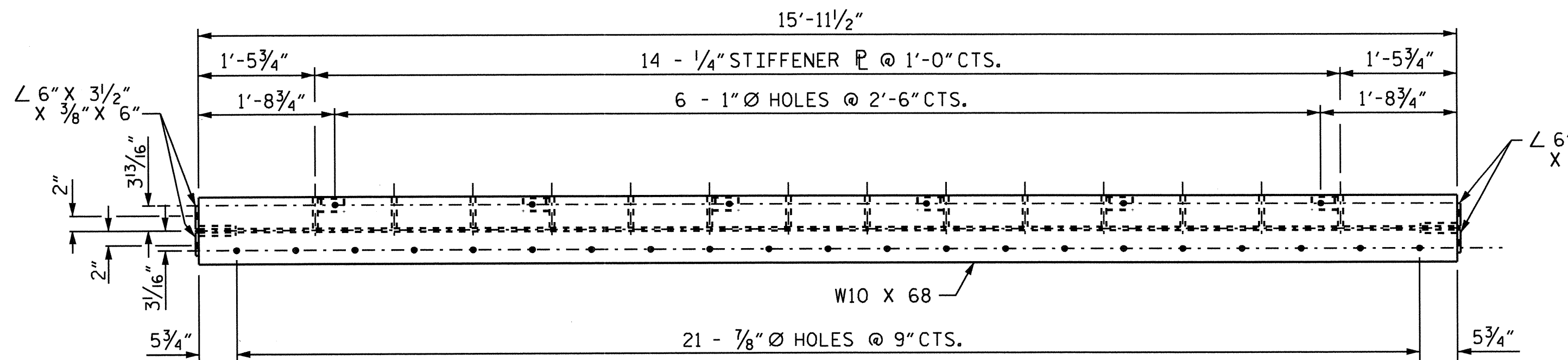
DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K. P. SEDAI DATE : 6-14-12

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 S:\DPCI\Keith\Barodawala\Cherry Branch Ramp A.dgn  
 kpaschal

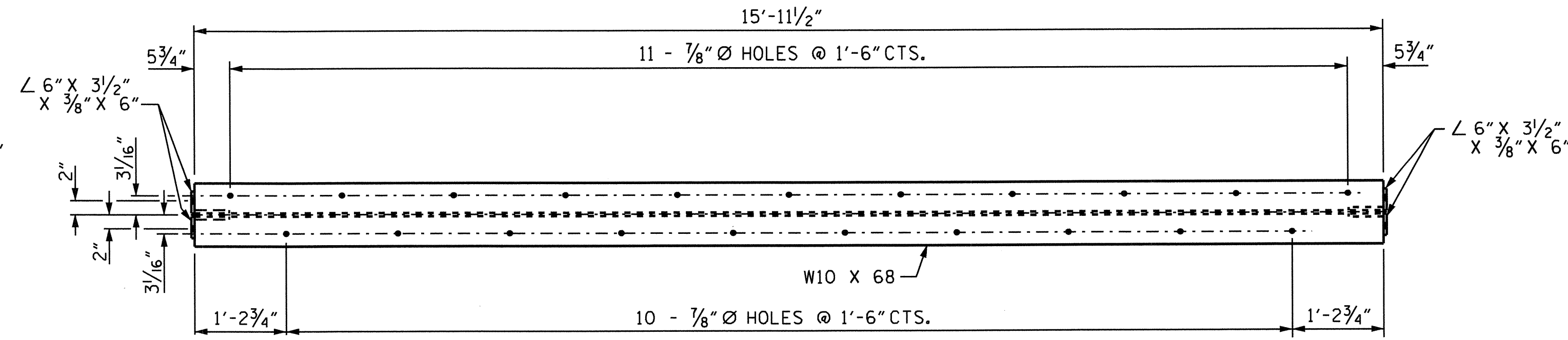
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			29



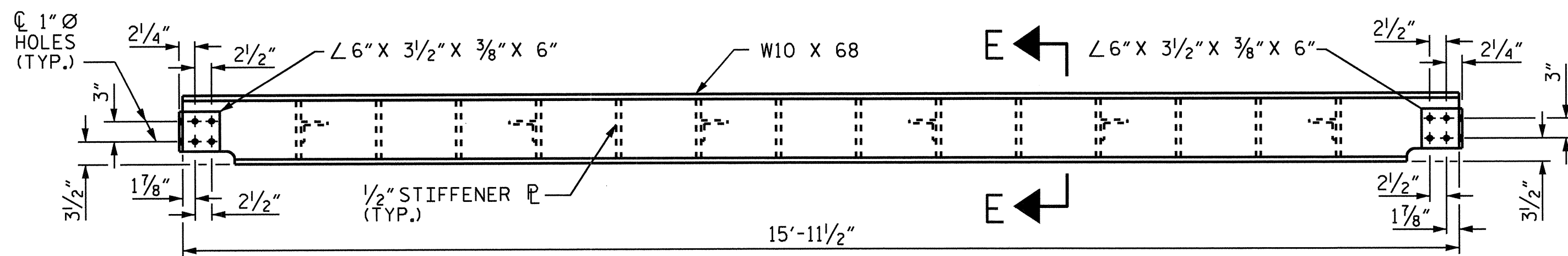




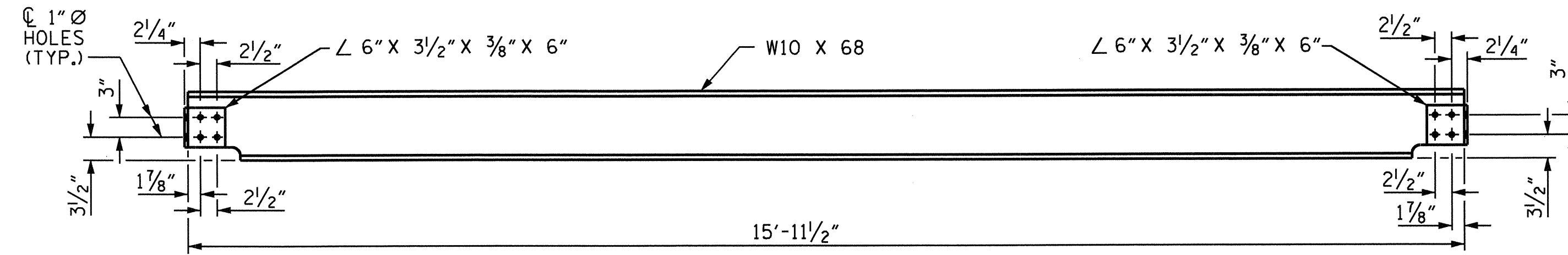
PLAN- TOP FLANGE



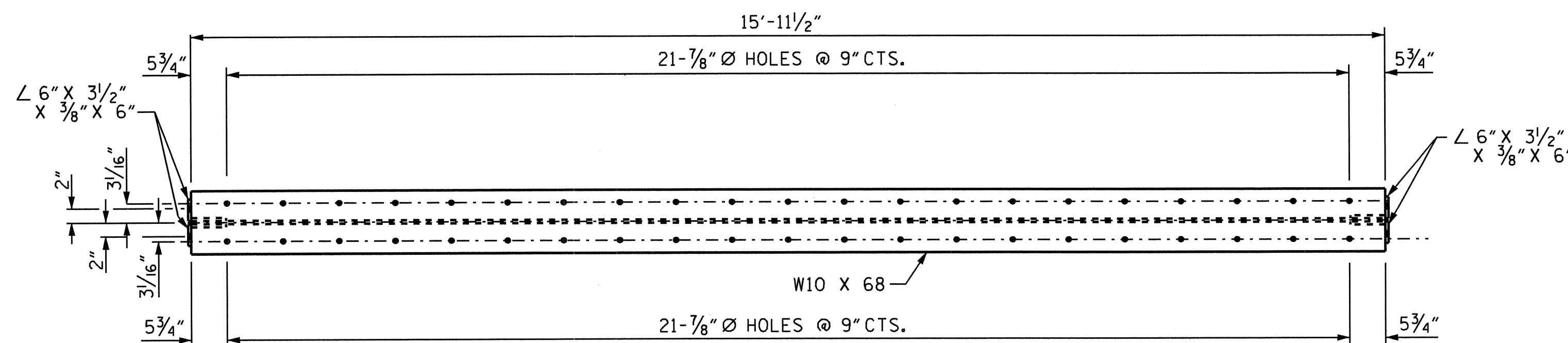
PLAN- TOP FLANGE



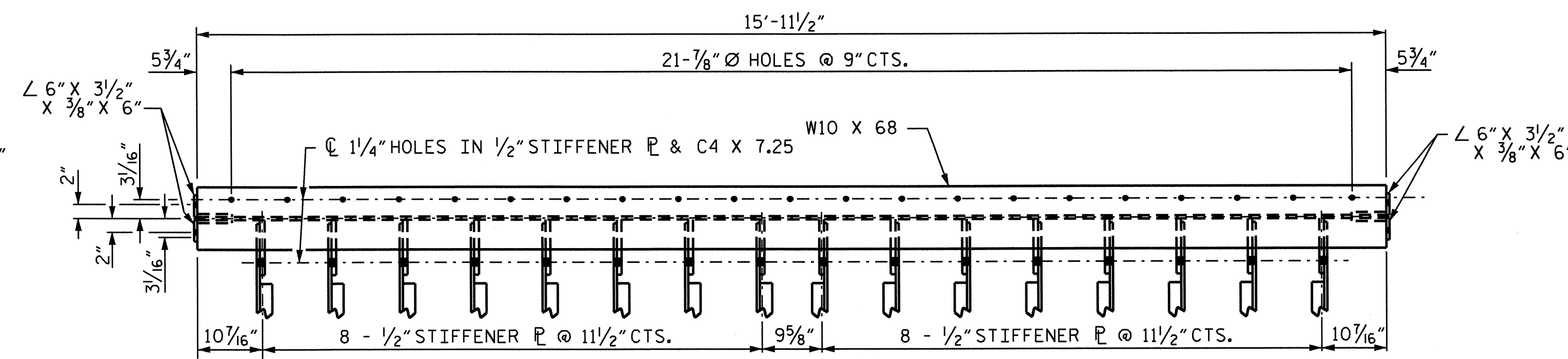
ELEVATION  
FB 1  
(FLOOR BEAM)



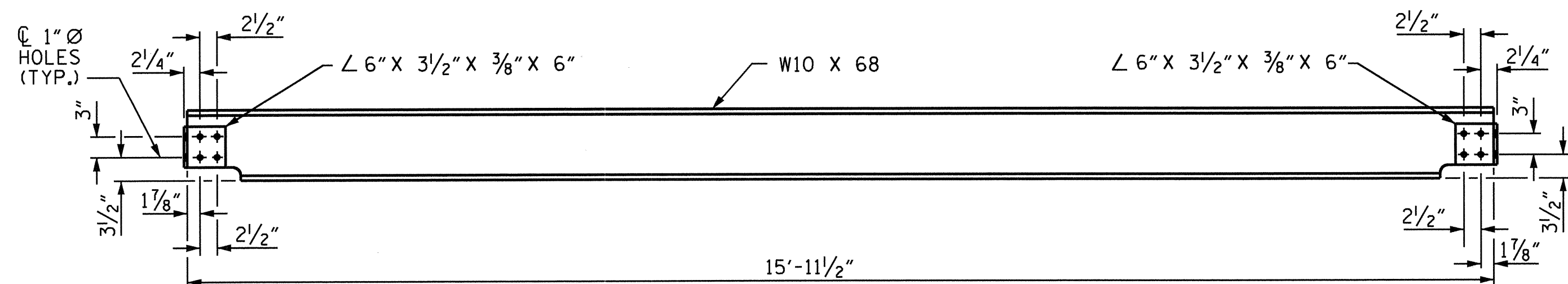
ELEVATION  
FB 2  
(FLOOR BEAM)



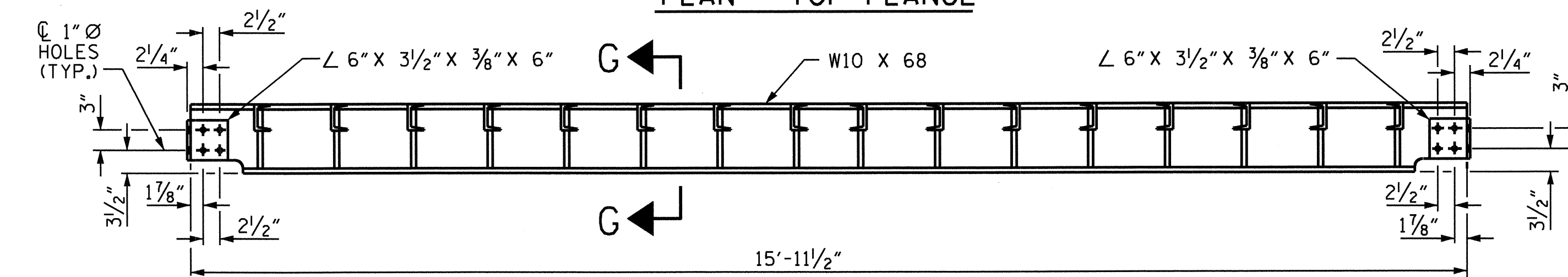
PLAN- TOP FLANGE



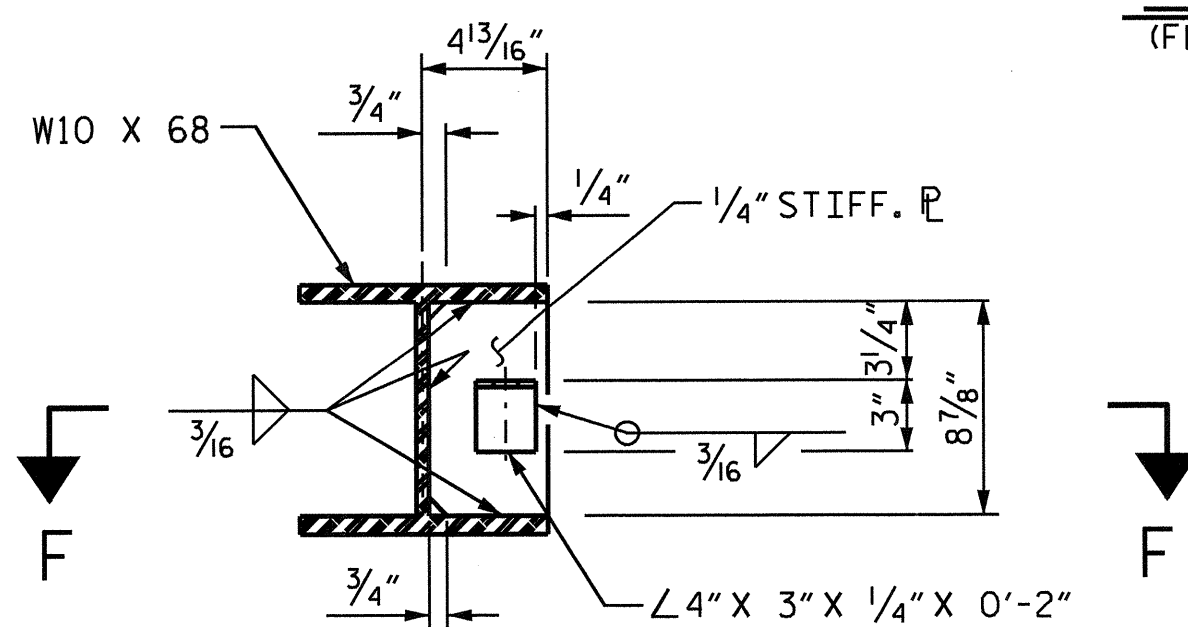
PLAN - TOP FLANGE



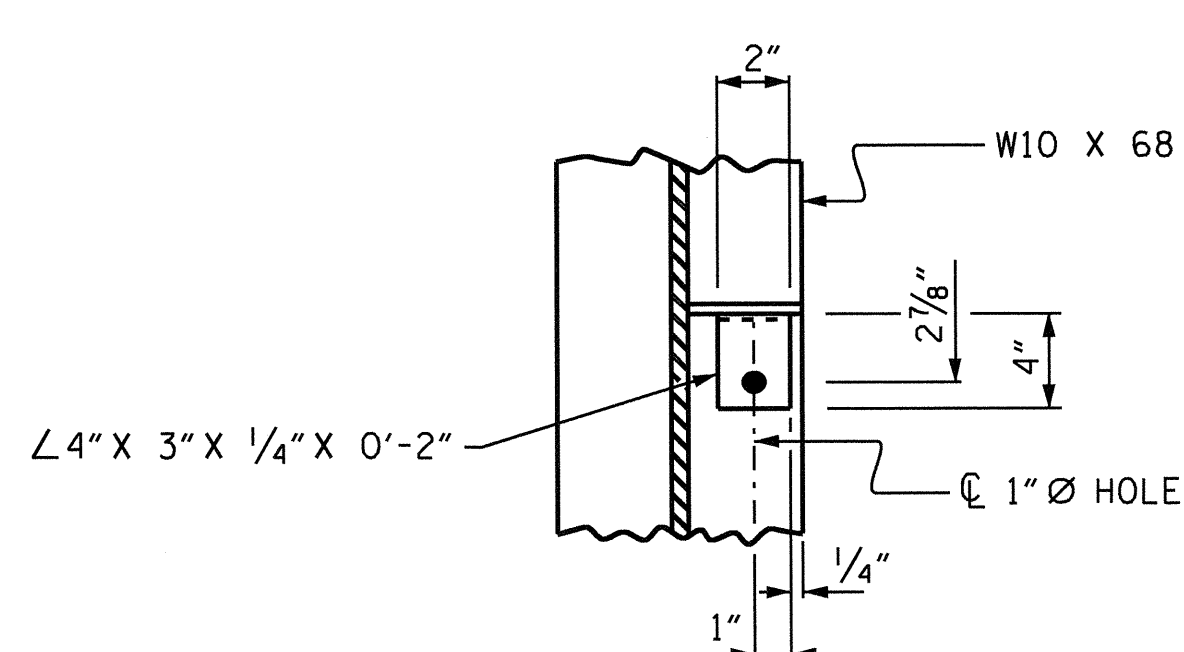
ELEVATION  
FB 3  
(FLOOR BEAM)



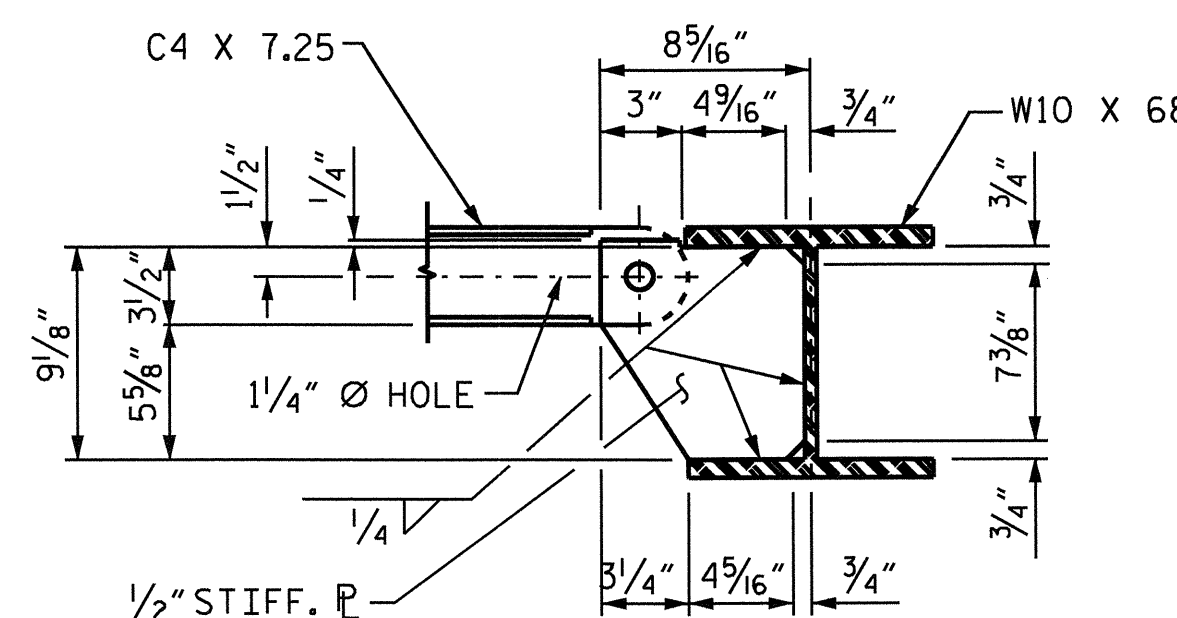
ELEVATION  
FB 4  
(FLOOR BEAM)



SECTION E-E



SECTION F-F



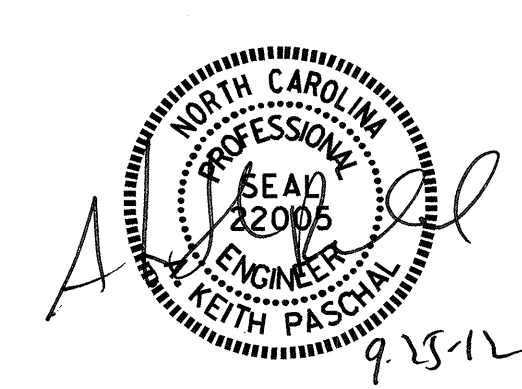
SECTION G-G

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 8 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

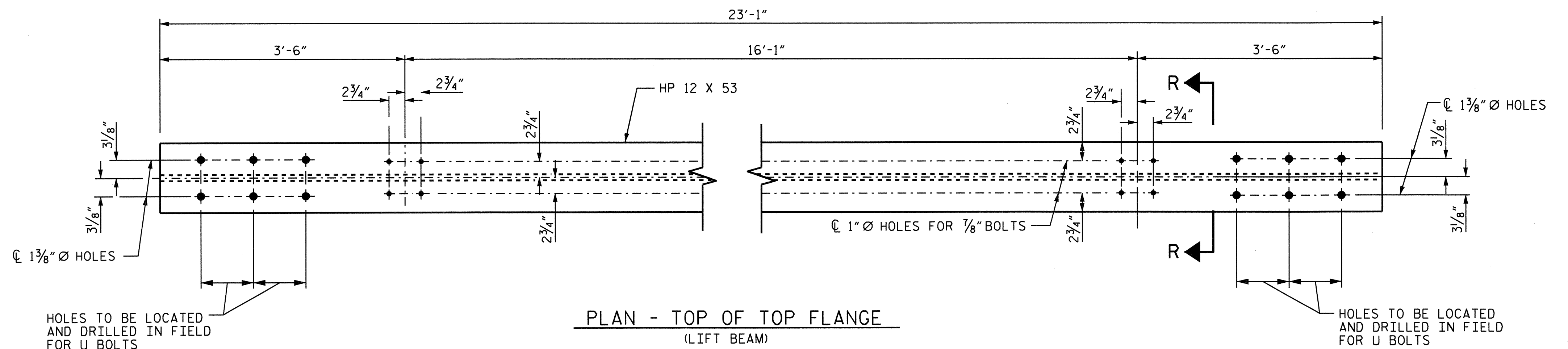
CHERRY BRANCH  
 FERRY RAMP



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K.P. SEDAI DATE : 6-14-12

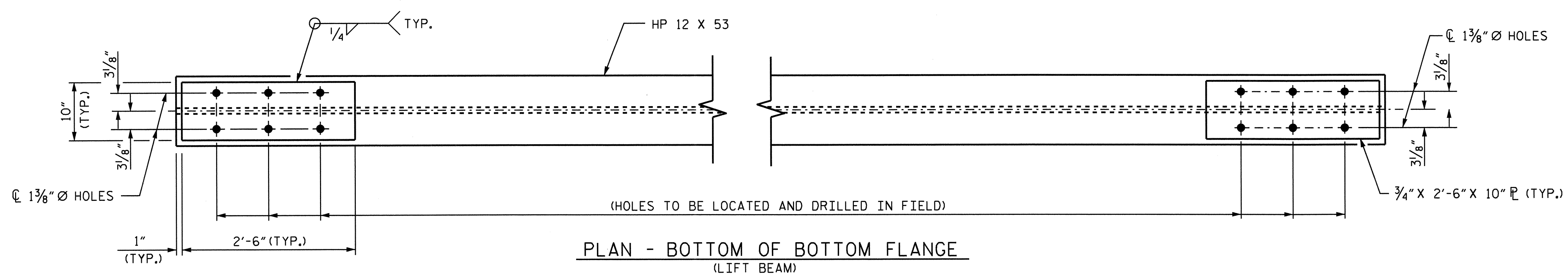
24-SEP-2012 10:27  
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 kpaschal



PLAN - TOP OF TOP FLANGE  
(LIFT BEAM)

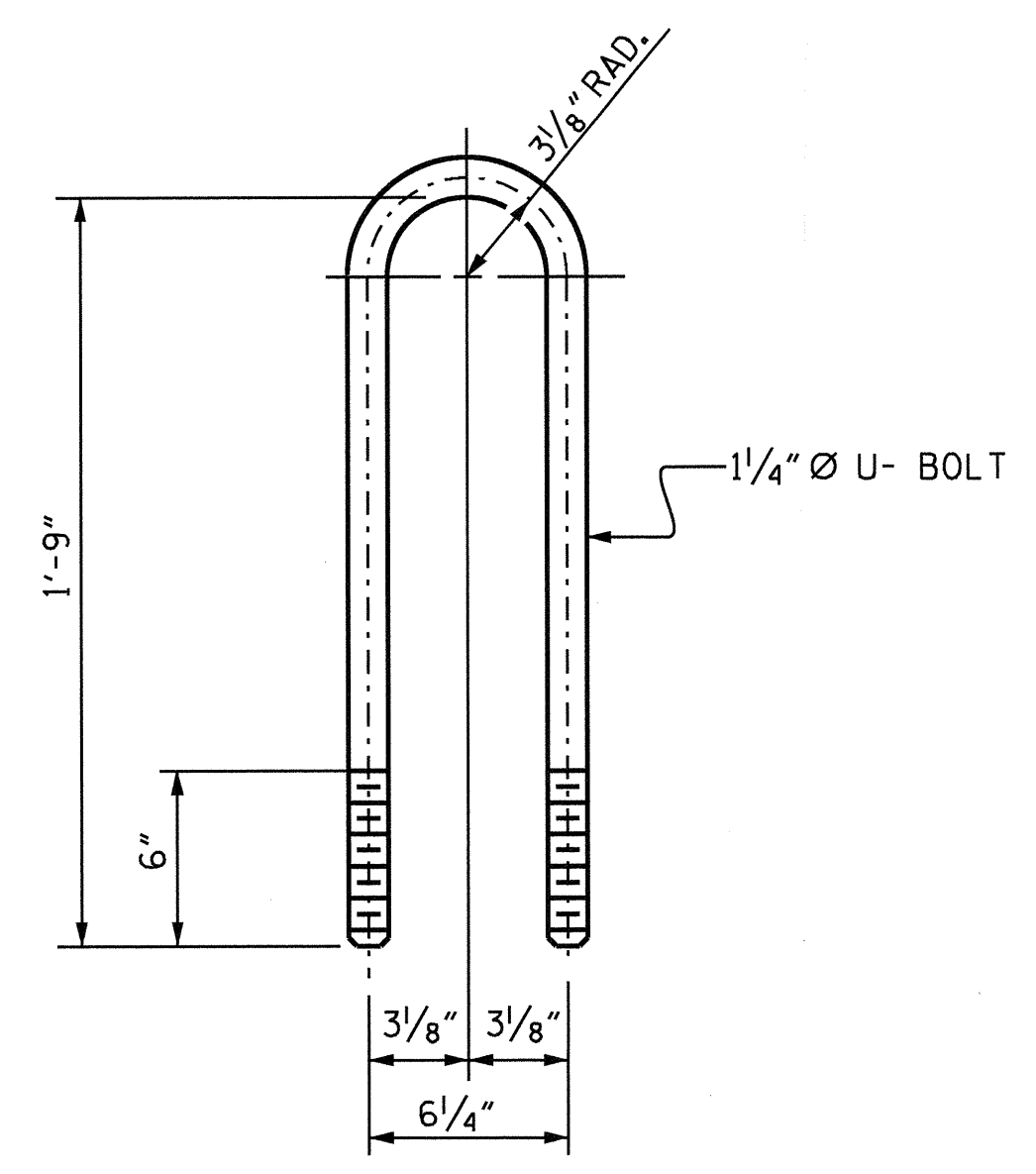
HOLES TO BE LOCATED AND DRILLED IN FIELD FOR U BOLTS

HOLES TO BE LOCATED AND DRILLED IN FIELD FOR U BOLTS



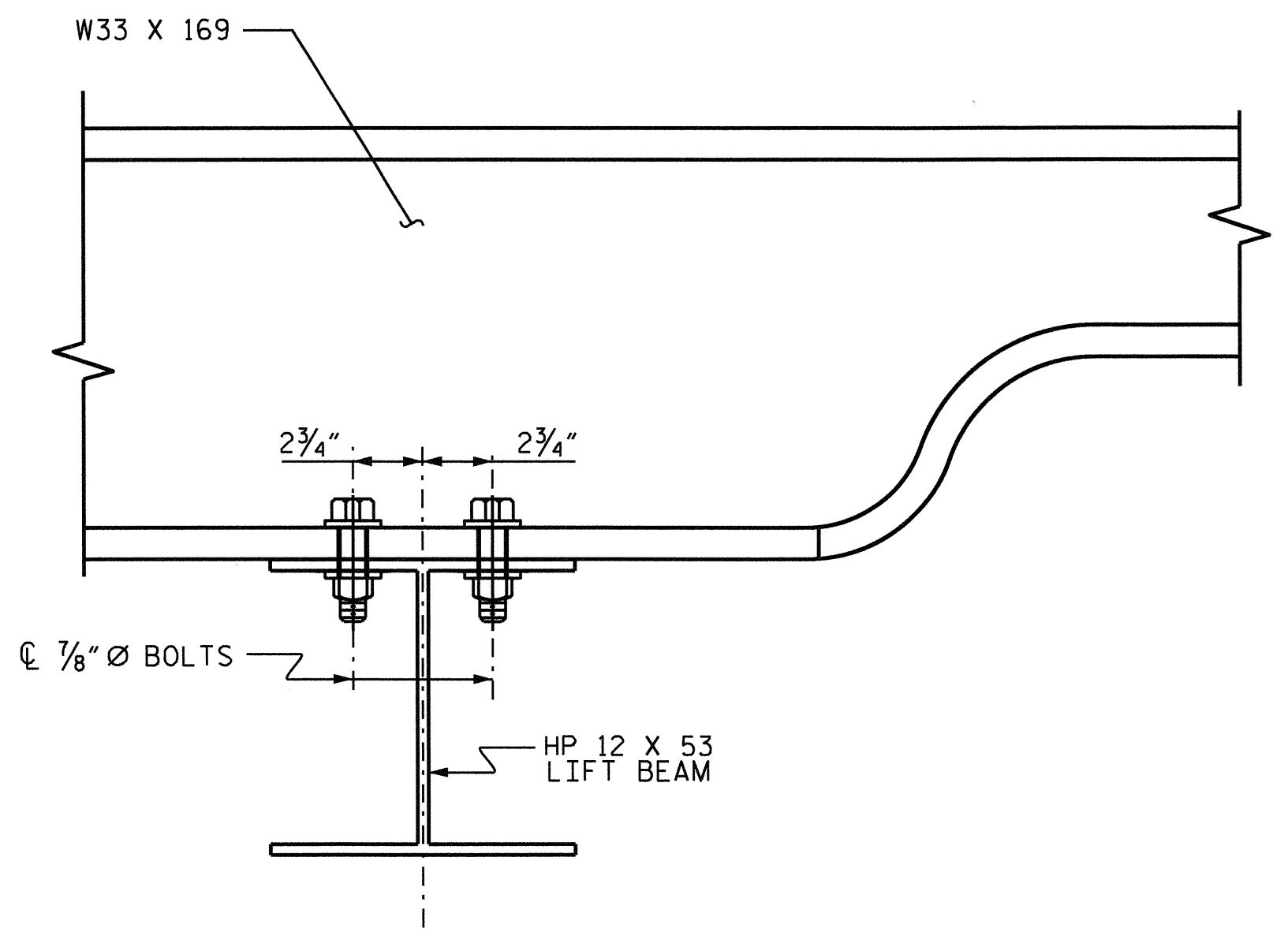
PLAN - BOTTOM OF BOTTOM FLANGE  
(LIFT BEAM)

DETAIL "L"



DETAIL OF U-BOLT FOR LIFT BEAM

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE HOLES IN THE HP 12 X 53 SHALL BE FIELD DRILLED.



VIEW R-R

NOTES

- ALL PINS, BOLTS, WASHERS, NUTS, AND OTHER HARDWARE TO BE GALVANIZED AND THIS COST WILL BE INCLUDED IN THE CONTRACT BID PRICE FOR APPROXIMATE POUNDS STRUCTURAL STEEL.
- ALL BOLTS TO BE HIGH STRENGTH (AASHTO M164) UNLESS NOTED OTHERWISE.
- CHECKERED FLOOR PLATE BOLTS TO BE A307 CARRIAGE BOLTS, SQUARE NECK WITH WASHER, NUT, AND JAM NUT.
- CHECKERED FLOOR PLATES TO BE METALLIZED AFTER FABRICATION. ALL WELDING REQUIRED ON RAMP TO BE COMPLETED BEFORE METALLIZATION.
- ALL STEEL M270 GRADE A36 UNLESS NOTED OTHERWISE.
- ALL GIRDETS, BEAMS, ANGLES, CHANNELS, PLATES, RODS, AND PIPES TO BE METALLIZED.
- ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.
- AT FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.
- CHECKERED FLOOR PLATES SHALL RECEIVE A SKID RESISTANT COATING. SEE SPECIAL PROVISIONS.
- CHARPY V-NOTCH TEST REQUIRED FOR W33 X 169 GIRDETS AND W10 X 68 FLOOR BEAMS IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.
- FOR THERMAL SPRAYED COATING (METALLIZATION), SEE SPECIAL PROVISIONS.
- THE RAMP SHALL BE METALLIZED WITH ALUMINIUM TO A THICKNESS OF 10 MILS AND SEALED AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATING (METALLIZATION).
- 1/4" Ø STEEL PIPE RAIL TO BE GALVANIZED AFTER FABRICATION.
- FOR 1/4" Ø STEEL PIPE RAIL, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL (ONE RAMP)	
* STRUCTURAL STEEL (ONE RAMP)	APPROX. LBS. 52,386
1/4" Ø STEEL PIPE RAIL	LIN.FT. 92
UNTREATED STRUCTURAL TIMBER	0.073 M.B.F.

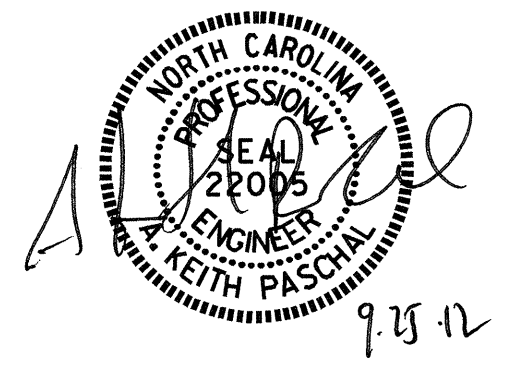
\* INCLUDES FLOOR PS, L 6" X 6" X 16'-6" PL, 4" Ø EXTRA STRONG PIPE, CHAINS, SHACKLES, AND BEARINGS.

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 9 OF 9

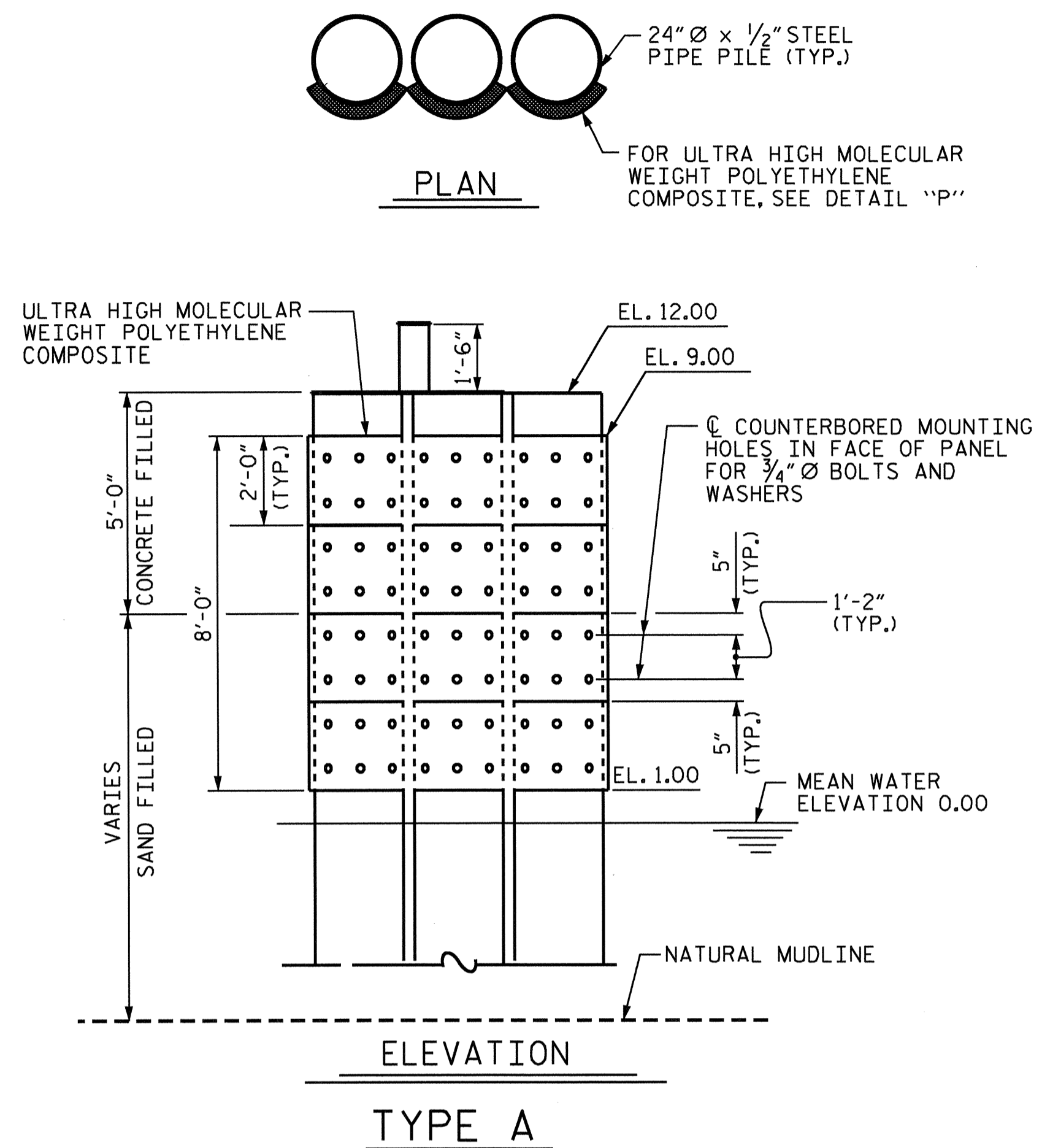
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CHERRY BRANCH  
 FERRY RAMP

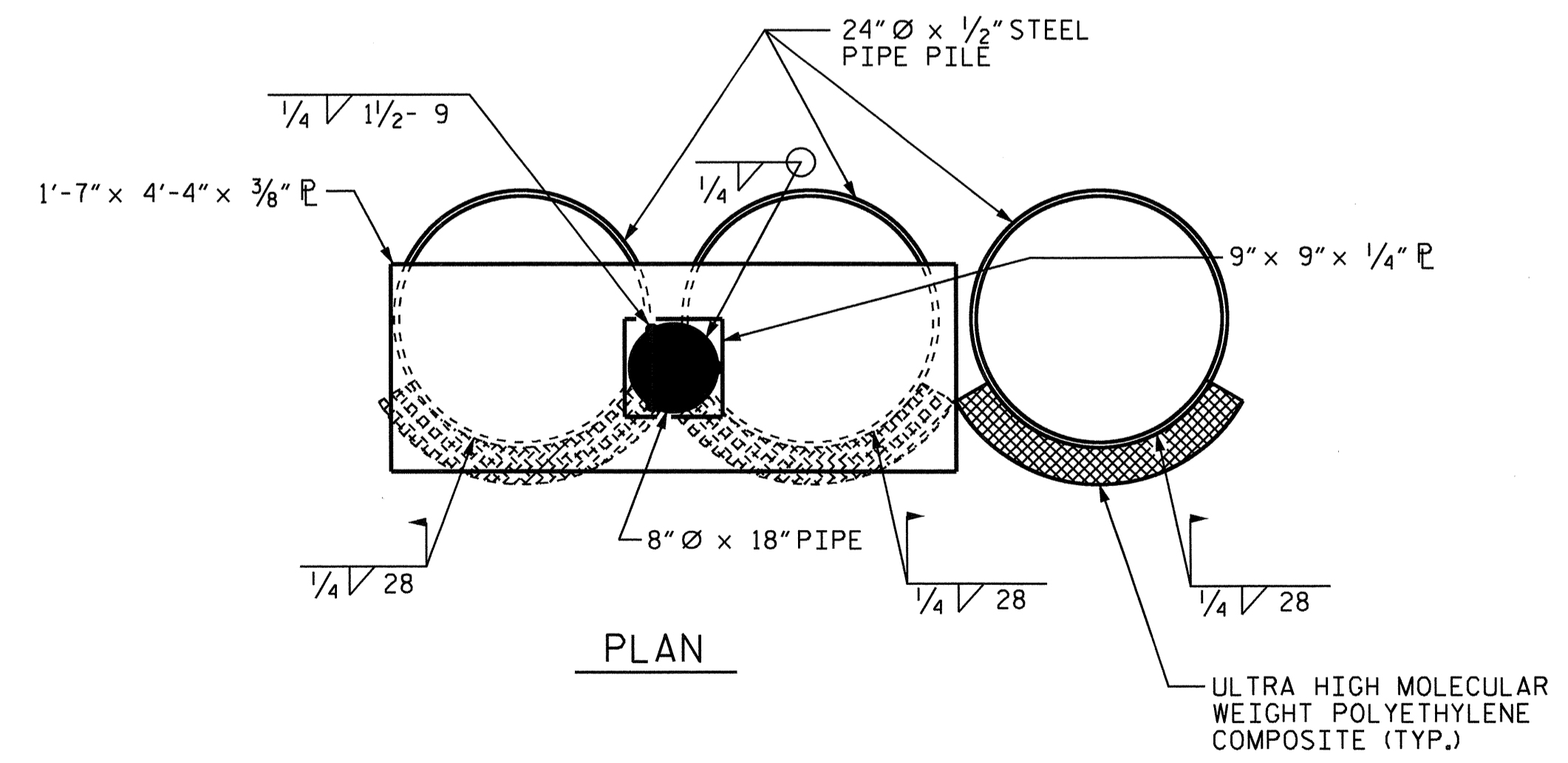
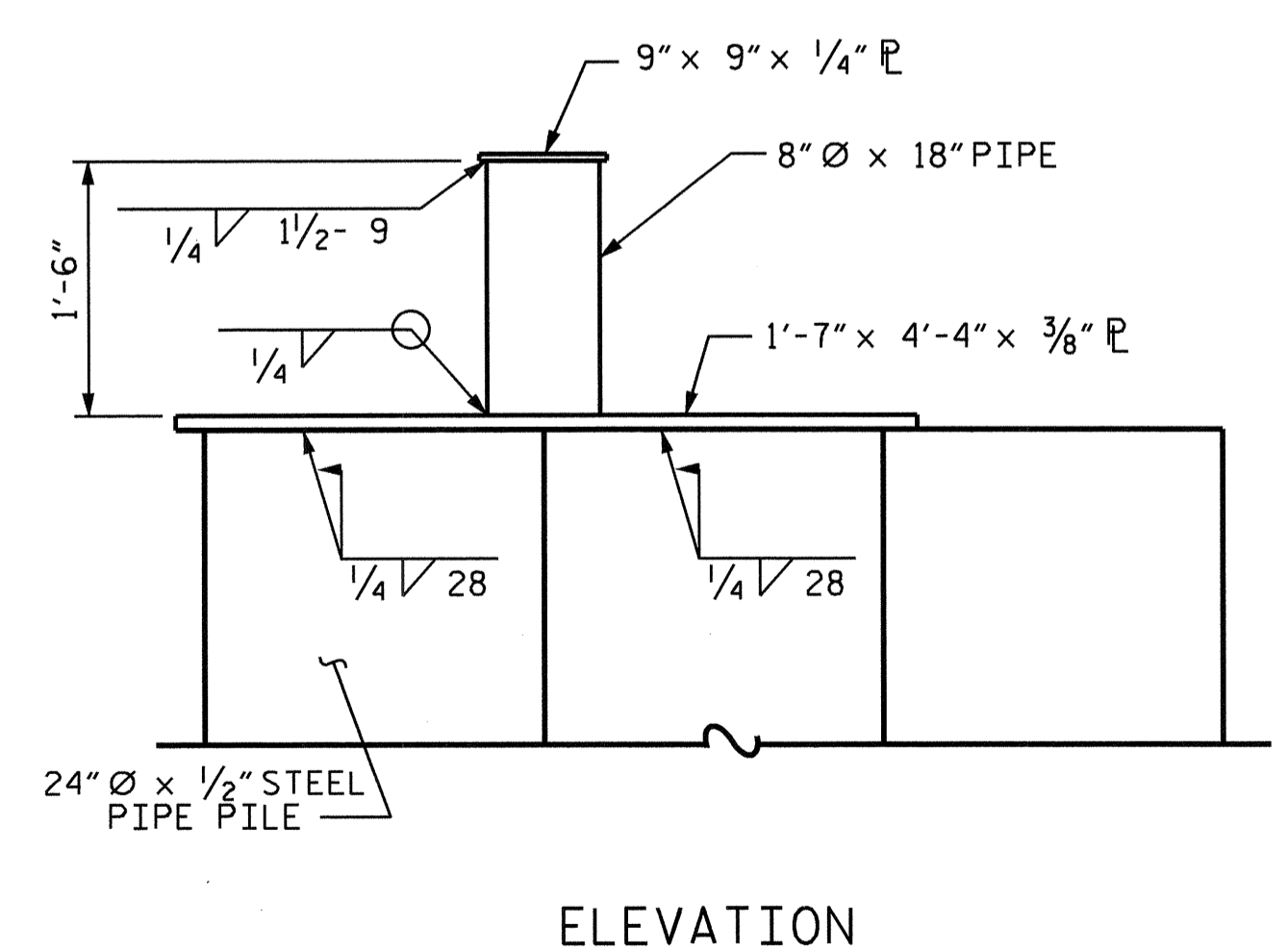
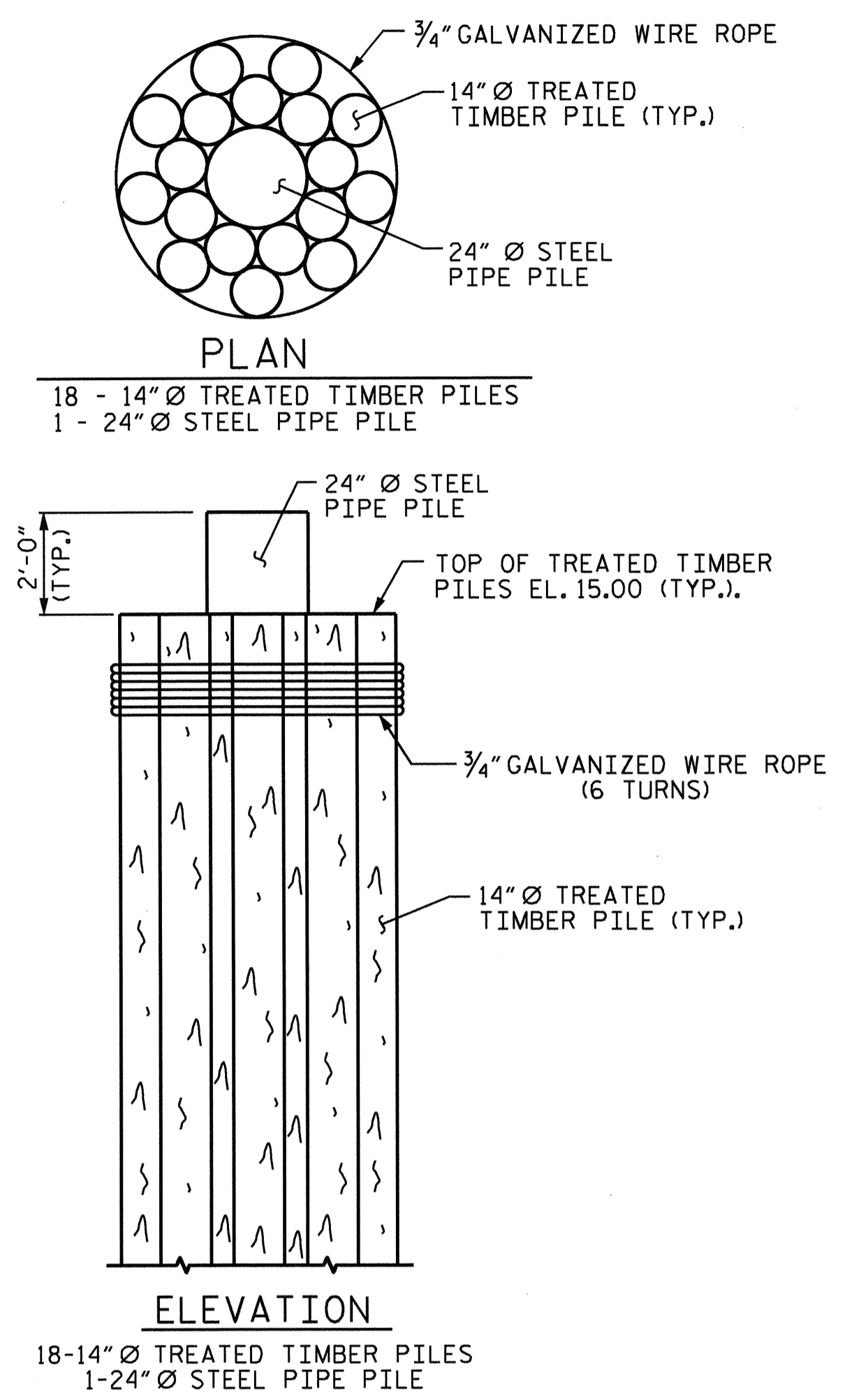
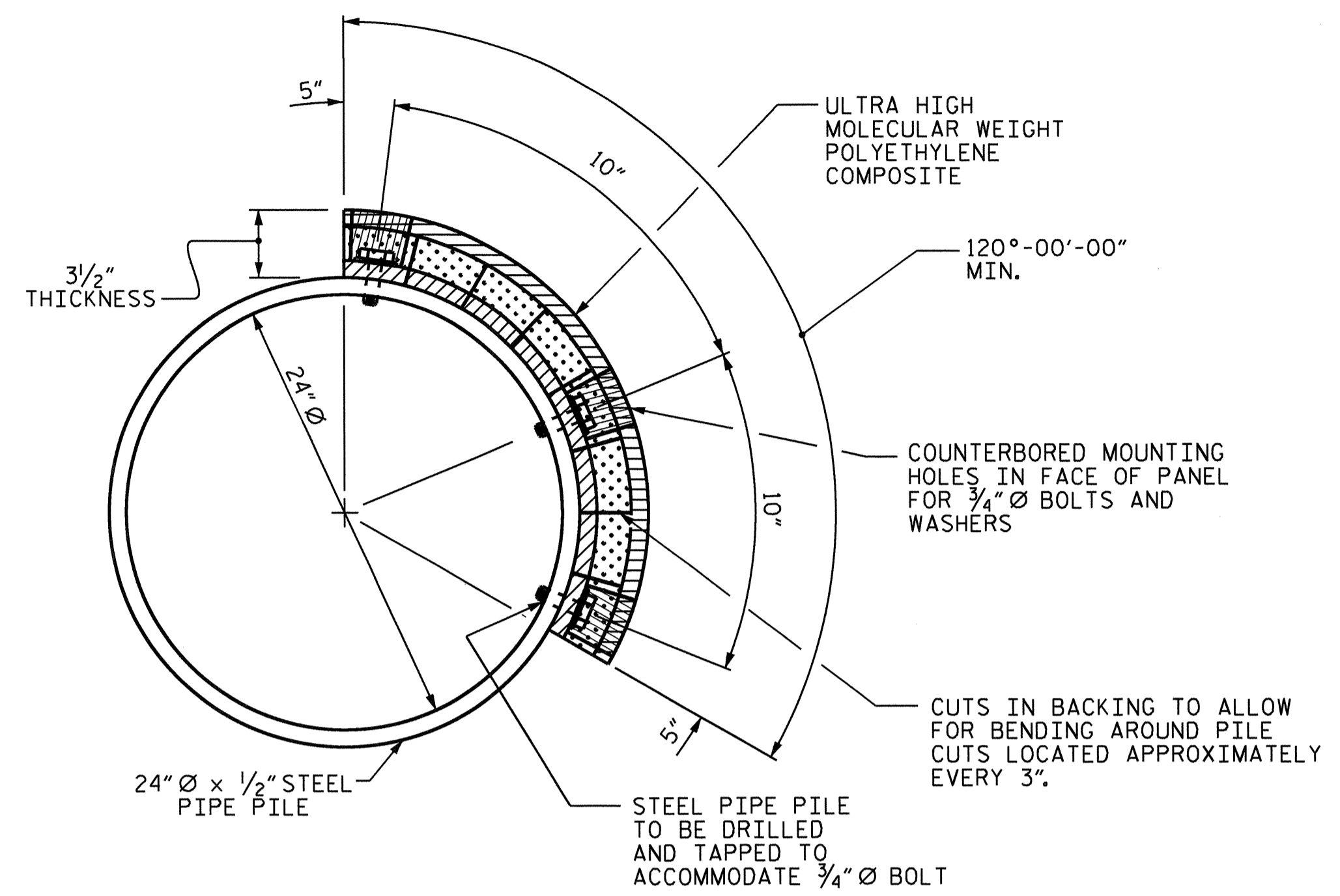


REVISIONS						SHEET NO. S-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DRAWN BY : B.N.BARODAWALA DATE : 4-23-12  
 CHECKED BY : K. P. SEDAI DATE : 6-14-12



DOLPHIN AND FENDER DETAILS



TOP OF PIPE PILE DETAILS

PROJECT NO. F-5500  
CRAVEN COUNTY  
STATION: 10+00.00 -RPA-  
SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
DOLPHIN DETAILS CHERRY BRANCH FERRY BASIN					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 29



**NOTES**

FOR ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE & ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE, SEE SPECIAL PROVISIONS.

FOR PAINTING OF STEEL PIPE PILES, SEE SPECIAL PROVISIONS FOR "PAINTING STEEL PILES."

JETTING WILL NOT BE ALLOWED TO INSTALL THE STEEL PIPE PILES OR THE TREATED TIMBER PILES.

JETTING IS NOT ALLOWED FOR REMOVAL OF EXISTING PILES.

NO SEPARATE PAYMENT OR MEASUREMENT WILL BE MADE FOR HARDWARE, TOOLS, EQUIPMENT, OR LABOR FOR INSTALLING THE ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE & ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE. THIS WORK AND MATERIAL SHALL BE INCLUDED IN THE CONTRACT UNIT BID PRICE FOR ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE AND ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE.

TO ENSURE PROPER DOLPHIN LOCATIONS, THE FERRY SHALL BE POSITIONED AS DIRECTED BY THE FERRY DIVISION AND USED AS A TEMPLATE FOR LOCATING DOLPHINS. THE 24 FT. DIMENSION FROM Q RAMP A TO Q DOLPHIN TYPE E SHALL BE MAINTAINED.

THE ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE SHALL BE SECURED TO THE STEEL PIPE PILE PRIOR TO FILLING STEEL PIPE PILES WITH SAND AND CONCRETE.

THE POSITIONING INCLUDING THE FINAL ELEVATIONS OF THE ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE ON THE STEEL PIPE PILE SHALL BE AS DIRECTED BY THE ENGINEER, FOLLOWING THE INSTALLATION OF THE STEEL PIPE PILES.

BOLTS FOR THE ATTACHMENT OF ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE TO STEEL PIPE PILES SHALL BE 3/4" x 1/2" BOLTS AND IN ACCORDANCE WITH ASTM F-593 GROUP 2 (TYPE 316 STAINLESS STEEL).

FOR SAND AND CONCRETE FILL OF THE STEEL PIPE PILES, SEE SPECIAL PROVISIONS FOR DOLPHINS.

INSTALL PP 24"x0.5" STEEL PIPE PILE DOLPHINS TO A TIP ELEVATION NO HIGHER THAN -58 FT.

INSTALL 14" MINIMUM BUTT DIAMETER TREATED TIMBER PILE DOLPHINS TO A TIP ELEVATION NO HIGHER THAN -35 FT.

FOR STEEL PIPE PILES, SEE SPECIAL PROVISIONS FOR DOLPHINS.

DOLPHIN PILES SHALL BE DRAWN TOGETHER AT THE TOP AND WRAPPED WITH SIX TURNS OF 3/4" WIRE ROPE AT ONE POINT. THE WIRE ROPE SHALL BE SECURED WITH 3/8" SQUARE STAPLES AND TWO CABLE CLAMPS AT THE END.

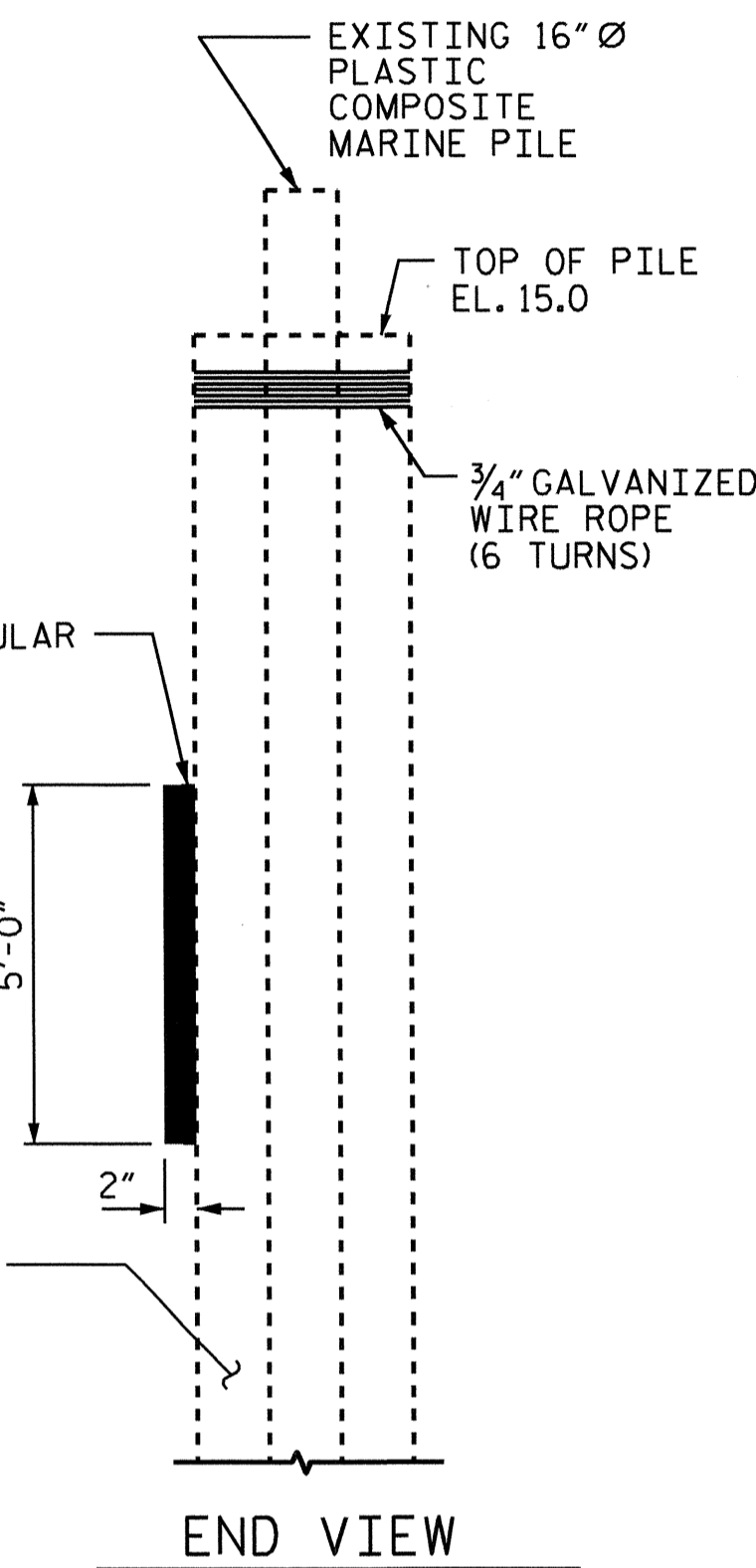
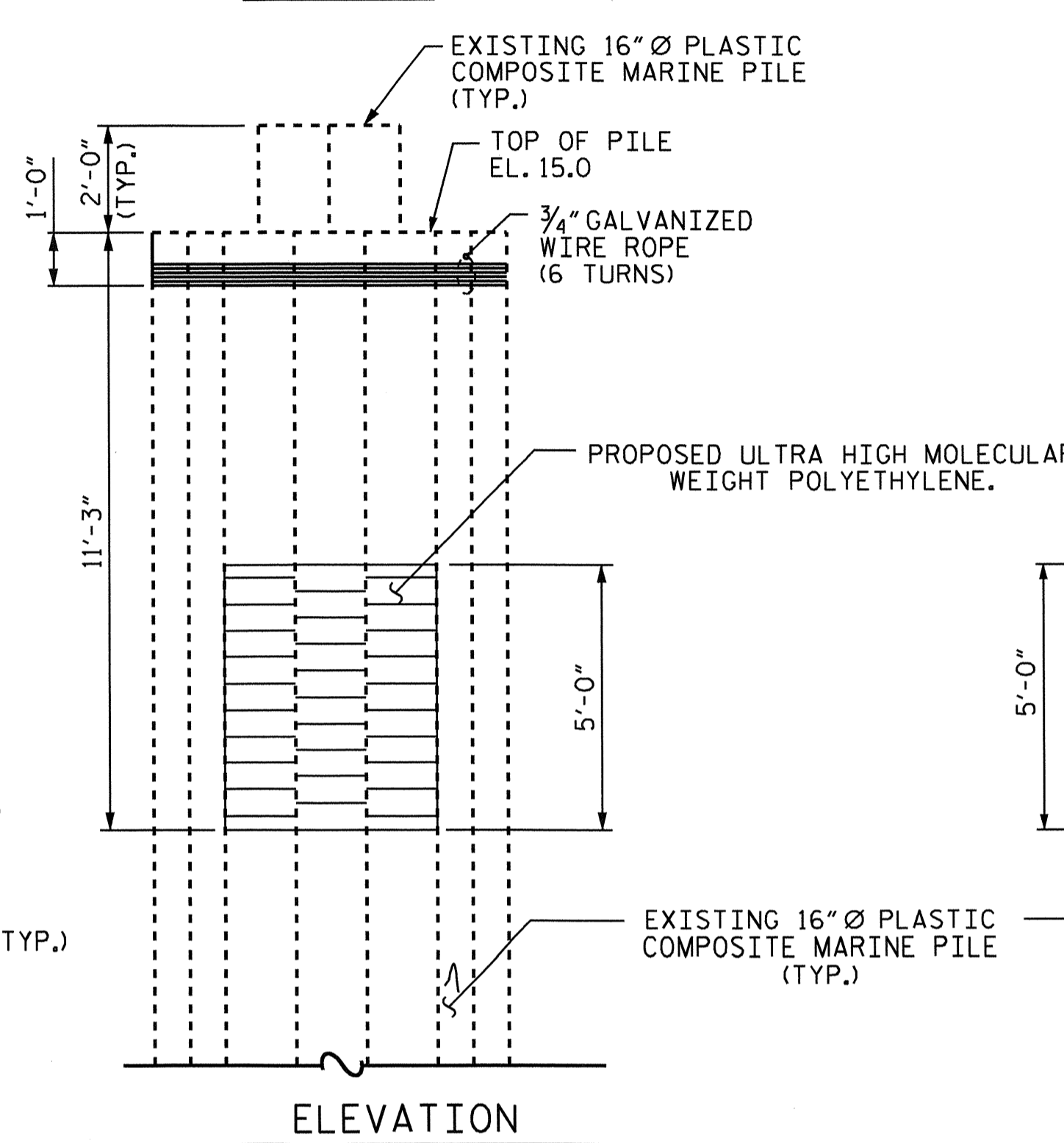
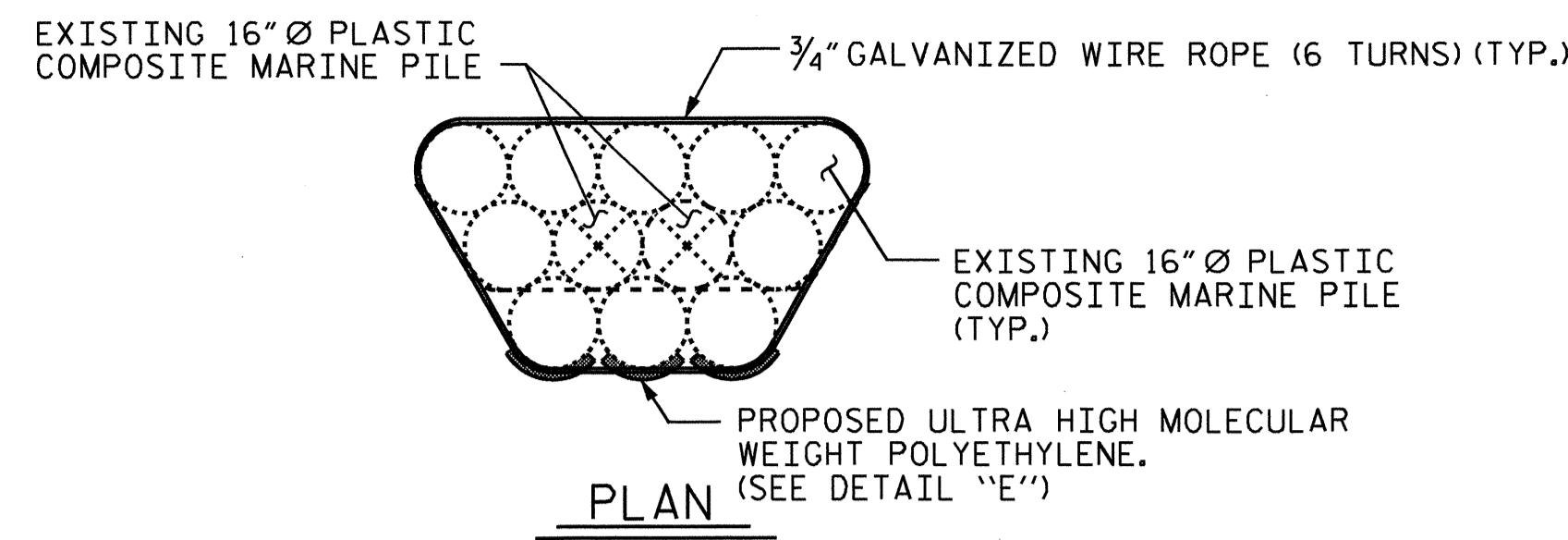
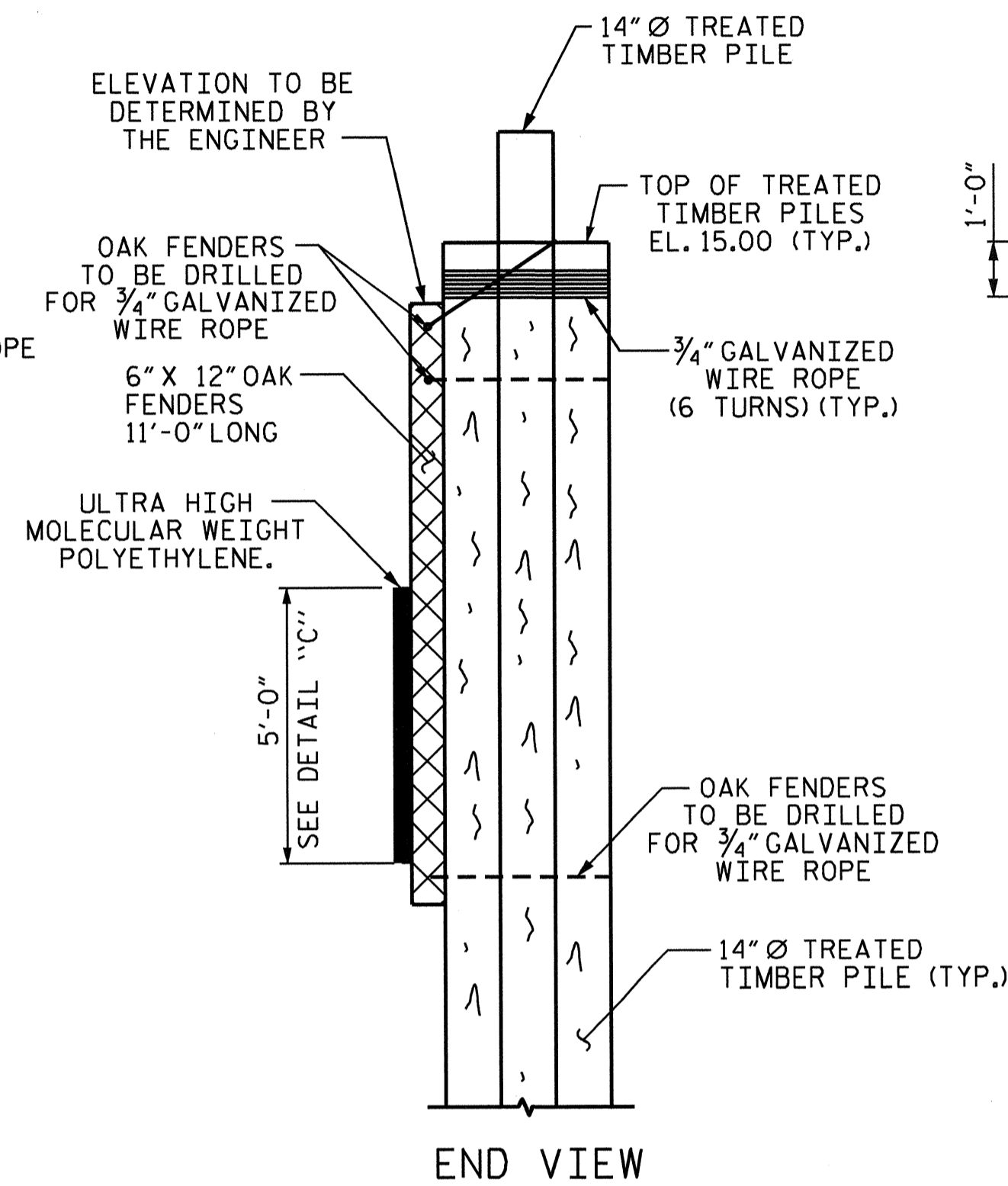
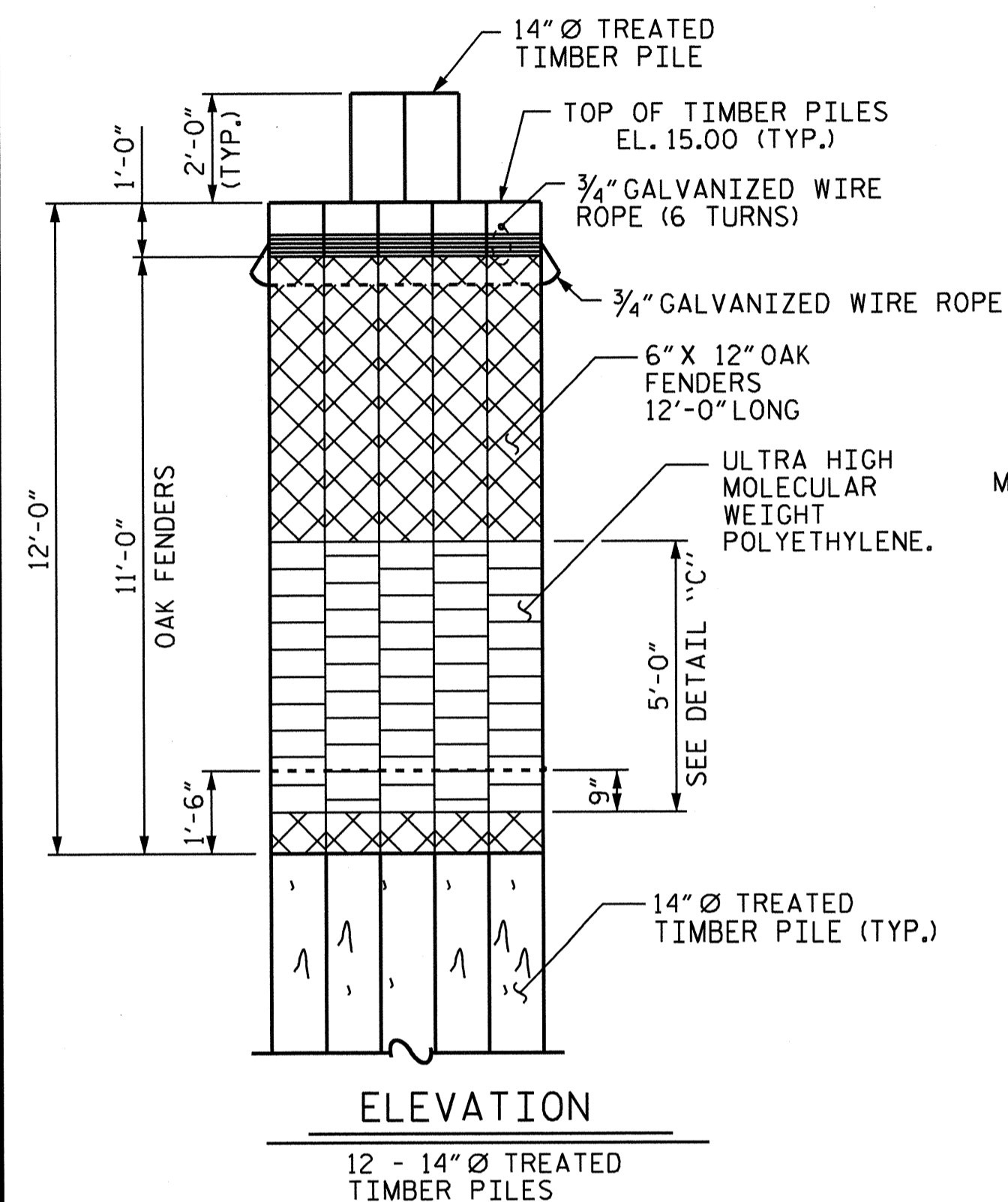
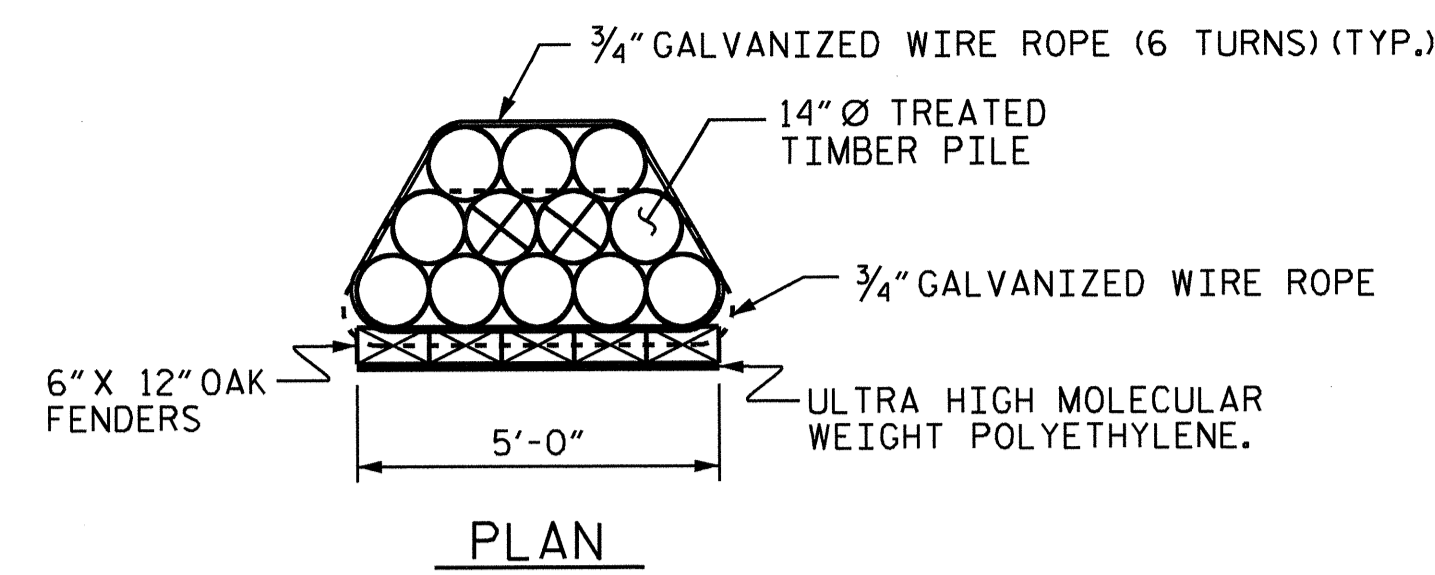
GALVANIZED WIRE ROPE USED FOR WRAPPING DOLPHINS AND INSTALLING OAK FENDERS SHALL CONFORM TO ASTM A603 CLASS B.

ALL HARDWARE SHALL BE GALVANIZED, UNLESS OTHERWISE NOTED.

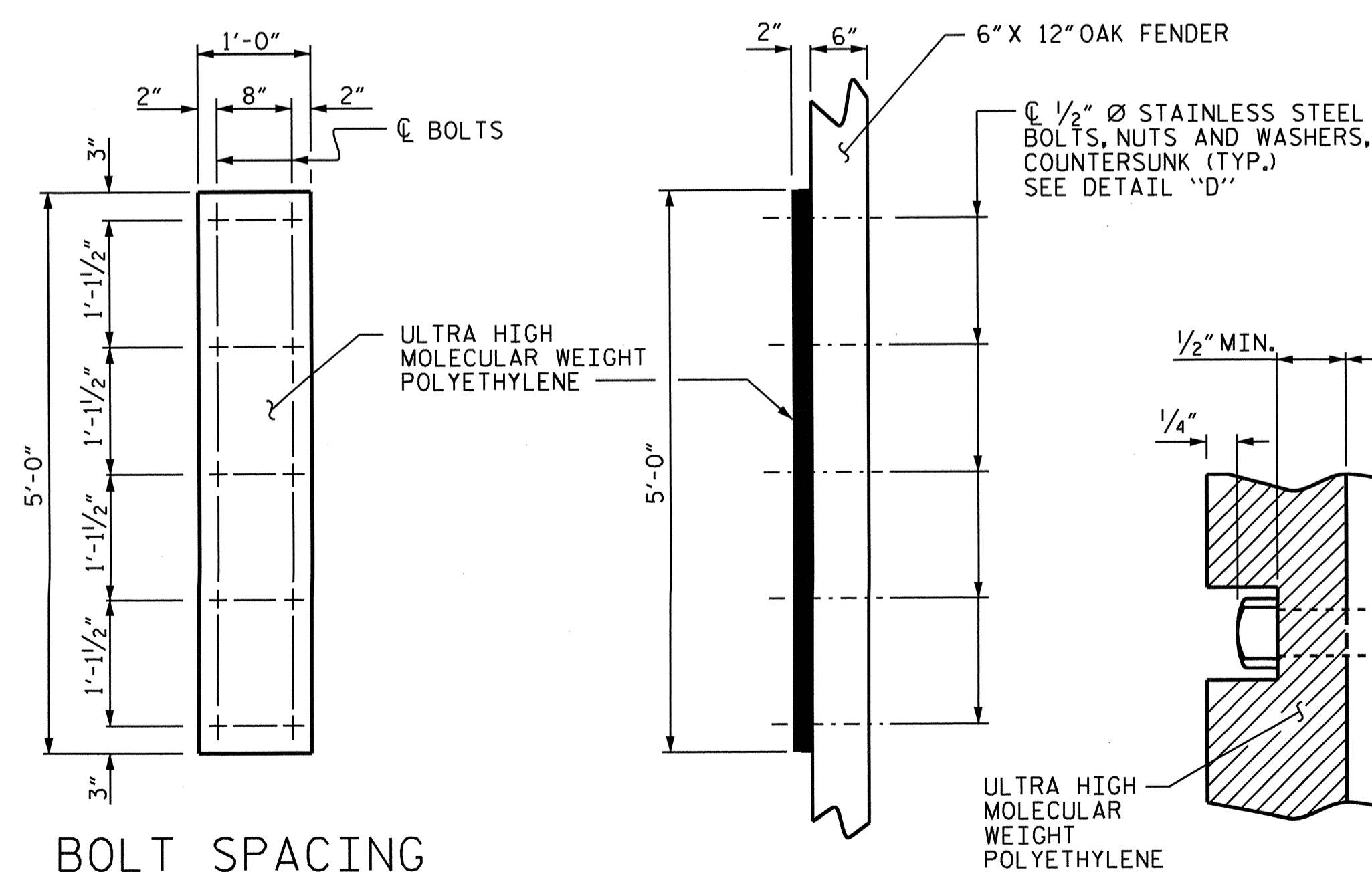
NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR WIRE ROPE USED TO WRAP DOLPHINS AND INSTALLING OAK FENDERS, HARDWARE, TOOLS, EQUIPMENT, OR LABOR. THIS WORK AND MATERIALS SHALL BE INCLUDED IN THE CONTRACT UNIT BID PRICE FOR TREATED TIMBER PILES.

FOR UNTREATED WHITE OAK TIMBER, SEE SPECIAL PROVISIONS FOR DOLPHINS.

THE 6" X 12" OAK TIMBER FENDERS SHALL BE FACED AS SHOWN WITH 2" THICK X 12" WIDE X 5'-0" LONG ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE. SEE SPECIAL PROVISIONS FOR DOLPHINS.

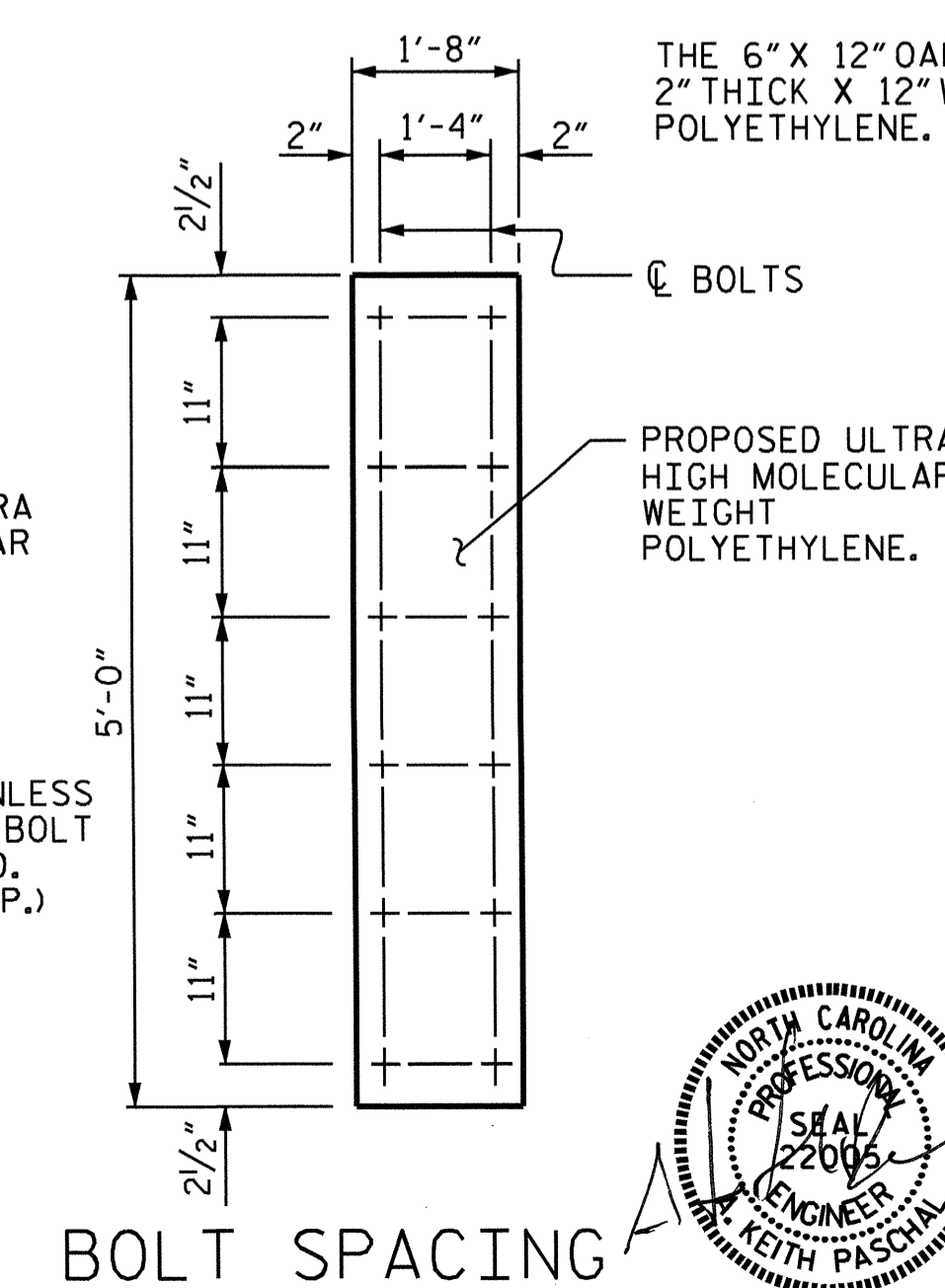
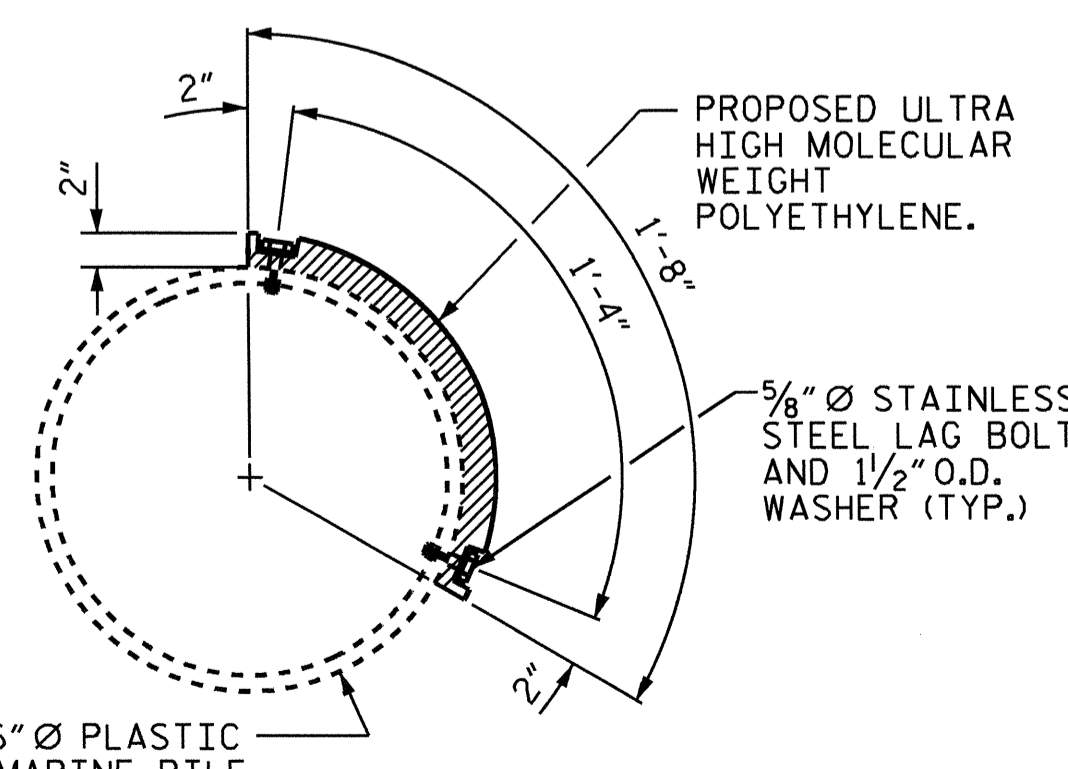
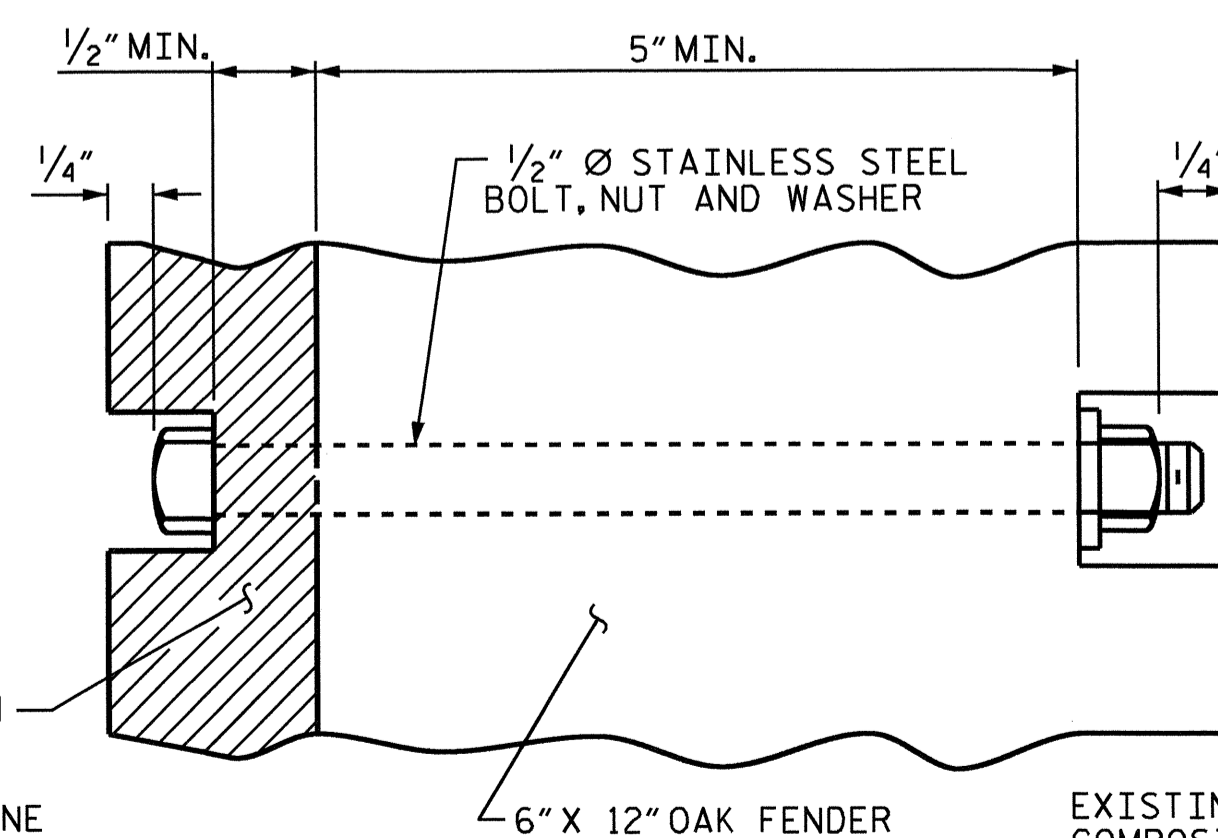


**TYPE E**



**BILL OF MATERIAL**

UNTREATED STRUCTURAL TIMBER	14" Ø TREATED TIMBER PILES	24" Ø STEEL PIPE PILES	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE	CLASS AA CONCRETE		
M.B.F.	NO.	LIN.FT.	NO.	LIN.FT.	SO.FT.	SO.FT.	CU. YDS.
0.990	54	2712	7	527	134	205	3.7



**DETAIL 'C'**

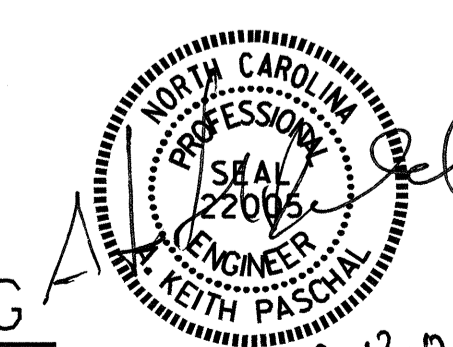
(SHOWING CONNECTION DETAIL FOR ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE TO OAK FENDER)

**DETAIL 'D'**

**DETAIL 'E'**

DRAWN BY: B.N. BARODAWALA DATE: 4-23-12  
 CHECKED BY: K.P. SEDAİ DATE: 6-14-12

13-DEC-2012 14:32  
 S:\DPCG\Keith\Barodawala\Cherry Branch Ramp A.dgn  
 bbarodawala



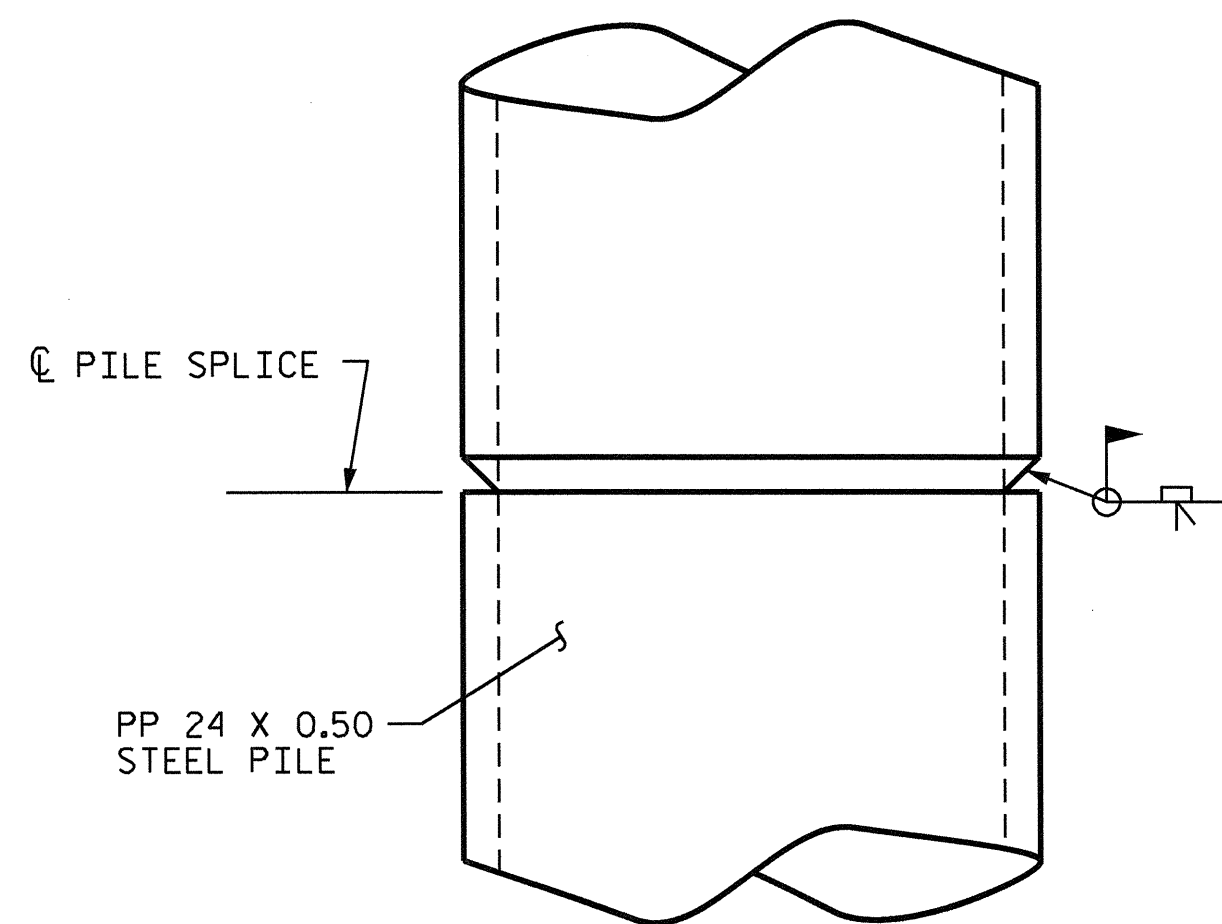
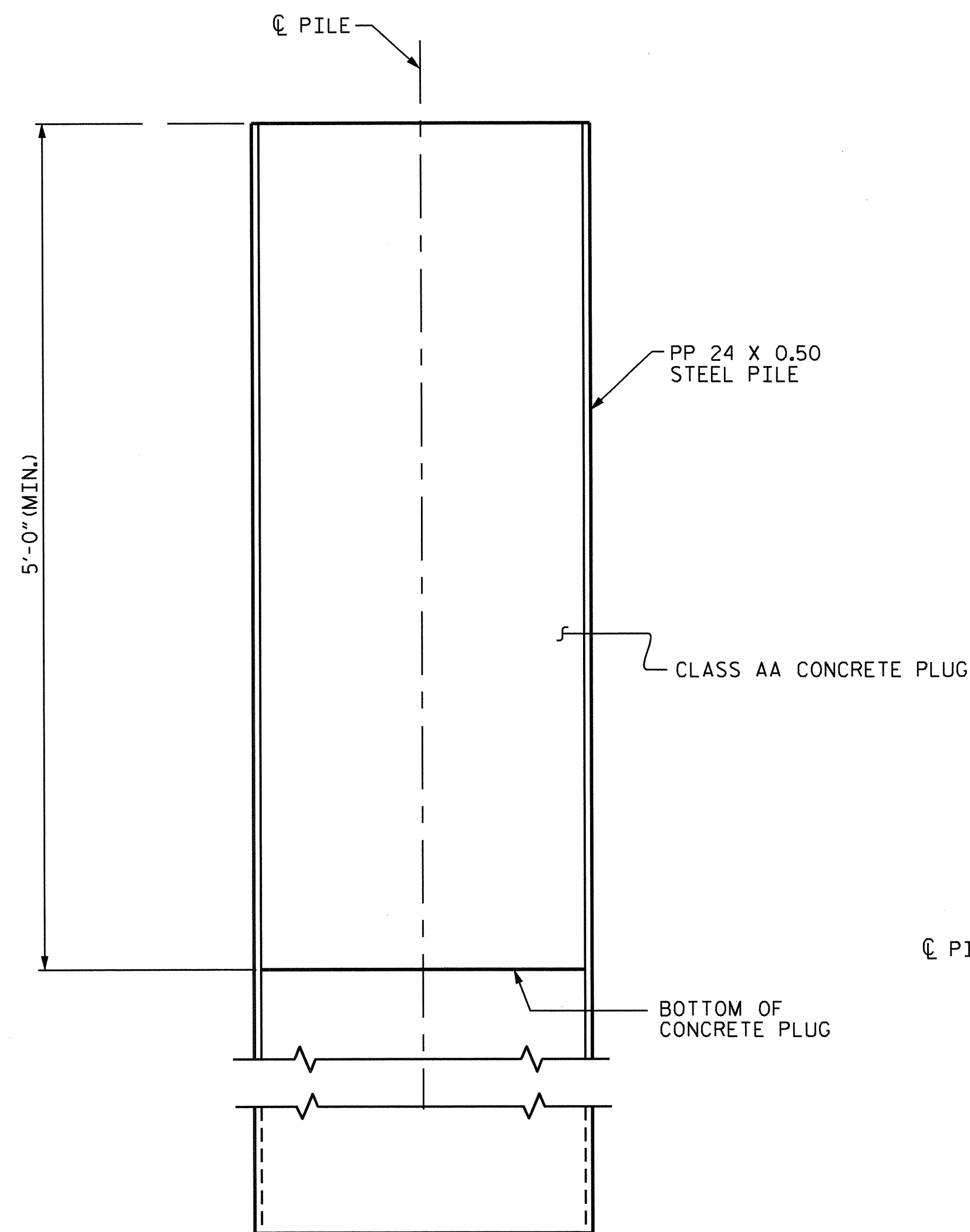
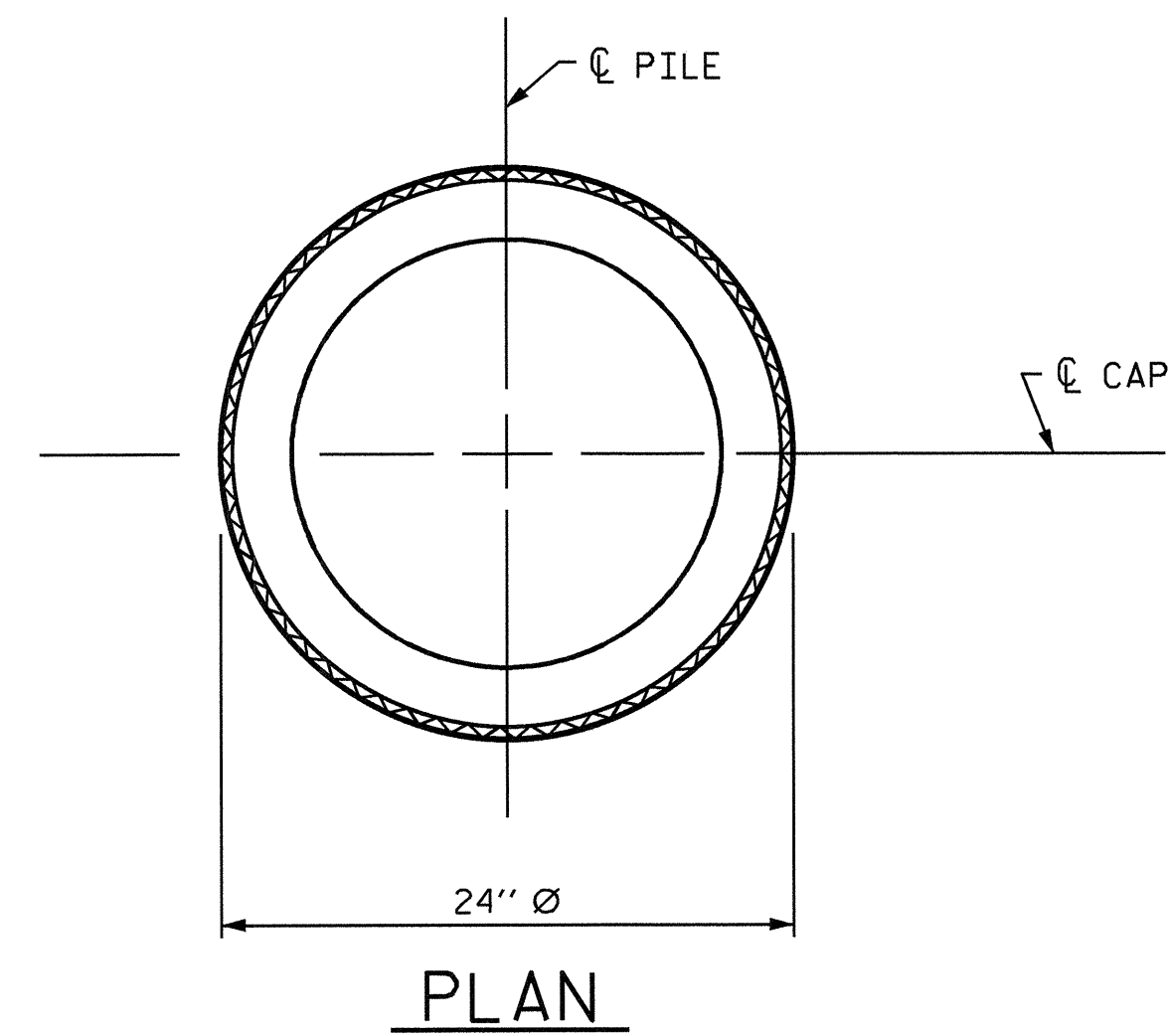
PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**DOLPHIN DETAILS**  
**CHERRY BRANCH**  
**FERRY BASIN**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			29



**PP 24 X 0.50 STEEL PILE**  
( OPEN END )

**NOTES**

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

PROJECT NO. F-5500  
CRAVEN COUNTY  
STATION: 10+00.00 -RPA-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
24" STEEL PIPE PILE



ASSEMBLED BY : B.N.BARODAWALA	DATE : 4-23-12
CHECKED BY : K. P. SEDAI	DATE : 6-14-12
DRAWN BY : TLA 8/05	ADDED 10/1/05
CHECKED BY : GM 9/05	REV. 5/1/06R MAA/KMM
	REV. 10/1/11 MAA/GM

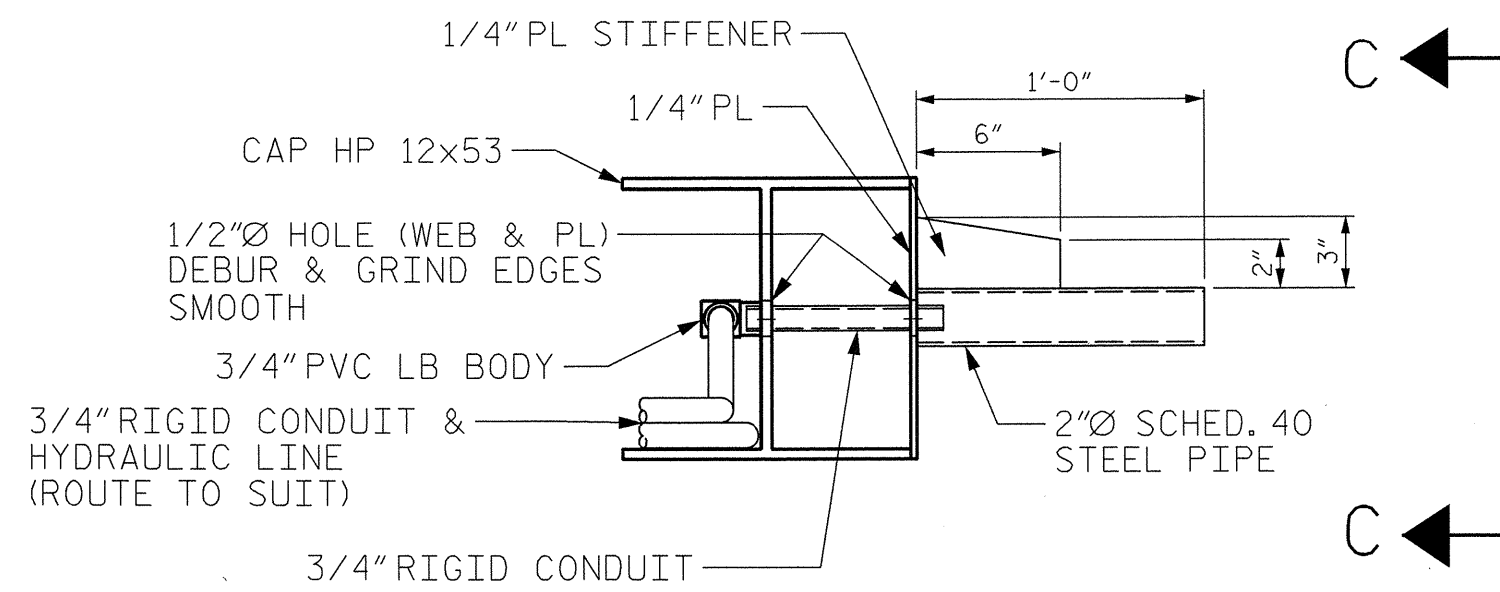
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S:\DPCI\Keith\Barodawala\Cherry Branch Ramp A.dgn  
kpaschal

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS 29
2			4			

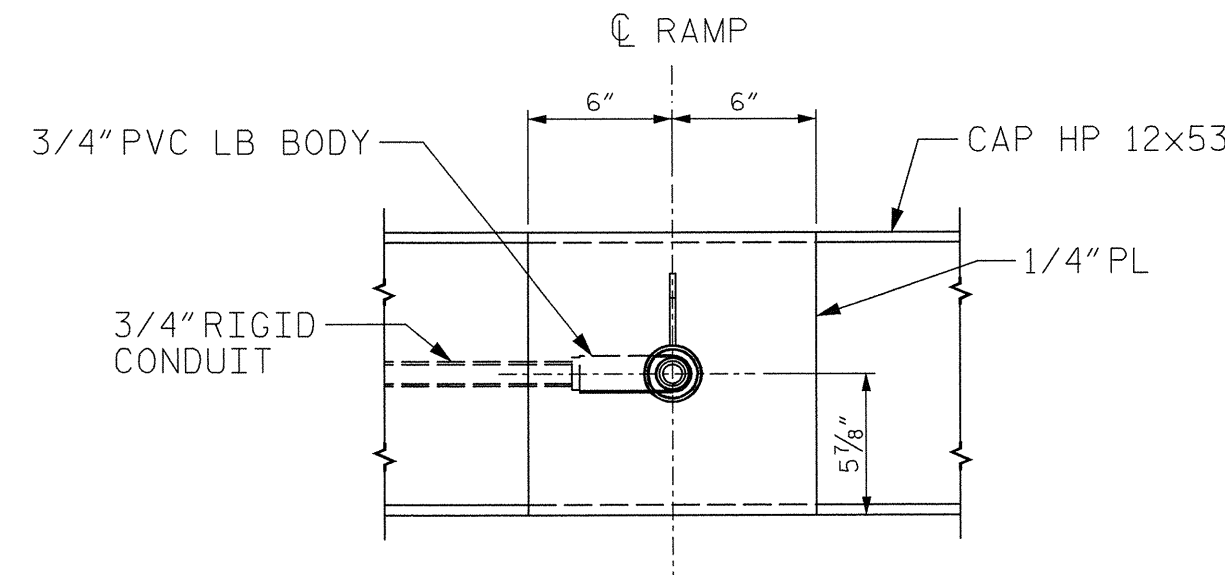
STD. NO. SPP4

**NOTES:**

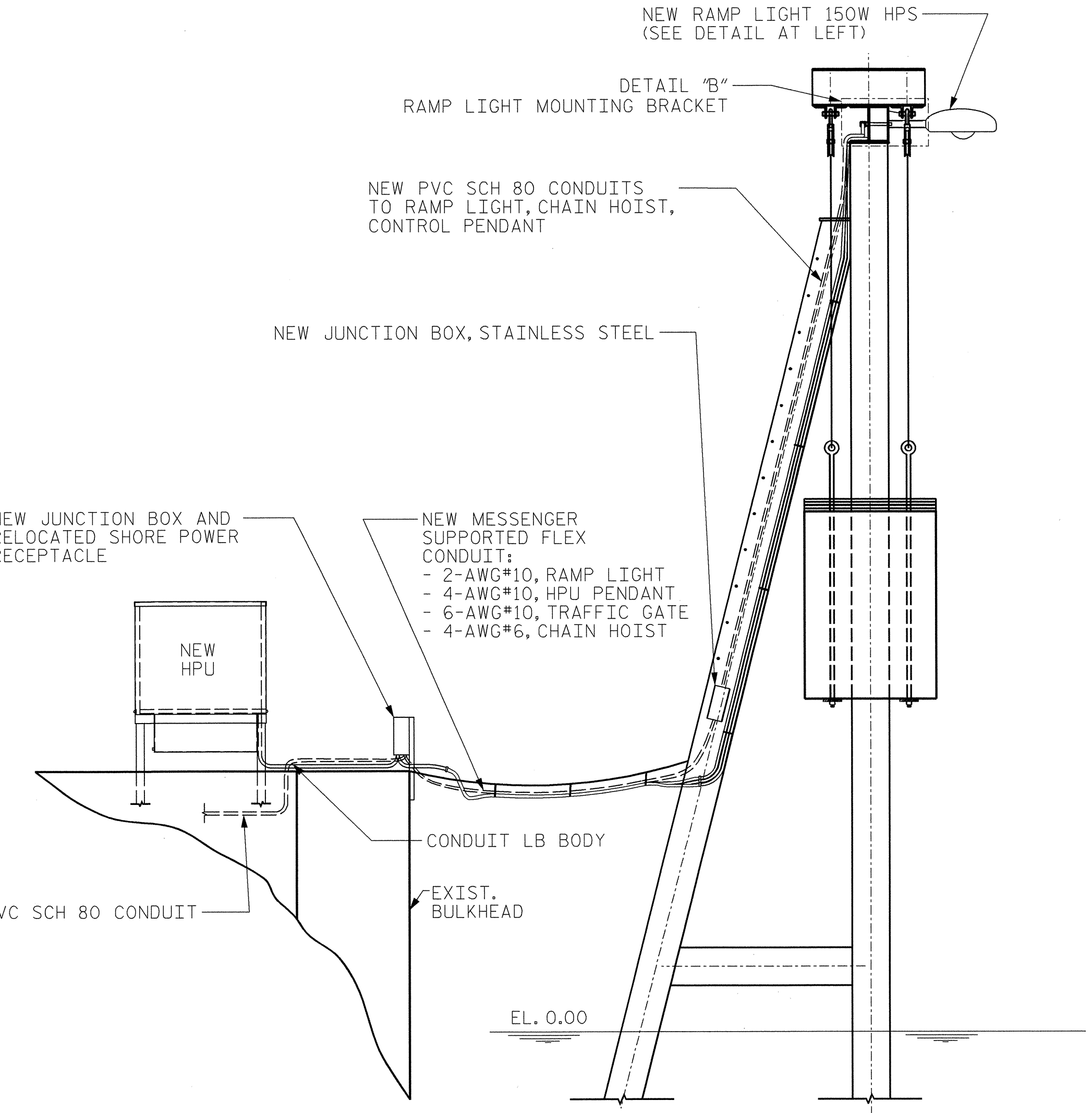
1. ALL WORK SHALL BE INSTALLED IN COMPLIANCE WITH NFPA 70, THE NATIONAL ELECTRICAL CODE.
2. NEW JUNCTION BOX AT NEW HYDRAULIC POWER UNIT SHALL BE MOUNTED ON HORIZONTAL STAINLESS STEEL UNISTRUT SUPPORTED BY TWO 4X4 TREATED TIMBER POSTS EMBEDDED AT LEAST 3 FT INTO THE GROUND. HYDRAULIC POWER UNIT MOTOR STARTER AND CHAIN HOIST DISCONNECT SWITCHES SHALL BE MOUNTED ON SAME FRAMING.
3. NEW JUNCTION BOX MOUNTED ON EXISTING BULKHEAD NEAR MESSENGER CABLE SHALL BE SUPPORTED BY 2 STAINLESS STEEL UNISTRUTS MOUNTED TO BULKHEAD BY 1/2 INCH STAINLESS ADHESIVE ANCHOR BOLTS EMBEDDED AT LEAST 6 INCHES INTO BULKHEAD CONCRETE. USE 3 BOLTS SPACED AT LEAST 18 INCHES APART FOR EACH UNISTRUT.
4. PROVIDE JUNCTION BOXES, PULL BOXES AND CONDUIT RUNS AS REQUIRED TO COMPLETE THE SYSTEM.
5. ALL RIGID PVC CONDUIT SHALL BE SUPPORTED ON STRUCTURE AND ON BULKHEAD AT INTERVALS NO TO EXCEED 6 FEET.



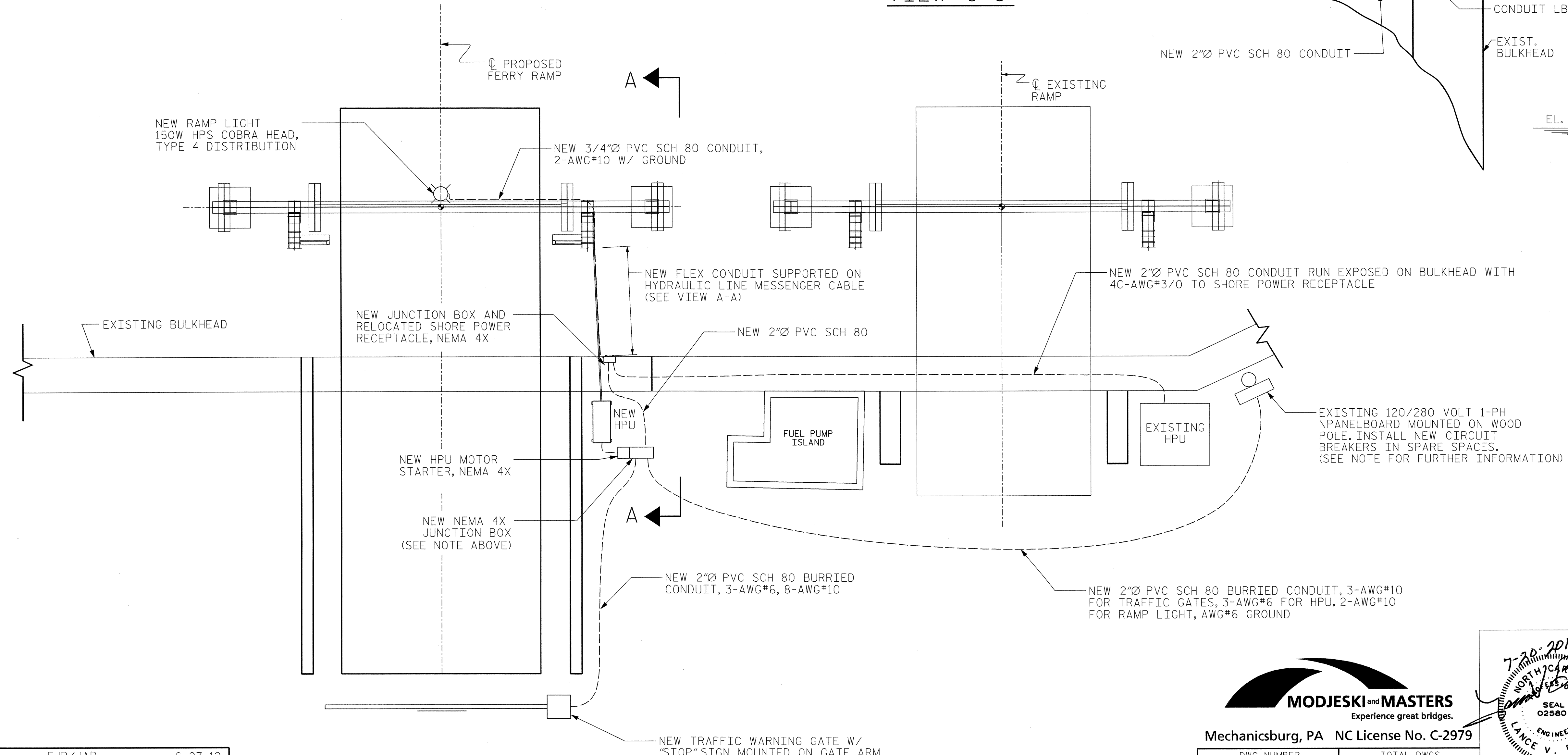
**DETAIL "B"**



**VIEW C-C**



**VIEW A-A**



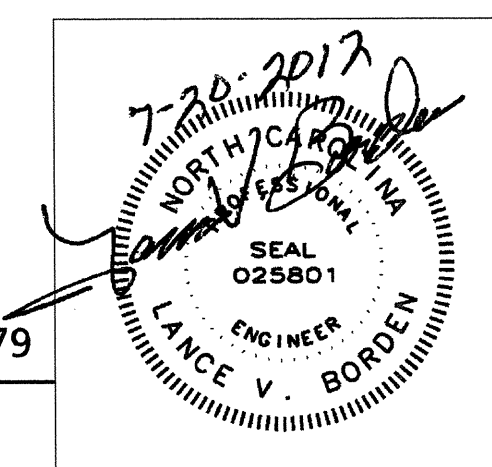
PROJECT NO. F-5500  
 CRAVEN COUNTY  
 STATION: 10+00.00 -RP-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

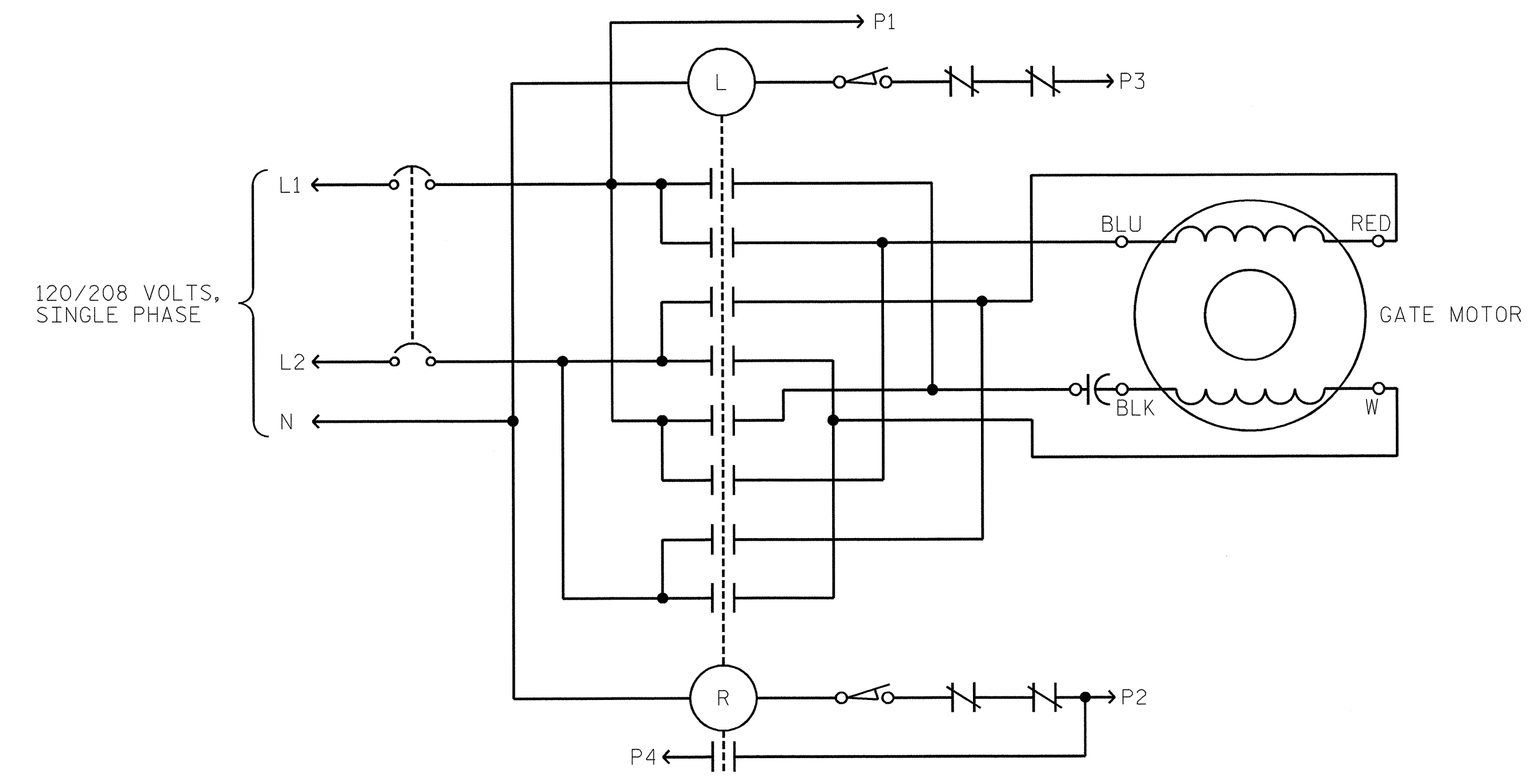
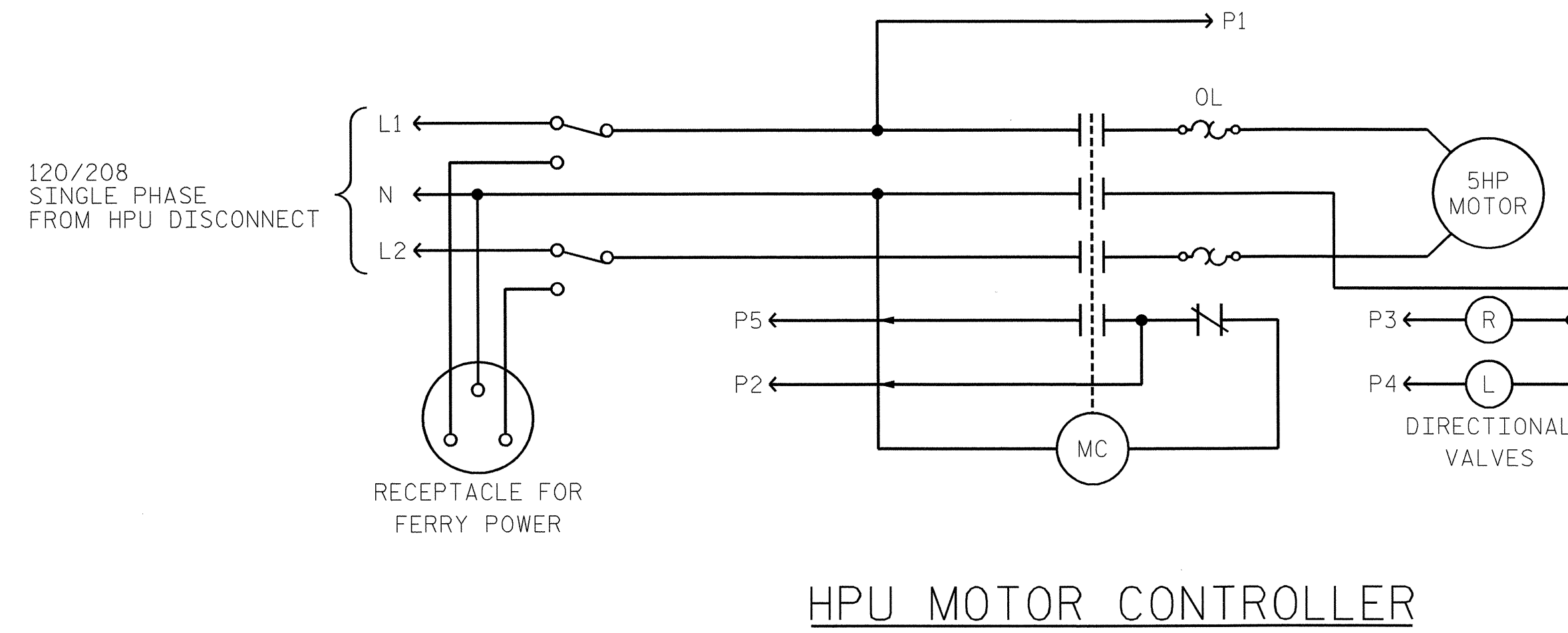
**CHERRY BRANCH  
 FERRY RAMP  
 ELECTRICAL LAYOUT**

**MODJESKI and MASTERS**  
 Experience great bridges.  
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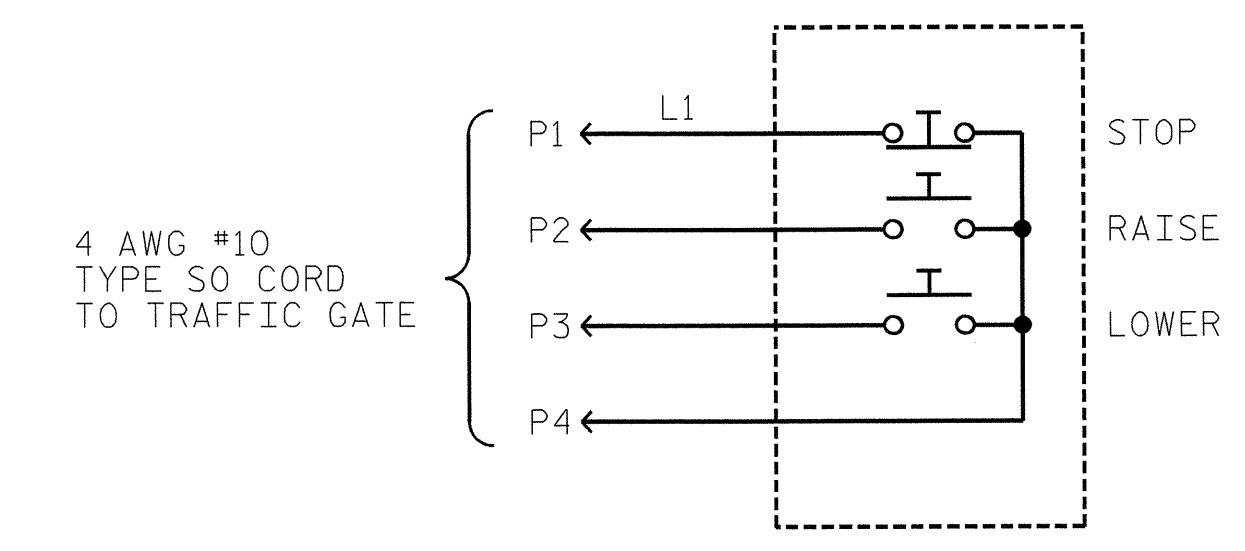
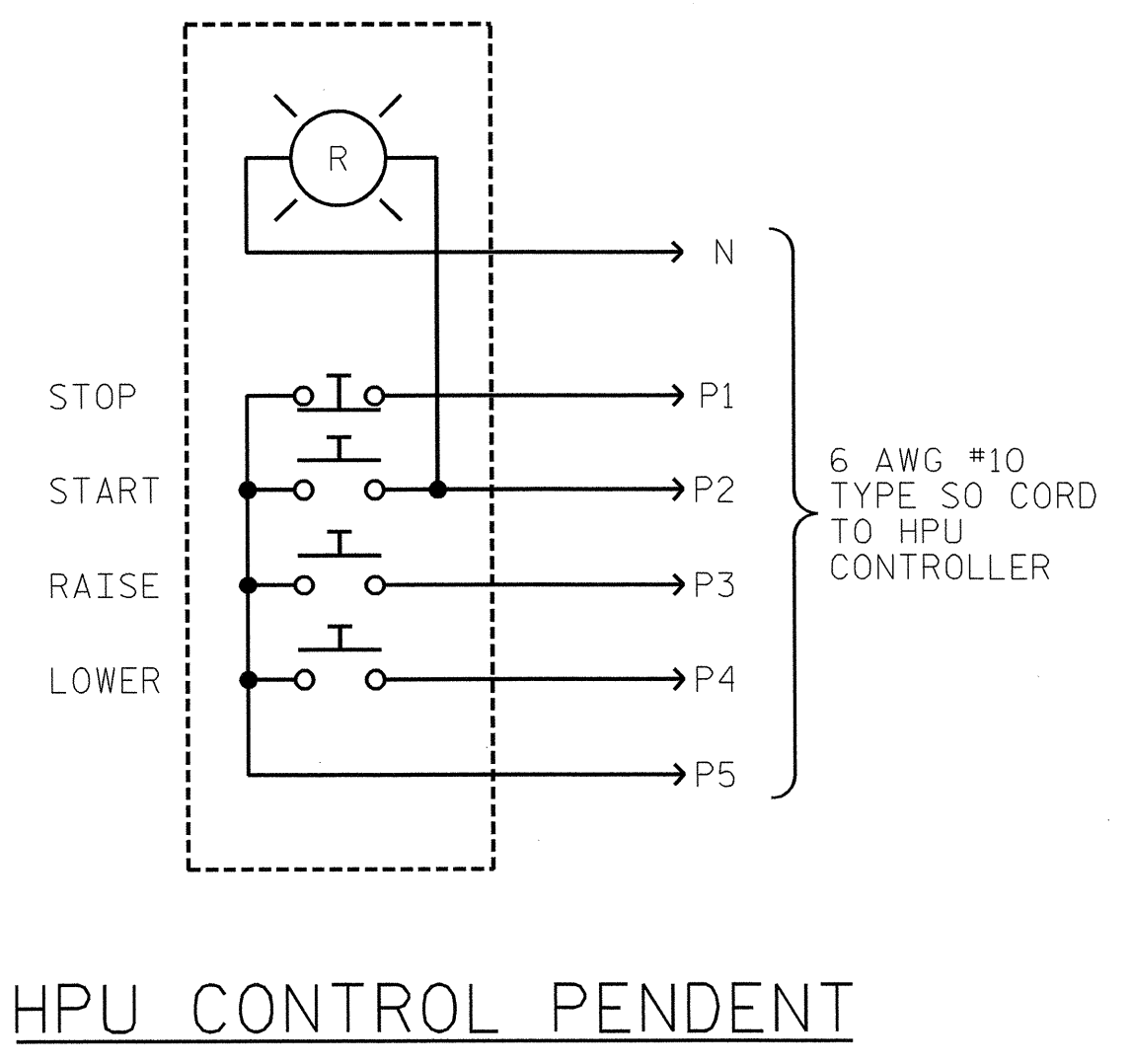


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-1
1			3			TOTAL SHEETS
2			4			4

DRAWN BY: EJP/JAB DATE: 6-27-12  
 CHECKED BY: LVB DATE: 6-27-12



CONTROLLER INSTALLED IN GATE HOUSING BY GATE MANUFACTURER  
CONTRACTOR AND MOTOR WIRING MAY VARY DEPENDING ON MOTOR SELECTED



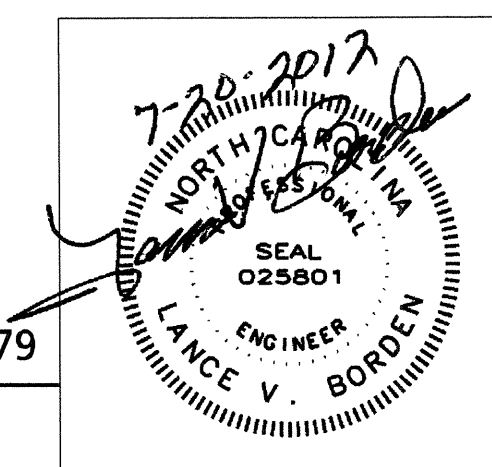
**NOTES:**  
1. FOR ADDITIONAL REQUIREMENTS, SEE SPECIFICATIONS.

PROJECT NO. F-5500  
CRAVEN COUNTY  
STATION: 10+00.00 -RPA-

SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CHERRY BRANCH FERRY RAMP ELECTRICAL WIRING DIAGRAM					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					E-2
TOTAL SHEETS					4

**MODJESKI and MASTERS**  
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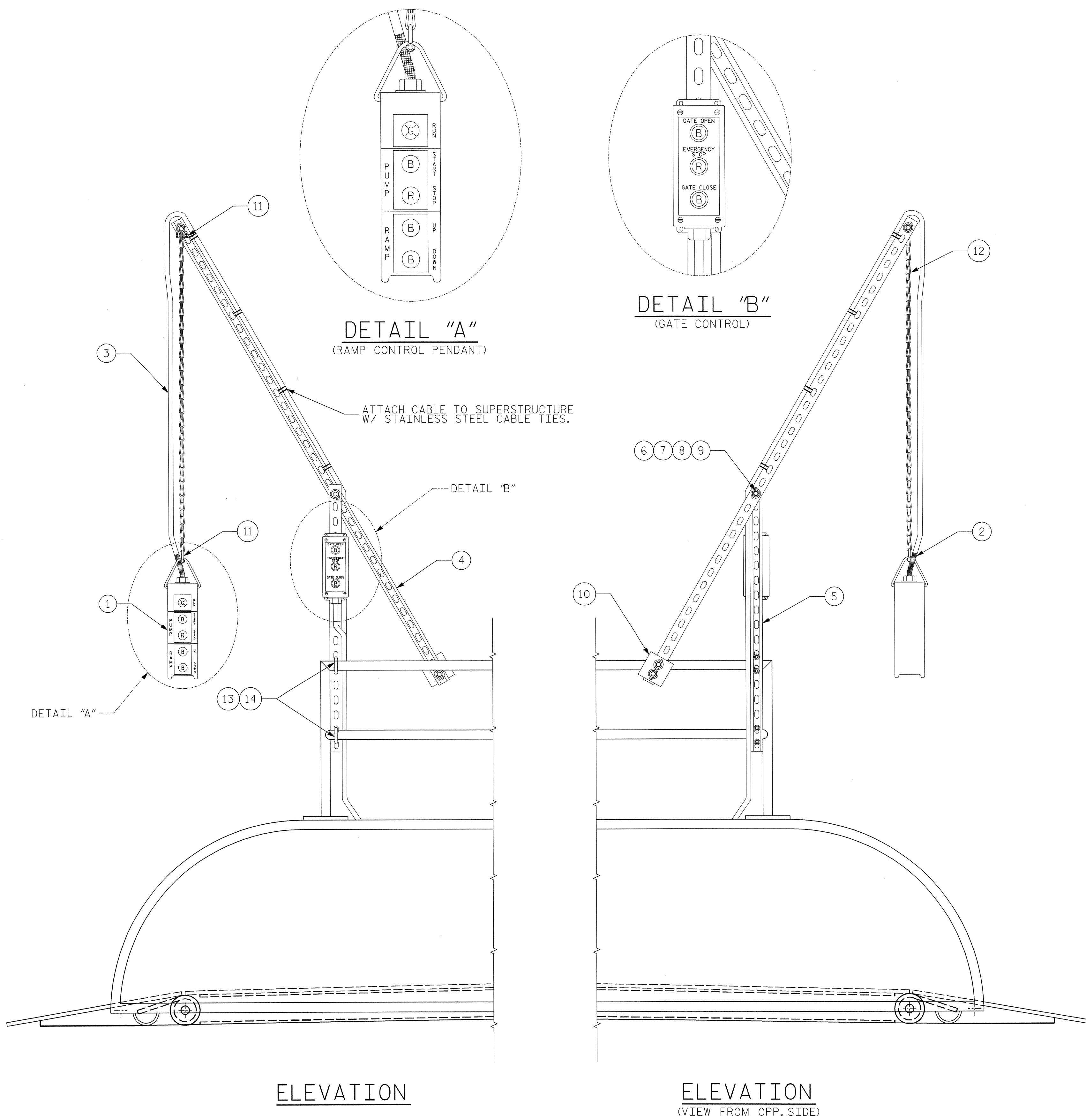


DRAWN BY: RLR DATE: 6-27-12  
CHECKED BY: LVB DATE: 6-27-12

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DWG NUMBER	TOTAL DWGS
E02	08





ELEVATION

ELEVATION  
(VIEW FROM OPP. SIDE)

BILL OF MATERIALS				
ITEM NO.	QUANTITY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	PENDANT STATION	SQUARE D	CLASS 9001
		NEMA 4X ENCLOSURE		TYPE SKYP4
	1	LEGEND PLATE (CUSTOM)	SQUARE D	CLASS 9001
		RAMP - UP-DOWN		TYPE SKN299
	1	LEGEND PLATE (CUSTOM)	SQUARE D	CLASS 9001
		PUMP - START - STOP		TYPE SKN299
	1	LEGEND PLATE	SQUARE D	CLASS 9001
		RUN		TYPE SKN124
	1	PILOT LIGHT (LED)	SQUARE D	CLASS 9001
		GREEN		TYPE SKP38LGG9
	1	OPERATOR	SQUARE D	CLASS 9001
		PUSH BUTTON		TYPE SKRU-1
	3	RUBBER BOOT	SQUARE D	CLASS 9001
		BLACK		TYPE KU-1
1	RUBBER BOOT	SQUARE D	CLASS 9001	
	RED		TYPE KU-2	
1	OPERATOR	SQUARE D	CLASS 9001	
	PUSH BUTTON		TYPE SKRU-10	
2	1	KELLEMS DELUXE LIQUID-TIGHT CORD GRIP	KELLEMS	07401017
3	12 TO 16 FT.	FLEXIBLE CABLE	A.I.W. CORP	16awg-10c-SOOW
		10 CONDUCTOR - 16awg		
4	5 TO 6 FT.	STAINLESS-STEEL SUPERSTRUT	THOMAS & BETTS	A-1200-HS-SS
		12 GA. 1-5/8" X 13/16"		
5	3 FT.	STAINLESS-STEEL SUPERSTRUT	THOMAS & BETTS	A-1200-HS-SS
		12 GA. 1-5/8" X 13/16"		
6	3 IN.	STAINLESS STEEL PIPE	VARIOUS	N/A
		1/2" IP (CONDUIT OR PIPE)		
7	4 IN.	STAINLESS STEEL PIPE	VARIOUS	N/A
		1/2" IP (CONDUIT OR PIPE)		
8	10 IN.	THREADED ROD	VARIOUS	N/A
		5/8" X 11		
9	4	HEX NUT	VARIOUS	N/A
		5/8" X 11		
10	12 LBS.	WEIGHT - COUNTERBALANCE	CUT TO SUIT, DRILL AND TAP	LEAD
		3.5" X 3.5" X 2.5" OF LEAD (APPROX.)	TWO 5/16" MOUNTING HOLES	INGOT
11	2	SHACKLE	VARIOUS	N/A
		1/4" GALVAIZED		
12	2 TO 3 FT.	CHAIN	VARIOUS	3601T38
		SAFE AND REGISTER		(MCMaster-CARR)
13	1 PACKAGE	STAINLESS STEEL U-BOLTS	VARIOUS	8896T56
		3/8"-16 FOR 1" PIPE		(MCMaster-CARR)
14	1 PACKAGE	STAINLESS STEEL FENDER WASHERS	VARIOUS	90313A114
		3/8" X 1-1/4" OD		(MCMaster-CARR)

**NOTE:**  
 - BILL OF MATERIALS IS NOT ALL INCLUSIVE. ADDITIONAL HARDWARE AND/OR COMPONENTS MAY BE REQUIRED. CONTRACTOR TO VERIFY ALL COMPONENTS AND DIMENSIONS.  
 - GATE CONTROL ENCLOSURE SHALL BE A NEMA 4X STAINLESS STEEL ENCLOSURE. ALL CONDUIT CONNECTIONS SHALL BE LIQUID TIGHT AND CONNECTED TO THE BOTTOM OF THE ENCLOSURE.  
 - ALL HARDWARE SHALL BE STAINLESS STEEL.

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

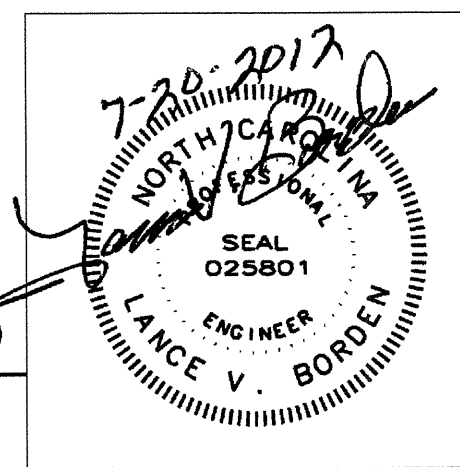
SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

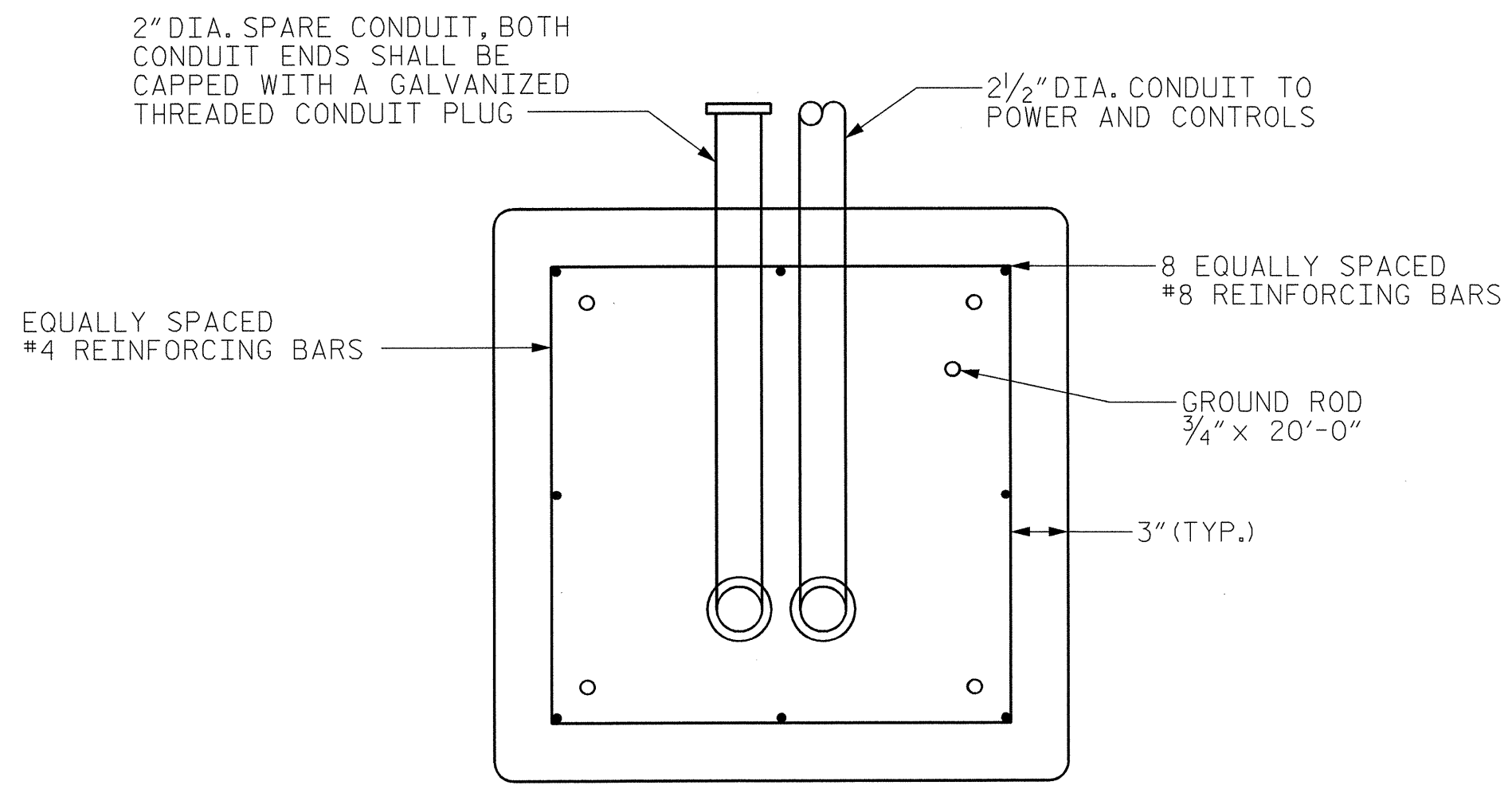
CHERRY BRANCH  
 FERRY RAMP  
 CONTROL  
 PENDANT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-3
1			3			TOTAL SHEETS
2			4			4

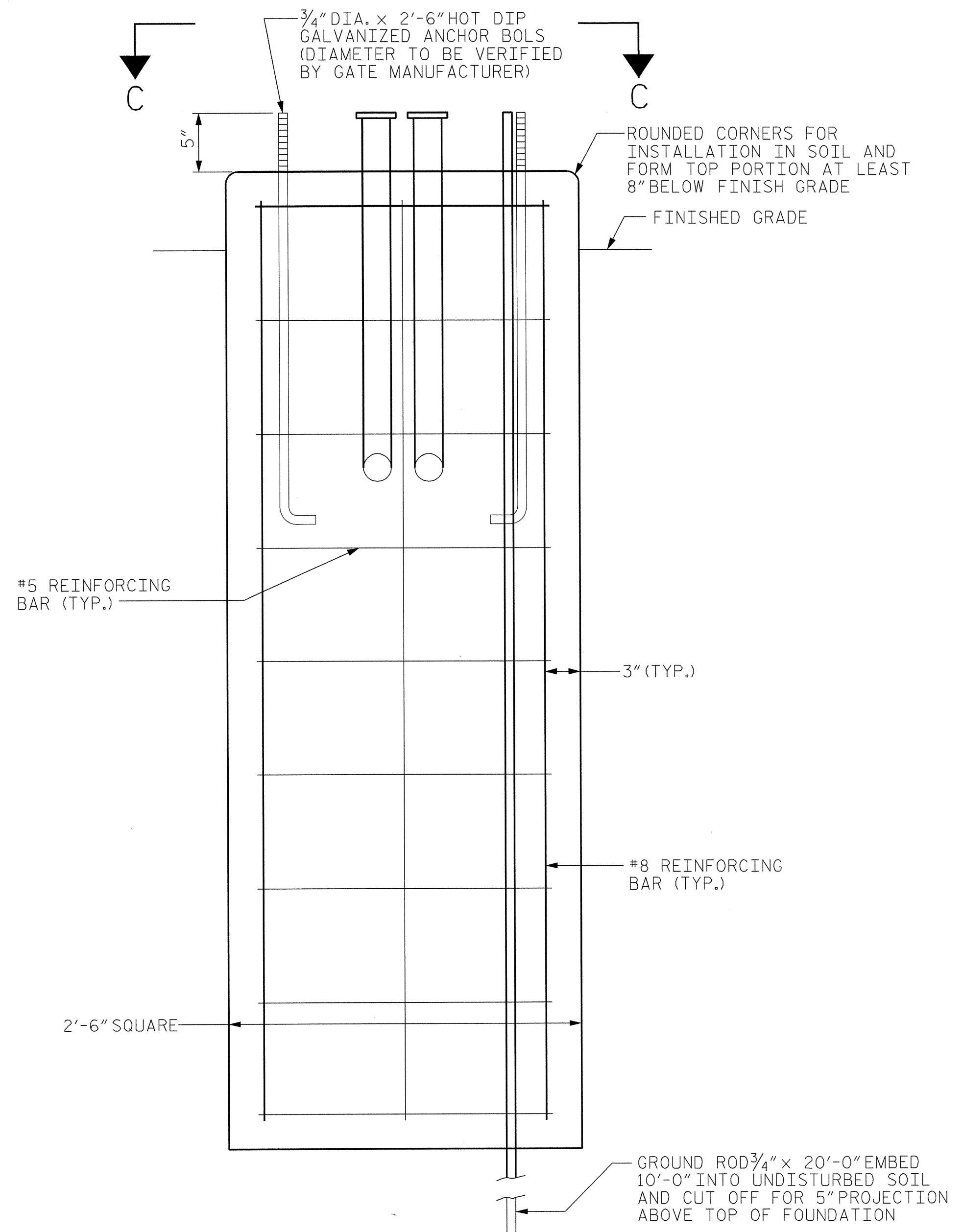
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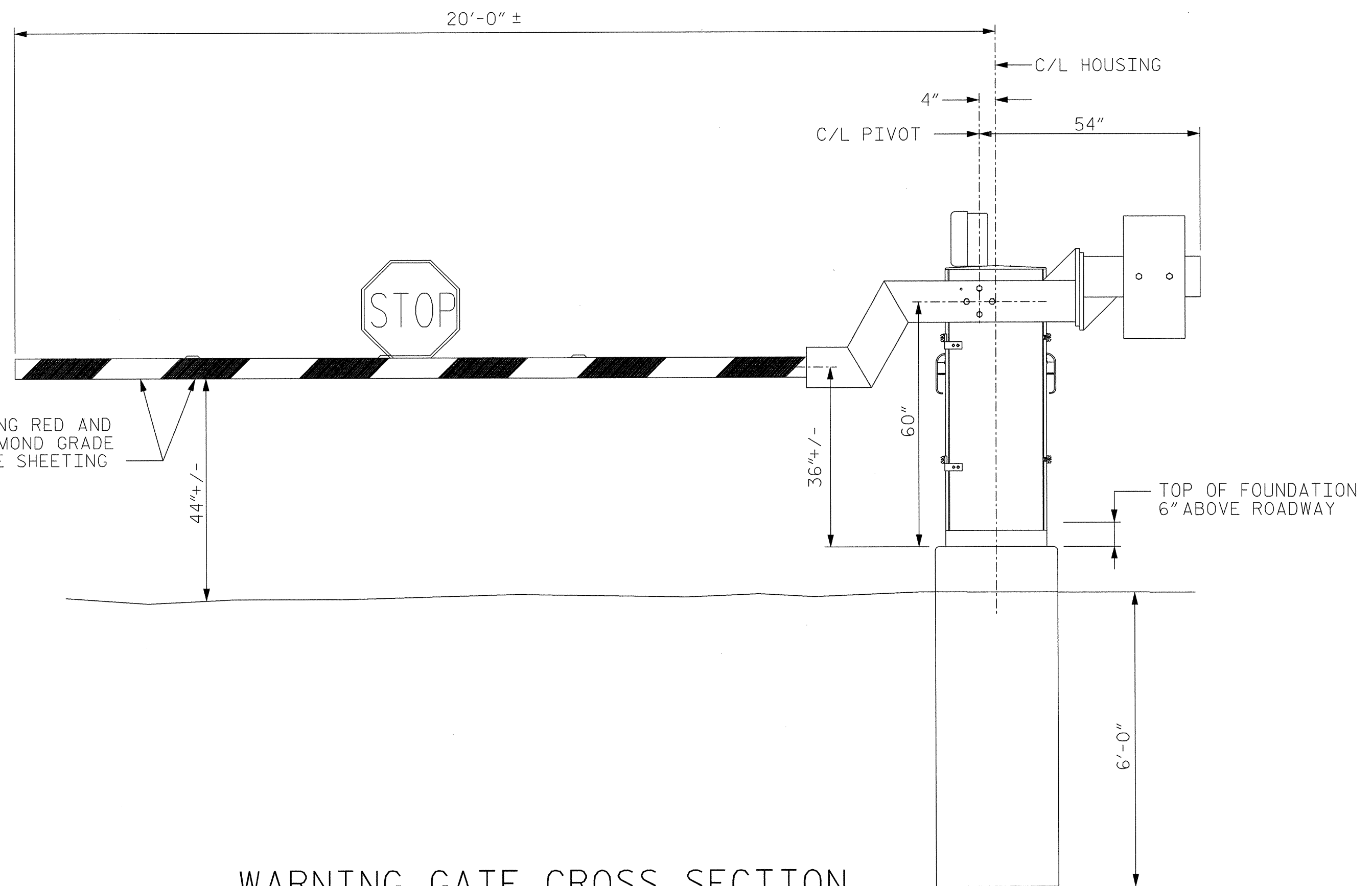
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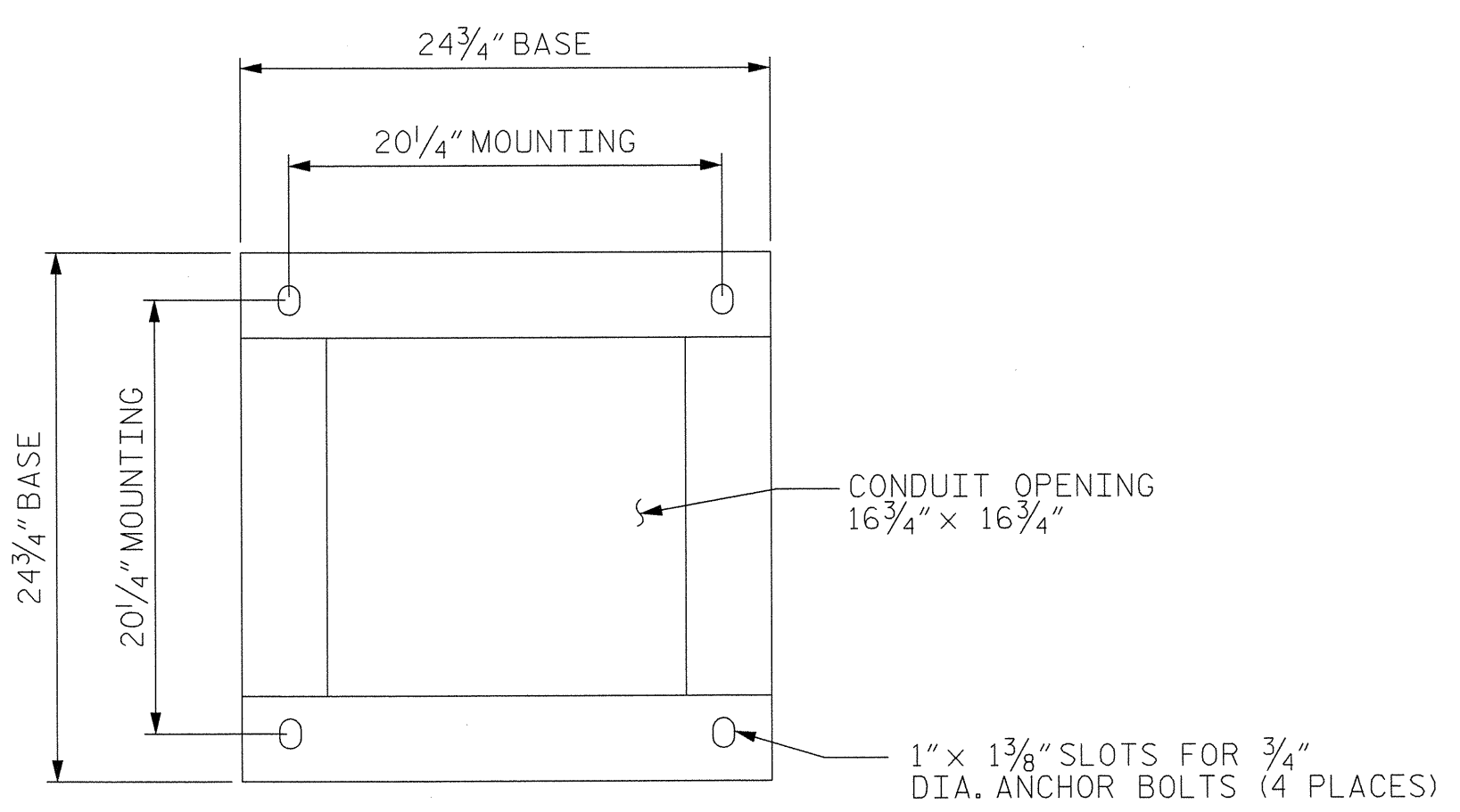
VIEW A-A



FOUNDATION DETAIL



WARNING GATE CROSS SECTION



MOUNTING BASE

PROJECT NO. F-5500  
 CRAVEN COUNTY  
 STATION: 10+00.00 -RP-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

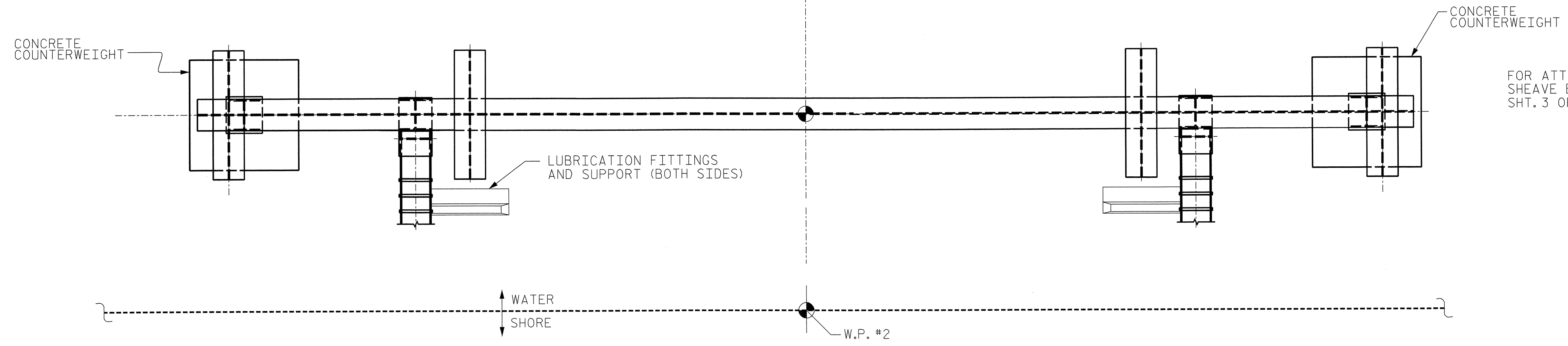
CHERRY BRANCH  
 FERRY RAMP  
 WARNING GATE

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7-20-2012  
 SEAL 025801  
 ENGINEER  
 LANCE V. BORTEN

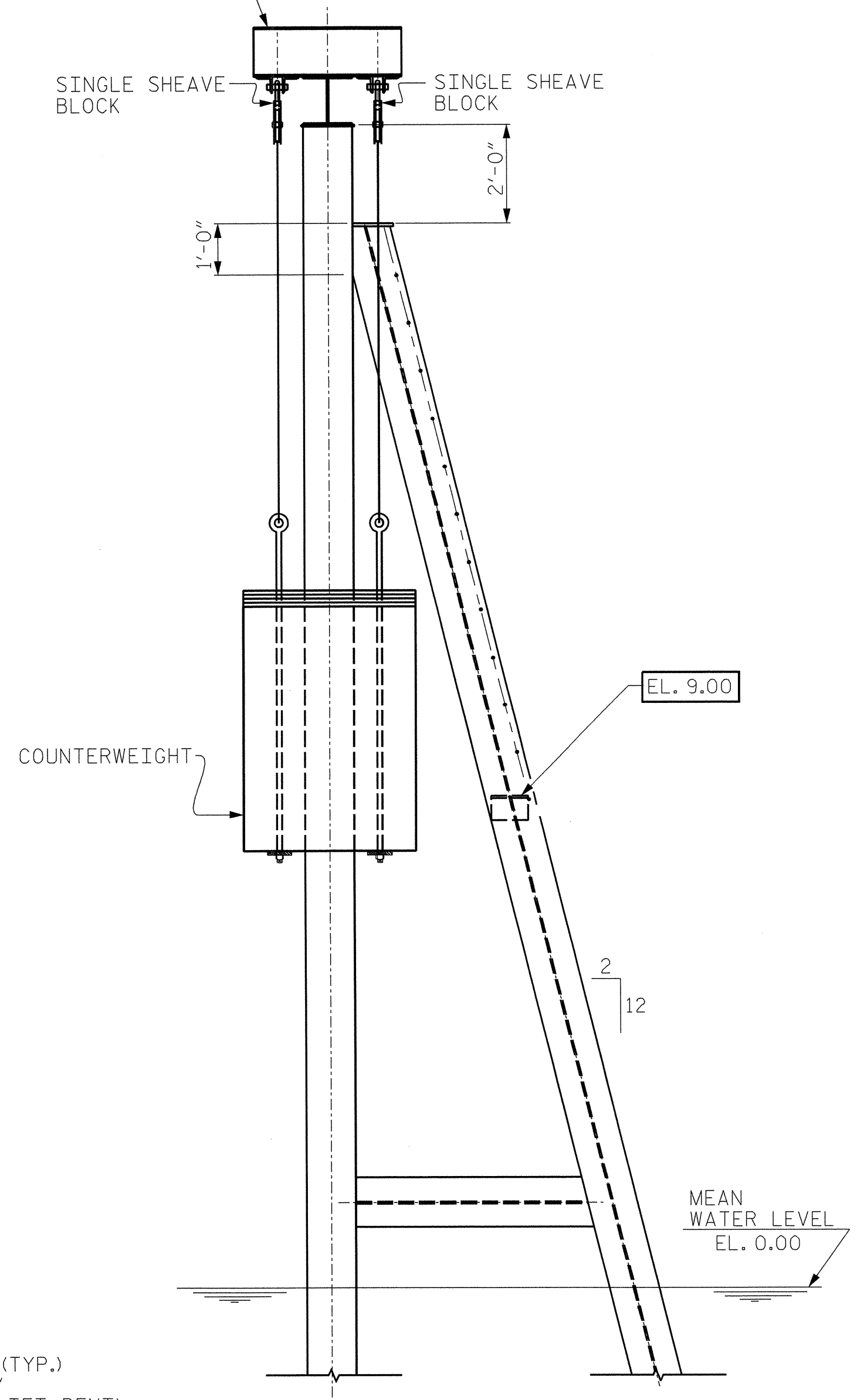
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			E-4
2			4			4

DRAWN BY: JAB/EJP DATE: 6-27-12  
 CHECKED BY: LVB DATE: 6-27-12

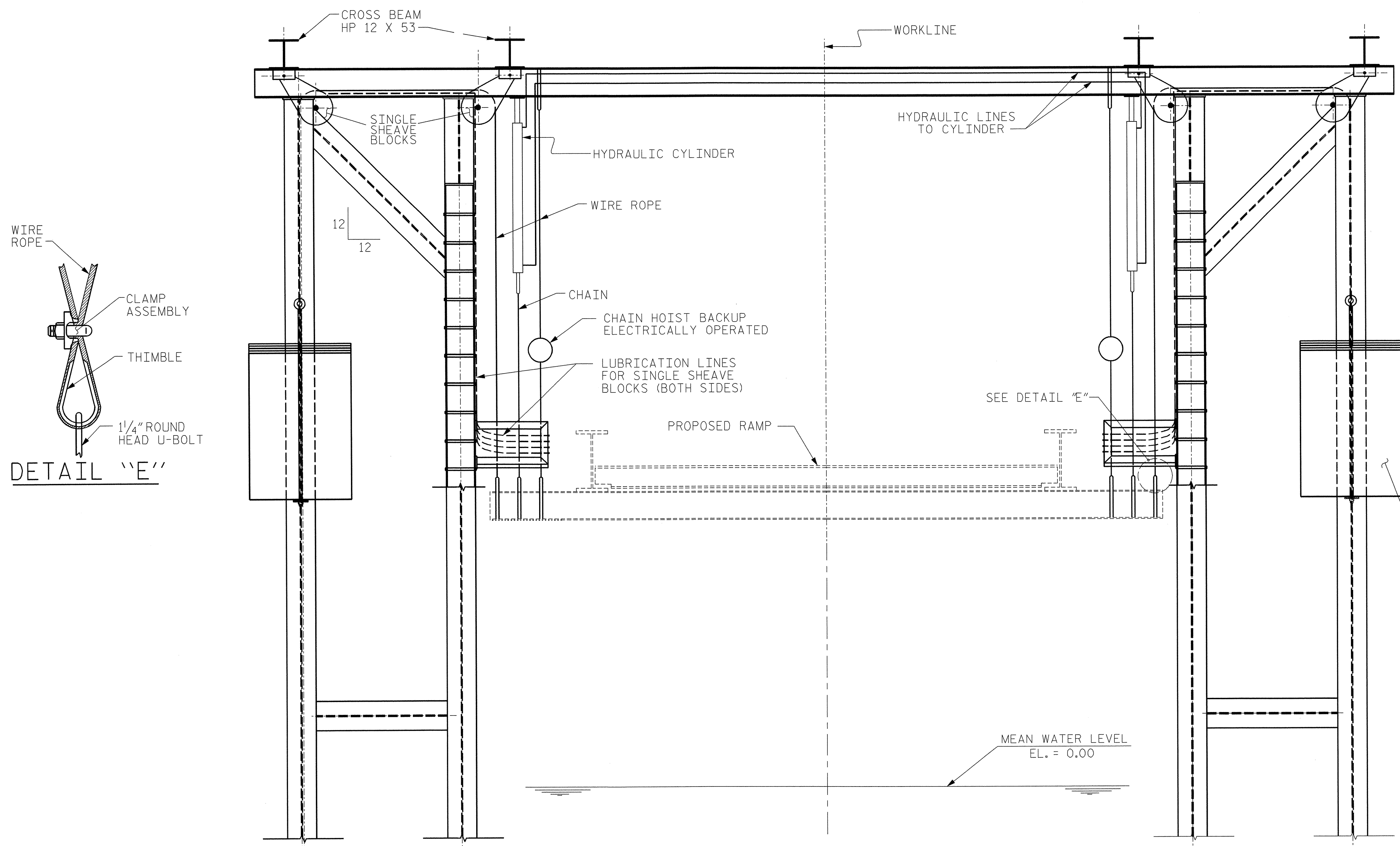


PLAN

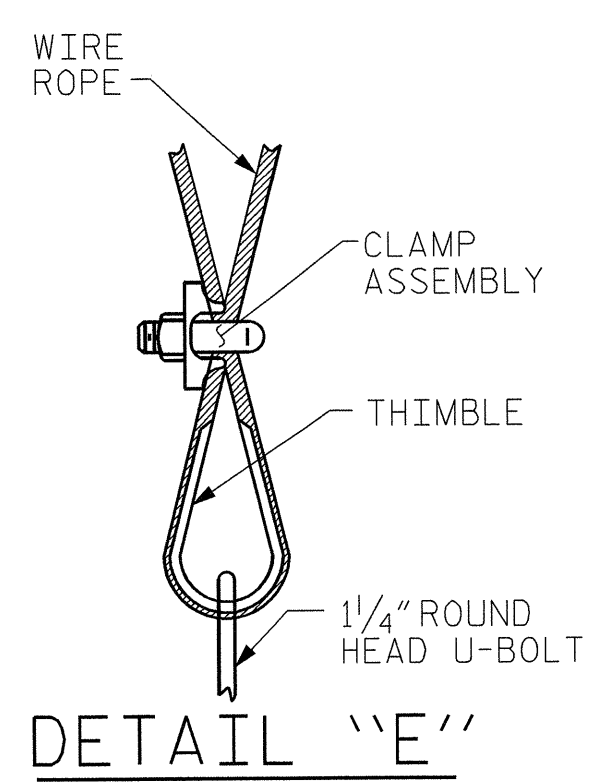
FOR ATTACHMENT OF SINGLE SHEAVE BLOCKS (SEE DETAIL "B" SHT. 3 OF 4 OF LIFT BENT)



VIEW A-A



ELEVATION  
(VIEW FROM WATER)



PROJECT NO. F-5500  
 CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

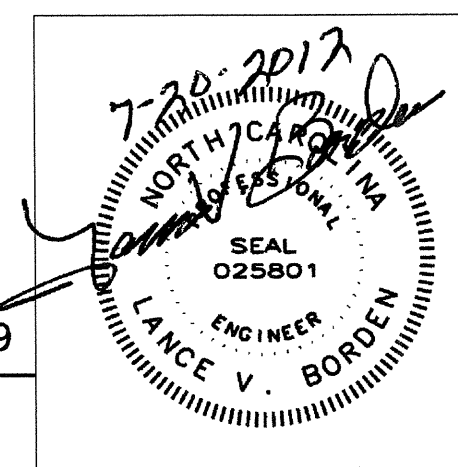
SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**CHERRY BRANCH  
 FERRY RAMP  
 MECHANICAL LAYOUT**

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DWG NUMBER	TOTAL DWGS
M01	08



DRAWN BY: EJP/JAB DATE: 6-27-12  
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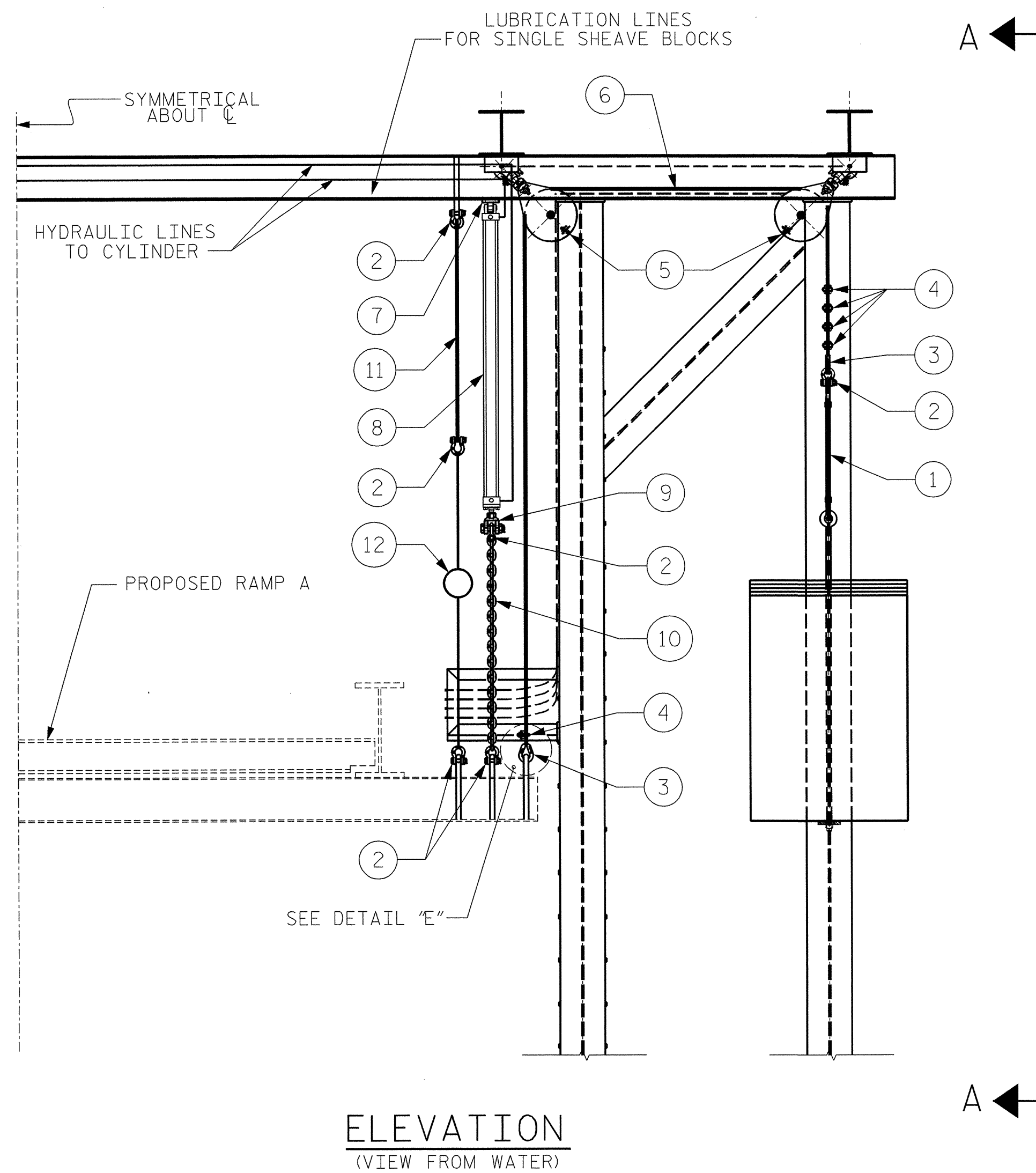
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-1
1			3			TOTAL SHEETS
2			4			4

BILL OF MATERIALS			
ITEM NO.	QUANTITY	DESCRIPTION	MATERIAL/MODEL NUMBER
1	4	JAW AND EYE TURNBUCKLE, 1" THREAD WITH 24" TAKE UP BY CROSBY	STOCK NUMBER HG-227, MODEL NUMBER 1032233
2	14	BOLT TYPE ANCHOR SHACKLE, 3/4" SIZE BY CROSBY	STOCK NUMBER G-2130, MODEL NUMBER 1019515
3	6	WIRE ROPE THIMBLE, 3/4" SIZE BY CROSBY	STOCK NUMBER G-414, MODEL 1037773
4	18	FORGED WIRE ROPE CLIPS, 3/4" SIZE BY CROSBY (MINIMUM 4 PER WIRE ROPE END)	STOCK NUMBER G-450, MODEL 1010195
5	8	SINGLE SHEAVE BLOCK WITH BRONZE BUSHINGS, 3/4" WIRE ROPE AND 14" DIAMETER BY MCKISSICK	MODEL 419 SHACKLE (STOCK NO. 109527)
6	2	LENGTHS OF GALVANIZED 3/4" IWRC WIRE ROPE 6X19 CLASSIFICATION WITH MINIMUM STRENGTH 46,000 LBS	IMPROVED PLOW STEEL

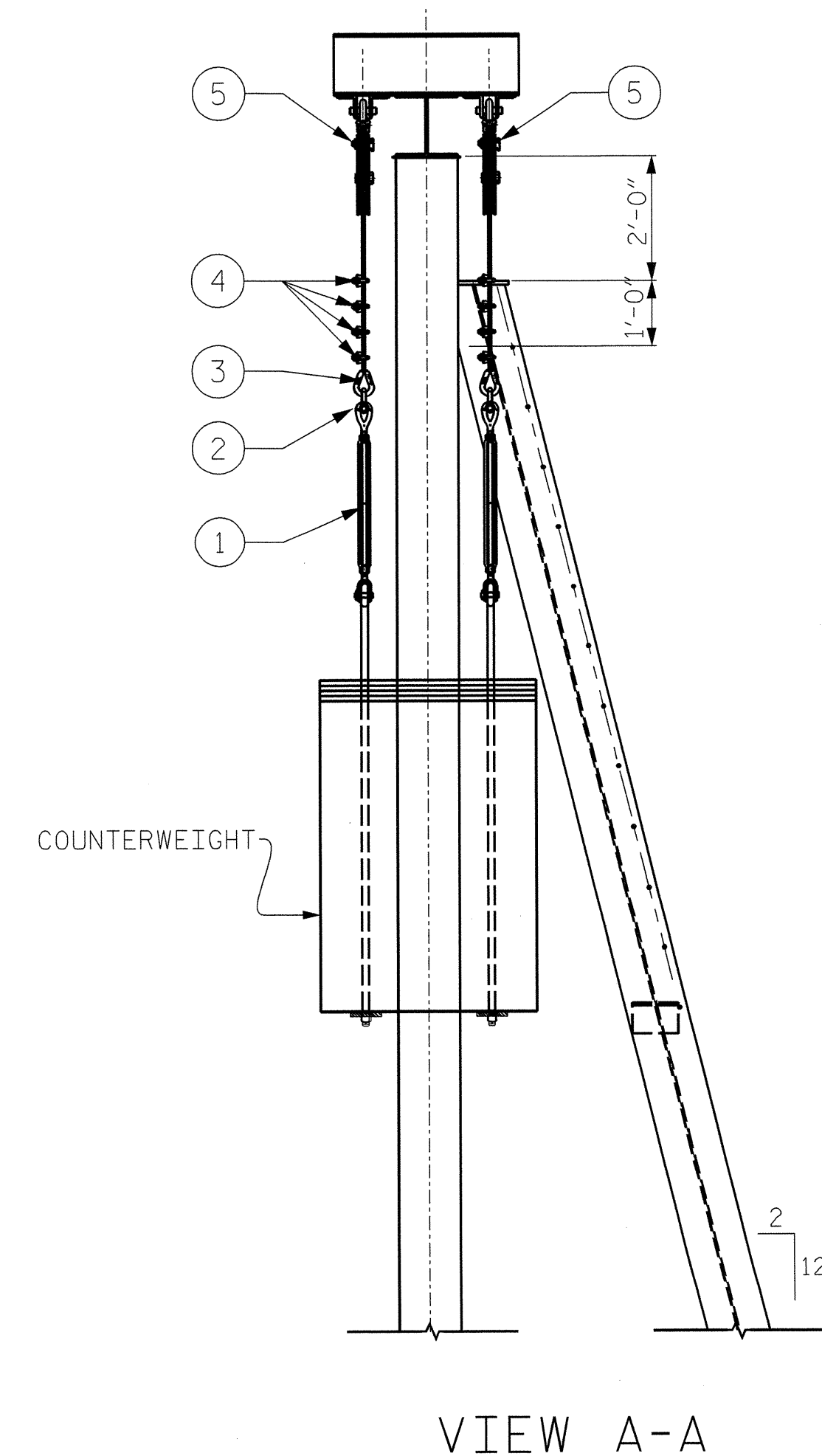
BILL OF MATERIALS			
ITEM NO.	QUANTITY	DESCRIPTION	MATERIAL/MODEL NUMBER
7	2	HYDRAULIC CYLINDER EYE BRACKET AND PIN BY PARKER	EYE BRACKET - PN0938700000 PIN - PN0938840000
8	2	HYDRAULIC CYLINDER WITH 3.25" BORE, 72" STROKE BY PARKER	MODEL NUMBER 3.25 $\phi$ -CBB SHLU 18ACx72.000
9	2	SS ROD CLEVIS, 1-1/4 - 12, (W/ STAINLESS STEEL PIN, 1-3/8" DIA x 4.13", WASHERS AND COTTER PINS) BY PARKER	CLEVIS BRACKET - PN0938780000 PIN - PN0938850000
10	2	LENGTHS OF 3/4" SIZE ALLOY CHAIN BY CROSBY	GRADE 100, SPECTRUM 10 ALLOY CHAIN
11	2	MECHANICALLY SPLICED SLING OF 3/4" IWRC 6X19 CLASSIFICATION WIRE ROPE	IMPROVED PLOW STEEL
12	2	ELECTRIC CHAIN HOIST, 115V, 2 TON, 10 FT. LIFT @ 8 FPM BY DAYTON (BACKUP)	MODEL NUMBER 2GXH6

**NOTE:**

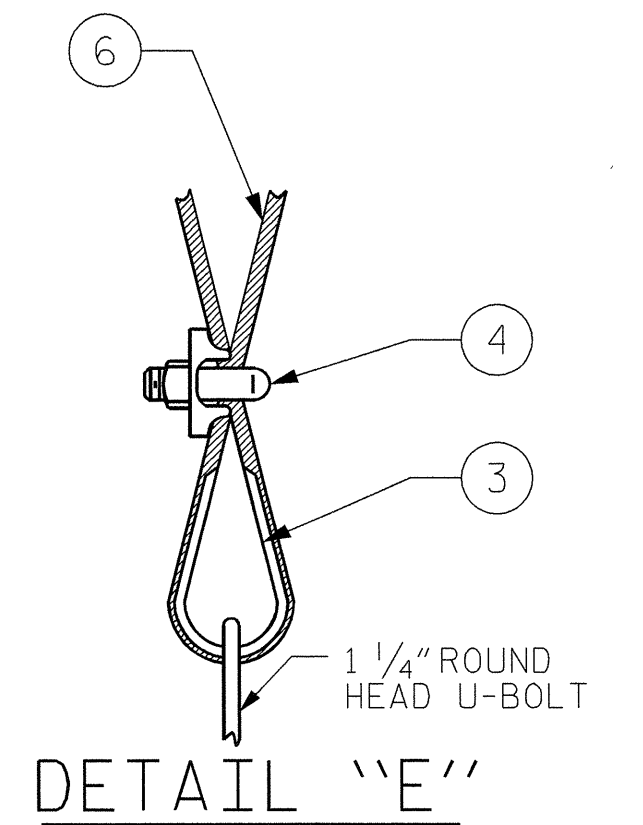
- ALL ITEMS TO BE CONFIRMED BY CONTRACTOR AS SUITABLE BEFORE PURCHASE. STOCK AND MODEL NUMBERS ARE LISTED AS REFERENCE AND ARE NOT GUARANTEED TO BE CURRENT OR CORRECT. CONTRACTOR TO VERIFY ALL COMPONENTS AND DIMENSIONS



**ELEVATION**  
(VIEW FROM WATER)



**VIEW A-A**



**DETAIL "E"**

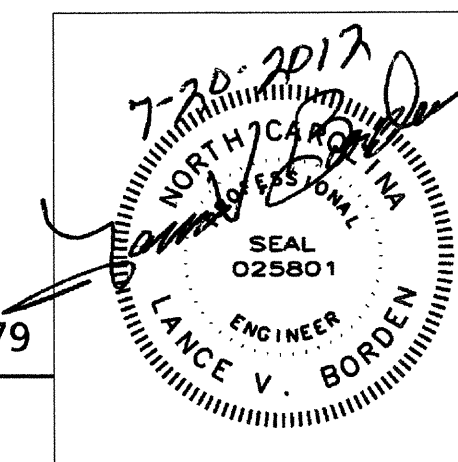
PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CHERRY BRANCH  
 FERRY RAMP  
 RAMP LIFT SYSTEM

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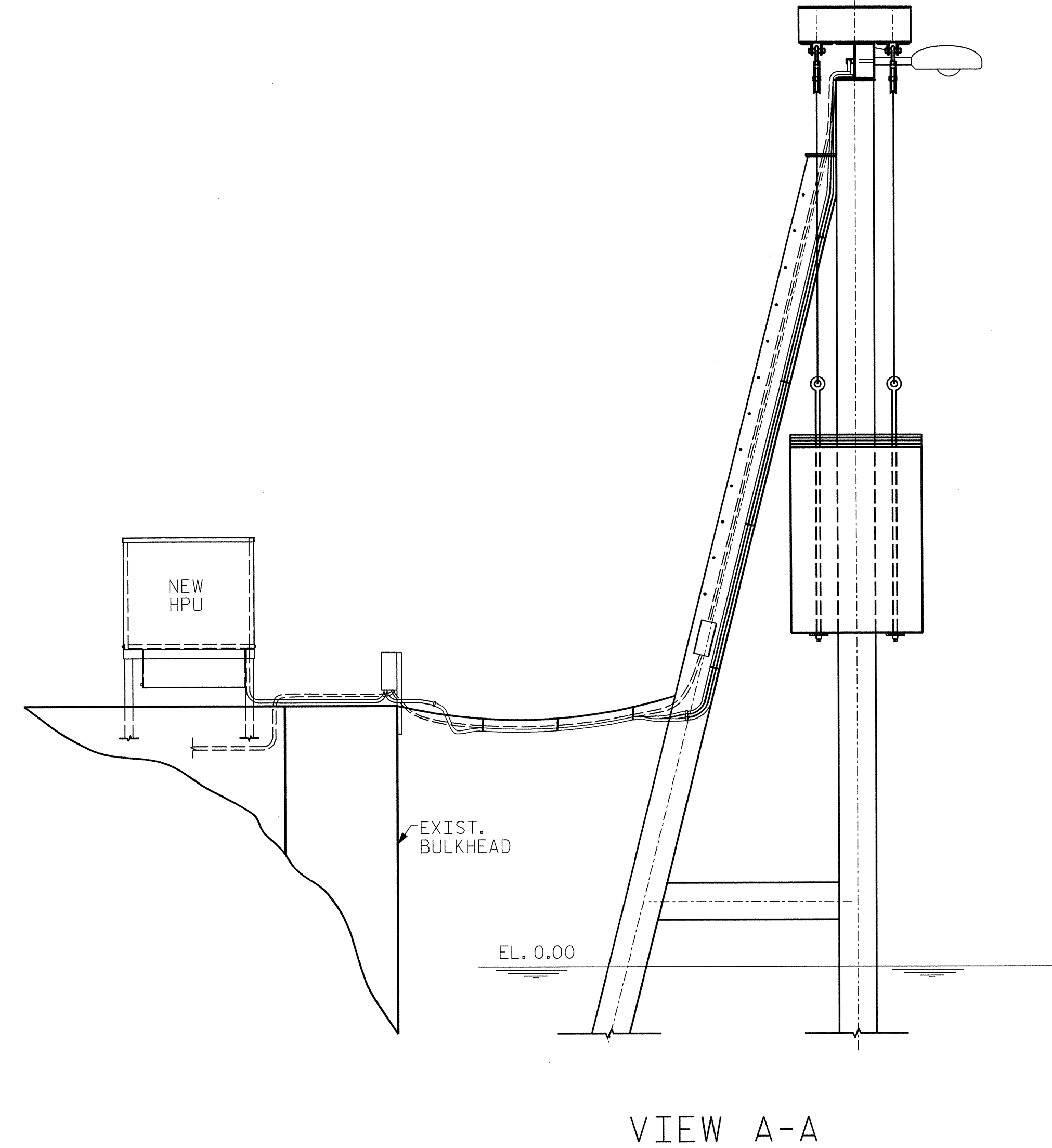
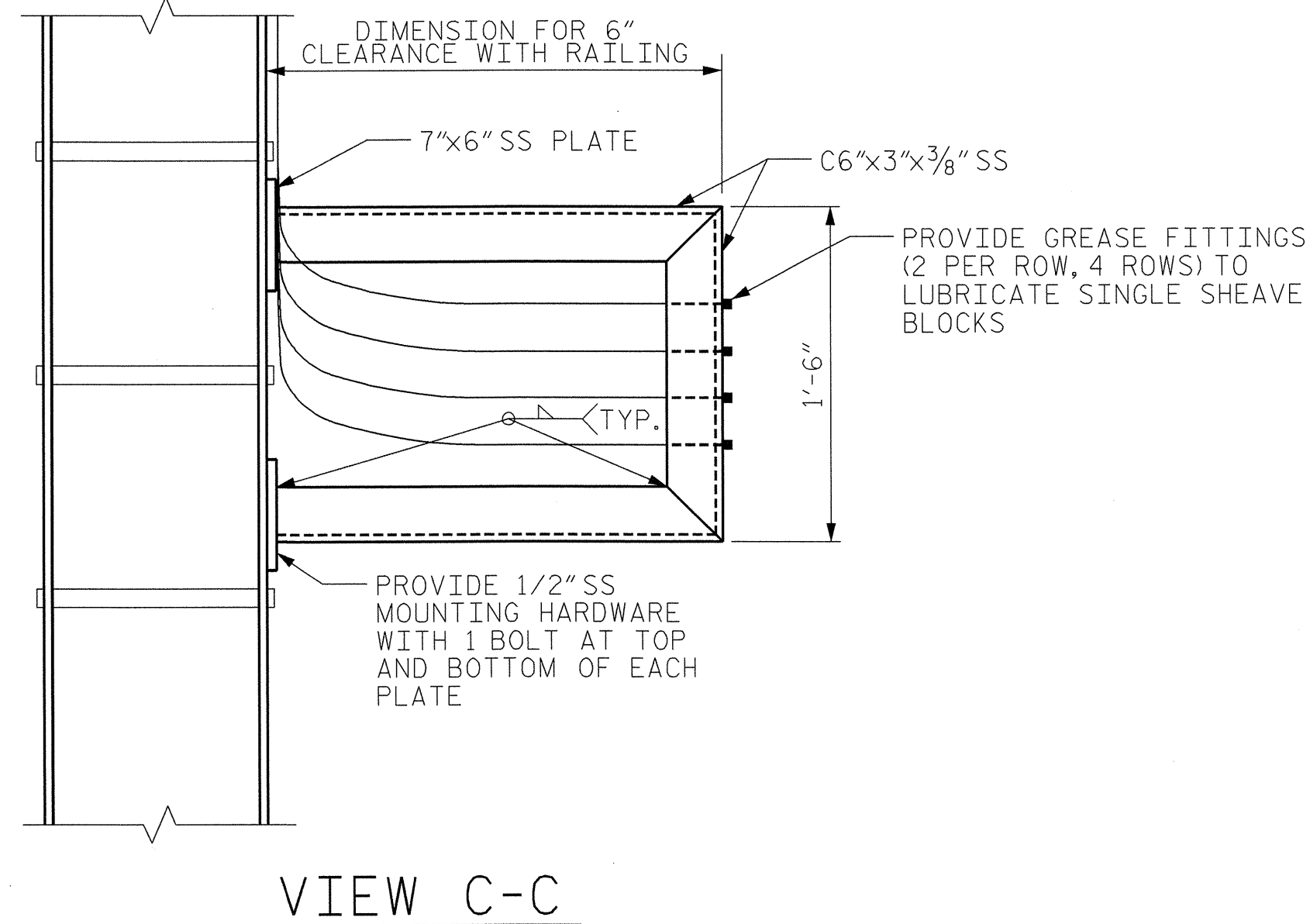
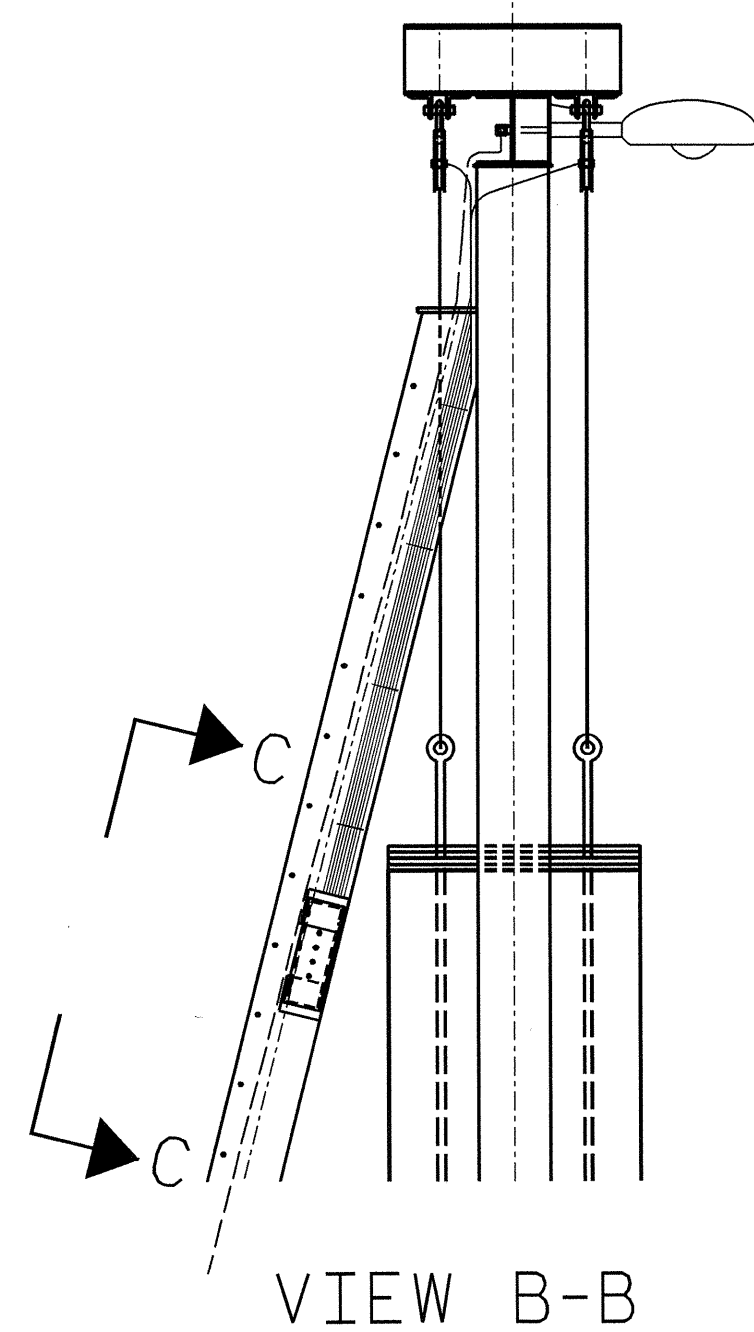


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 CHECKED BY: DMB DATE: 6-27-12

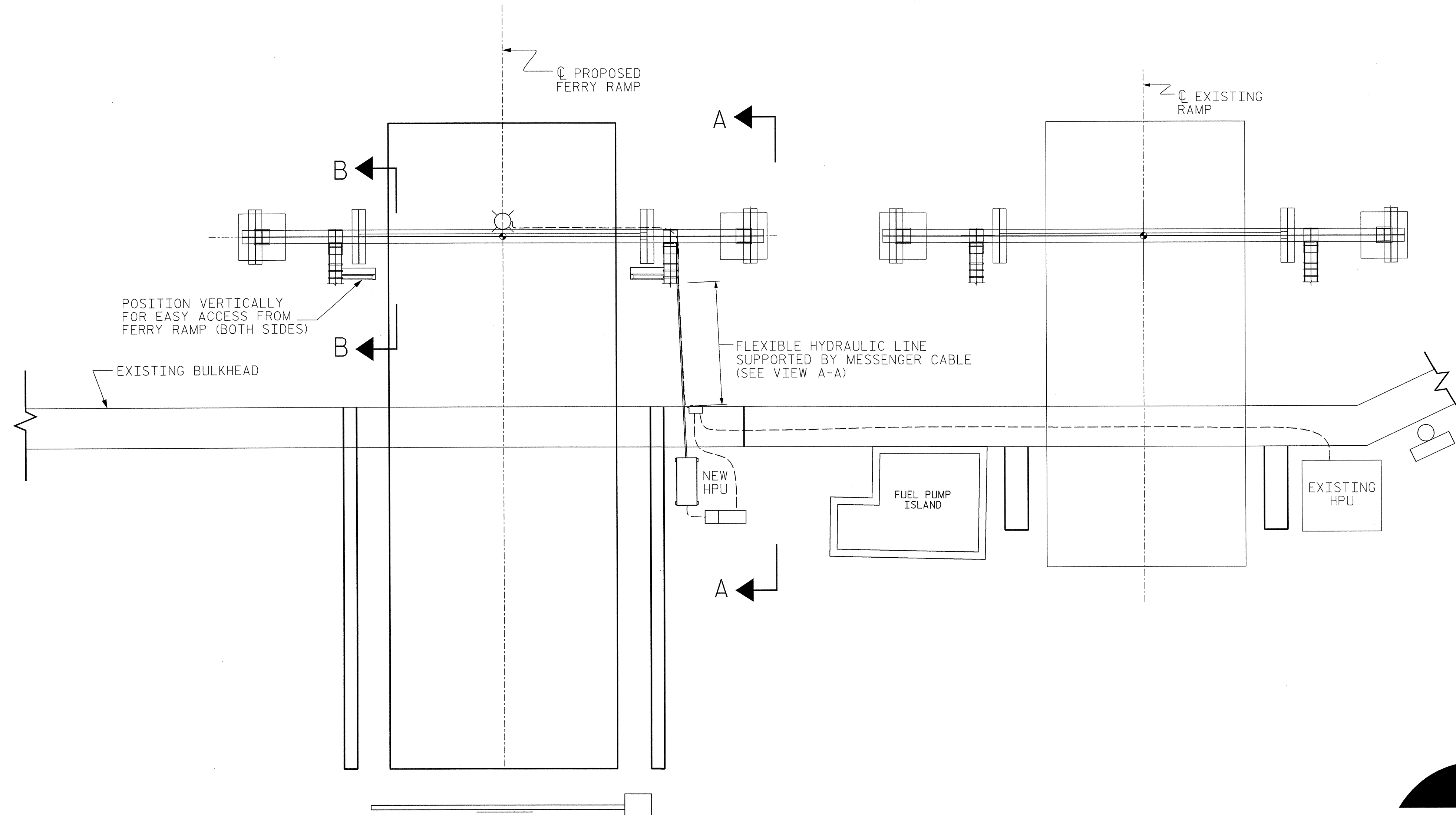
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DWG NUMBER	TOTAL DWGS
M02	08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			M-2
2			4			4



- NOTES:
- GREASE LINES HAVE STAINLESS STEEL BRAIDED FLEXIBLE LINES AT FITTING CONNECTION AND AT SINGLE SHEAVE BLOCK CONNECTION.
  - REMAINDER OF GREASE LINES SHALL BE STAINLESS STEEL TUBING RIGIDLY CLAMPED TO STRUCTURE AT LEAST EVERY 2 FT. WITH ALL STAINLESS STEEL HARDWARE

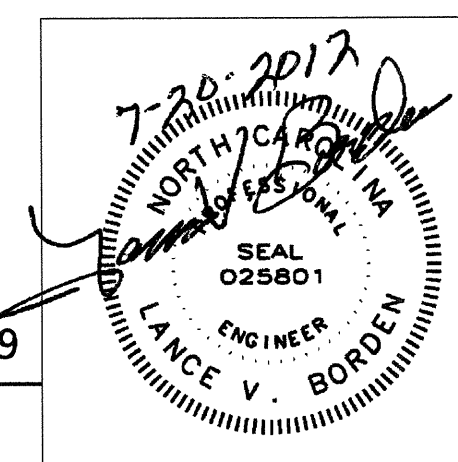


PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RP-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

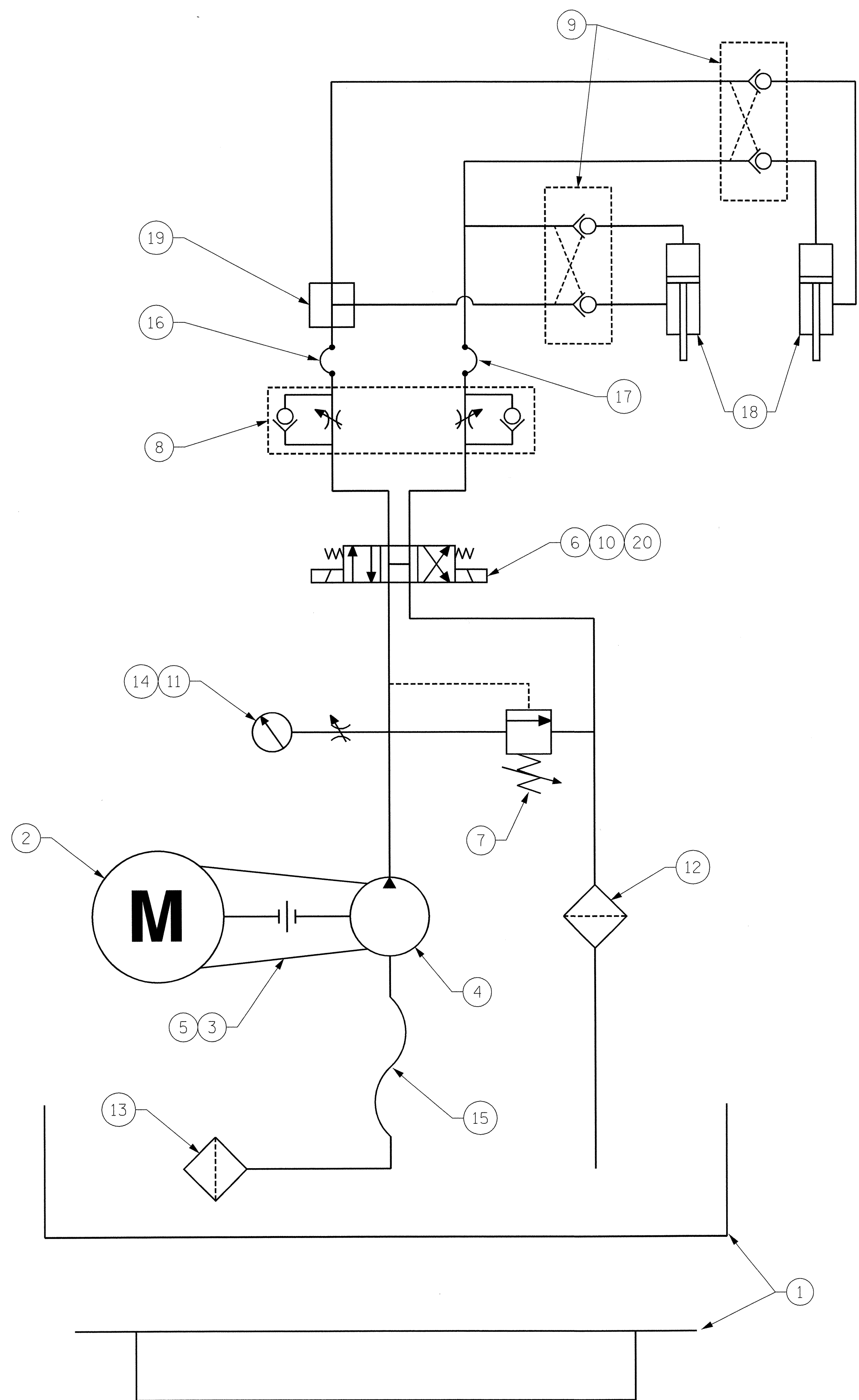
CHERRY BRANCH  
 FERRY RAMP  
 HYDRAULIC AND  
 LUBRICATION LINES



DRAWN BY: JAB/EJP DATE: 6-27-12  
 CHECKED BY: DMB DATE: 6-27-12

DWG NUMBER: M03 TOTAL DWGS: 08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-3
1			3			TOTAL SHEETS
2			4			4



BILL OF MATERIALS			
ITEM NO.	QUANTITY	DESCRIPTION	MATERIAL/MODEL NUMBER
1	1	30 GALLON RESERVOIR BY HPU MANUFACTURER	---
2	1	ELECTRIC MOTOR BY BALDOR	5HP, 1800 RPM, TEFC, 208.60/10, 184 TC
3	1	MOTOR TO PUMP ADAPTOR BY VESCOR	1960 P/M ADAPTOR 184 TC x SAE 2A-5.0
4	1	FIXED DISPLACEMENT UNIDIRECTIONAL SELF-PRIMING EXTERNAL GEAR PUMP BY BOSCH-REXROTH	AZPF-016RRR12MB
5	1	MOTOR TO PUMP ADAPTOR COUPLING BY MAGNALOY	M200 3/4-3/16 x 1-1/8 - 1/4
6	1	SINGLE STATION MANIFOLD BY HPU MANUFACTURER	---
7	1	RELIEF VALVE BY SUN	RDDA-LAN
8	1	DUAL FLOW CONTROL BY SUN	NCCB-KCN
9	2	PILOT OPERATED CHECK VALVES BY SUN	CKCB-XCN
10	1	SOLENOID OPERATED DIRECTIONAL VALVE BY BOSCH REXROTH	4WE6H6X/W110N9
11	1	2 1/2", 3,000 PSI, 1/4" BOTTOM MOUNT PRESSURE GAGE BY WIKA	213.40
12	1	MEDIUM PRESSURE 10 MICRON RETURN LINE FILTER WITH 3 PSI BYPASS BY DONALDSON COMPANY, INC.	P164378 FILTER WITH P166416 HEAD
13	1	SUCTION STRAINER WITH 3 PSI RELIEF VALVE BY DONALDSON COMPANY, INC.	P173912
14	1	GAGE SNUBBER BY SUN	NSAB-KXV-BA
15	1	1/2" INSIDE DIAMETER TYPE AT-ISO 1436 TYPE 2AT EN 853 TYPE 2SN	381-8
16	1	4,250 PSI HOSE BY PARKER	
17	1		
18	2	HYDRAULIC CYLINDER	SEE "RAMP LIFT SYSTEM" DRAWING FOR DETAILS
19	1	FLOW INTEGRATOR BY BRAND	B300-1/2

NOTES:  
 - ITEM #19 TO BE INSTALLED ON THE RETURN LINE FROM CYLINDERS.  
 - ITEM #1 INCLUDES 30 GAL. RESERVIOR, DRIP PAN, AND COVER.  
 (SEE "HYDRAULIC UNIT ENCLOSURE" DRAWING FOR ADDITIONAL DETAILS.)  
 - HYDRAULIC UNIT AND CYLINDER TO BE PAINTED MARINE ENAMEL.

PROJECT NO. F-5500  
CRAVEN COUNTY  
 STATION: 10+00.00 -RPA-

SHEET 4 OF 4

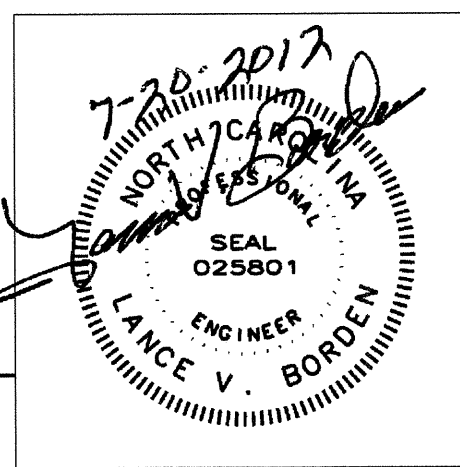
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CHERRY BRANCH  
 FERRY RAMP  
 HYRAULIC SCHEMATIC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			M-4
2			4			A

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DWG NUMBER: M04  
 TOTAL DWGS: 08



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 CHECKED BY: DMB DATE: 6-27-12

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## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0". EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINISHES AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN