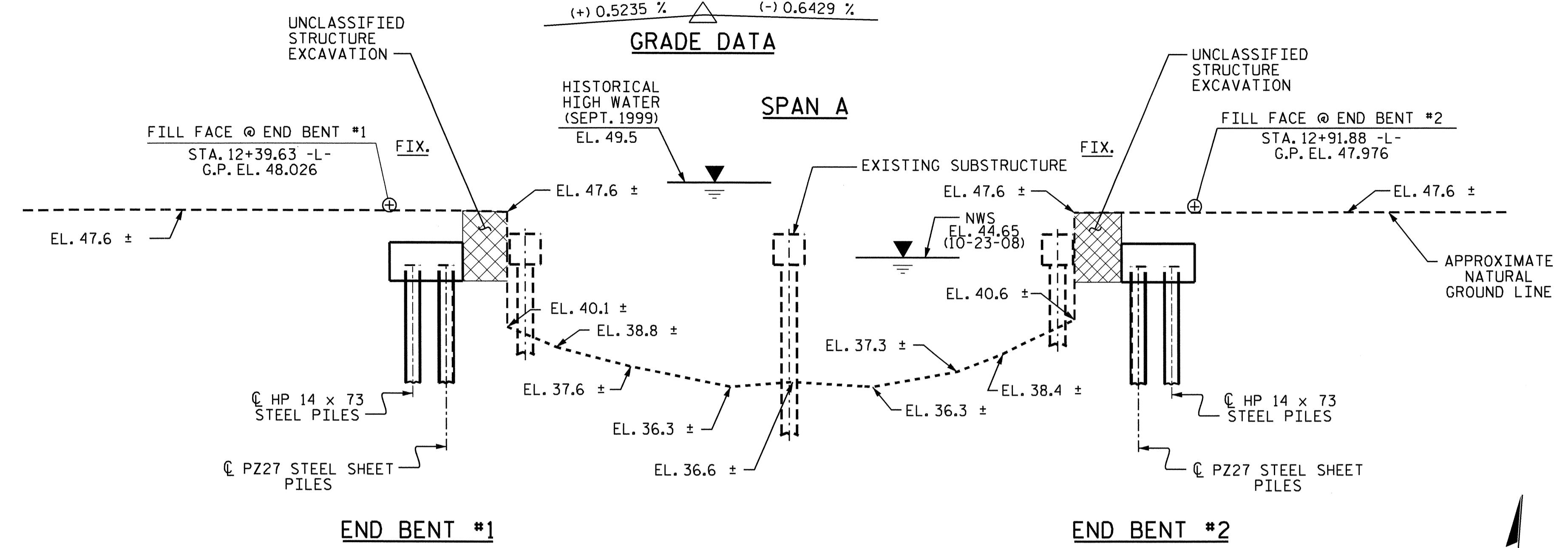


PI = 12+45.79 -L-
 Δ = 0°-31'-12.3" (RT.)
 D = 0°-15'-37.6"
 L = 199.70'
 T = 99.85'
 R = 22,000.00'
 SE = NC

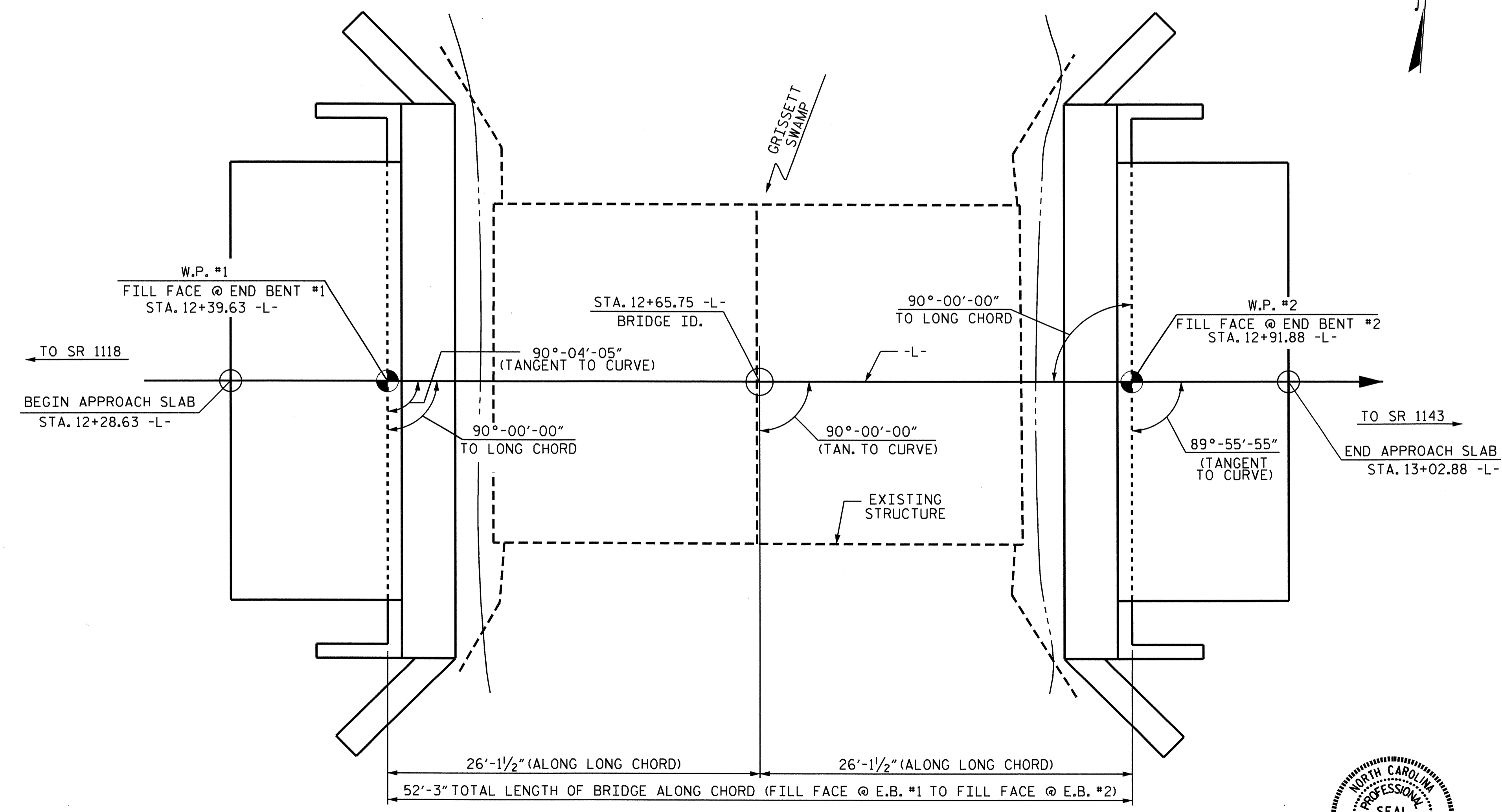
HORIZONTAL CURVE DATA -L-

PI = 12+60.00 -L-
 EL. = 48.29'
 VC = 180'

GRADE DATA
 (+) 0.5235 % (-) 0.6429 %



SECTION ALONG -L-



PLAN

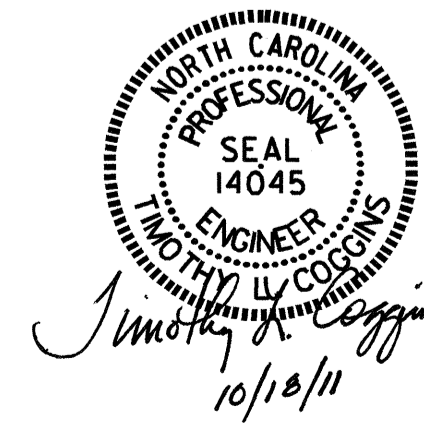
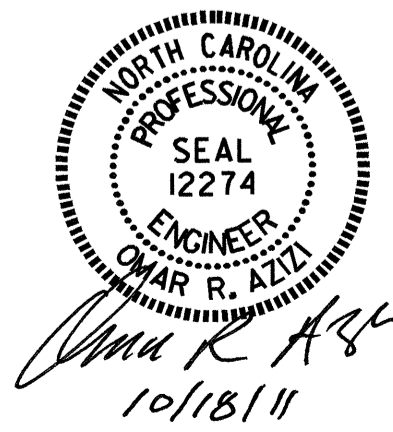
PILES AND SHEET PILES NOT SHOWN FOR CLARITY

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 78

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER GRISSETT SWAMP ON SR 1006 BETWEEN SR 1118 AND SR 1143



DRAWN BY: B.N. BARODAWALA DATE: 5-6-11
 CHECKED BY: PEGGY PARISI DATE: 6-9-11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			39

STR. #1

NOTES

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

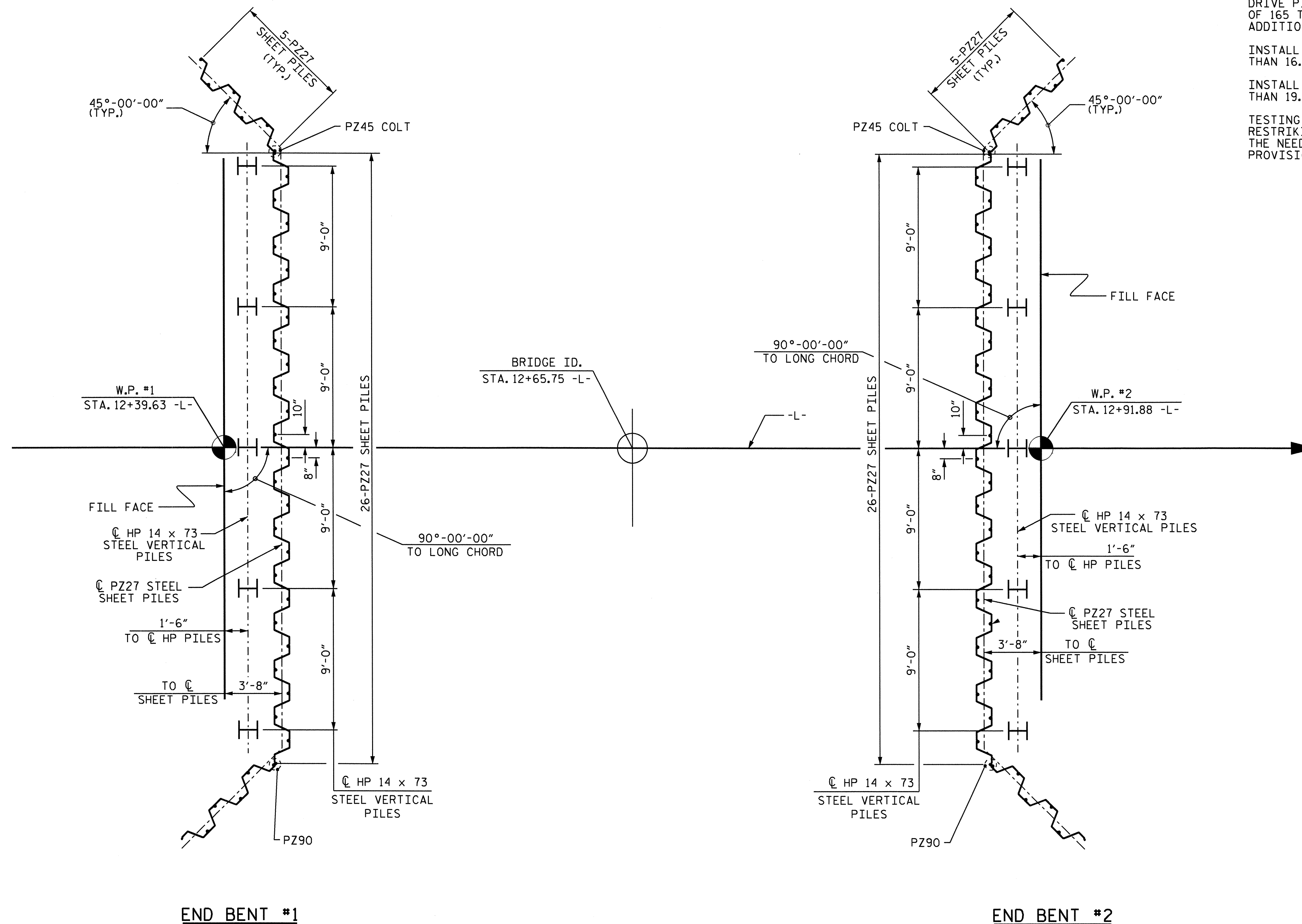
DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 205 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

INSTALL PILES AT END BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 16.0 FT.

INSTALL PILES AT END BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 19.0 FT.

TESTING THE PILES WITH THE PILE DRIVING ANALYZER DURING DRIVING. RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PILE DRIVING ANALYZER, SEE PILES PROVISION.



FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES AND SHEET PILES ARE SHOWN TO THE PILE CENTERLINE.

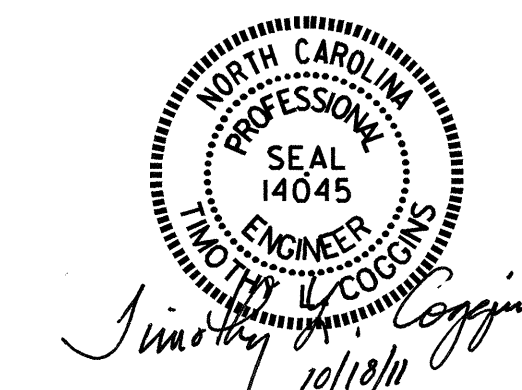
PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 12+65.75 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER GRISSETT SWAMP ON SR 1006 BETWEEN SR 1118 AND SR 1143



DRAWN BY : B.N.BARODAWALA DATE : 5-9-11
CHECKED BY : PEGGY PARISI DATE : 6-9-11

12-SEP-2011 14:51
R:\Structures\FINAL PLANS\STR *1\B4473.sd.gd.01.dgn
nruffin

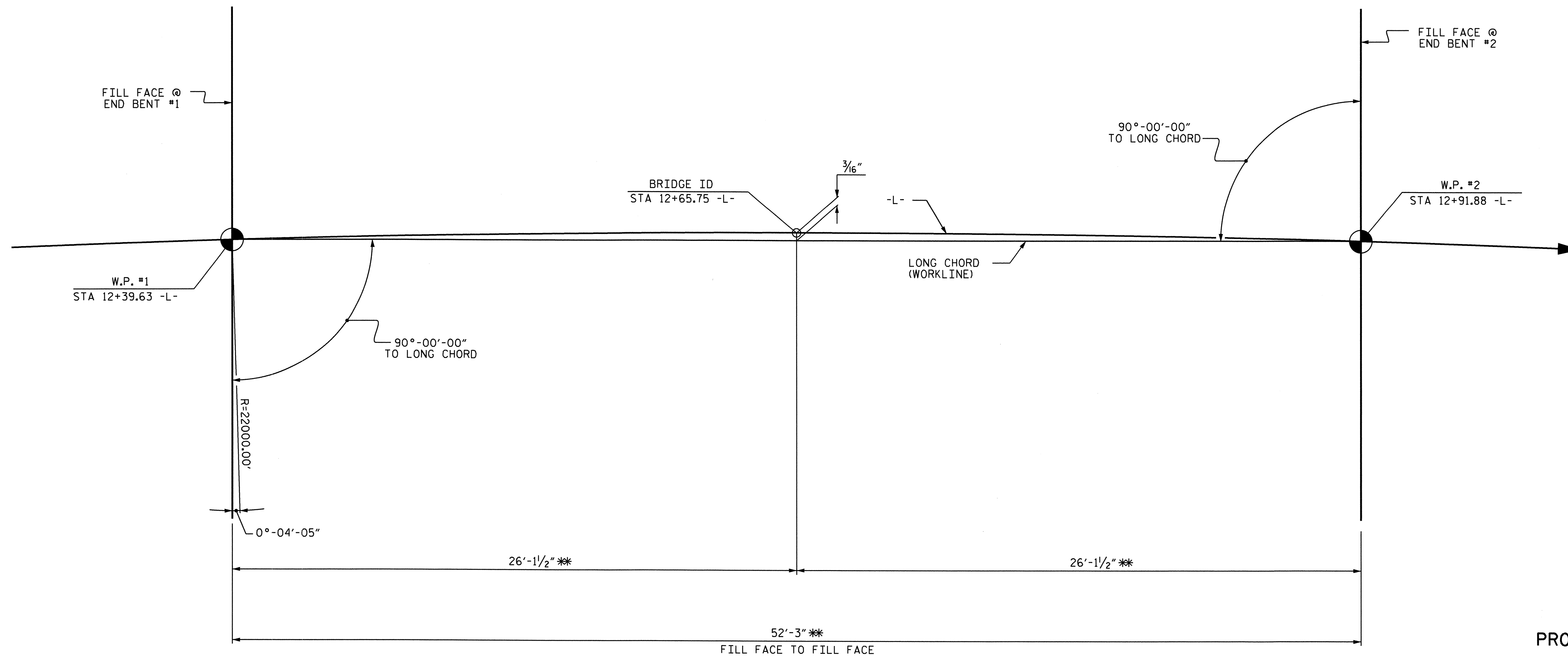
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			39

STR. #1

NC005

HORIZONTAL CURVE DATA -L-

PI = 12+45.79 -L-
 Δ = 0°-31'-12.3" (RT.)
 D = 0°-15'-37.6"
 L = 199.70'
 T = 99.85'
 R = 22,000.00'
 SE = NC



** ALONG LONG CHORD

LONG CHORD LAYOUT

END BENTS ARE PARALLEL.

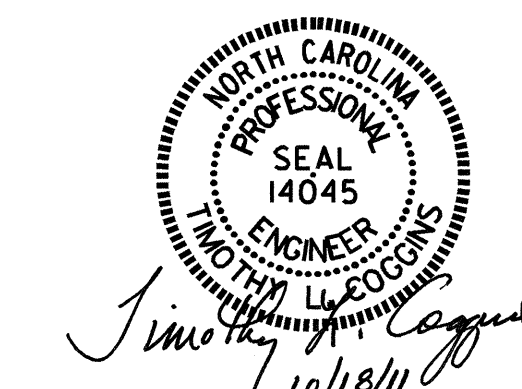
PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER GRISSETT
 SWAMP ON SR 1006
 BETWEEN SR 1118 AND SR 1143



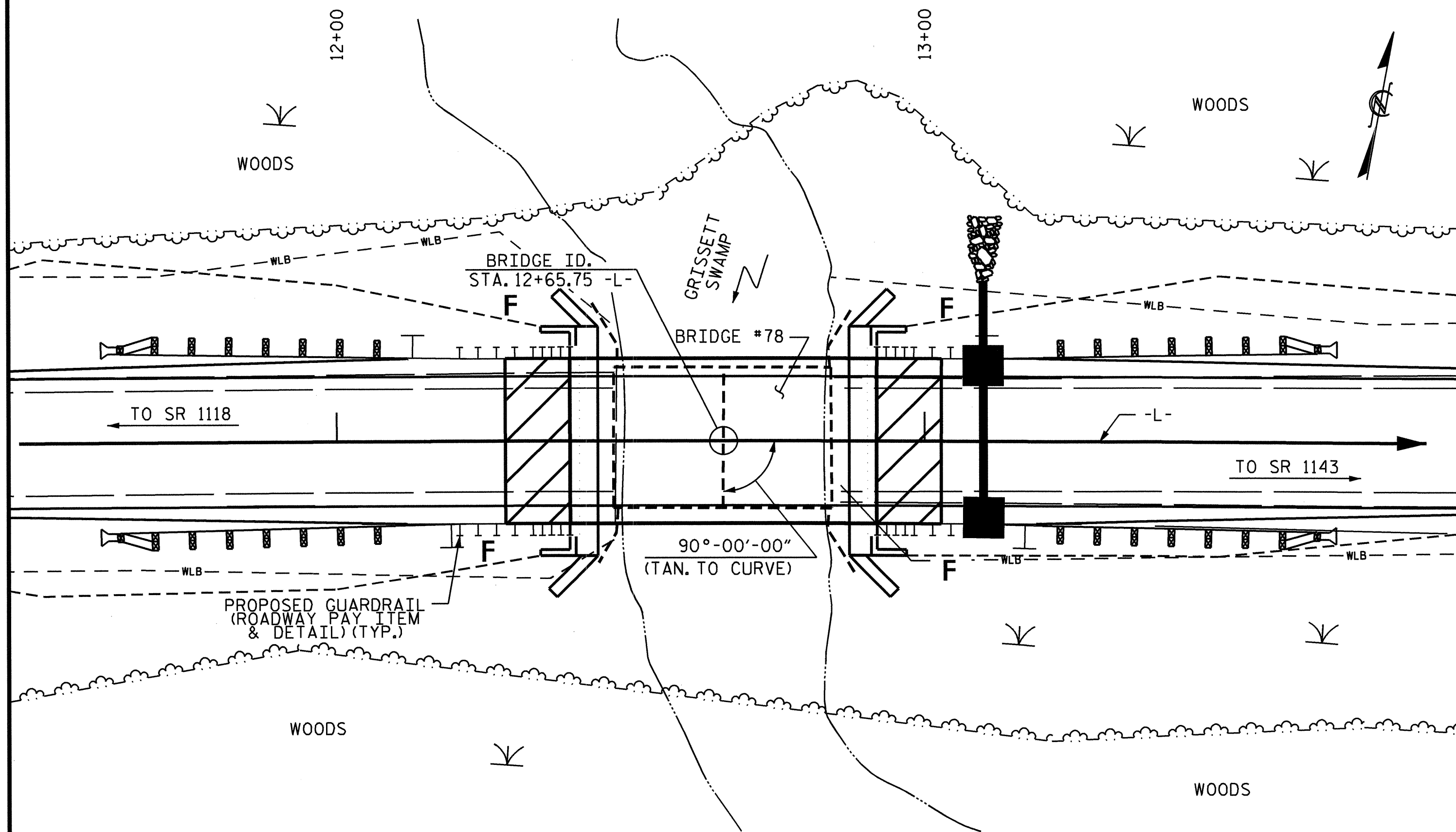
DRAWN BY : B.N. BARODAWALA DATE : 6-22-11
 CHECKED BY : PEGGY PARISI DATE : 6-22-11

12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR *1\4473.sd.qd.01.dgn
 nruffin

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			39

STR. #1

BM #5 - RR SPIKE IN 16" OAK, STA. 12+79.00 -L-, 75' RT., EL. 46.50'



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THE EXISTING STRUCTURE CONSISTING OF 2 SPANS, (EACH @ 18'-8") WITH A CLEAR ROADWAY WIDTH OF 24'-0" AND A CONCRETE DECK ON I BEAMS SUPPORTED BY A CONCRETE CAP AND TIMBER PILES AT THE END BENTS AND BENT AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+65.75 -L-."
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 24 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
 FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.
 FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.
 FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.
 STEEL SHEET PILES SHALL BE HOT ROLLED.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 14 x 73 STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS		18" STEEL SHEET PILES	
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	EACH	LIN.FT.	LUMP SUM	NO.	LIN.FT.	NO.	SO. FT.
SUPERSTRUCTURE					LUMP SUM					100.25	LUMP SUM	11	550.00		
END BENT NO. 1			LUMP SUM	21.8		2804	5	300	5					38	993
END BENT NO. 2			LUMP SUM	21.8		2804	5	250	5					38	612
TOTAL	LUMP SUM	1	LUMP SUM	43.6	LUMP SUM	5608	10	550	10	100.25	LUMP SUM	11	550.00	76	1605

HYDRAULIC DATA

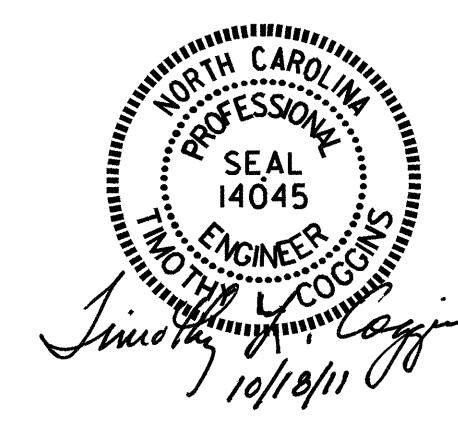
DESIGN DISCHARGE..... 2000 CFS
 FREQUENCY OF DESIGN FLOOD..... 25 YEARS
 DESIGN HIGH WATER ELEVATION..... 46.1'
 DRAINAGE AREA..... 27.1 SQ. MI.
 BASE DISCHARGE(Q100)..... 3000 CFS
 BASE HIGH WATER ELEVATION..... 47.0'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE..... 3000 CFS
 FREQUENCY OF OVERTOPPING FLOOD..... 100 YR.
 OVERTOPPING FLOOD ELEVATION..... 47.0'

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER GRISSETT SWAMP ON SR 1006 BETWEEN SR 1118 AND SR 1143

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: B.N.BARODAWALA DATE: 5-6-11
 CHECKED BY: PEGGY PARISI DATE: 6-9-11

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	1.39	50'	EL	24.5	0.80	0.276	1.44	50'	EL	24.5		
	HL-93(0pr)	N/A	--	1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	24.5	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	1.67	50'	EL	24.5	0.80	0.276	1.79	50'	EL	24.5		
	HS-20(0pr)	36.000	--	2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	24.5	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.70	50'	EL	24.5	0.80	0.276	3.64	50'	EL	24.5	
		SNGARBS2	20.000	--	2.871	57.420	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	24.5	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRIS2	22.000	--	2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	24.5	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3	27.250	--	1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	24.5	0.80	0.276	1.81	50'	EL	24.5	
		SNAGGRS4	34.925	--	1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	24.5	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A	35.550	--	1.537	54.657	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	24.5	0.80	0.276	1.54	50'	EL	24.5	
	TTST	SNS6A	39.950	--	1.438	57.43	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	24.5	0.80	0.276	1.44	50'	EL	24.5	
		SNS7B	42.000	--	1.370	57.54	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	24.5	0.80	0.276	1.37	50'	EL	24.5	
		TNAGRIT3	33.000	--	1.761	58.118	1.4	0.276	2.40	50'	EL	24.5	0.531	2.25	50'	EL	24.5	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A	33.075	--	1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	24.5	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A	41.600	--	1.480	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	24.5	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A	42.000	--	1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	24.5	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B	42.000	--	1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	24.5	0.80	0.276	1.57	50'	EL	24.5	
TNAGRIT4	43.000	--	1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	24.5	0.80	0.276	1.49	50'	EL	24.5			
TNAGT5A	45.000	--	1.388	62.470	1.4	0.276	1.89	50'	EL	24.5	0.531	1.80	50'	EL	24.5	0.80	0.276	1.39	50'	EL	24.5			
TNAGT5B	45.000	3	1.360	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	24.5	0.80	0.276	1.36	50'	EL	24.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

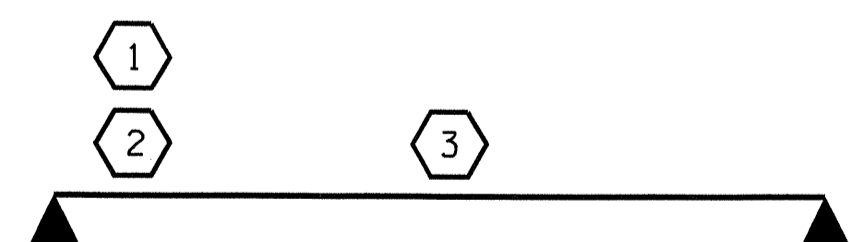
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	

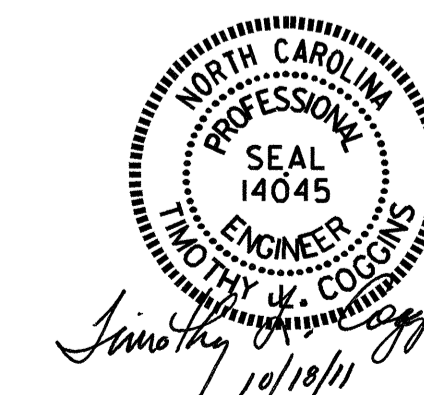


LRFR SUMMARY

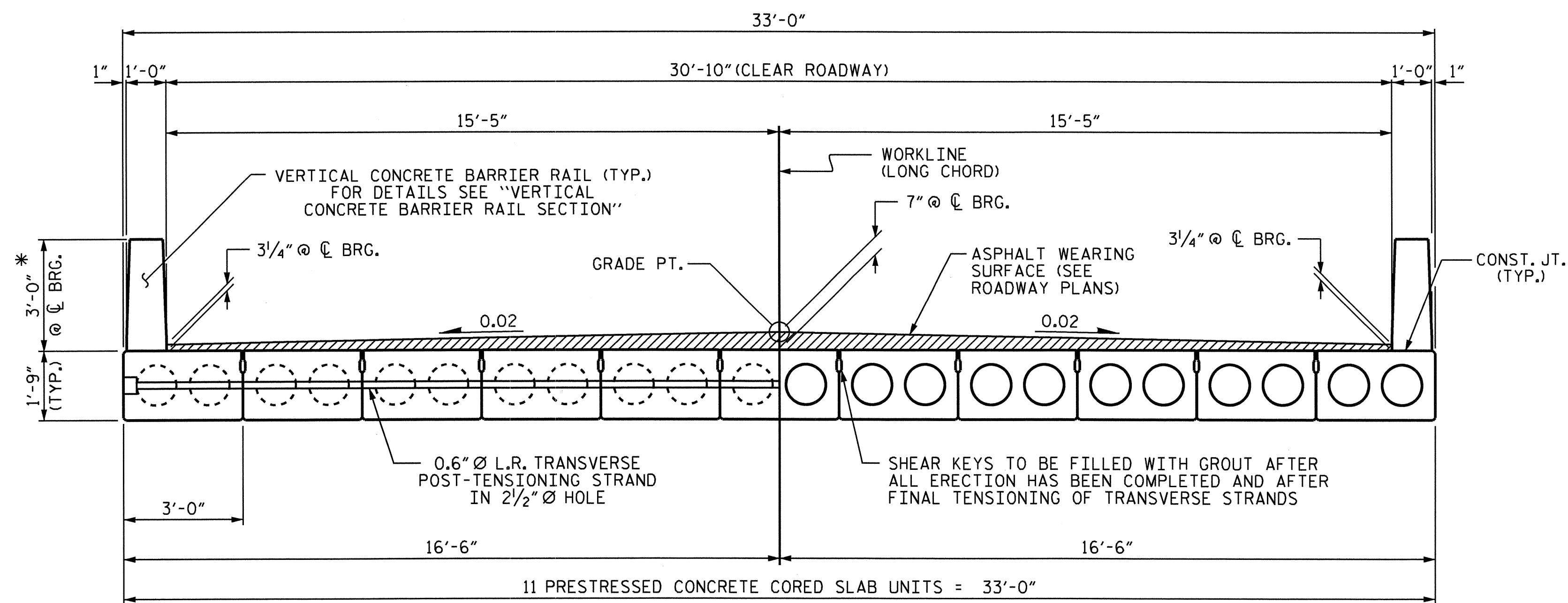
PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

ASSEMBLED BY : PEGGY PARISI DATE : 8-25-10
 CHECKED BY : B.N. BARODAWALA DATE : 9-2-10
 DRAWN BY : CVC 6/10
 CHECKED BY : DNS 6/10

12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR *1\B4473.sd_lrfr.01.dgn
 nruffin

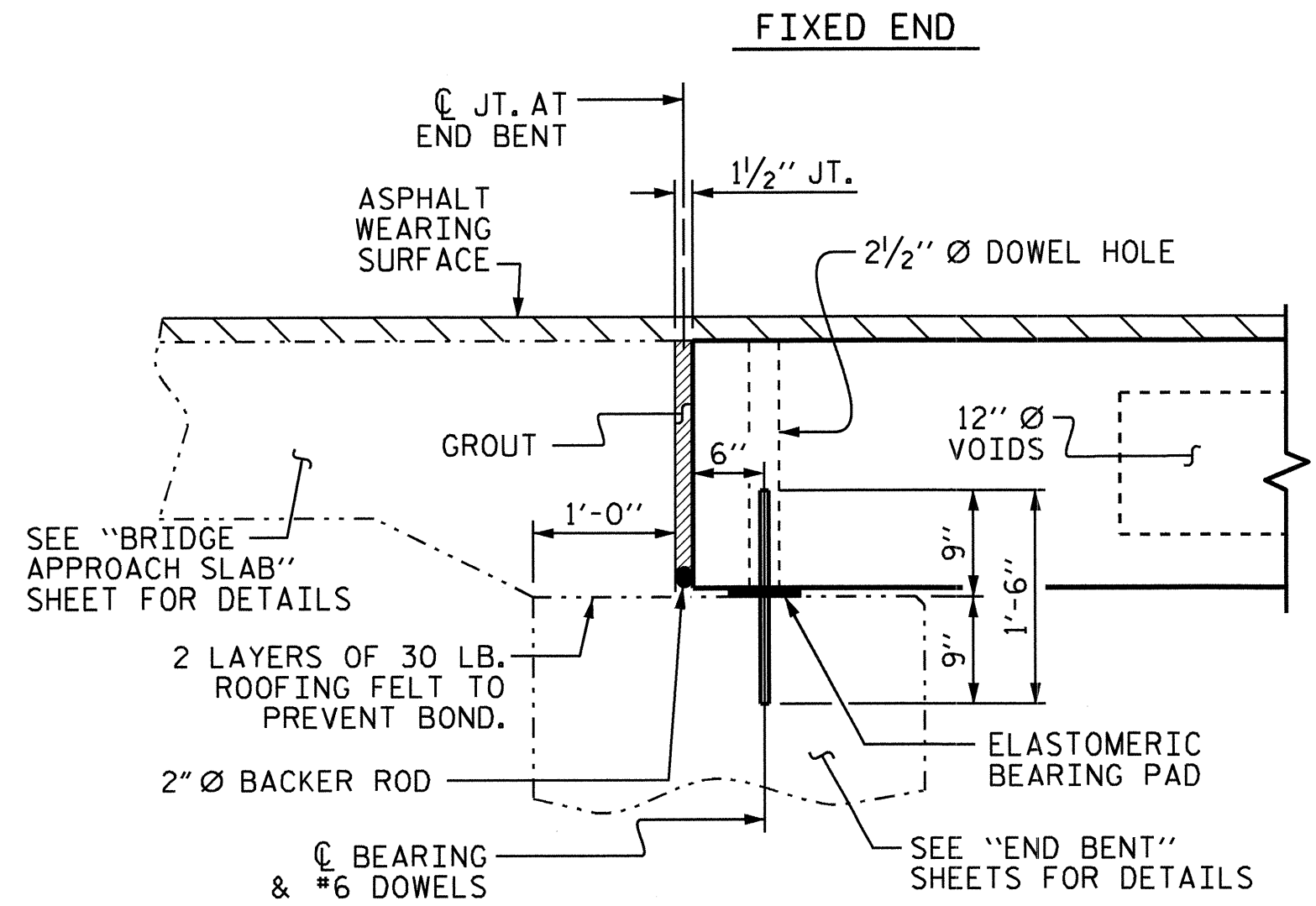


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR 50' CORED SLAB UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-5					TOTAL SHEETS 39

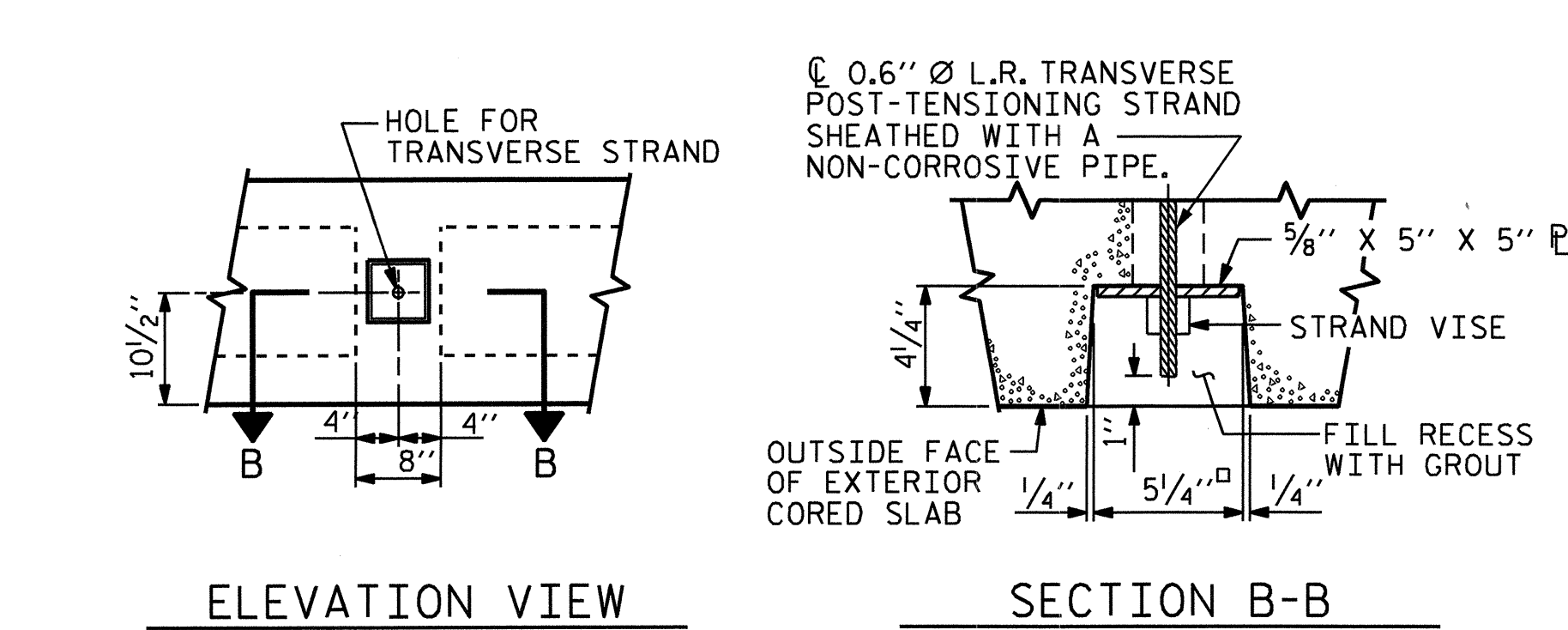


HALF SECTION AT INTERMEDIATE DIAPHRAGMS
TYPICAL SECTION
 HALF SECTION THROUGH VOIDS

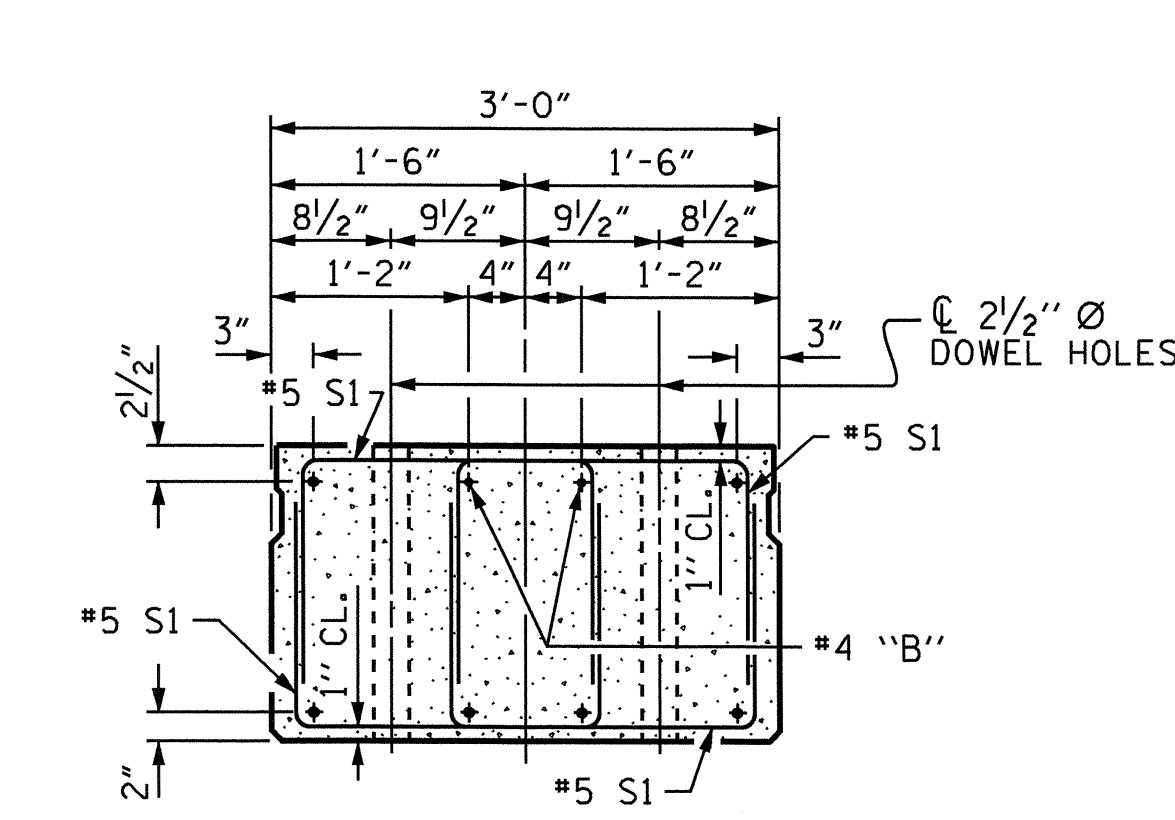
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



SECTION AT END BENT

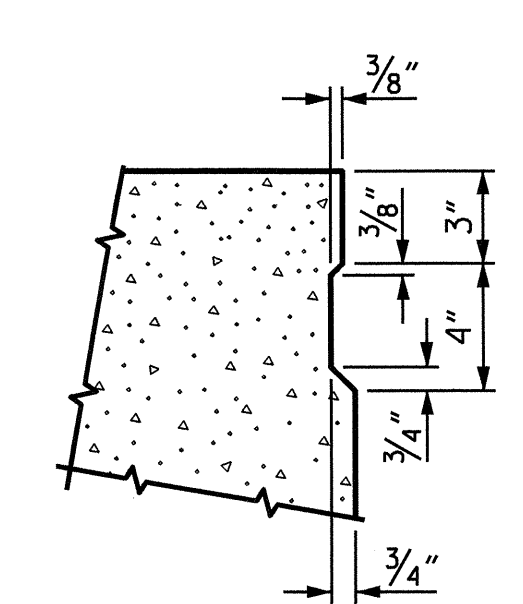


GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



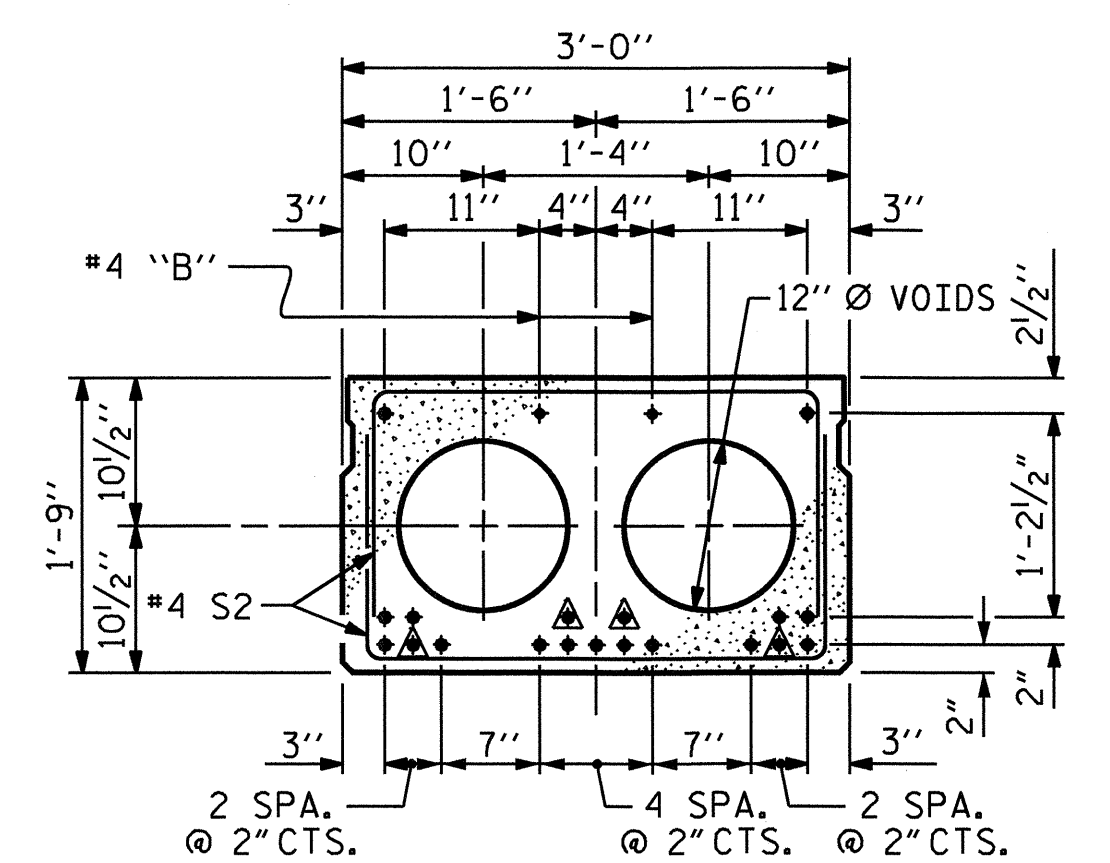
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



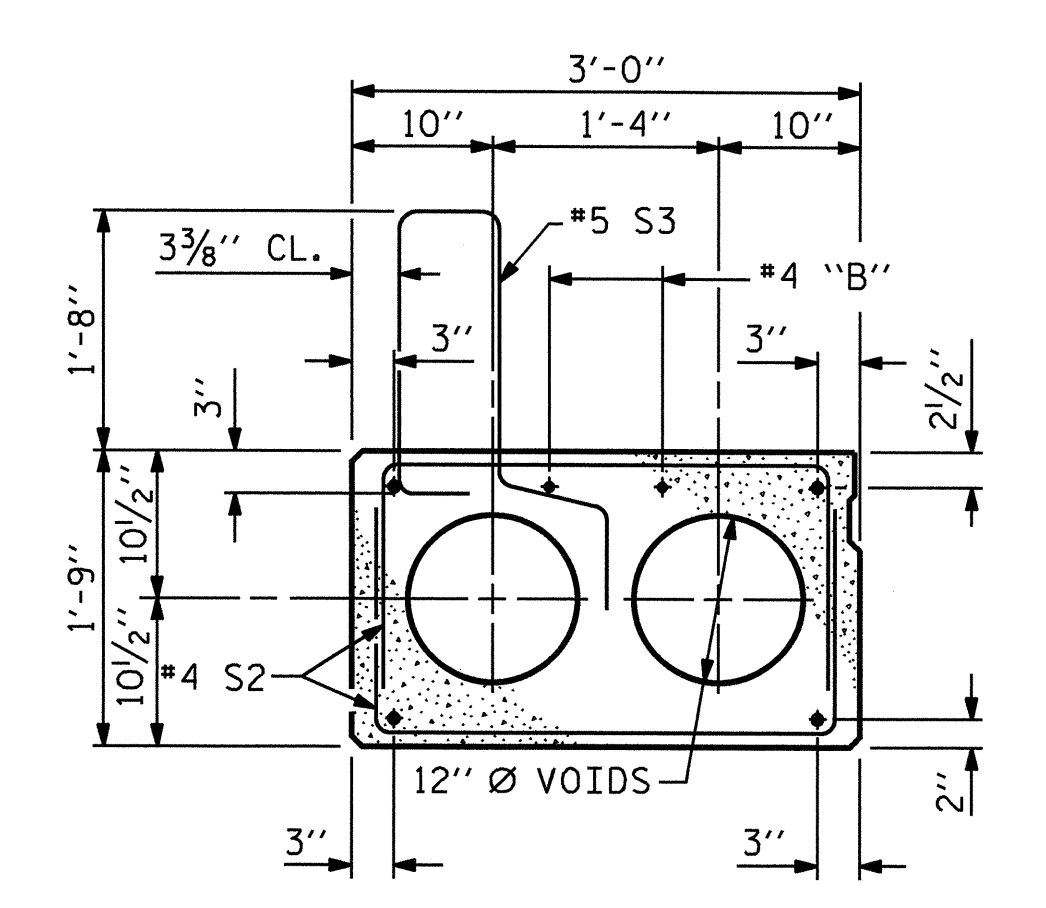
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



STRAND LAYOUT FOR 50' UNIT
 (19 STRANDS REQUIRED)

INTERIOR SLAB SECTION
 0.6" Ø LOW RELAXATION



EXTERIOR SLAB SECTION
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

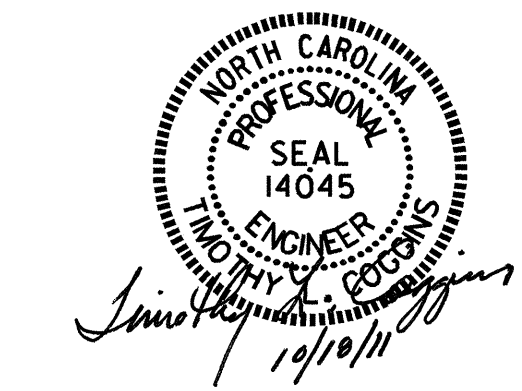
▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW						S-6
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	39
1			3			
2			4			



ASSEMBLED BY : PEGGY PARISI DATE : 8-24-10
 CHECKED BY : B.N. BARODAWALA DATE : 9-2-10
 DRAWN BY : DGE 3/09
 CHECKED BY : BCH 3/09

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 3/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

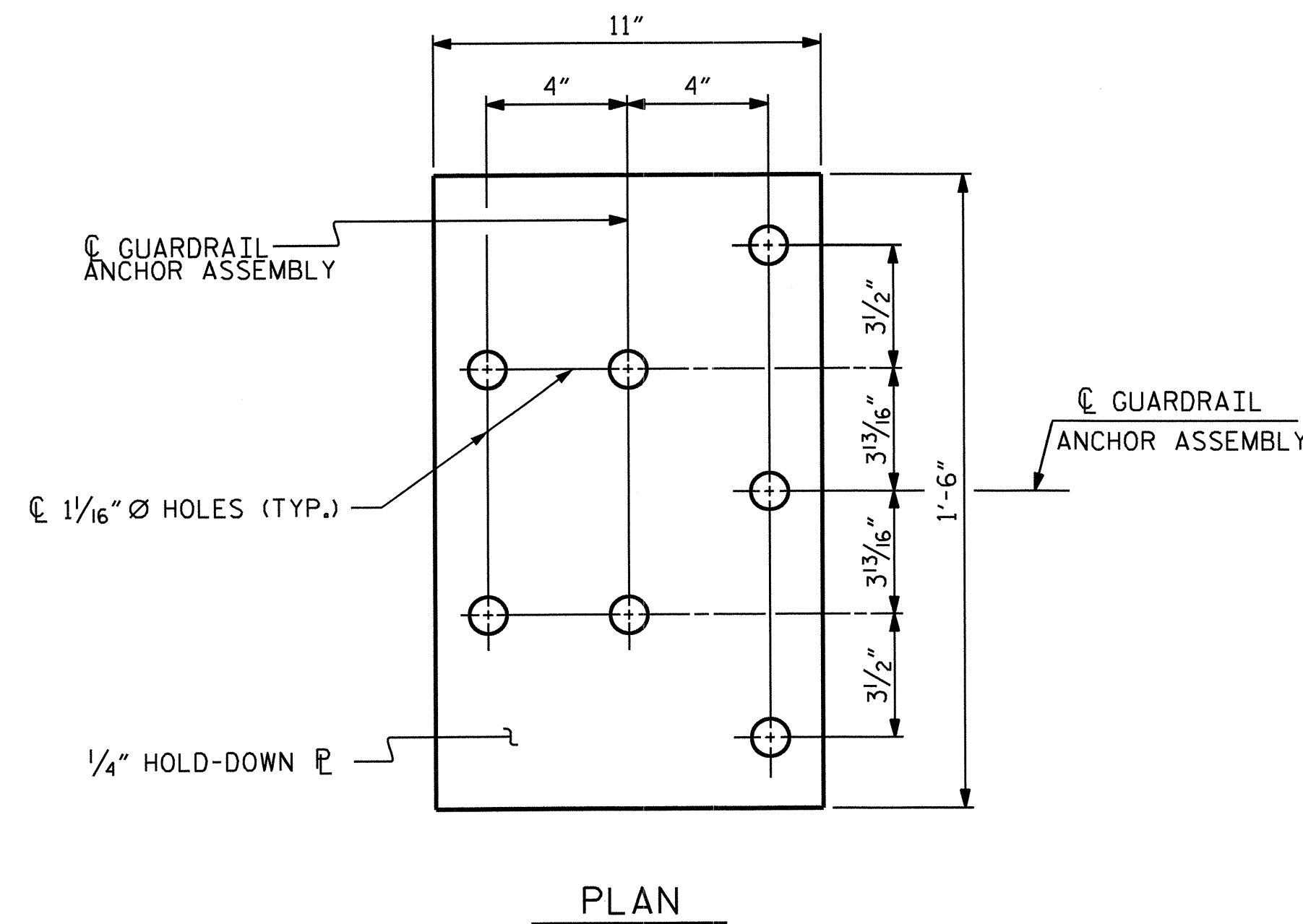
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

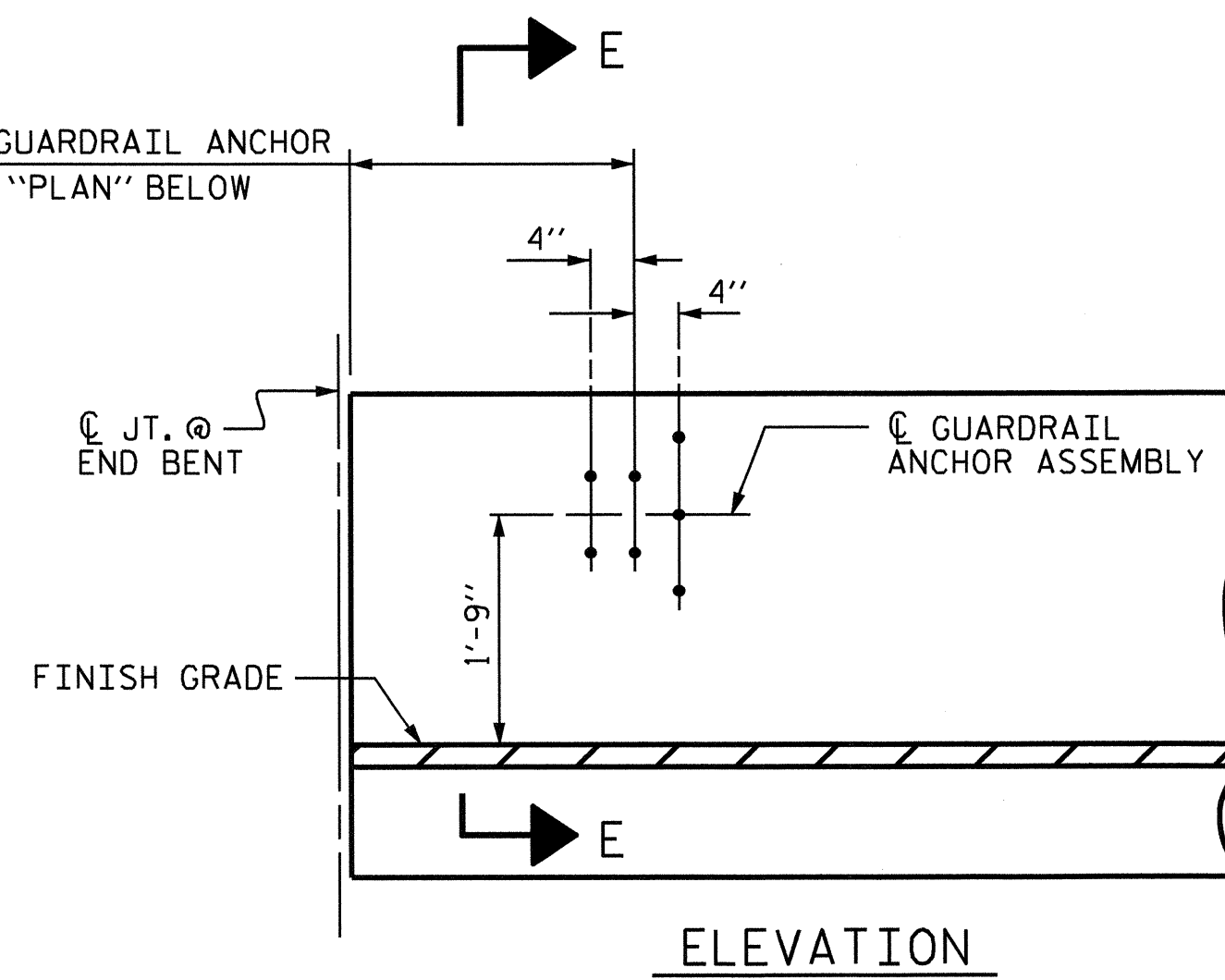
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

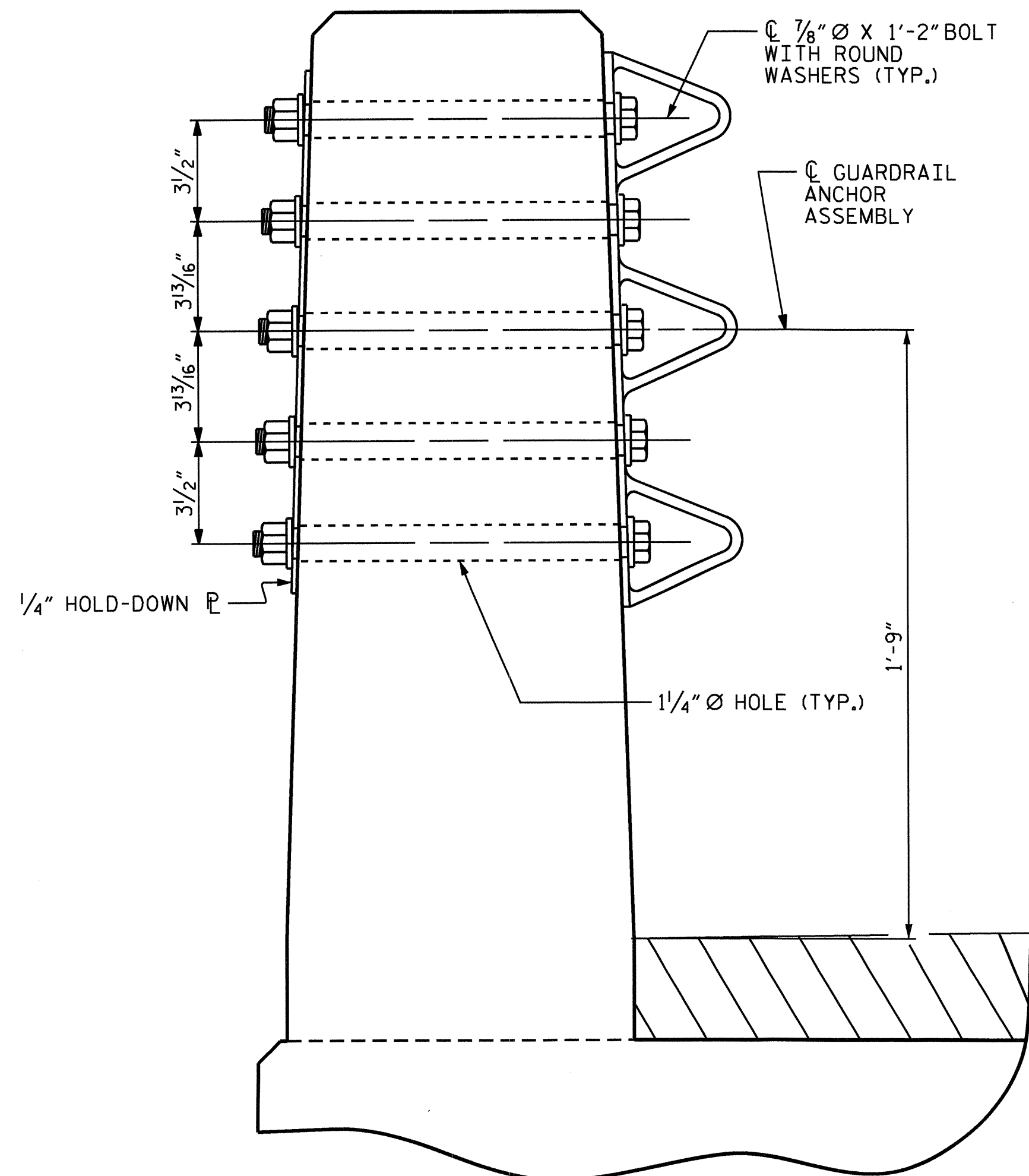


PLAN

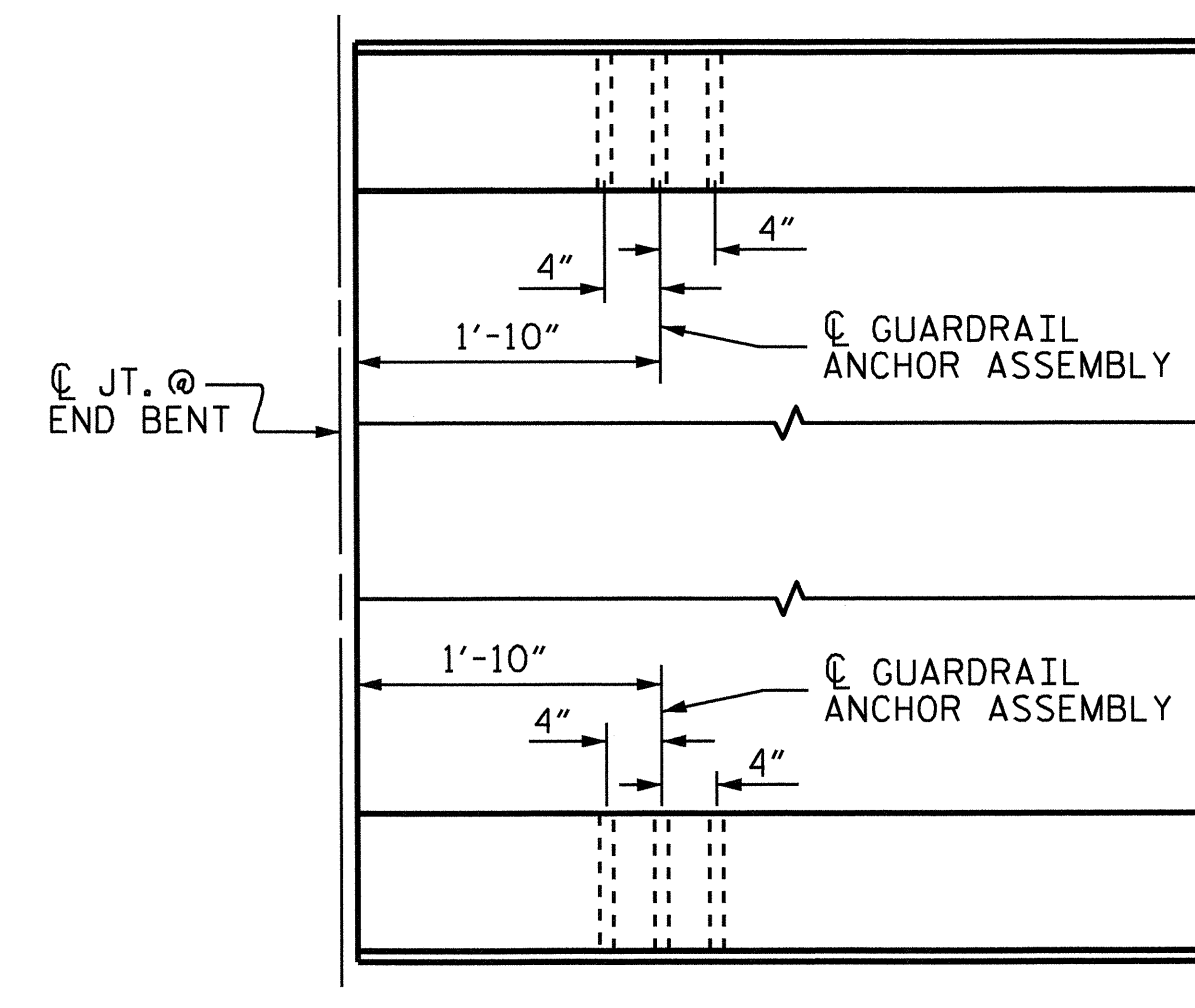
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



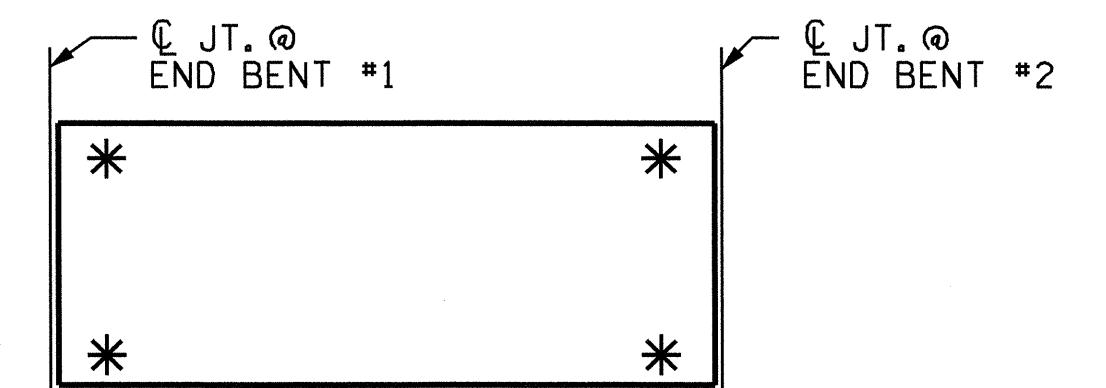
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4473

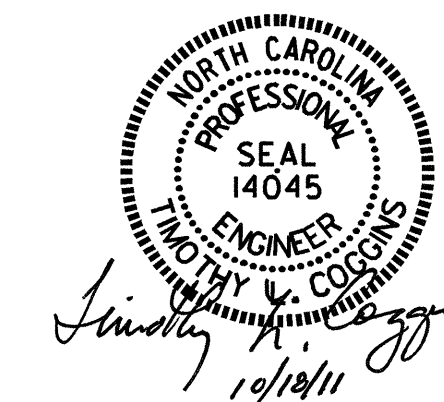
COLUMBUS COUNTY

STATION: 12+65.75 -L-

SHEET 3 OF 4

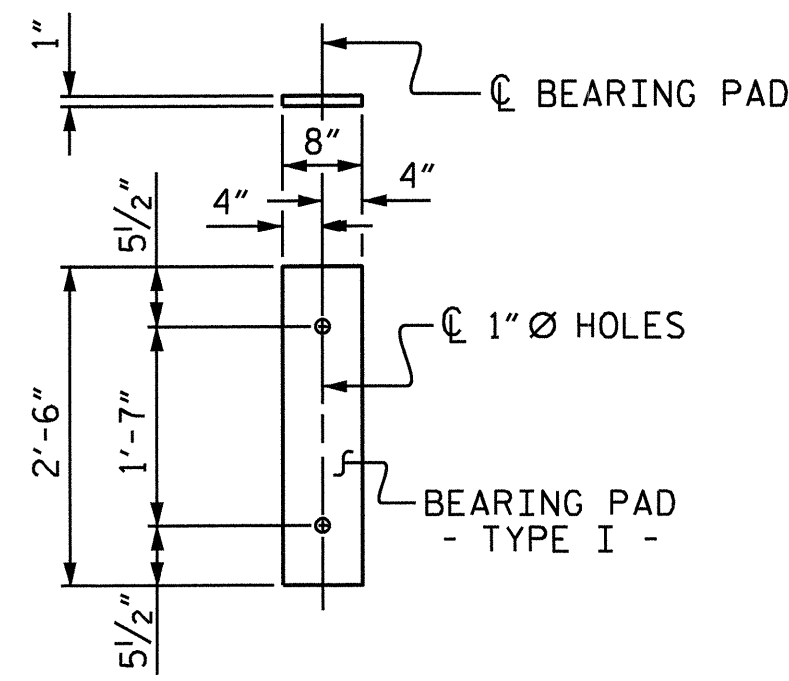
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
FOR VERTICAL CONCRETE
BARRIER RAIL



REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

ASSEMBLED BY : PEGGY PARISI DATE : 5-24-11	
CHECKED BY : B.N. BARODAWALA DATE : 5-24-11	
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	



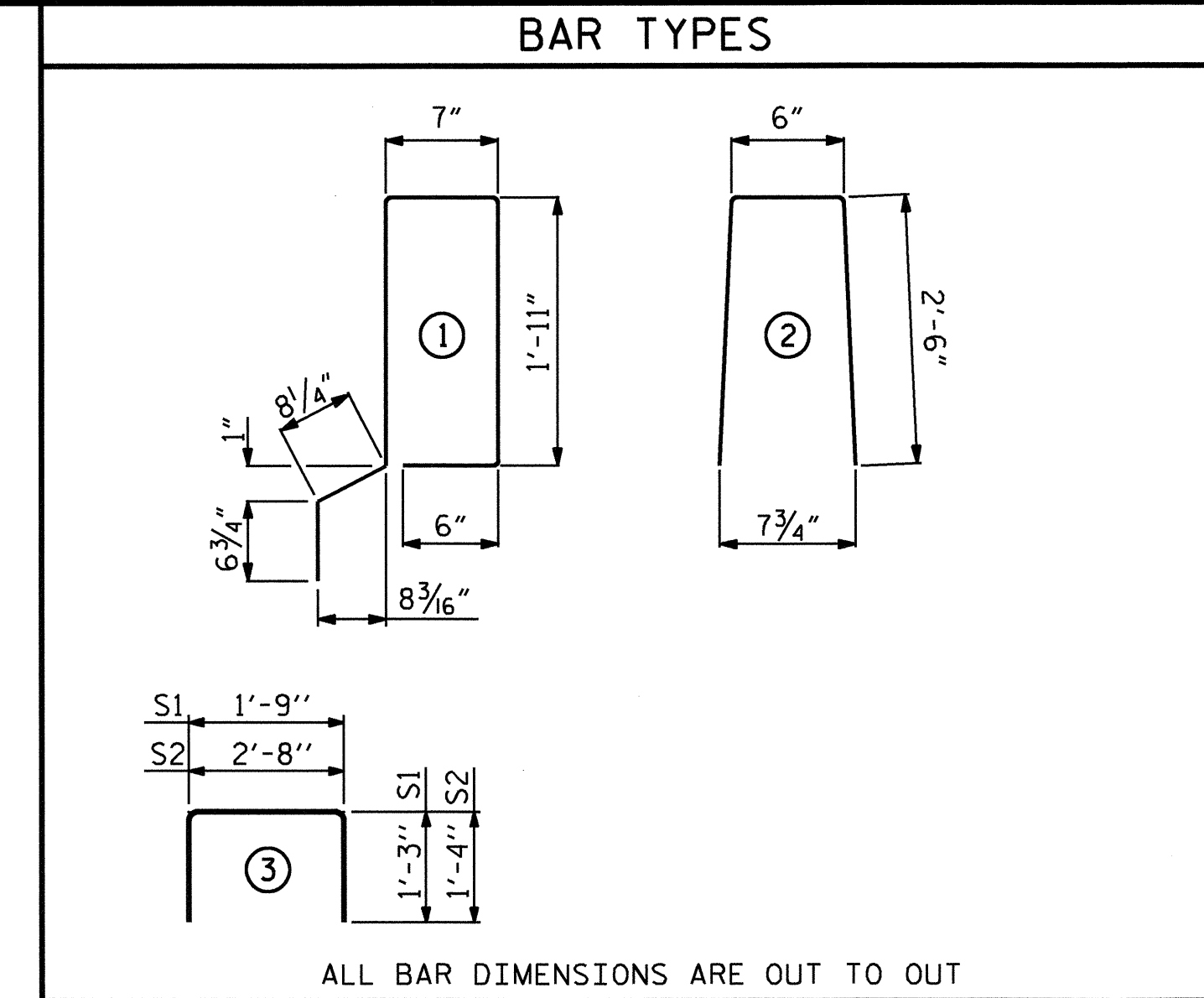
FIXED END
(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLABS REQUIRED			
50' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	9	50'-0"	450'-0"
TOTAL	11		550'-0"



BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
50' UNIT						
*B13	32	32	#5	STR	24'-7"	820
*S4	118	118	#5	2	5'-6"	677
* EPOXY COATED REINFORCING STEEL					LBS.	1497
CLASS AA CONCRETE					CU.YDS.	10.3
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT.	100.25

DEAD LOAD DEFLECTION AND CAMBER	
50' CORED SLAB UNIT	3'-0" x 1'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND 2 1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/4" ↓
FINAL CAMBER	2 1/4" ↑

** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	104	#4	3	5'-4"	371	5'-4"	371
*S3	59	#5	1	6'-2"	379		
REINFORCING STEEL				LBS.	475		475
* EPOXY COATED REINFORCING STEEL				LBS.	379		
6500 P.S.I. CONCRETE				CU. YDS.	7.1		7.1
0.6" Ø L.R. STRANDS				No.	19		19

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

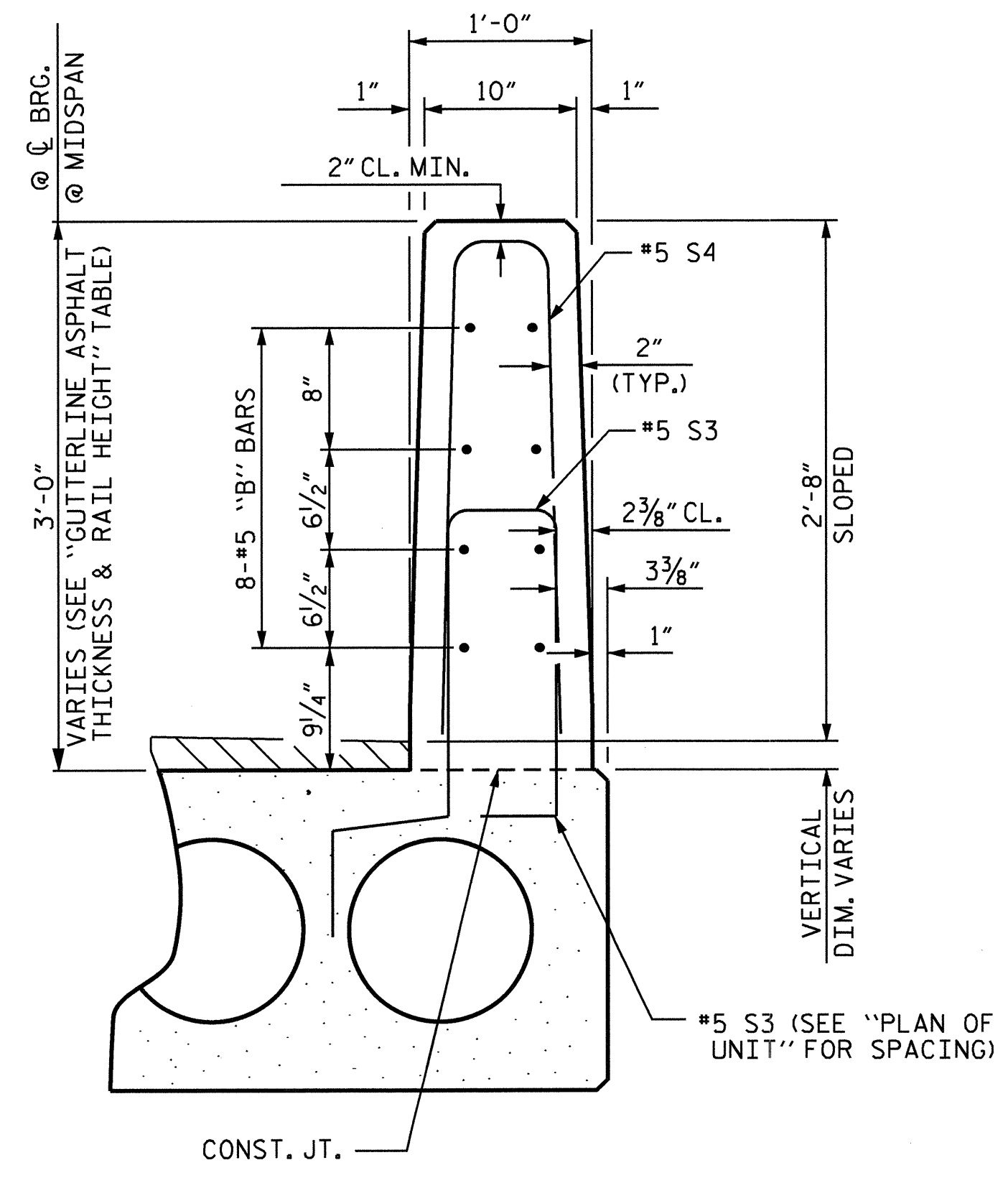
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE STRANDS SHALL BE 0.6" Ø AND TENSIONED TO 43,950 POUNDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

CONCRETE RELEASE STRENGTH	
UNIT	PSI
50' UNITS	4900



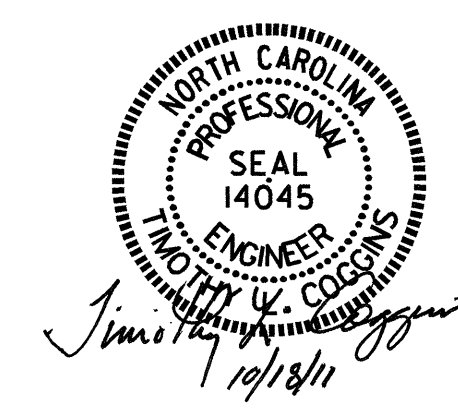
ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL SECTION

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
30'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS:	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
	NORMAL CROWN SECTION	
50' UNITS	1"	2'-9 3/4"

ASSEMBLED BY : PEGGY PARISI DATE : 8-24-10
 CHECKED BY : B.N. BARODAWALA DATE : 9-2-10
 DRAWN BY : DGE 5/09
 CHECKED BY : BCH 6/09

12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR *1\4473.sd.ts.01.dgn
 nruffin



PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			39

--- NOTES ---

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

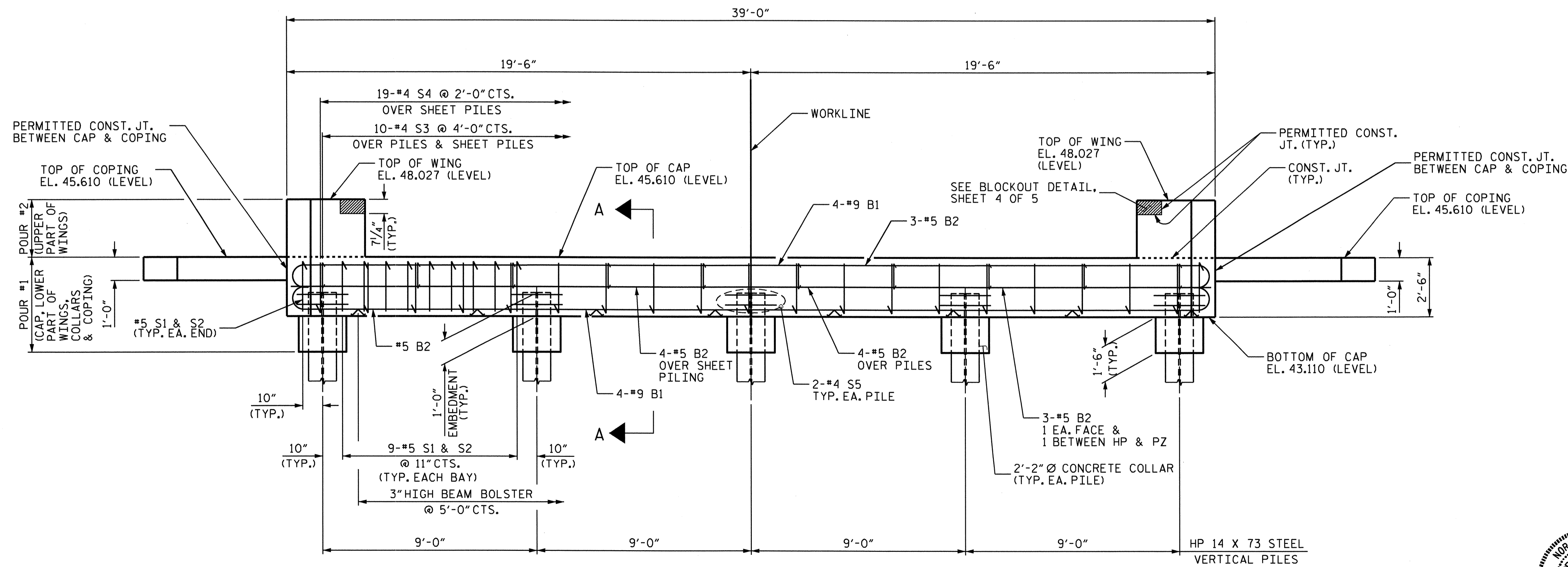
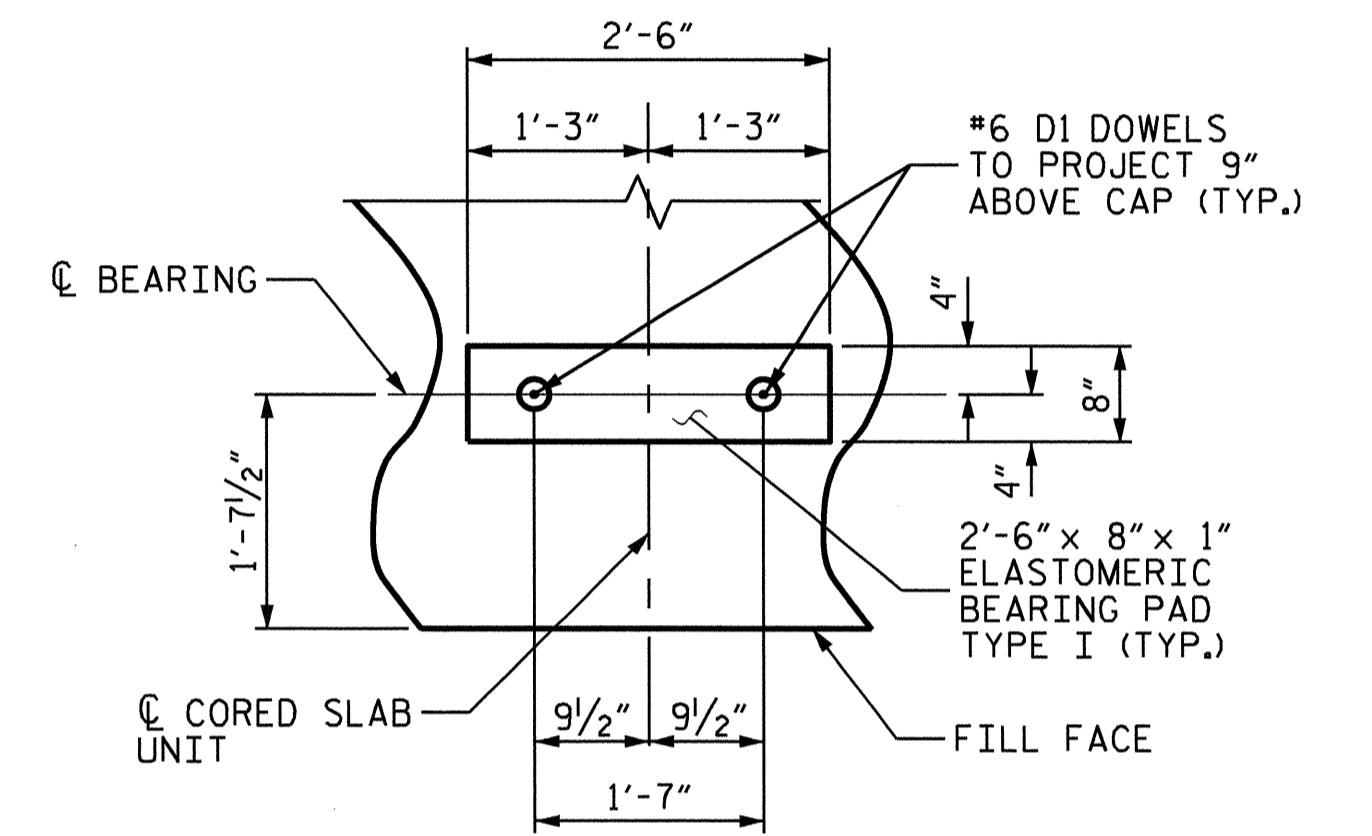
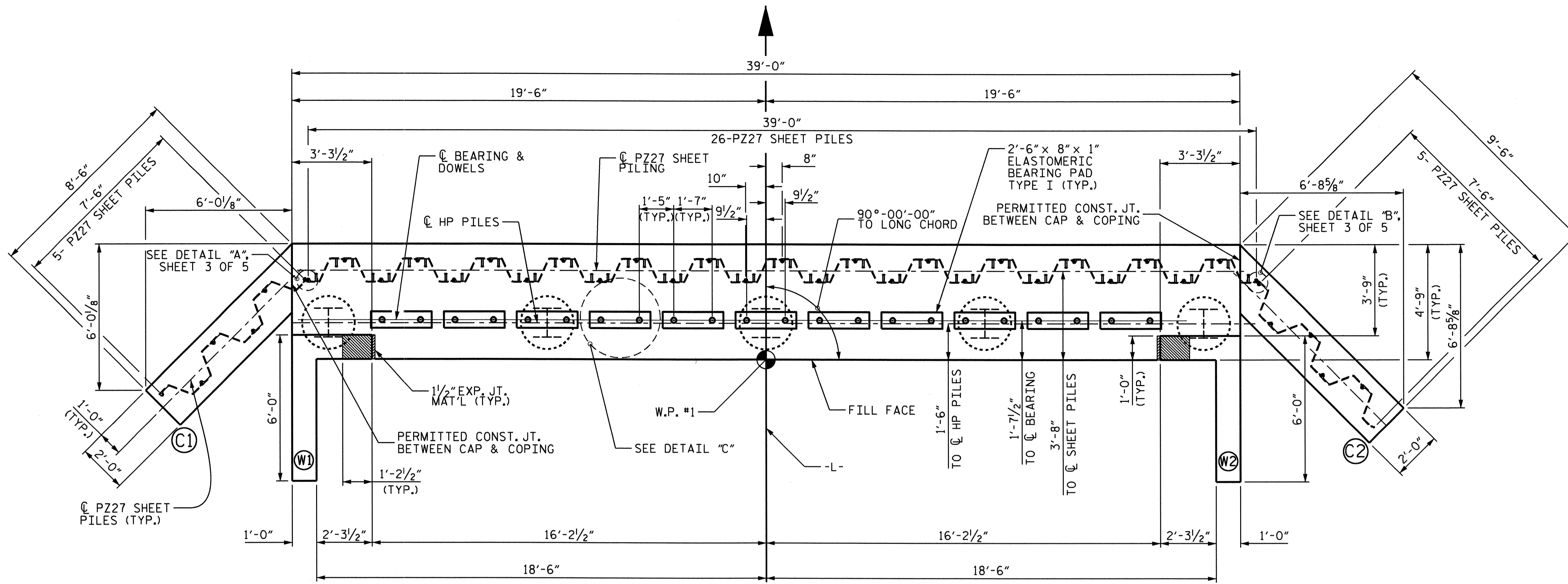
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS, REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

STEEL SHEET PILES SHALL BE HOT ROLLED.

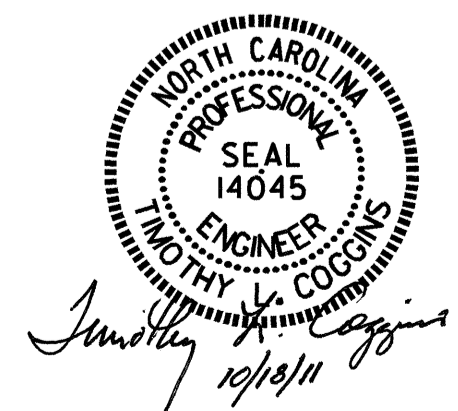
FOR ELEVATION VIEW OF PZ27 SHEET PILES, SEE SHEET 2 OF 5.



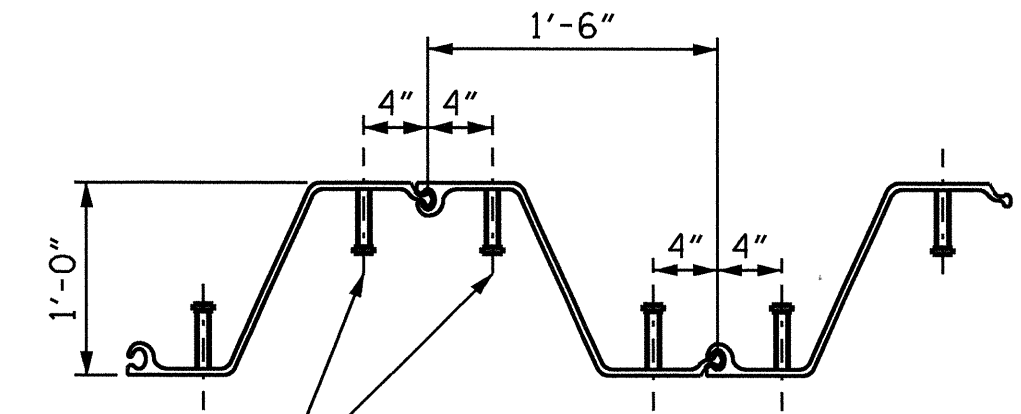
SHEET PILING NOT SHOWN FOR CLARITY.

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-
 SHEET 1 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					39

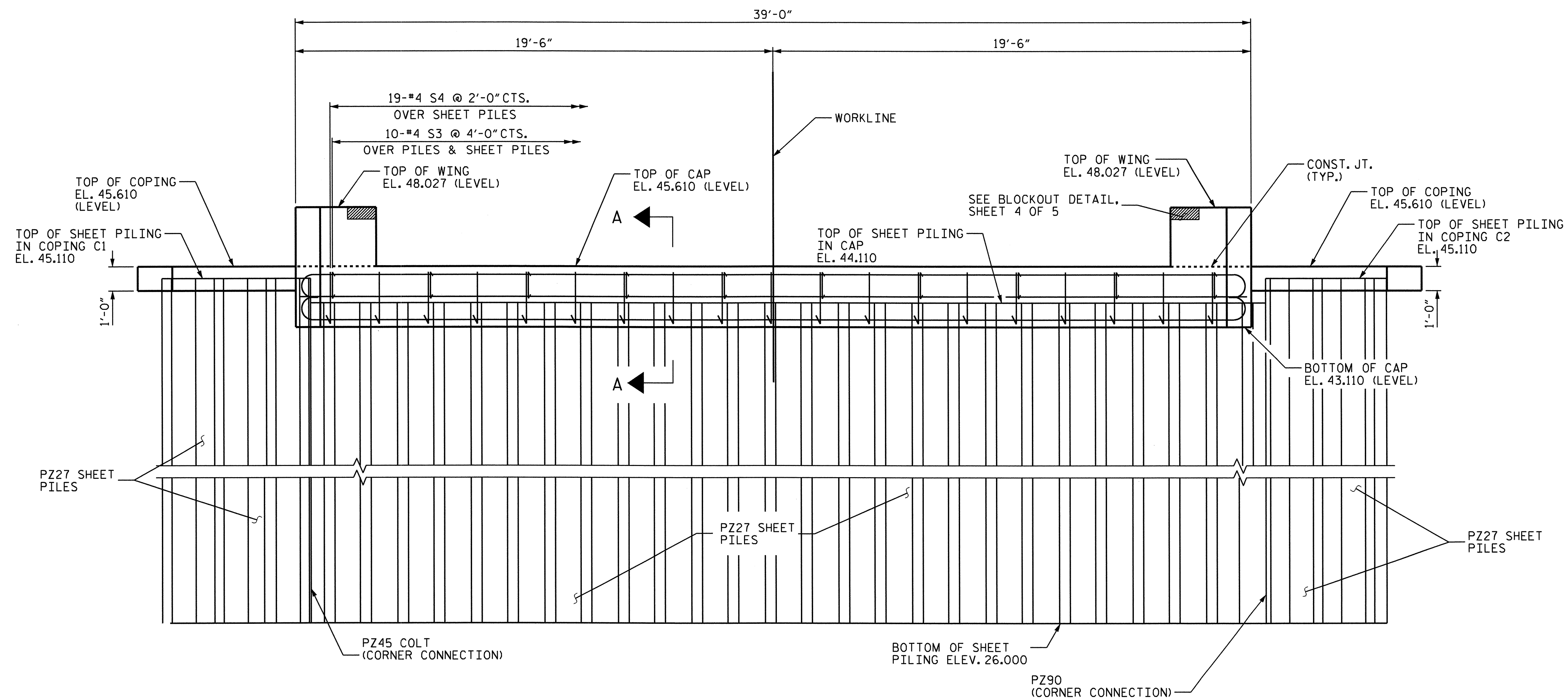


DRAWN BY: Nat M. Kalla DATE: 5/12/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11



3/4" Ø x 5" ANCHOR STUDS
WELDED TO SHEET PILES
(2 STUDS PER SHEET PILE
ONLY IN THE CAP)

ANCHOR STUD DETAILS



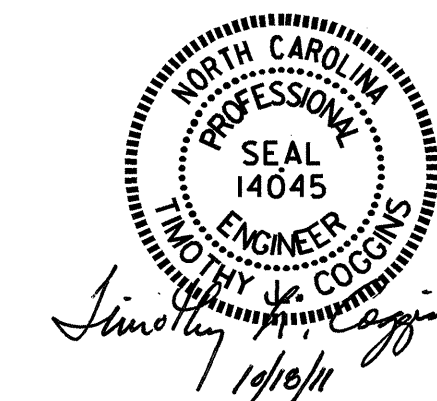
ELEVATION

HP PILES NOT SHOWN FOR CLARITY.

PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 12+65.75 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT #1



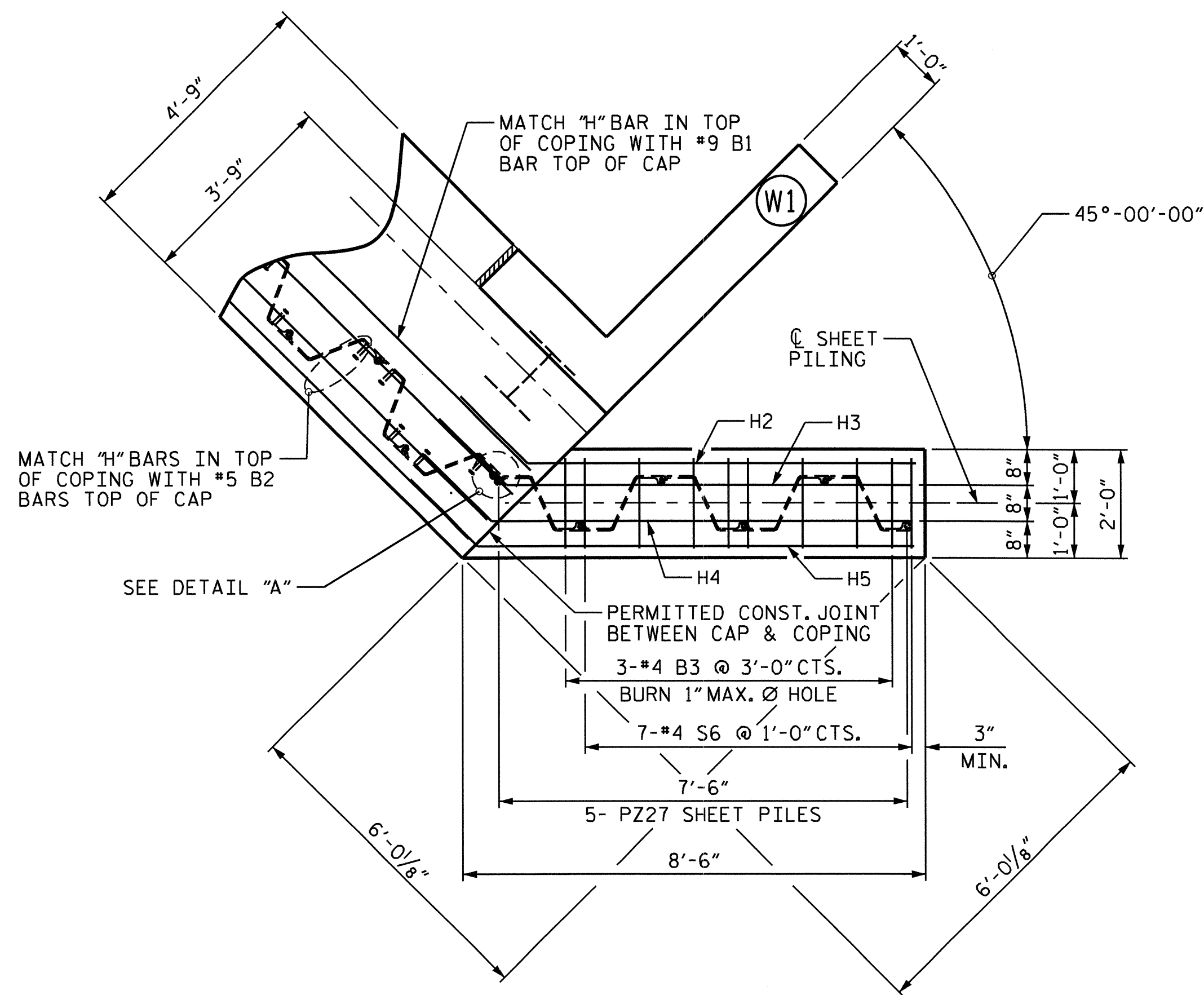
DRAWN BY : N.M. Ruffin DATE : 5/12/11
CHECKED BY : B.N. BARODAWALA DATE : 6-10-11

12-SEP-2011 11:41
R:\Structures\FINAL PLANS\STR *1\b4473.sd.eb.01.dgn
nruffin

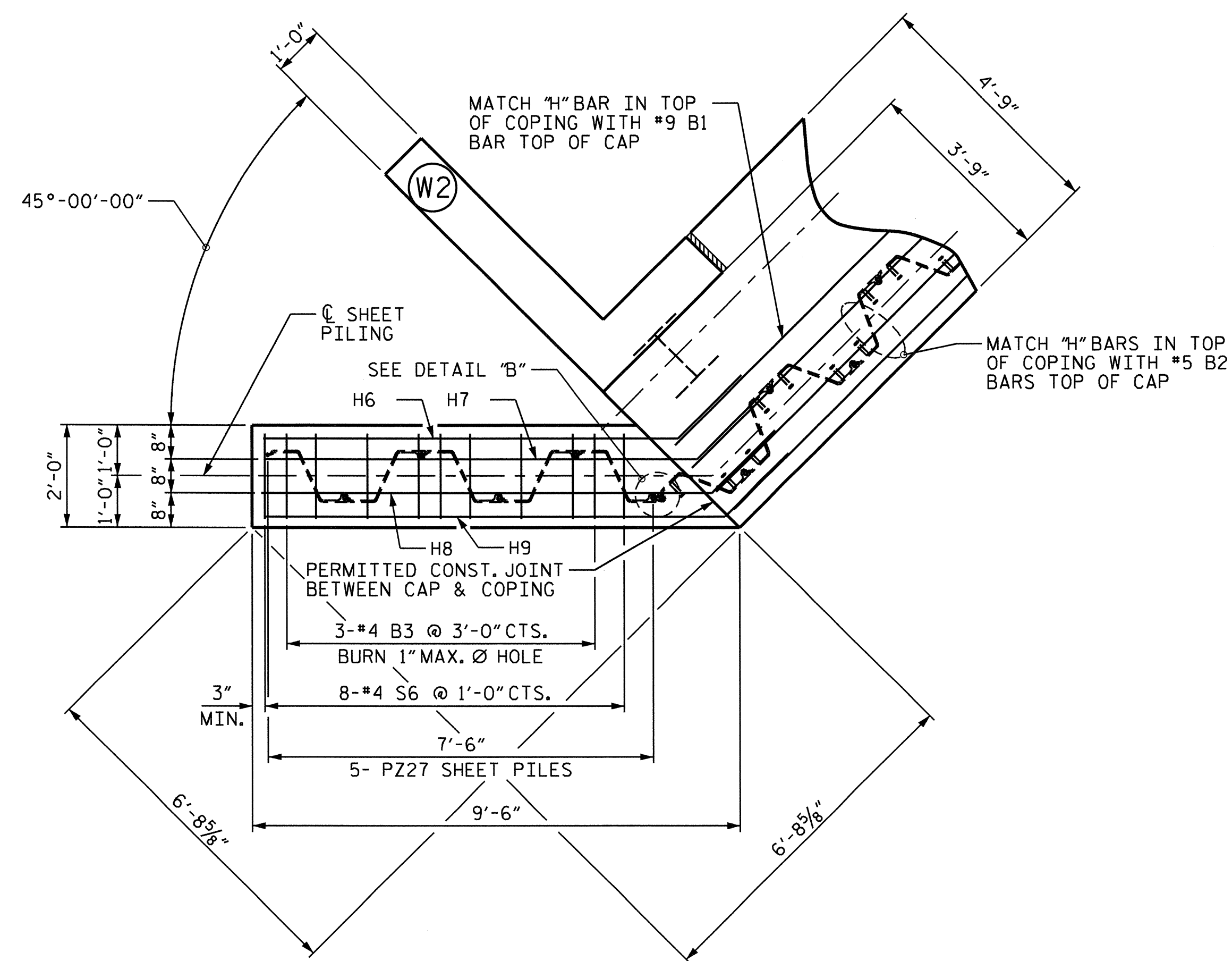
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			39

STR. #1

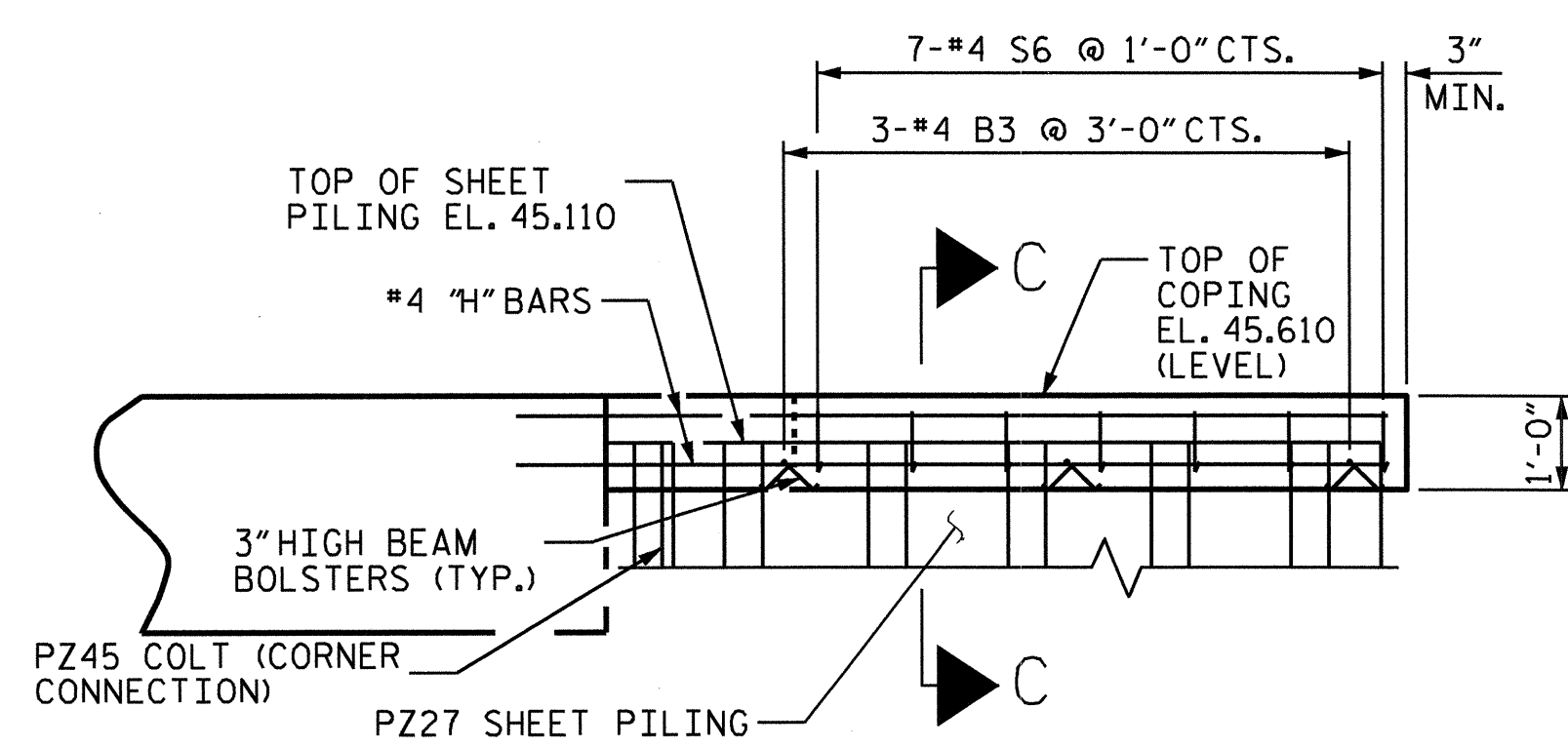
NC006



PLAN OF COPING C1

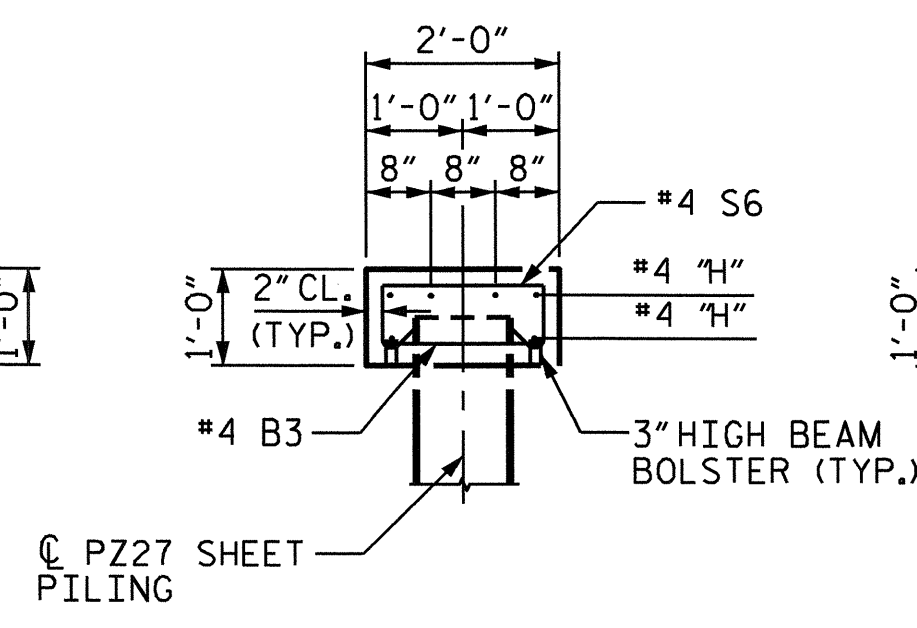


PLAN OF COPING C2

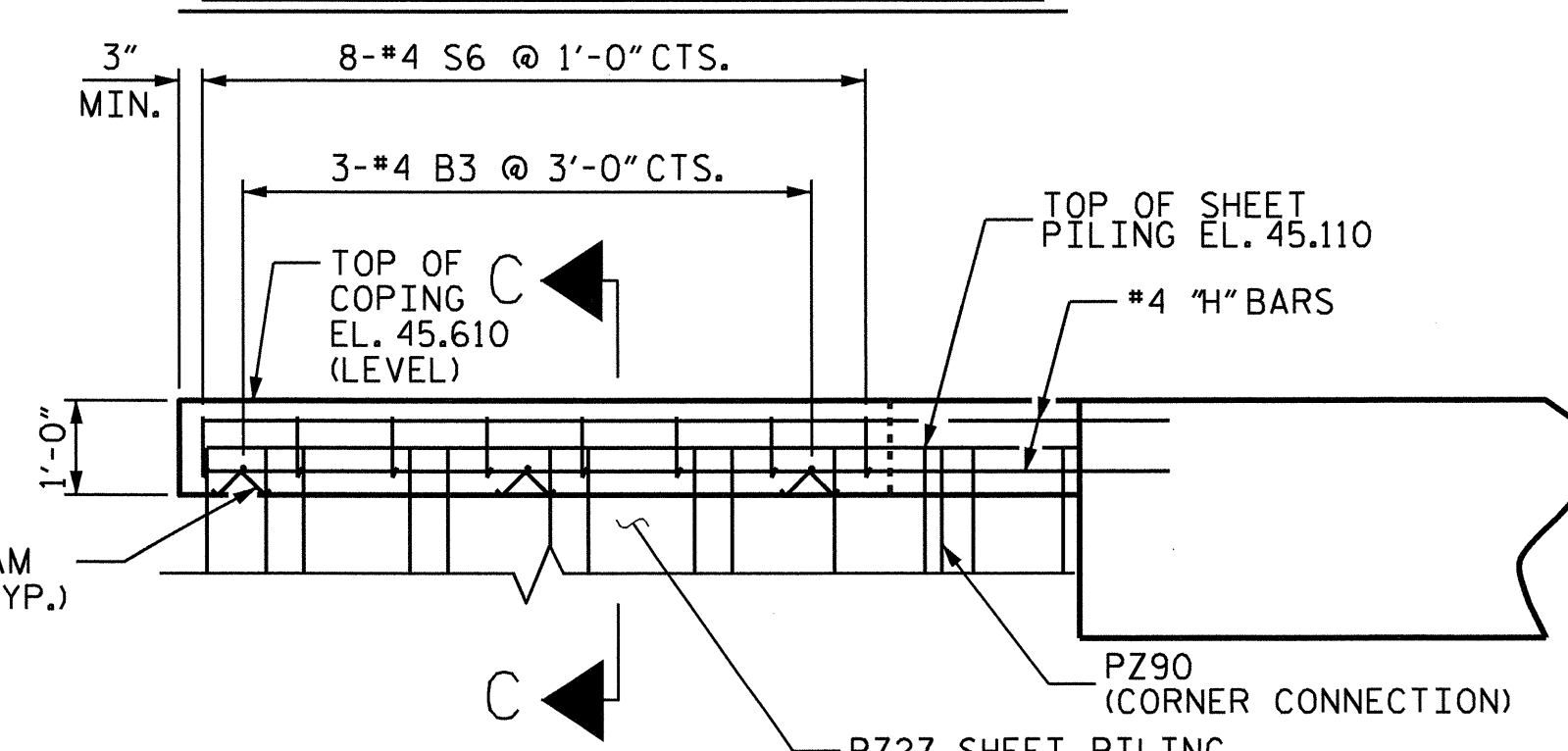


ELEVATION OF COPING C1

(WING NOT SHOWN FOR CLARITY)

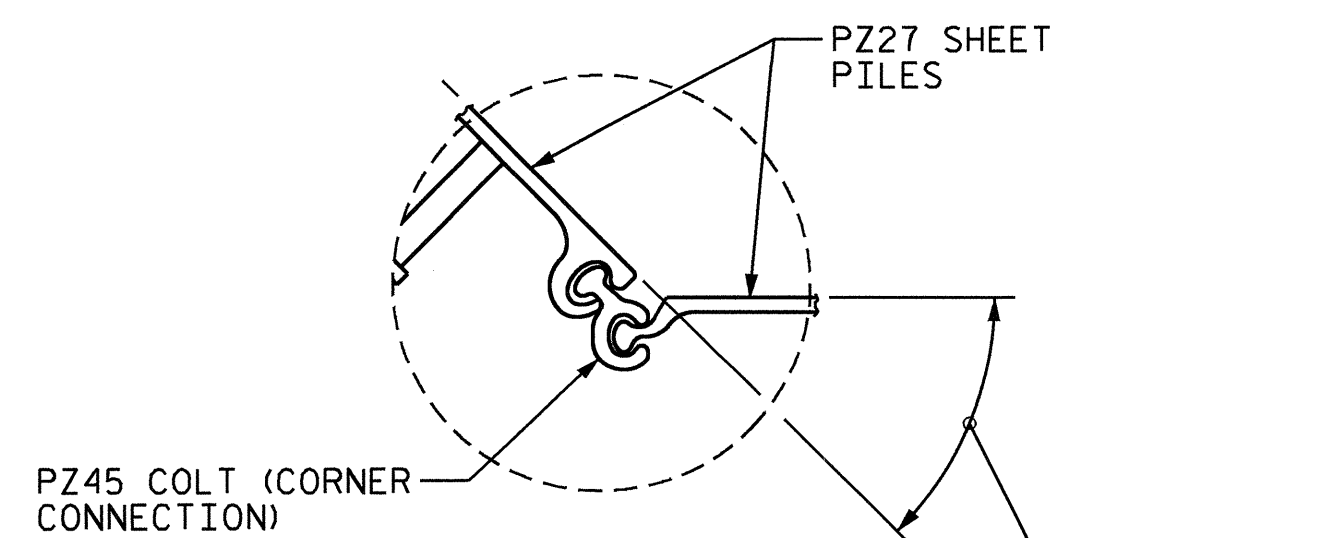


SECTION C-C

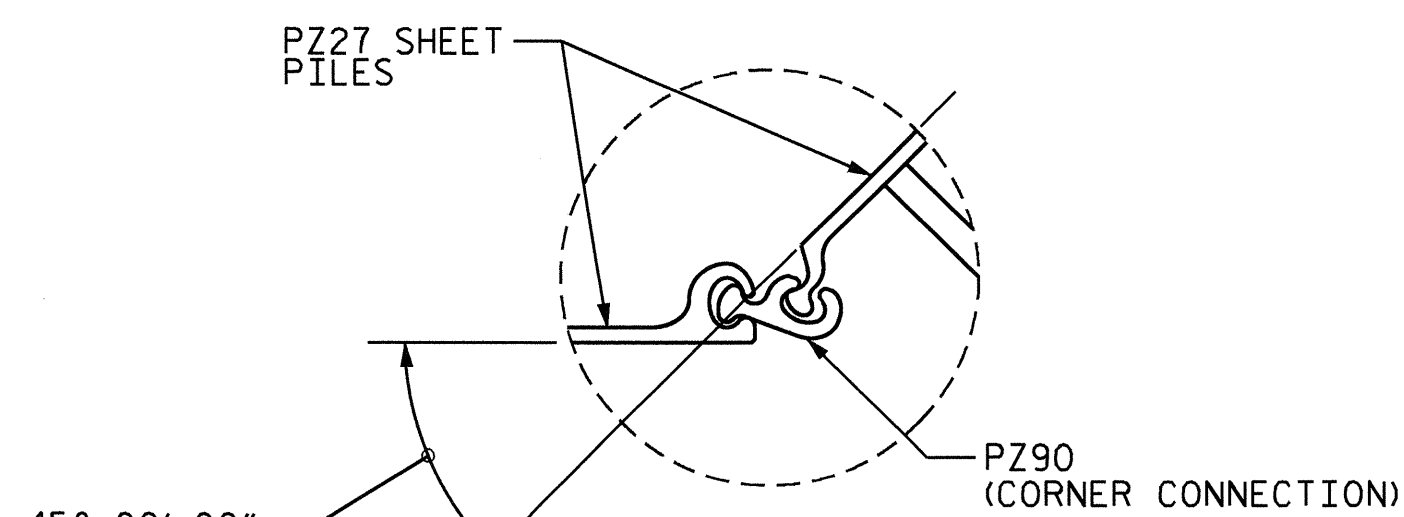


ELEVATION OF COPING C2

(WING NOT SHOWN FOR CLARITY)



DETAIL "A"



DETAIL "B"

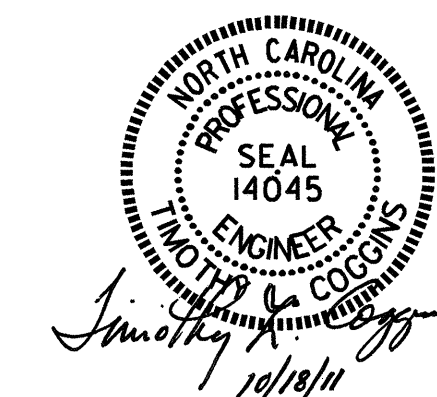
DRAWN BY: Neil M. Ruffin DATE: 5/12/11
CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

12-SEP-2011 11:41
R:\Structures\FINAL PLANS\STR *1\B4473.sd.tb.01.dgn
nruffin

PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 12+65.75 -L-

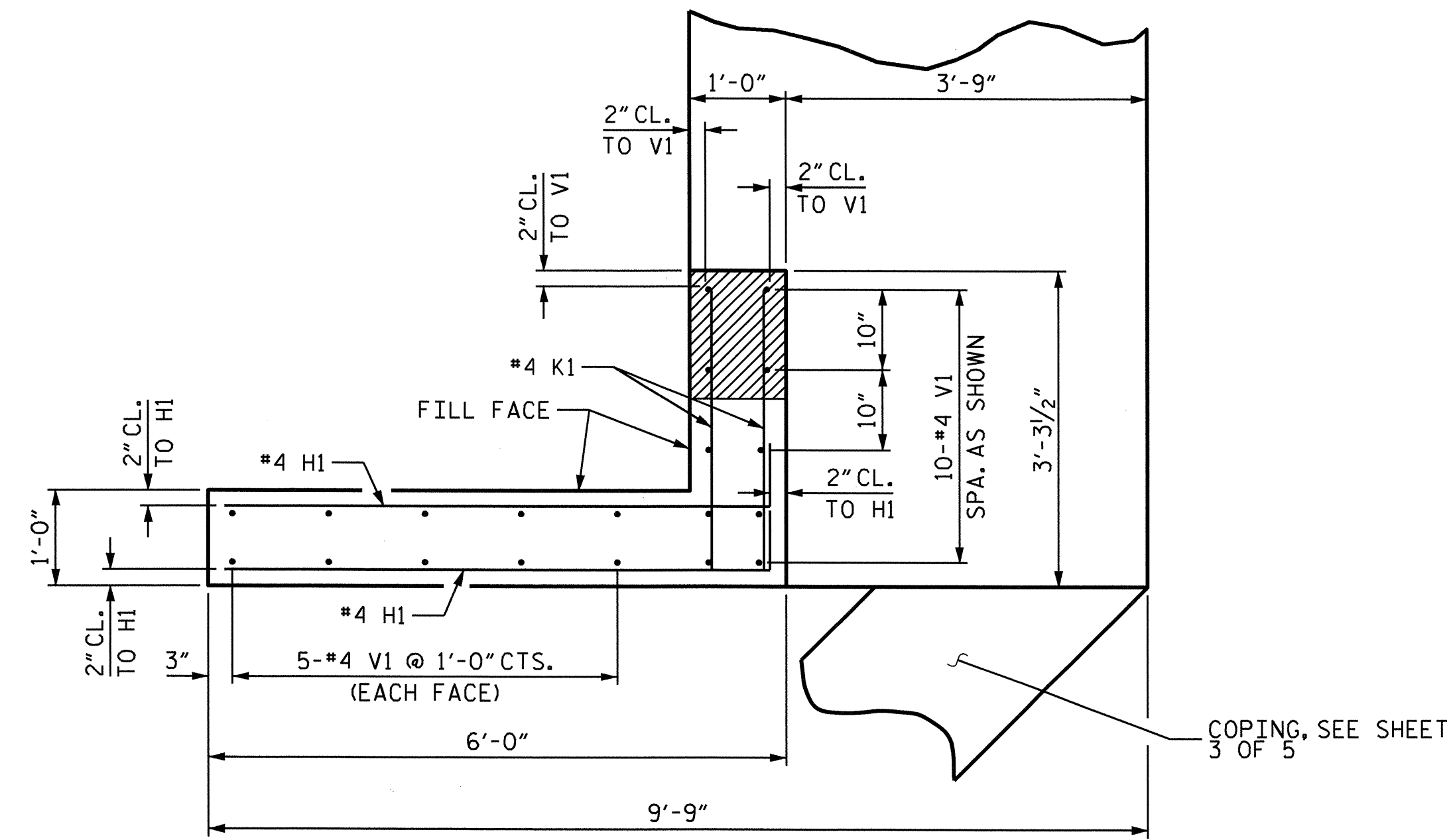
SHEET 3 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
SUBSTRUCTURE END BENT #1						S-12
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	39
1			3			
2			4			



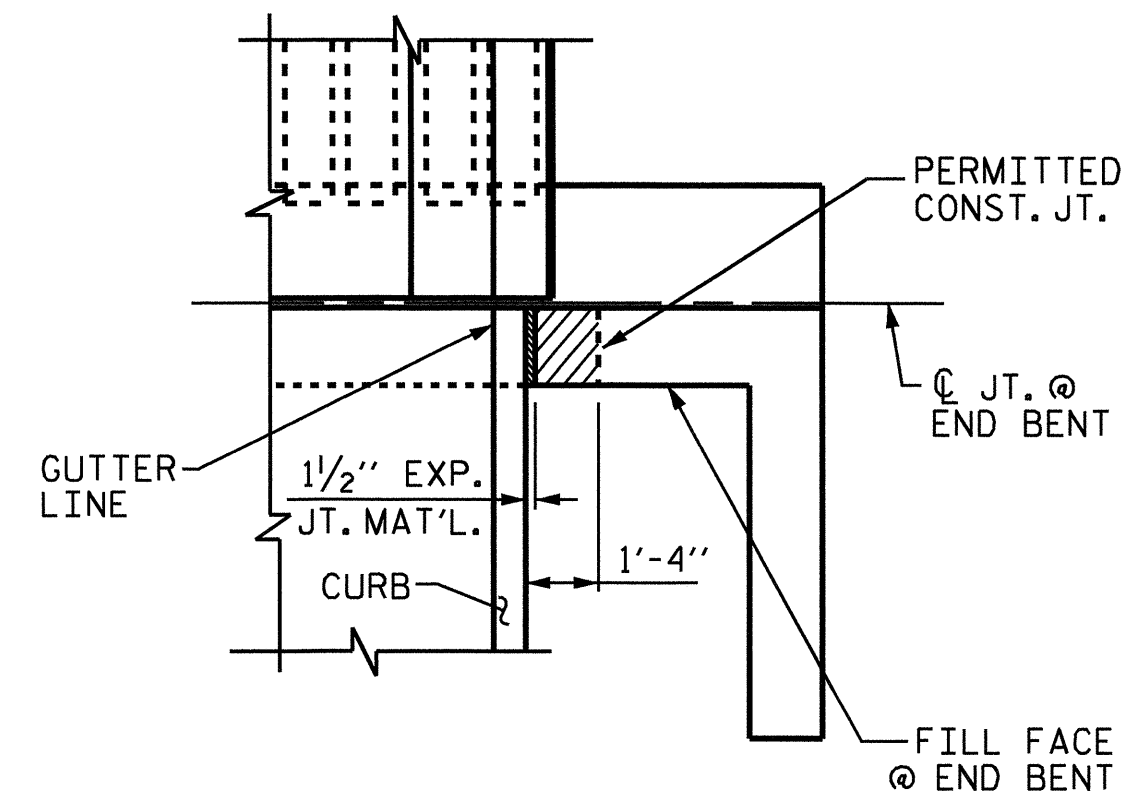
STR. #1

NC005

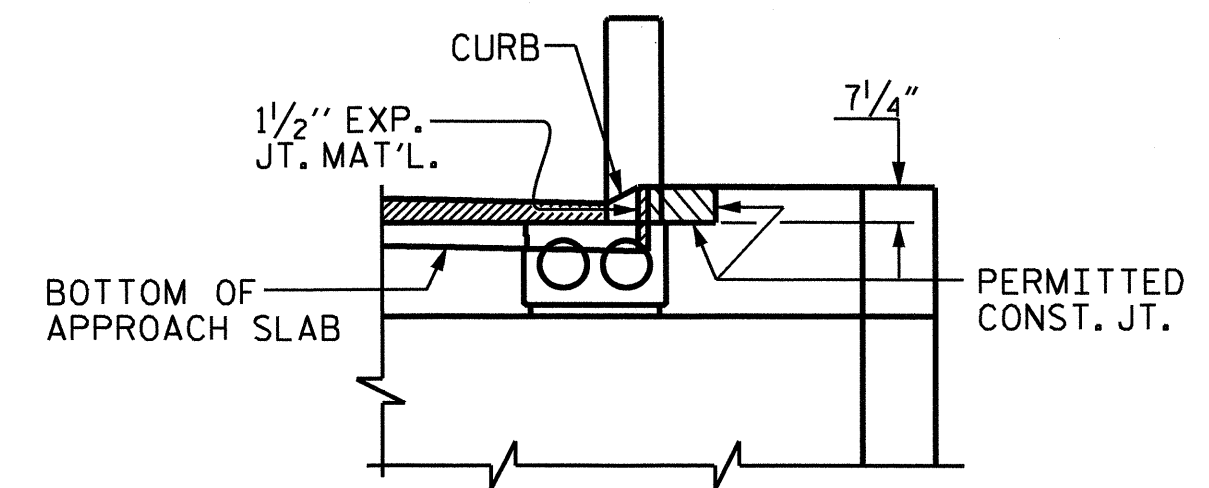


PLAN OF WING W2

PLAN OF WING W1 SIMILAR

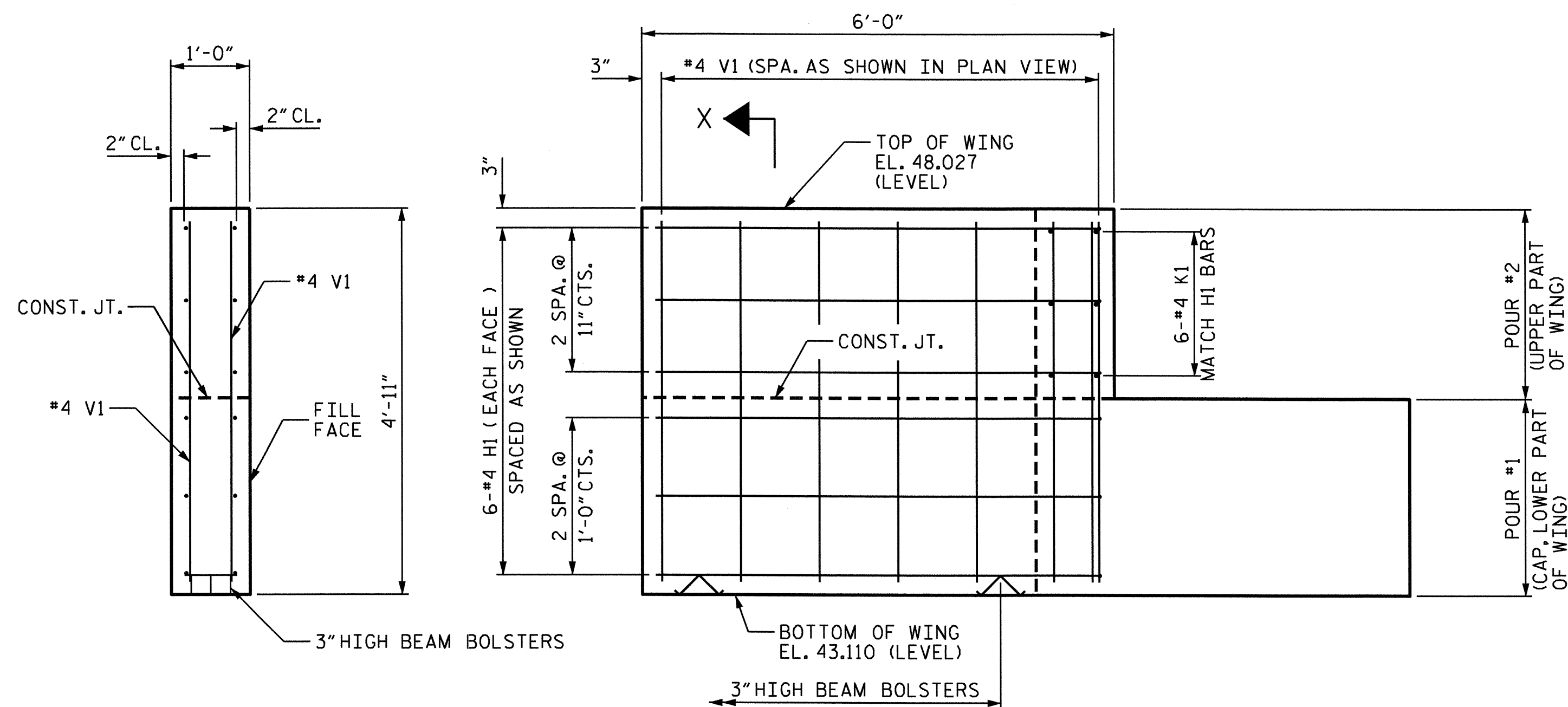


PLAN



ELEVATION

BLOCKOUT IN WING WALL FOR CORED SLAB



SECTION X-X

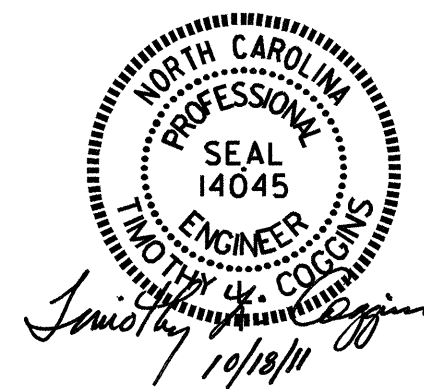
ELEVATION OF WING W2

ELEVATION OF WING W1 SIMILAR

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1

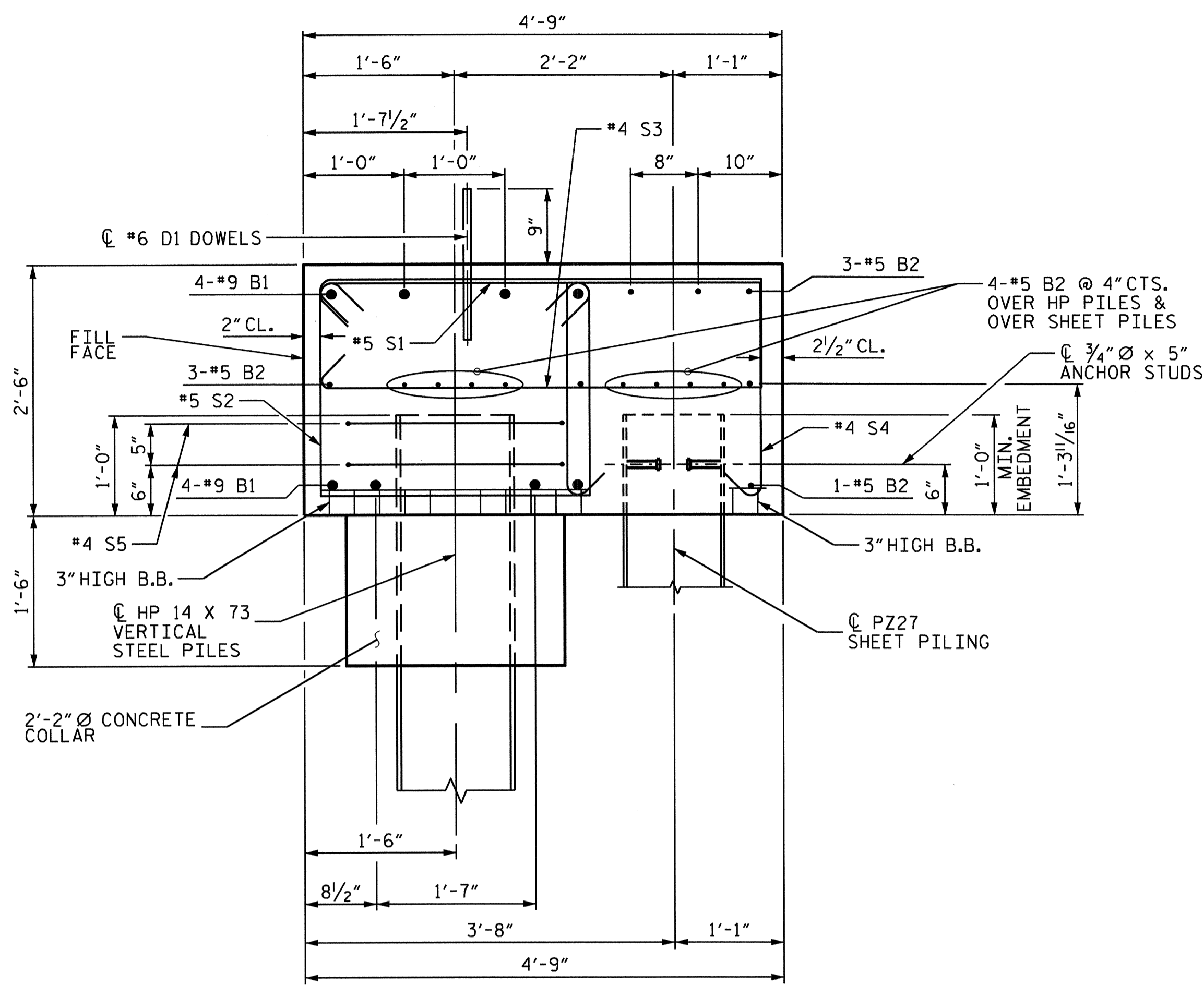


DRAWN BY : Neil M. Ruffin DATE : 5/12/11
 CHECKED BY : B.N. BARODAWALA DATE : 6-10-11

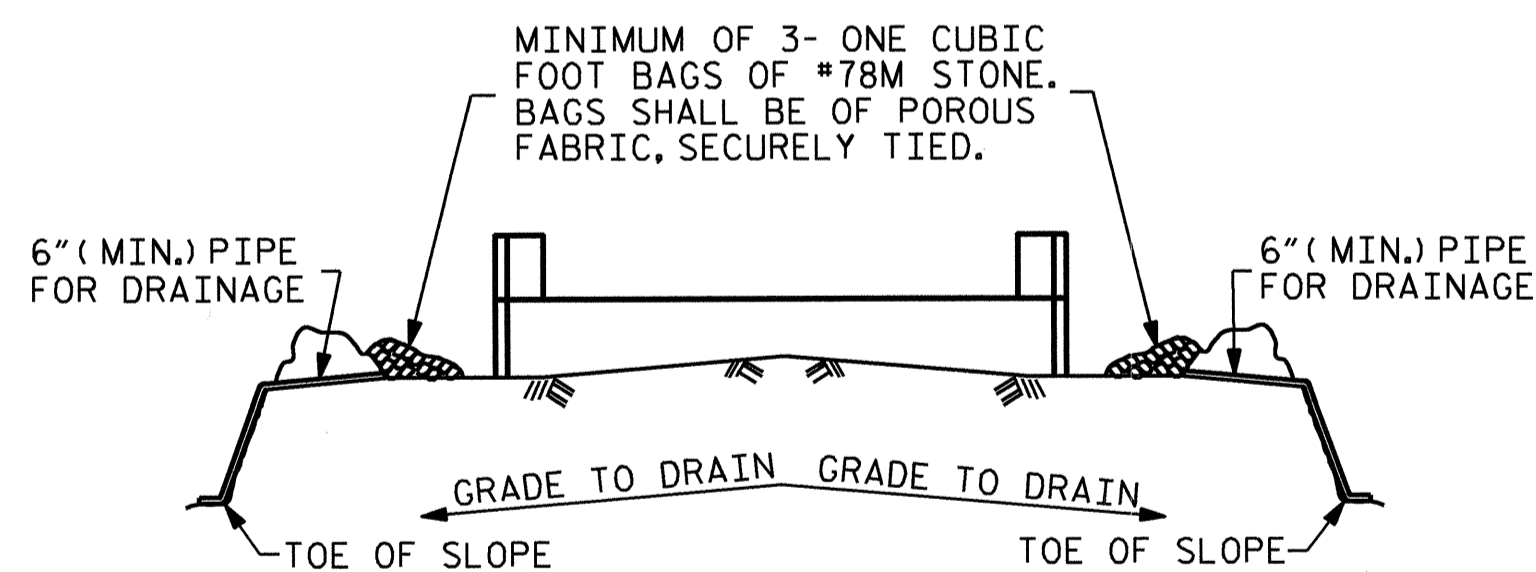
12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR *1\B4473.sd.eb.01.dgn
 nruffin

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 39
2			4			

STR. #1 NC005



SECTION A-A THRU CAP

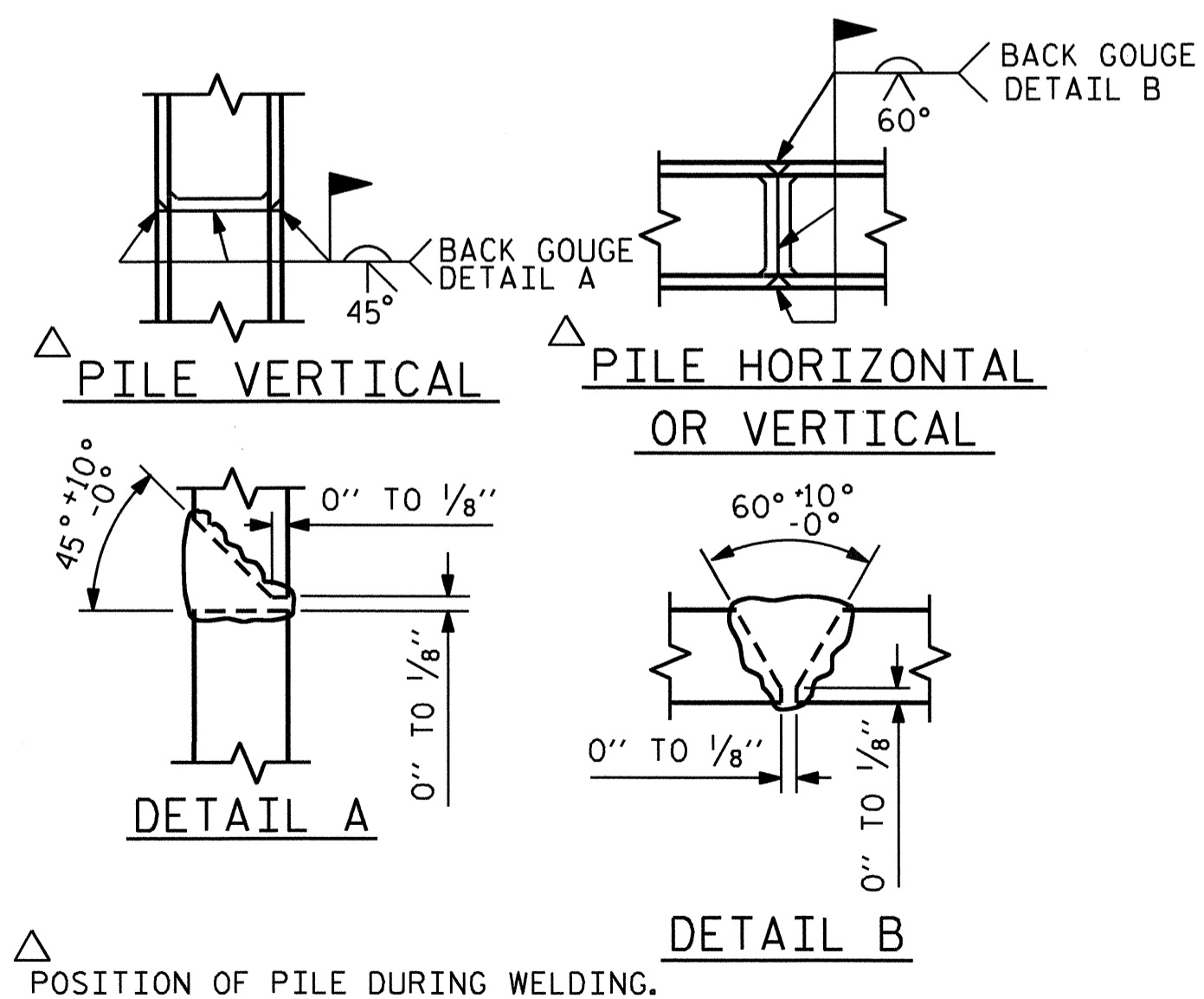


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

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

TEMPORARY DRAINAGE AT END BENT



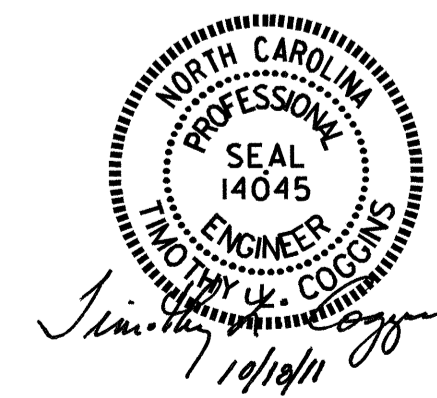
PILE SPLICE DETAILS

BAR TYPES				END BENT #1	
BILL OF MATERIAL					
BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	41'-0"	1115
B2	15	5	STR	38'-8"	605
B3	6	4	STR	1'-8"	7
D1	22	6	STR	1'-6"	50
H1	24	4	5	6'-4"	102
H2	2	4	6	9'-3"	12
H3	1	4	6	9'-6"	6
H4	1	4	6	9'-10"	7
H5	2	4	6	10'-2"	14
H6	2	4	6	10'-2"	14
H7	1	4	6	10'-6"	7
H8	1	4	6	10'-10"	7
H9	2	4	6	11'-0"	15
K1	12	4	STR	2'-11"	23
S1	38	5	2	3'-7"	142
S2	38	5	3	7'-10"	310
S3	10	4	3	10'-7"	71
S4	19	4	3	6'-11"	88
S5	10	4	4	7'-6"	50
S6	15	4	3	3'-8"	37
V1	40	4	STR	4'-7"	122
REINFORCING STEEL lbs.					2,804
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 CONCRETE COLLARS, CAP, LOWER WINGS, & COPING					20.3 C.Y.
POUR #2 UPPER WINGS					1.5 C.Y.
TOTAL					21.8 C.Y.
HP 14 x 73 STEEL PILES					
No. = 5					LIN. FEET 300
PILE REDRIVES					
EACH					5
18" STEEL SHEET PILES					
NO. PZ45 COLT = 1					
NO. PZ90 = 1					
NO. PZ27 = 36					
TOTAL NO. = 38					SO. FT. 993

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: Neil M. Ruffin DATE: 5/21/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

--- NOTES ---

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

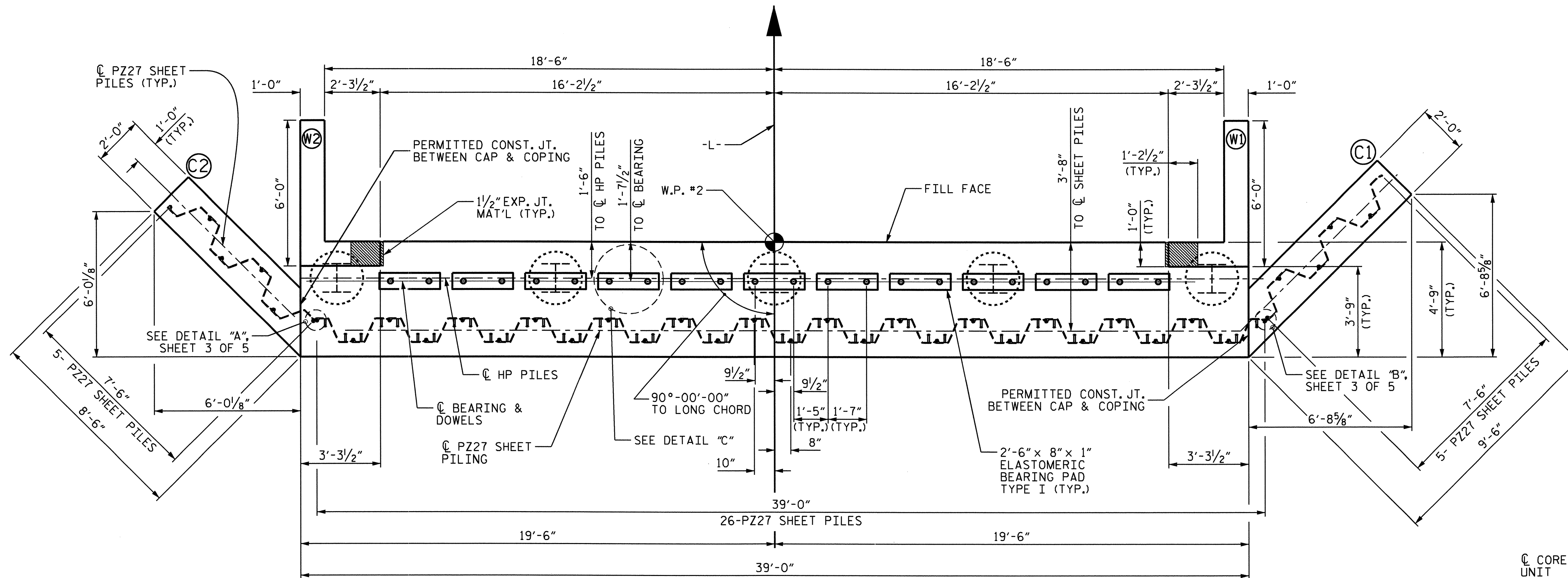
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

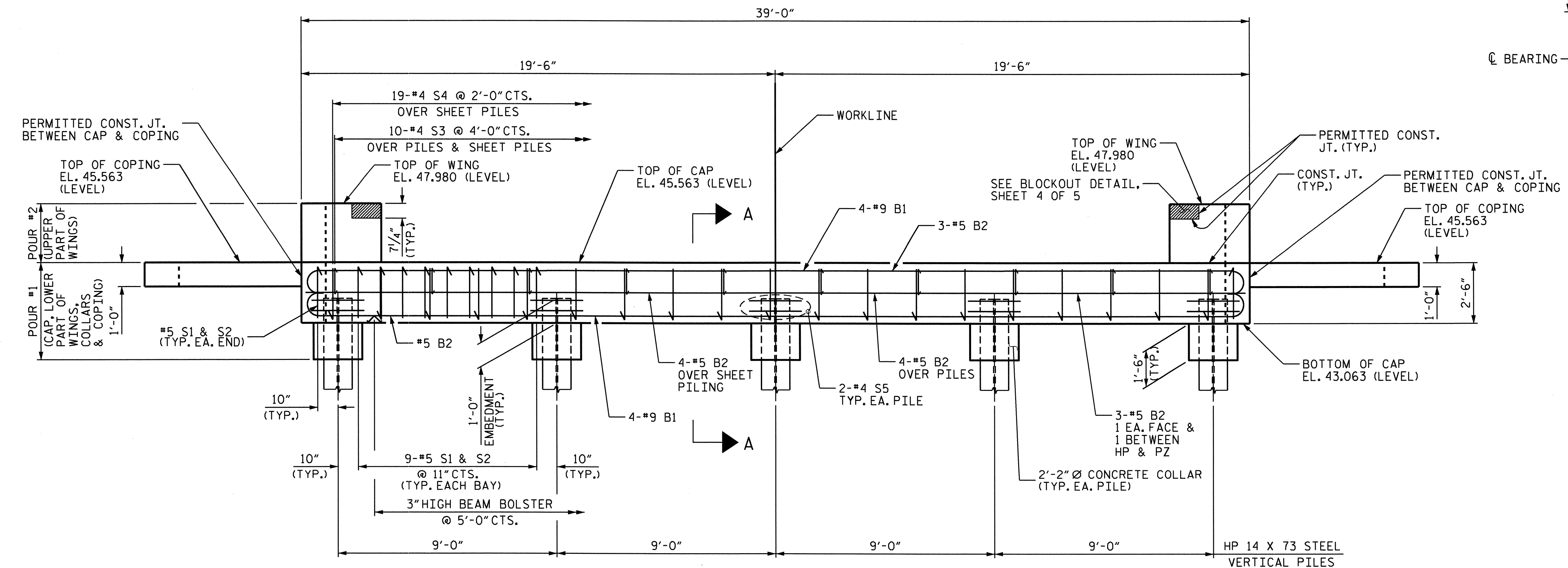
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

STEEL SHEET PILES SHALL BE HOT ROLLED.

FOR ELEVATION VIEW OF PZ27 SHEET PILES, SEE SHEET 2 OF 5.

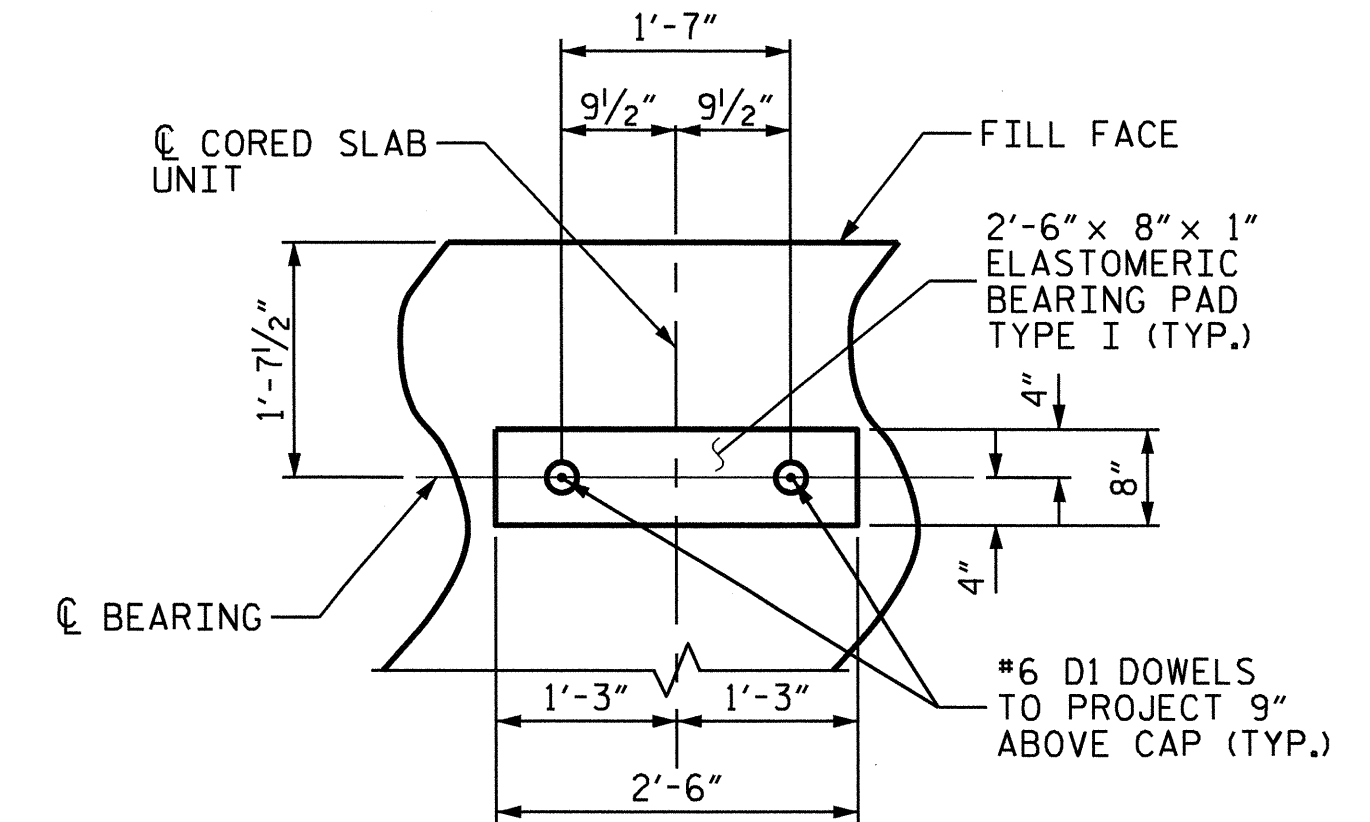


PLAN



ELEVATION

SHEET PILING NOT SHOWN FOR CLARITY.



DETAIL "C"

DRAWN BY: *N.M. Ruffin* DATE: 5/12/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

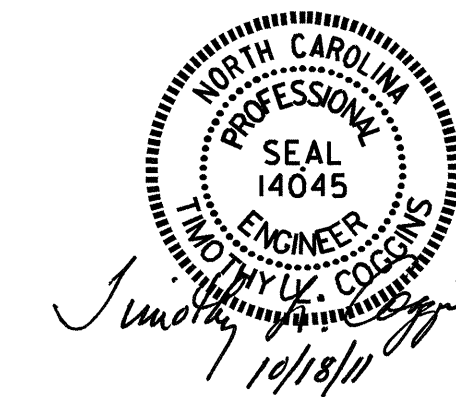
11-OCT-2011 12:17
 R:\TIP\Projects-BN4473\Structures\FINAL PLANS\STR *N4473.sd.sb.01.dgn
 toverette

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

SHEET 1 OF 5

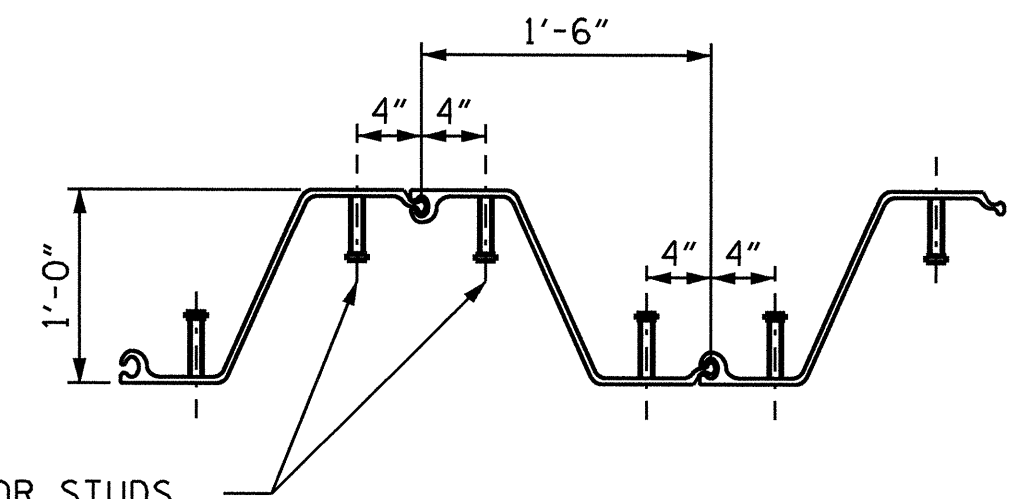
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-15	
				TOTAL SHEETS 39	



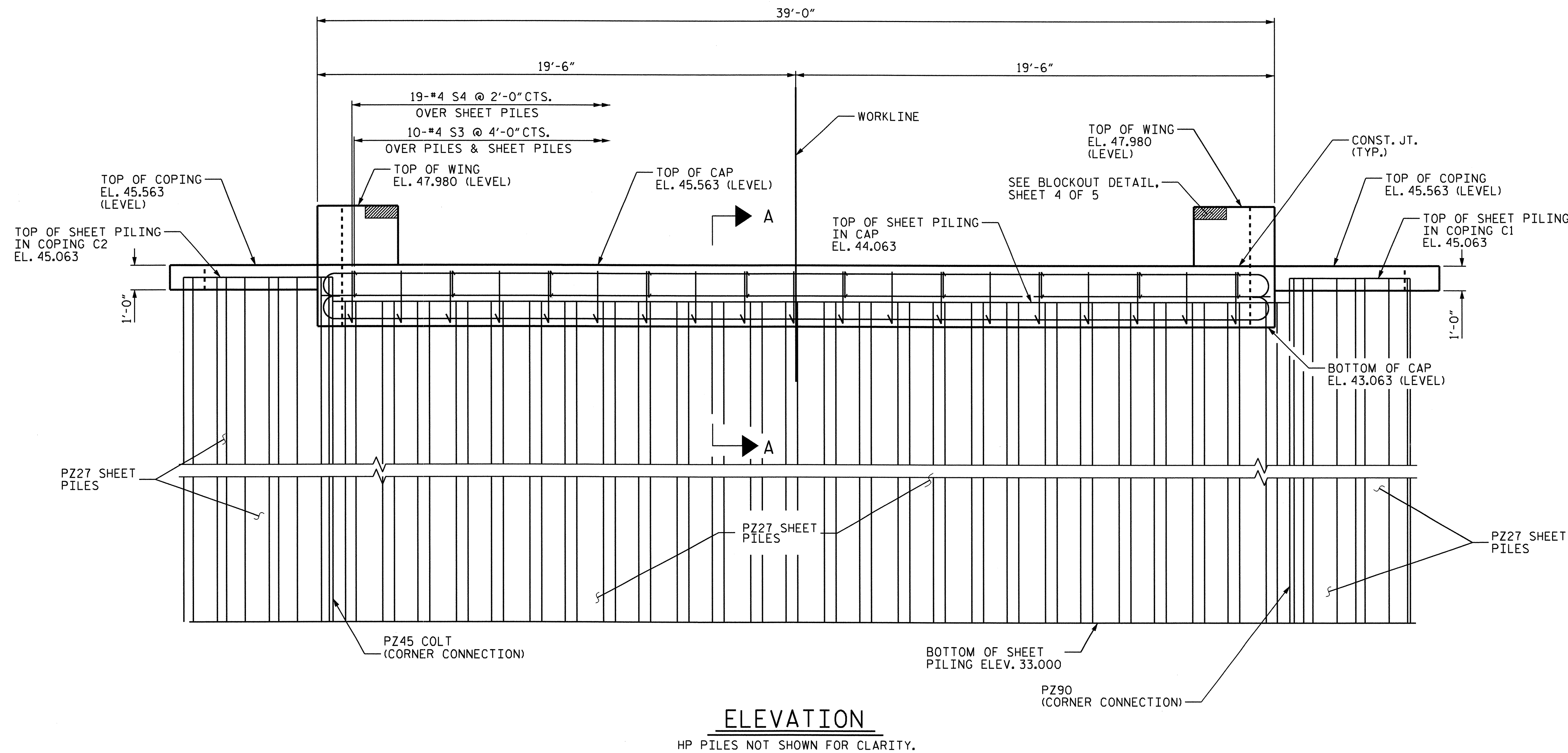
STR. #1

NC005



3/4" Ø x 5" ANCHOR STUDS
WELDED TO SHEET PILES
(2 STUDS PER SHEET PILE
ONLY IN THE CAP)

ANCHOR STUD DETAILS



ELEVATION
HP PILES NOT SHOWN FOR CLARITY.

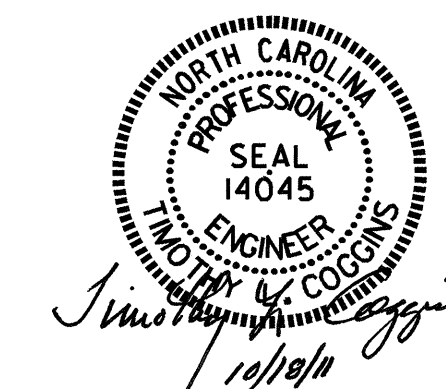
PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 12+65.75 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

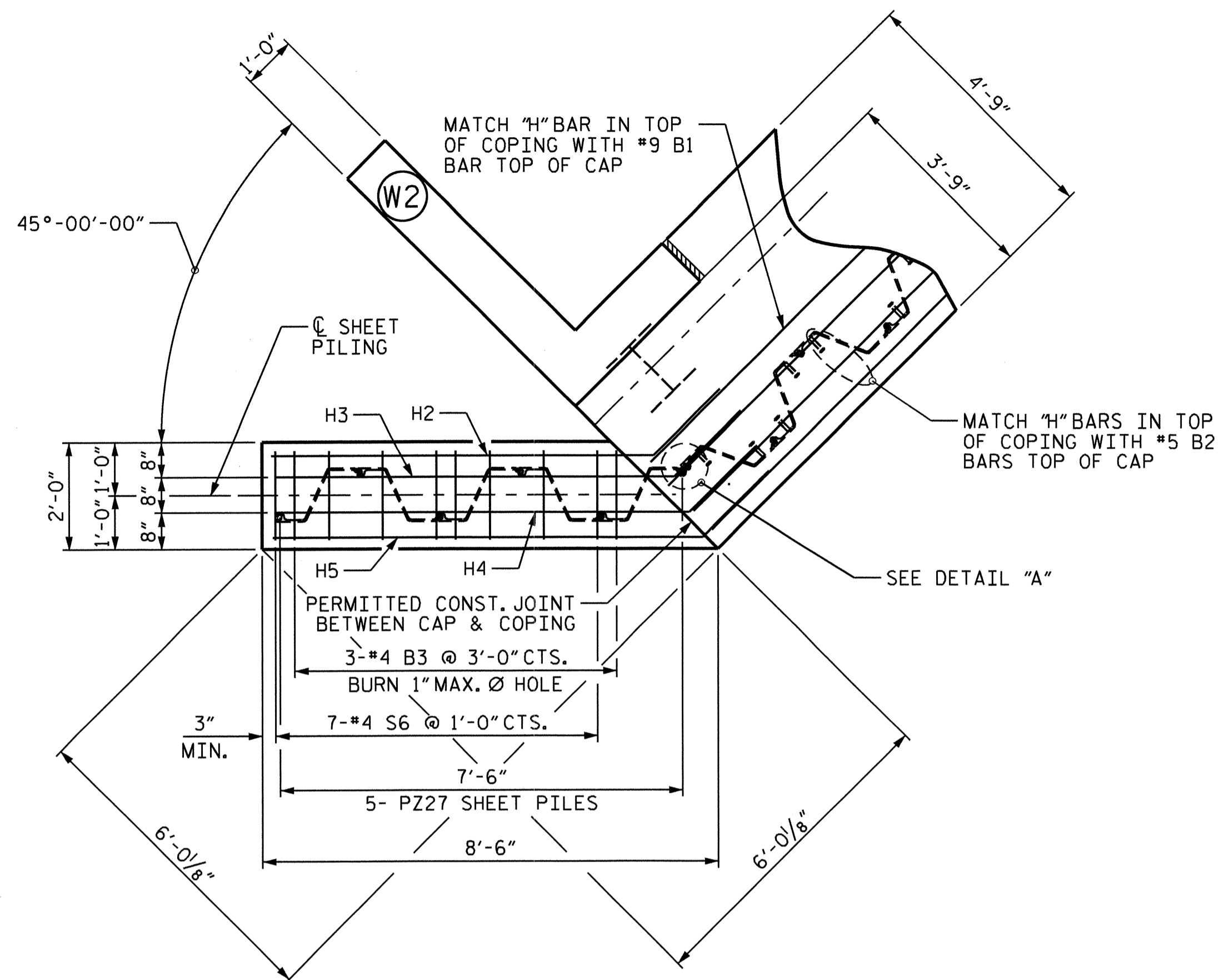
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			39



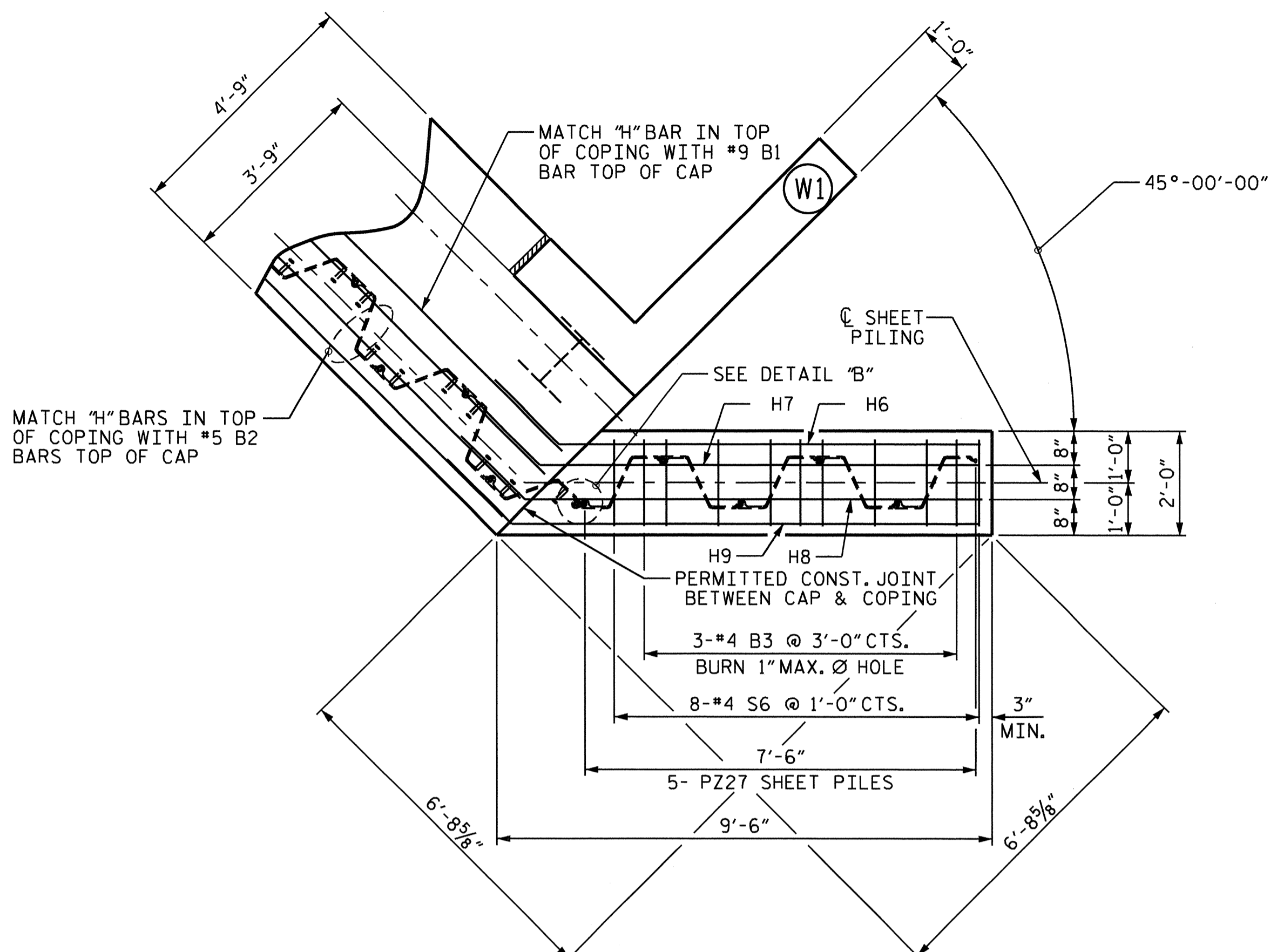
DRAWN BY: Ned M. Ruffin DATE: 5/12/11
CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

12-SEP-2011 11:41
R:\Structures\FINAL PLANS\STR *1\b4473.sd.eb.01.dgn
nruffin

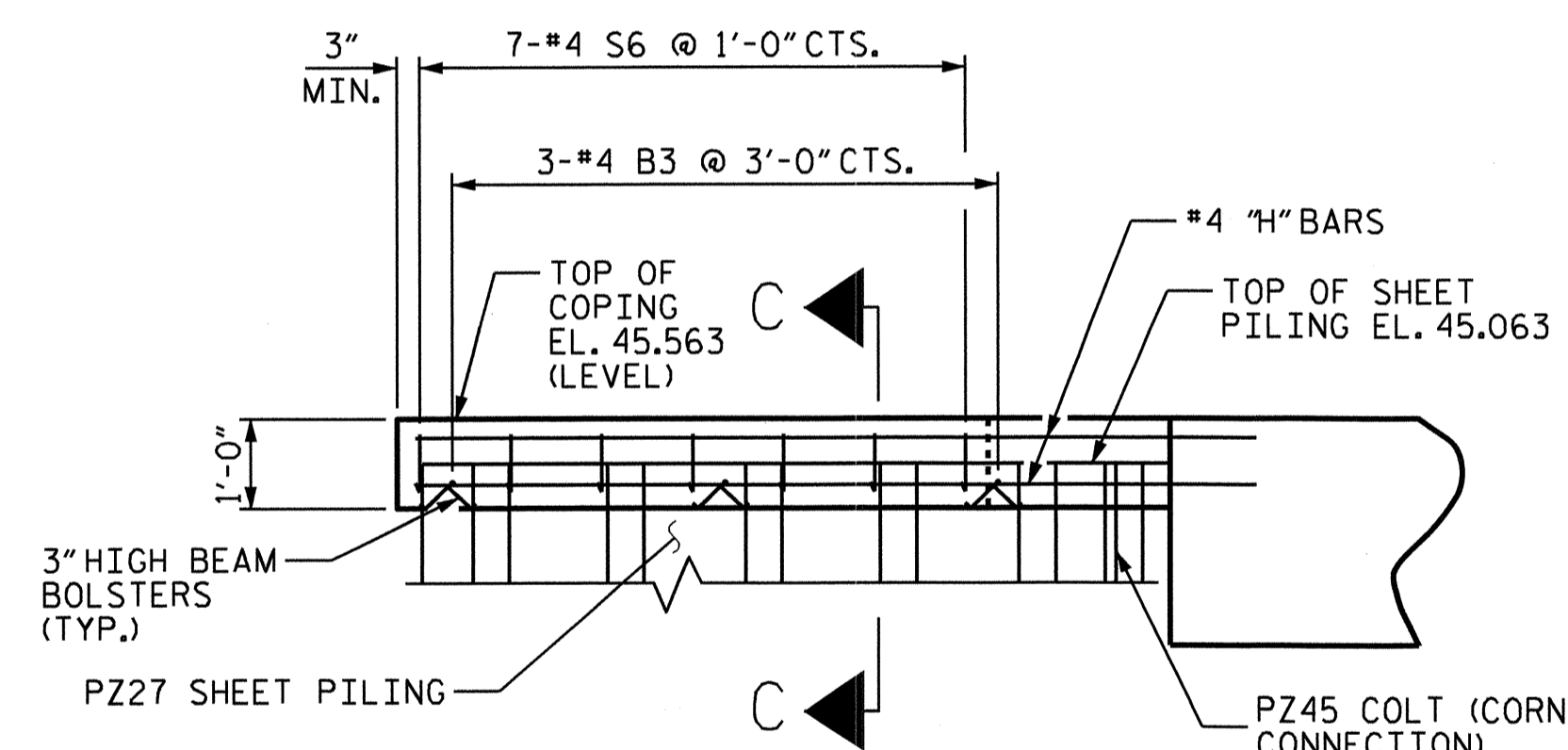
STR. #1 NC006



PLAN OF COPING C2

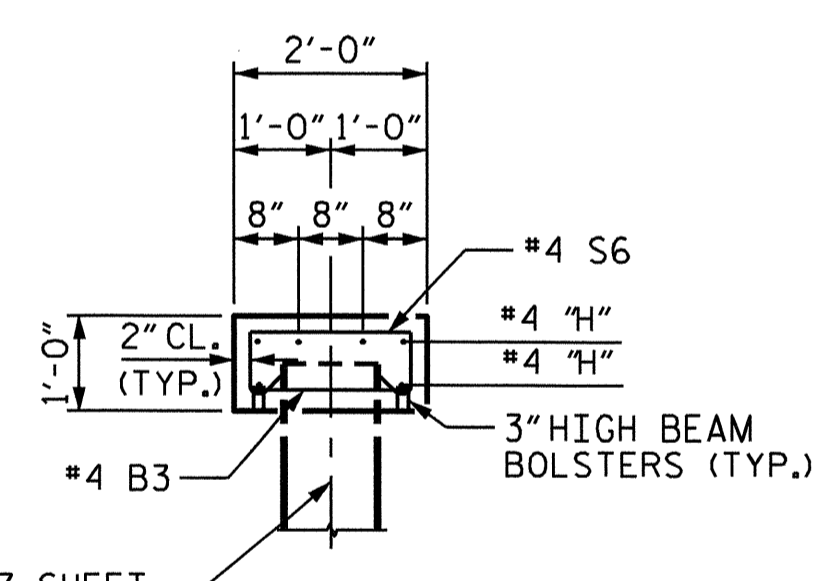


PLAN OF COPING C1

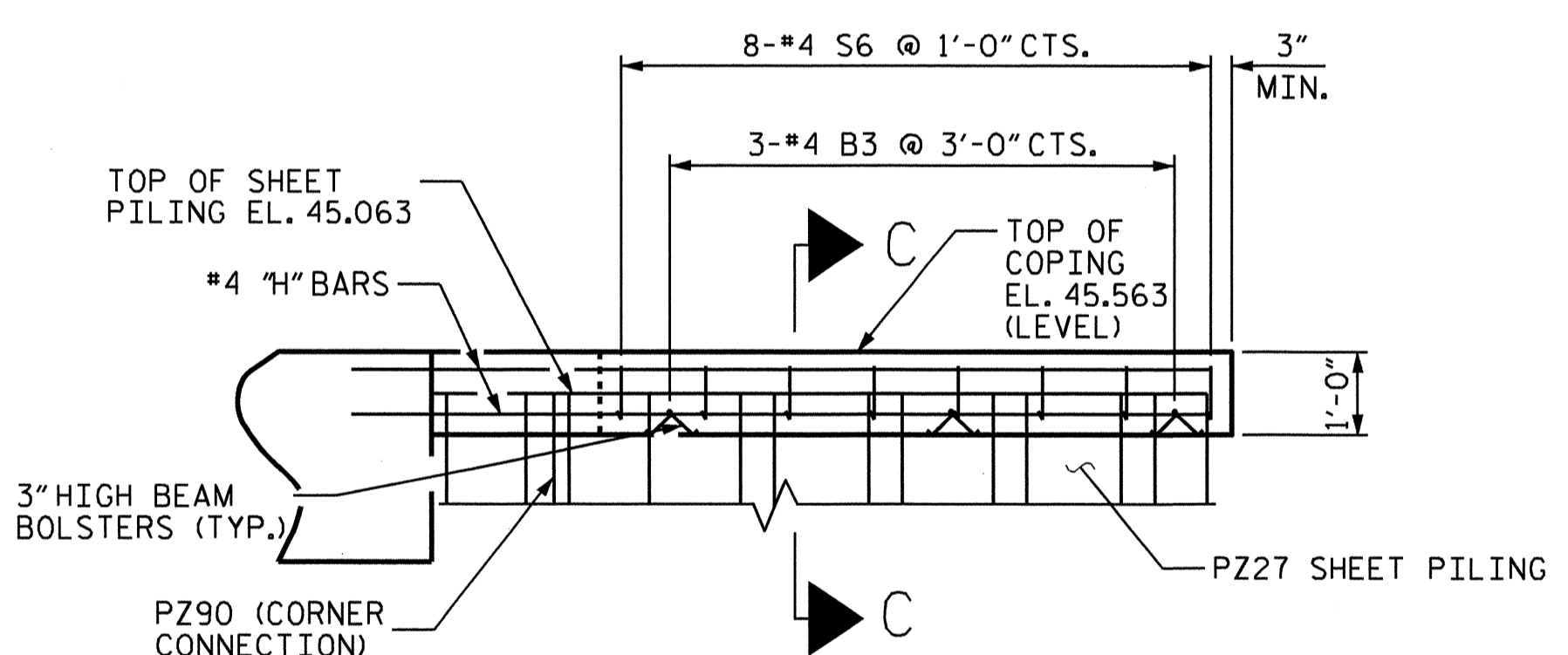


ELEVATION OF COPING C2

(WING NOT SHOWN FOR CLARITY)

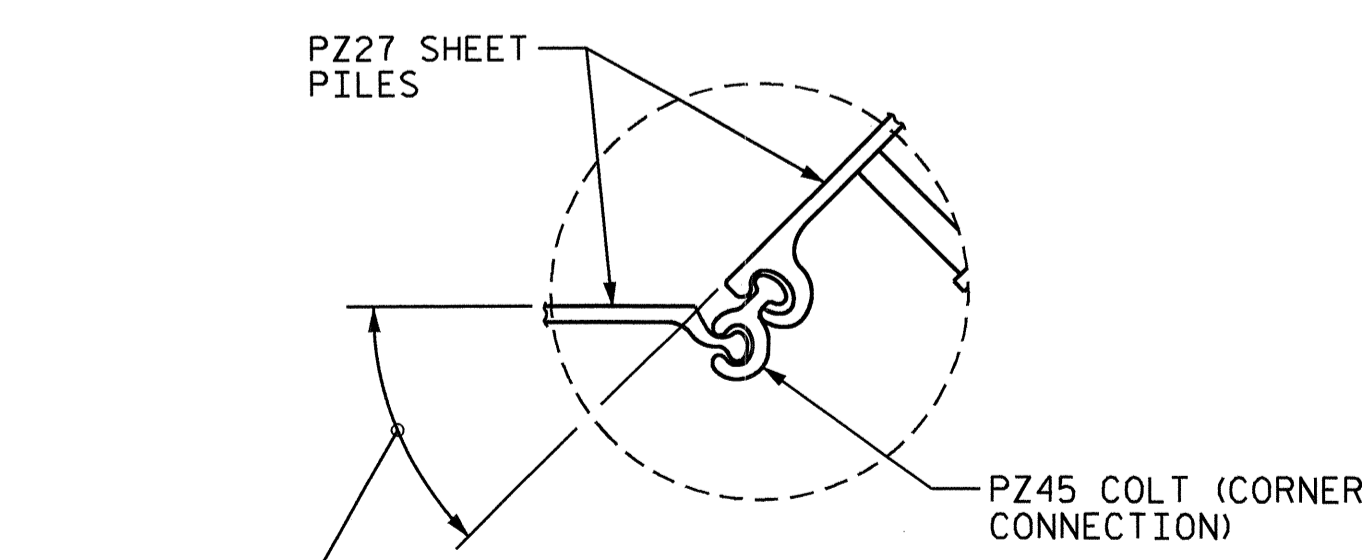


SECTION C-C

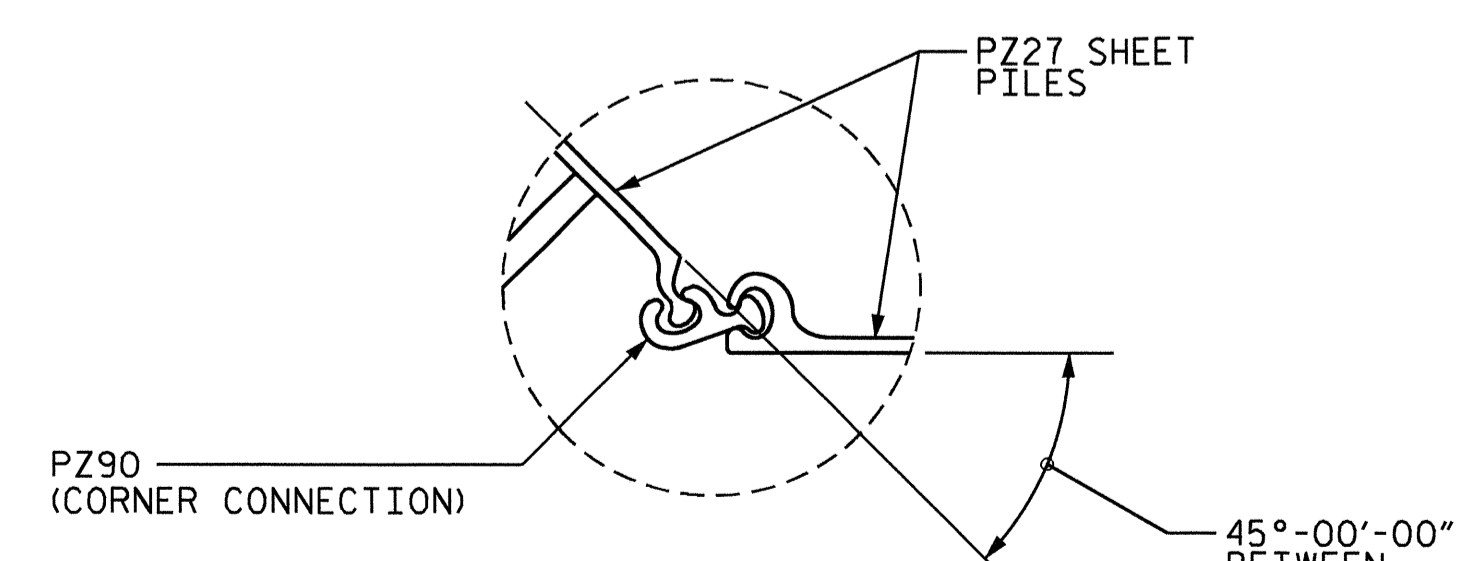


ELEVATION OF COPING C1

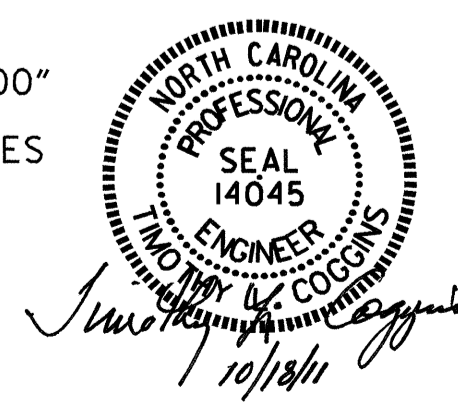
(WING NOT SHOWN FOR CLARITY)



DETAIL "A"



DETAIL "B"

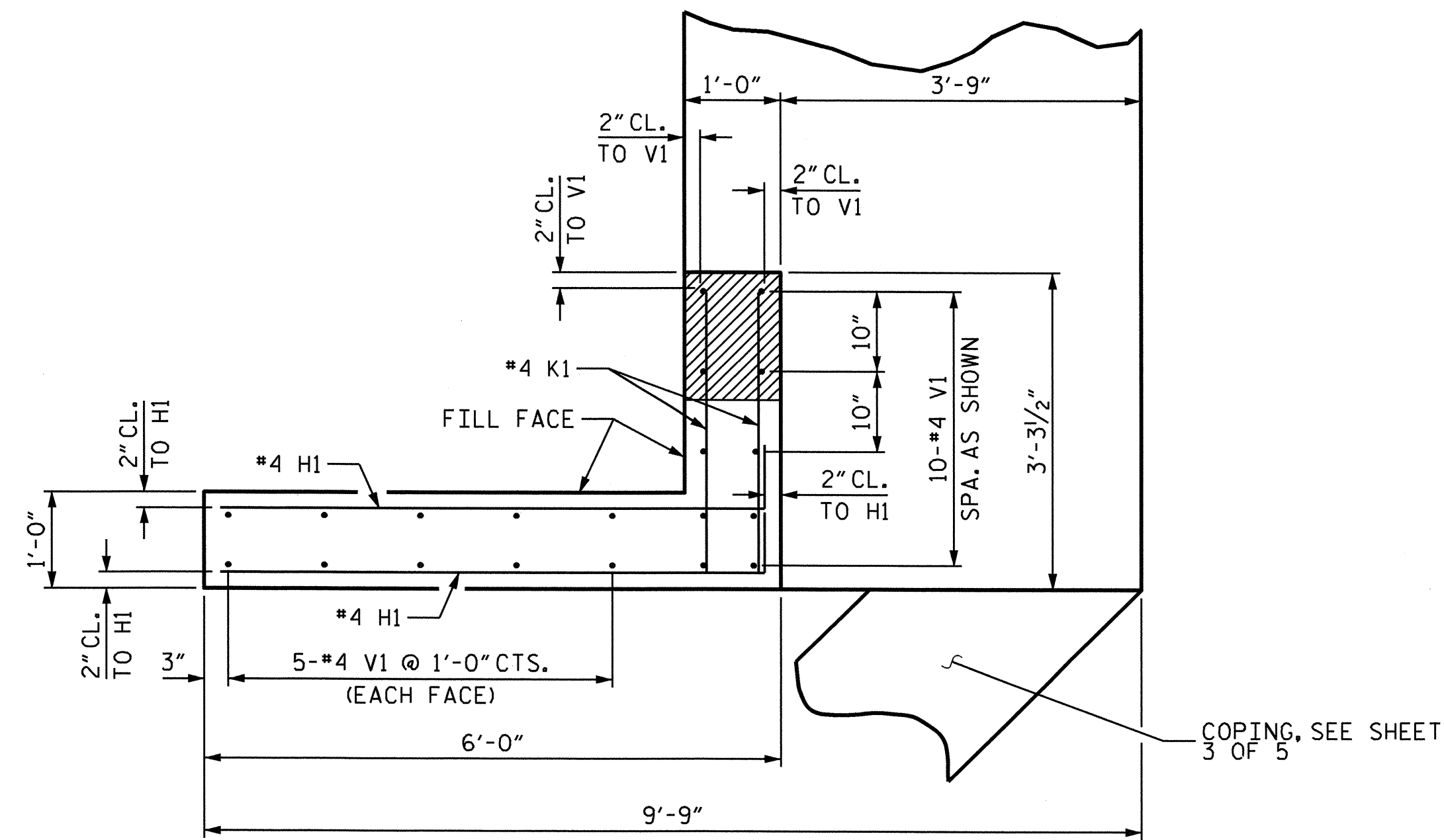


PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-
 SHEET 3 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-17
SUBSTRUCTURE END BENT #2						TOTAL SHEETS 39
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

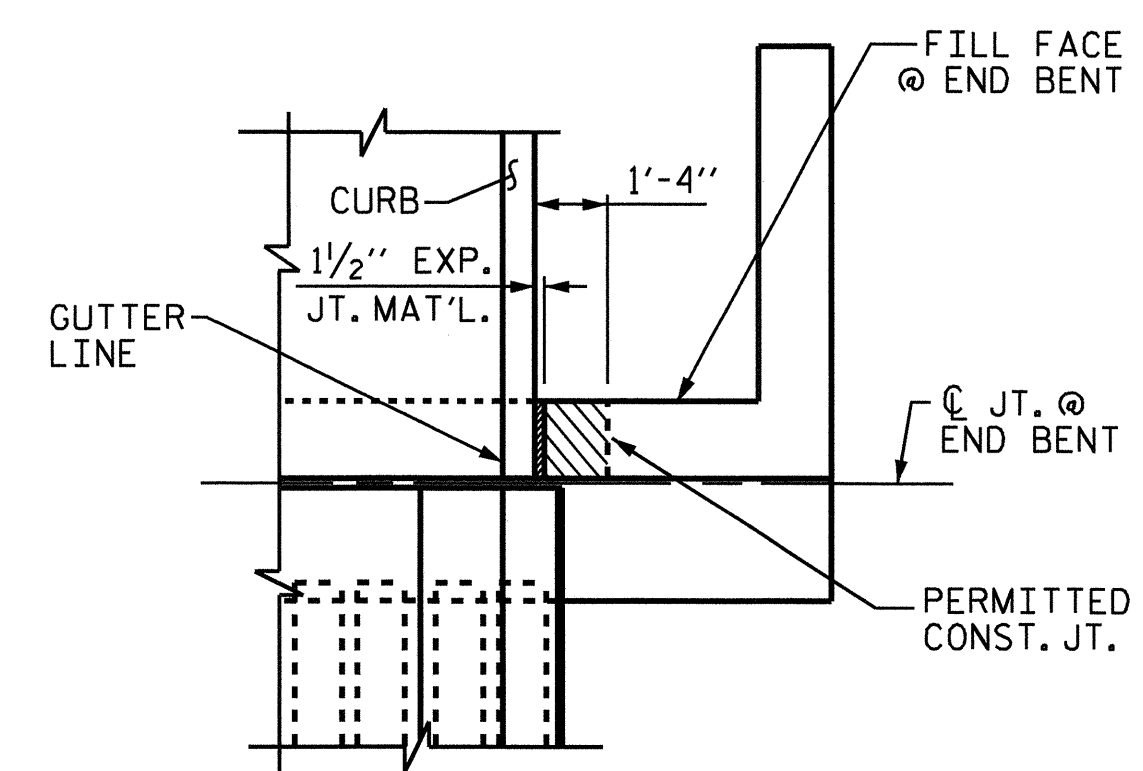
DRAWN BY: Nat M. Ruffin DATE: 5/2/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR *1\4473.sd..01.dgn
 nruffin

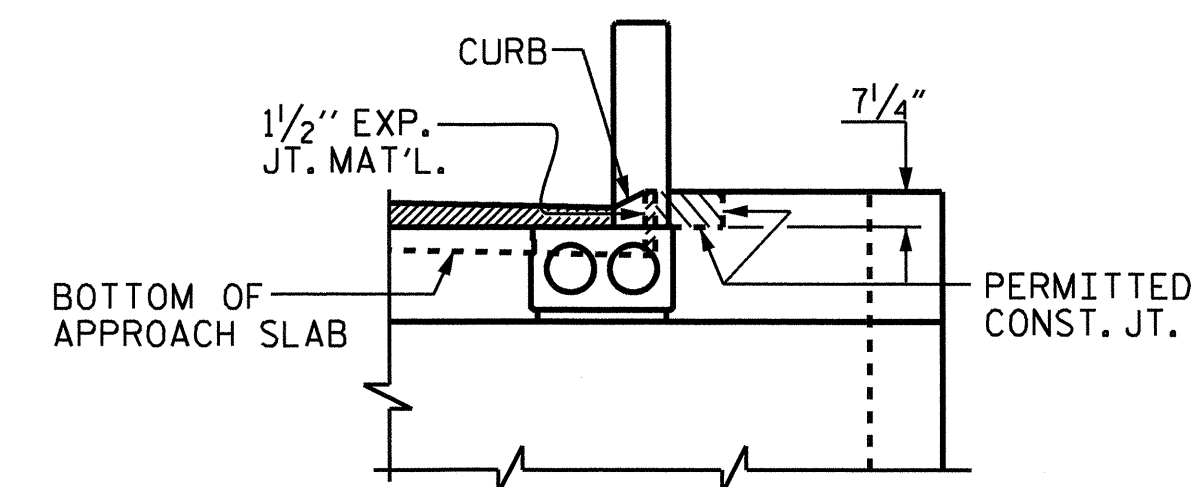


PLAN OF WING W2

PLAN OF WING W1 SIMILAR

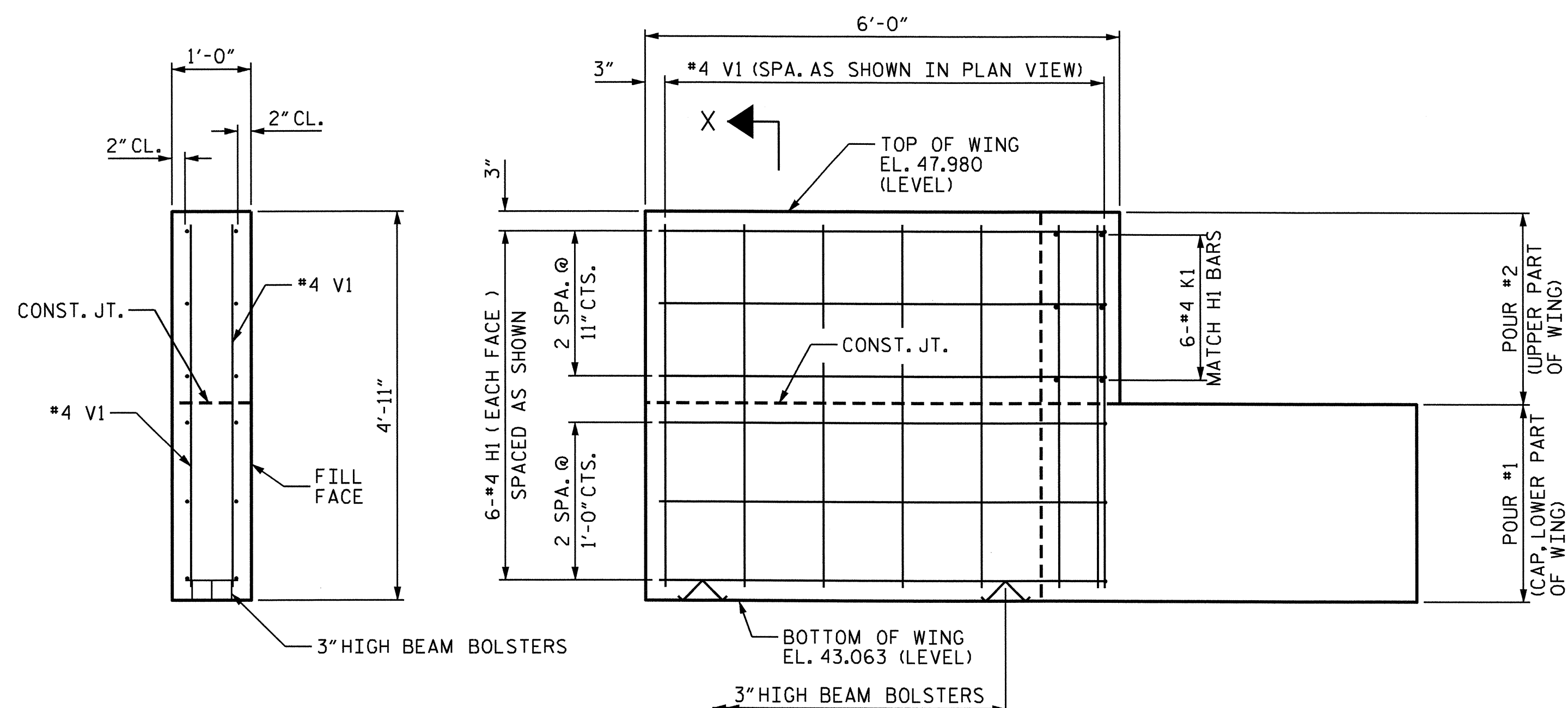


PLAN



ELEVATION

BLOCKOUT IN WING WALL FOR CORED SLAB



SECTION X-X

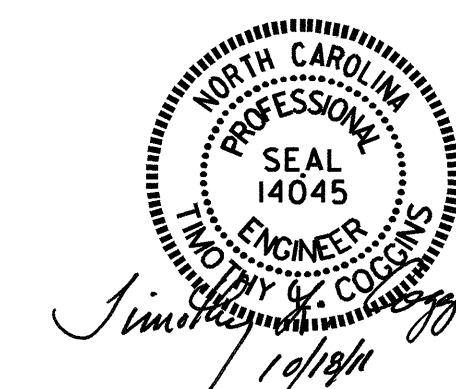
ELEVATION OF WING W2

ELEVATION OF WING W1 SIMILAR

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 12+65.75 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2



DRAWN BY: Nat M. Ruffin DATE: 5/12/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR *1\B4473.sd.eb.01.dgn
 nruffin

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			39

STR. #1

NC006

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

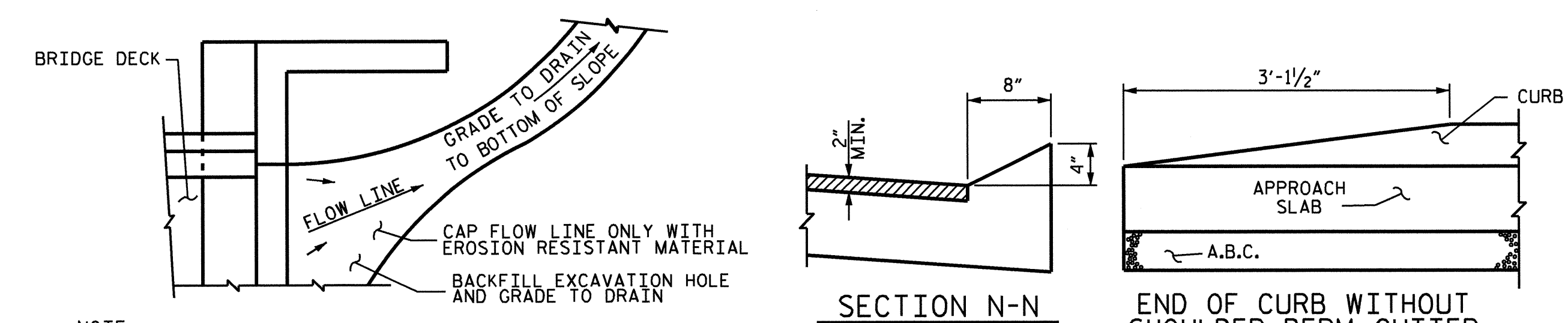
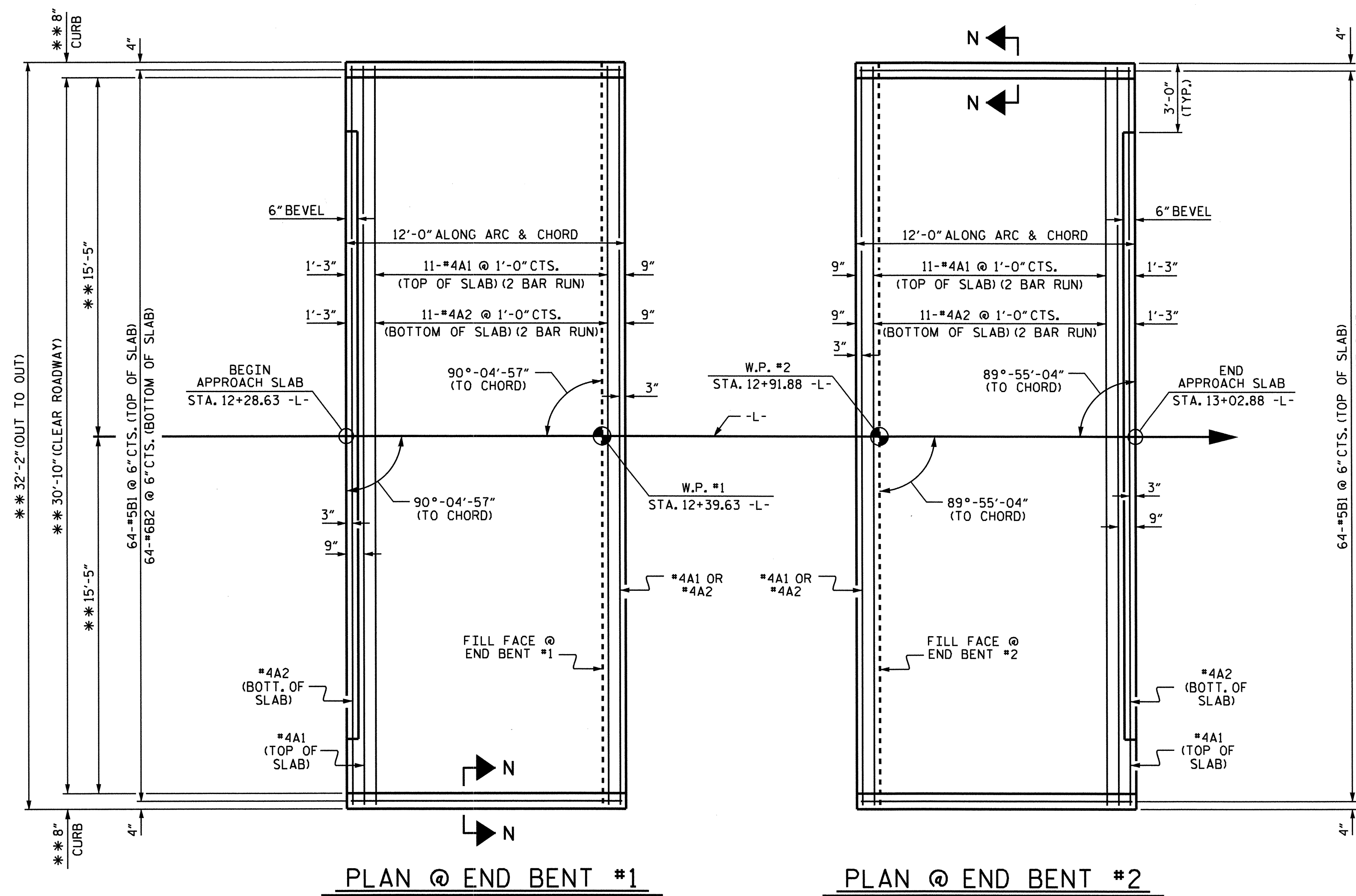
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLAB.

APPROACH SLAB GROOVING IS NOT REQUIRED.

ARC OFFSETS ARE NEGLIGIBLE.

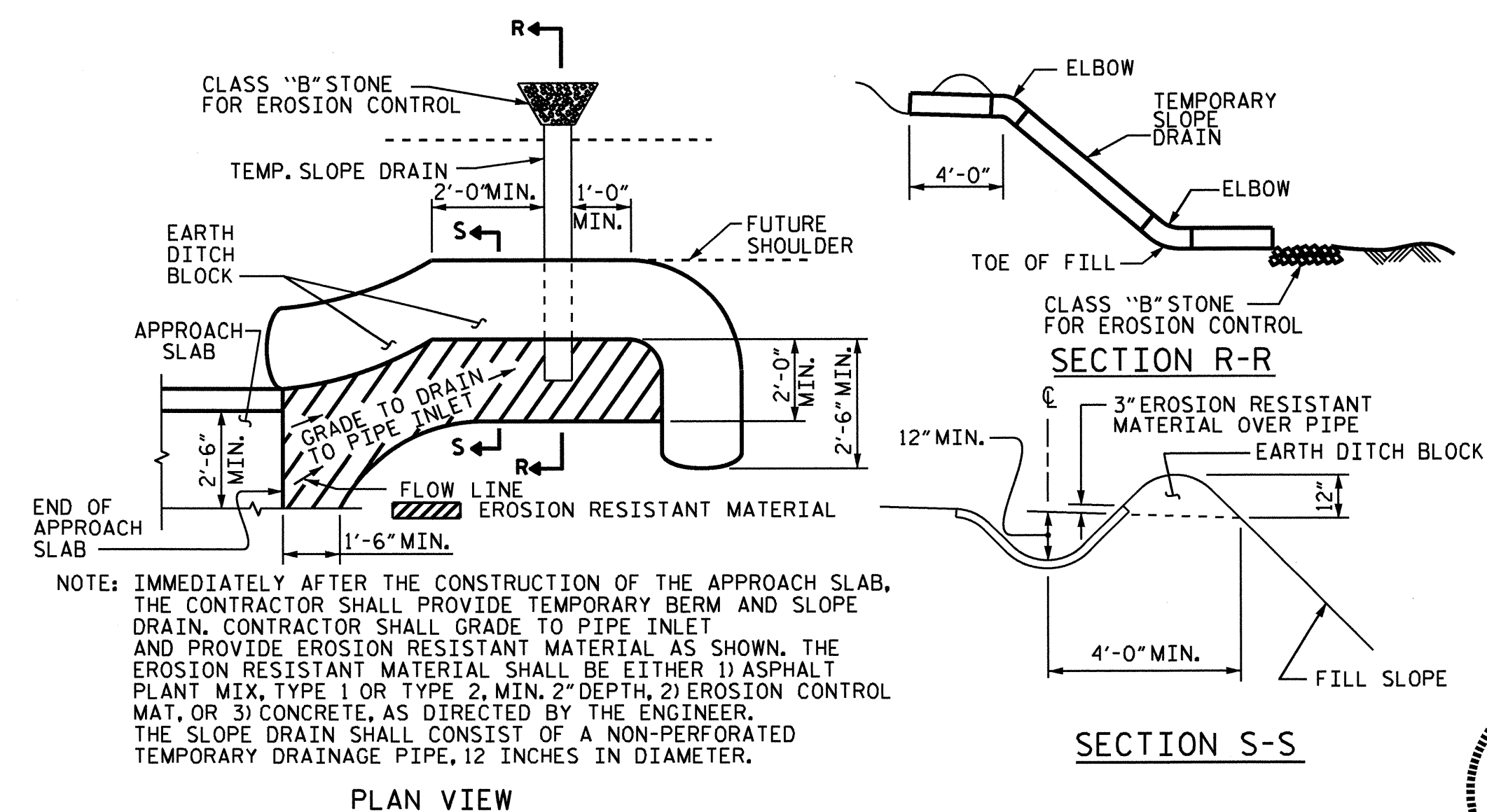
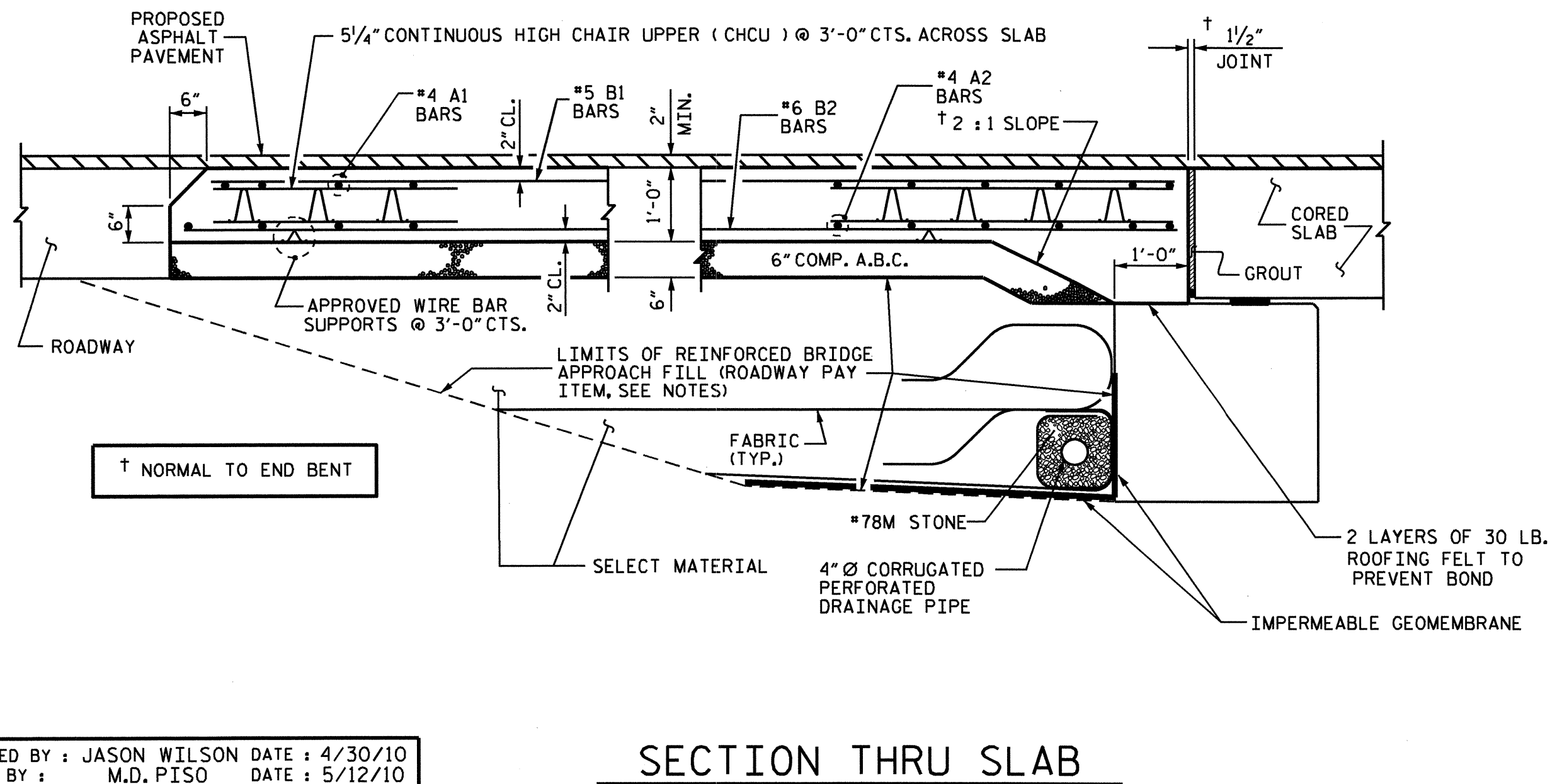
BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
*B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
*EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	16.2
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
*B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
*EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	16.2



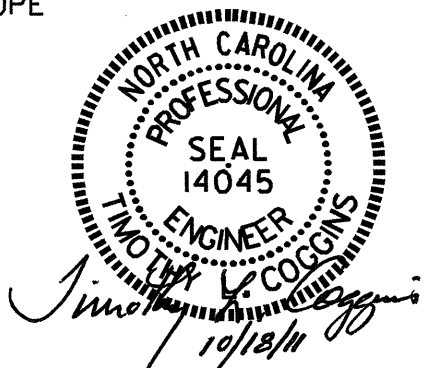
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.



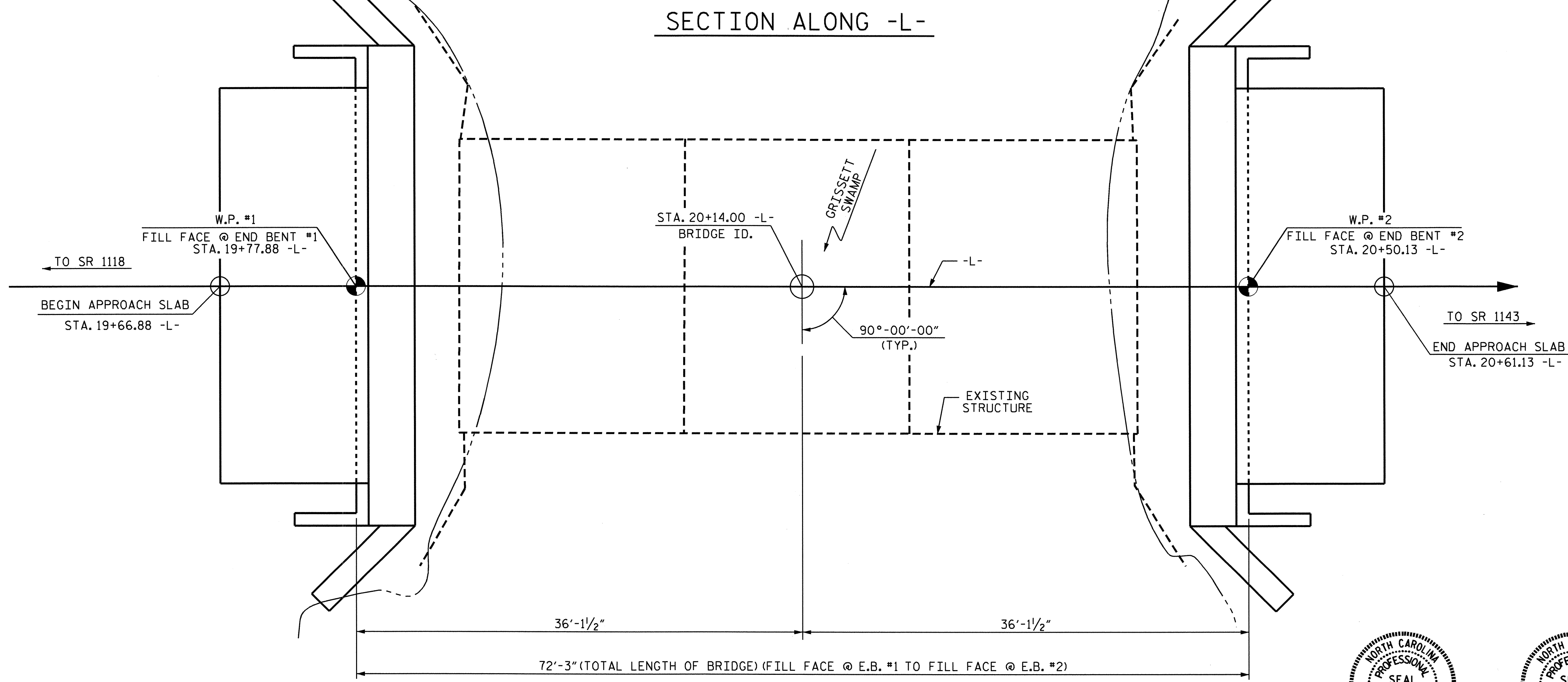
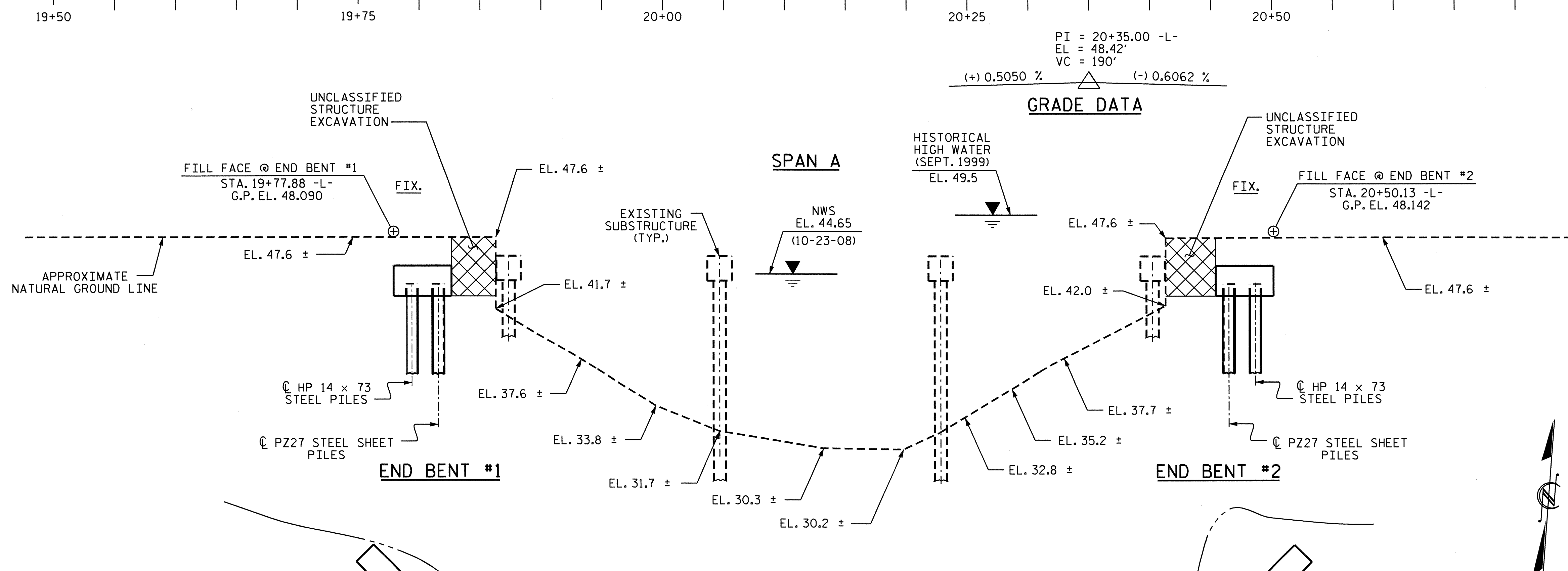
PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 12+65.75 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

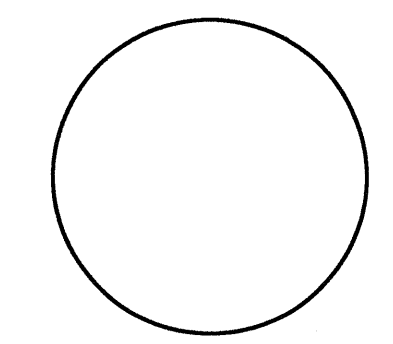
TOTAL SHEETS: 39

ASSEMBLED BY: JASON WILSON DATE: 4/30/10
CHECKED BY: M.D. PISO DATE: 5/12/10
DRAWN BY: SHS/MAA 5-09
CHECKED BY: BCH 5-09



PILES AND SHEET PILES NOT SHOWN FOR CLARITY

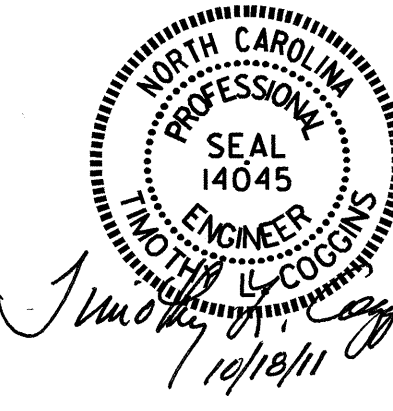
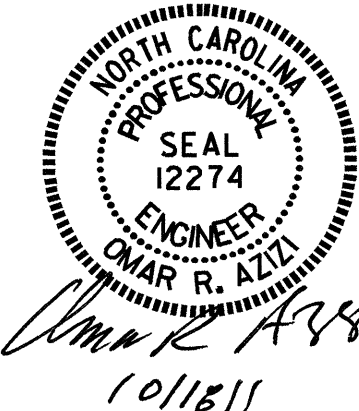
I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 76

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER GRISSETT SWAMP ON SR 1006 BETWEEN SR 1118 AND SR 1143



DRAWN BY: B.N. BARODAWALA DATE: 5-6-11
 CHECKED BY: PEGGY PARISI DATE: 6-15-11

REVISIONS						SHEET NO. S-21 TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

STR. #2

11-OCT-2011 12:47
 R:\TIP\Projects-B\B4473\Structures\FINAL PLANS\STR #2\B4473.sd.gd.02.dgn
 toveretta

NOTES

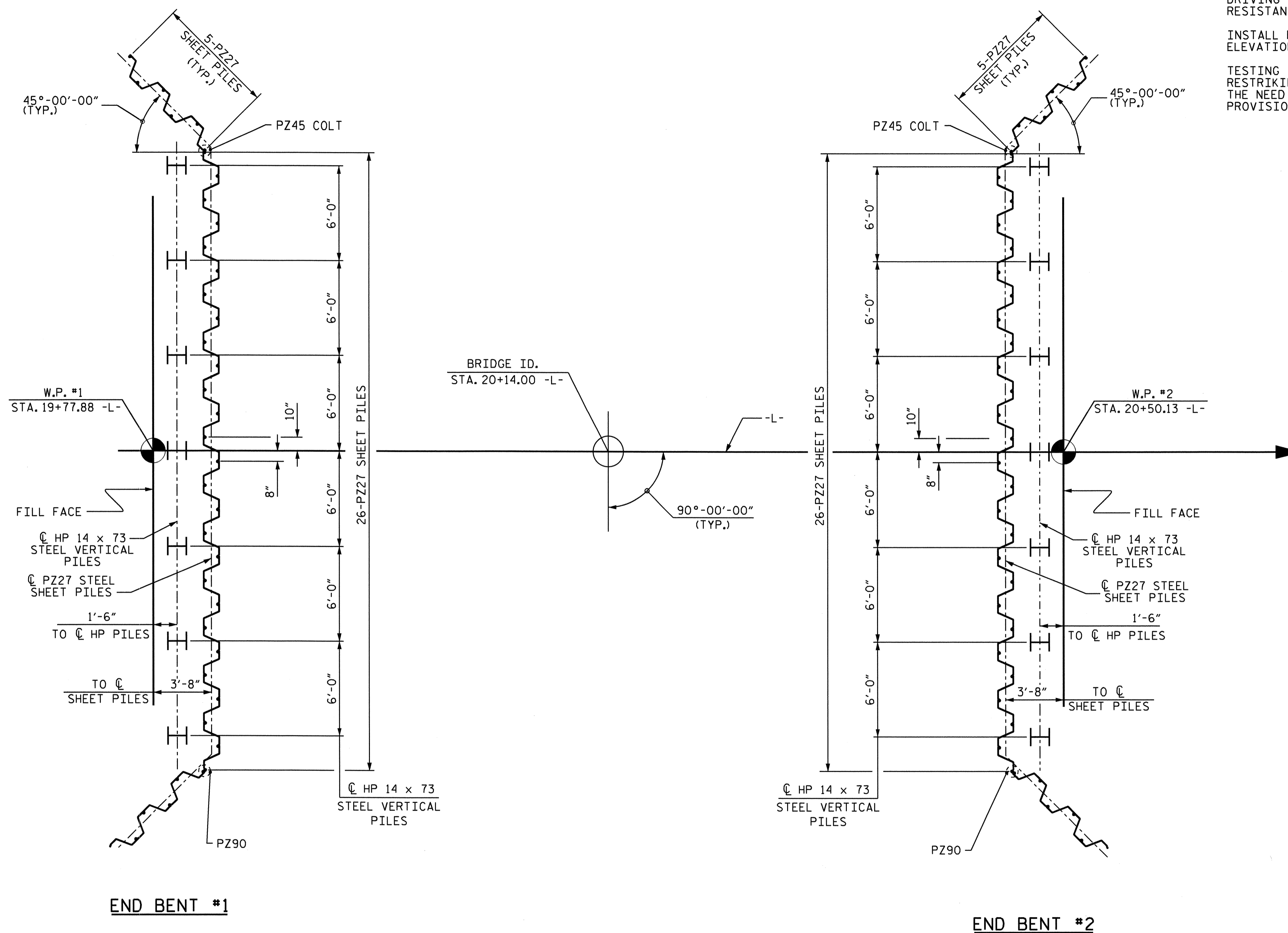
FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL PILES AT END BENT NO.1 AND END BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 9.0 FT.

TESTING THE PILES WITH THE PILE DRIVING ANALYZER DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PILE DRIVING ANALYZER, SEE PILES PROVISION.



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND SHEET PILES ARE SHOWN TO THE PILE CENTERLINE.

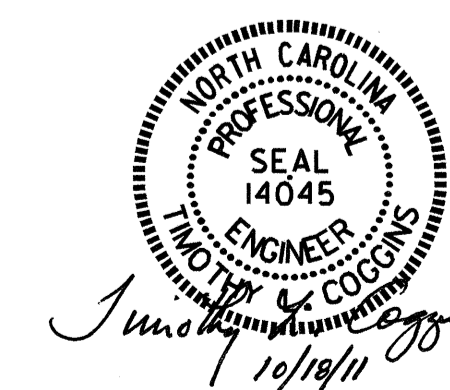
PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER GRISSETT SWAMP ON SR 1006 BETWEEN SR 1118 AND SR 1143



DRAWN BY : B.N.BARODAWALA DATE : 5-9-11
 CHECKED BY : PEGGY PARISI DATE : 6-15-11

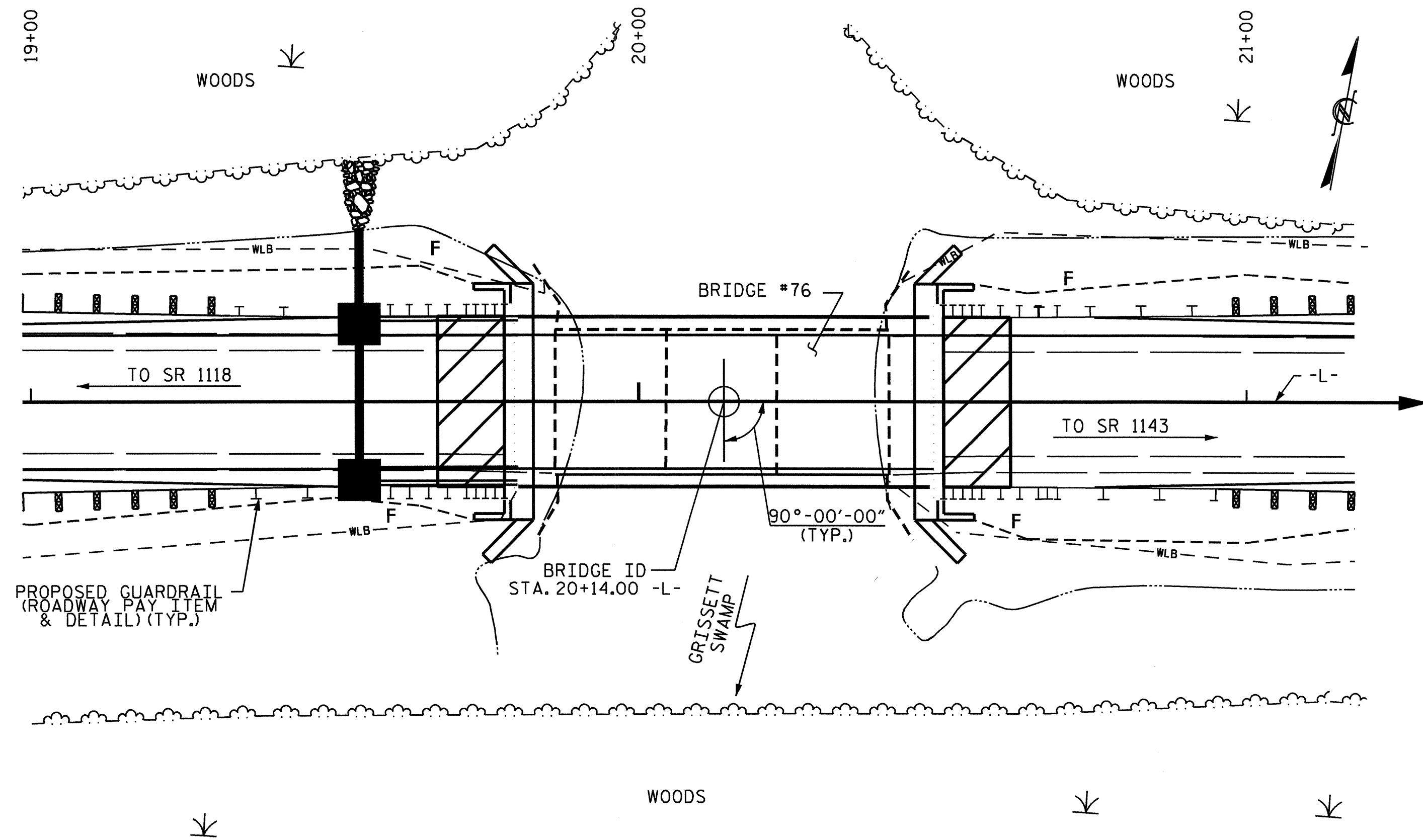
12-SEP-2011 14:51
 R:\Structures\FINAL PLANS\STR *2\4473.sd.gd.02.dgn
 ruffin

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			39

STR. #2

NC005

BM #6 - RR SPIKE IN 14" OAK, STA. 20+67.00 -L-, 59' RT., EL. 45.41'



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THE EXISTING STRUCTURE CONSISTING OF 3 SPANS, (1 @ 18'-8", 1 @ 18'-2" & 1 @ 18'-8") WITH A CLEAR ROADWAY WIDTH OF 24'-0" AND A CONCRETE DECK ON I BEAMS SUPPORTED BY A CONCRETE CAP AND TIMBER PILES AT THE END BENTS AND BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 20+14.00 -L-."
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 24 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
 FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.
 FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.
 FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.
 STEEL SHEET PILES SHALL BE HOT ROLLED.

TOTAL BILL OF MATERIAL															
	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 14 x 73 STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	18" STEEL SHEET PILES		
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	EACH	LIN.FT.	LUMP SUM	NO.	LIN.FT.	NO.	SO. FT.
SUPERSTRUCTURE					LUMP SUM					140.25	LUMP SUM	11	770.00		
END BENT NO. 1			LUMP SUM	22.4		2833	7	315	7					38	598
END BENT NO. 2			LUMP SUM	22.4		2833	7	350	7					38	601
TOTAL	LUMP SUM	1	LUMP SUM	44.8	LUMP SUM	5666	14	665	14	140.25	LUMP SUM	11	770.00	76	1199

HYDRAULIC DATA

DESIGN DISCHARGE..... 2000 CFS
 FREQUENCY OF DESIGN FLOOD..... 25 YEARS
 DESIGN HIGH WATER ELEVATION..... 46.1'
 DRAINAGE AREA..... 27.1 SQ. MI.
 BASE DISCHARGE(Q100)..... 3000 CFS
 BASE HIGH WATER ELEVATION..... 47.0'

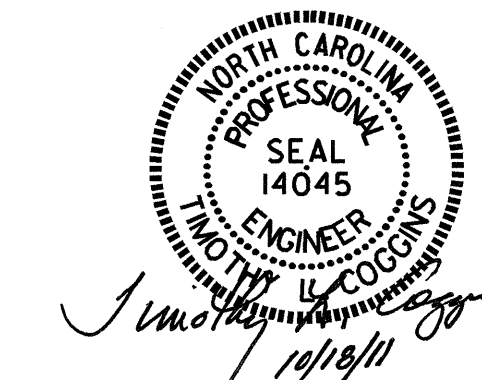
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE..... 3000 CFS
 FREQUENCY OF OVERTOPPING FLOOD..... 100 YR.
 OVERTOPPING FLOOD ELEVATION..... 47.0'

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER GRISSETT SWAMP ON SR 1006 BETWEEN SR 1118 AND SR 1143



DRAWN BY : B.N.BARODAWALA DATE : 5-6-11
 CHECKED BY : PEGGY PARISI DATE : 6-15-11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			39

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.006	--	1.75	0.273	1.03	70'	EL	34.5	0.507	1.32	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5		
	HL-93(0pr)	N/A	--	1.341	--	1.35	0.273	1.34	70'	EL	34.5	0.507	1.72	70'	EL	6.9	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.306	47.020	1.75	0.273	1.34	70'	EL	34.5	0.507	1.65	70'	EL	6.9	0.80	0.273	1.31	70'	EL	34.5		
	HS-20(0pr)	36.000	--	1.740	62.640	1.35	0.273	1.74	70'	EL	34.5	0.507	2.14	70'	EL	6.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.917	39.379	1.40	0.273	3.75	70'	EL	34.5	0.507	4.87	70'	EL	6.9	0.80	0.273	2.92	70'	EL	34.5	
		SNGARBS2	20.000	--	2.187	43.741	1.40	0.273	2.81	70'	EL	34.5	0.507	3.47	70'	EL	6.9	0.80	0.273	2.19	70'	EL	34.5	
		SNAGRIS2	22.000	--	2.077	45.690	1.40	0.273	2.67	70'	EL	34.5	0.507	3.23	70'	EL	6.9	0.80	0.273	2.08	70'	EL	34.5	
		SNCOTTS3	27.250	--	1.452	39.565	1.40	0.273	1.87	70'	EL	34.5	0.507	2.43	70'	EL	6.9	0.80	0.273	1.45	70'	EL	34.5	
		SNAGGRS4	34.925	--	1.218	42.554	1.40	0.273	1.57	70'	EL	34.5	0.507	2.03	70'	EL	6.9	0.80	0.273	1.22	70'	EL	34.5	
		SNS5A	35.550	--	1.191	42.346	1.40	0.273	1.53	70'	EL	34.5	0.507	2.06	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	
		SNS6A	39.950	--	1.095	43.747	1.40	0.273	1.41	70'	EL	34.5	0.507	1.88	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
	SNS7B	42.000	--	1.043	43.801	1.40	0.273	1.34	70'	EL	34.5	0.507	1.85	70'	EL	6.9	0.80	0.273	1.04	70'	EL	34.5		
	TTST	TNAGRIT3	33.000	--	1.336	44.087	1.40	0.273	1.72	70'	EL	34.5	0.507	2.23	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT4A	33.075	--	1.342	44.401	1.40	0.273	1.72	70'	EL	34.5	0.507	2.17	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT6A	41.600	--	1.100	45.746	1.40	0.273	1.41	70'	EL	34.5	0.507	1.98	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		TNT7A	42.000	--	1.106	46.462	1.40	0.273	1.42	70'	EL	34.5	0.507	1.94	70'	EL	6.9	0.80	0.273	1.11	70'	EL	34.5	
		TNT7B	42.000	--	1.147	48.180	1.40	0.273	1.47	70'	EL	34.5	0.507	1.80	70'	EL	6.9	0.80	0.273	1.15	70'	EL	34.5	
		TNAGRIT4	43.000	--	1.089	46.838	1.40	0.273	1.40	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.09	70'	EL	34.5	
TNAGT5A		45.000	--	1.026	46.175	1.40	0.273	1.32	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.03	70'	EL	34.5		
TNAGT5B	45.000	3	1.013	45.579	1.40	0.273	1.30	70'	EL	34.5	0.507	1.66	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	Y _{DC}	Y _{OW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

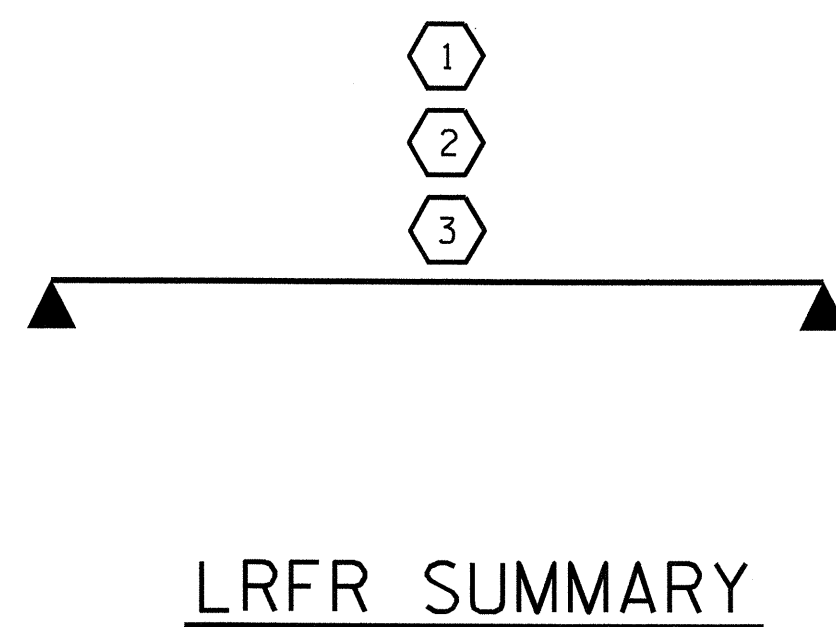
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

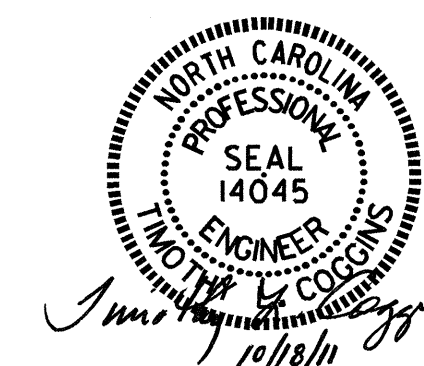
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-

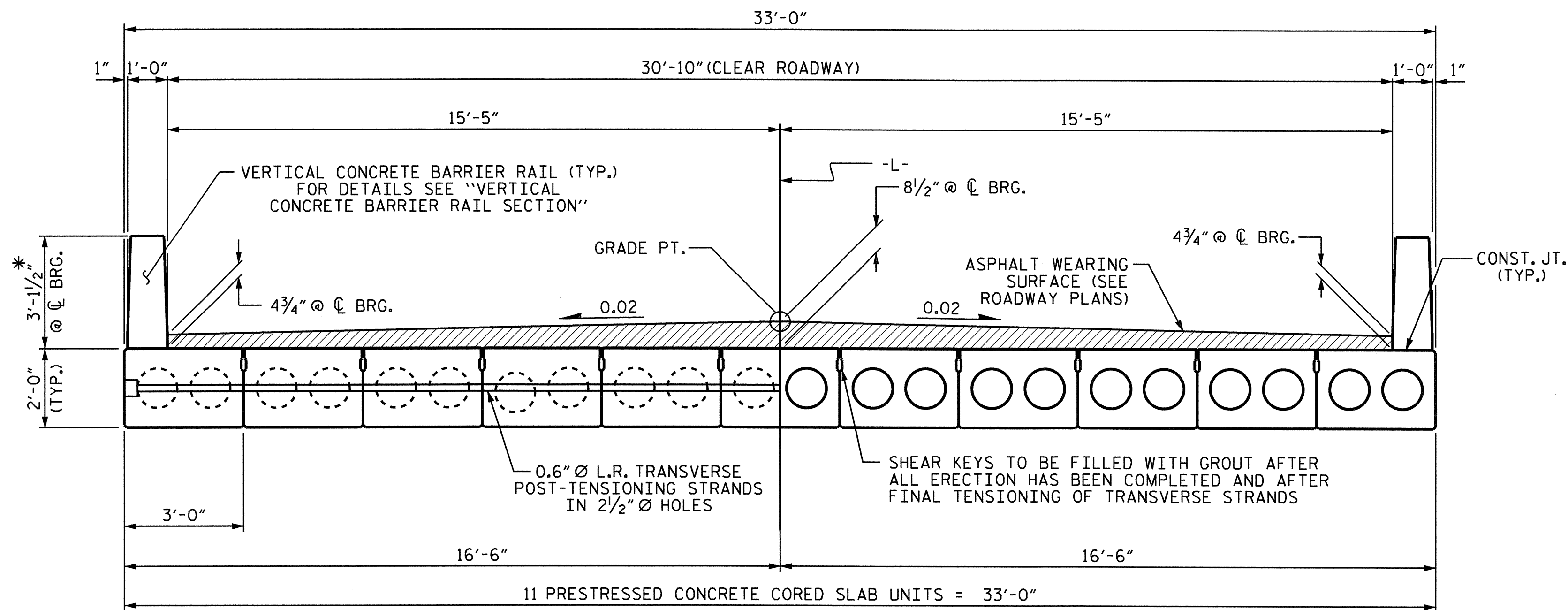


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 70' CORED SLAB UNIT
 90° SKEW
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			39

ASSEMBLED BY : PEGGY PARISI DATE : 8-25-10
 CHECKED BY : B.N. BARODAWALA DATE : 9-2-10
 DRAWN BY : CVC 6/10
 CHECKED BY : DNS 6/10



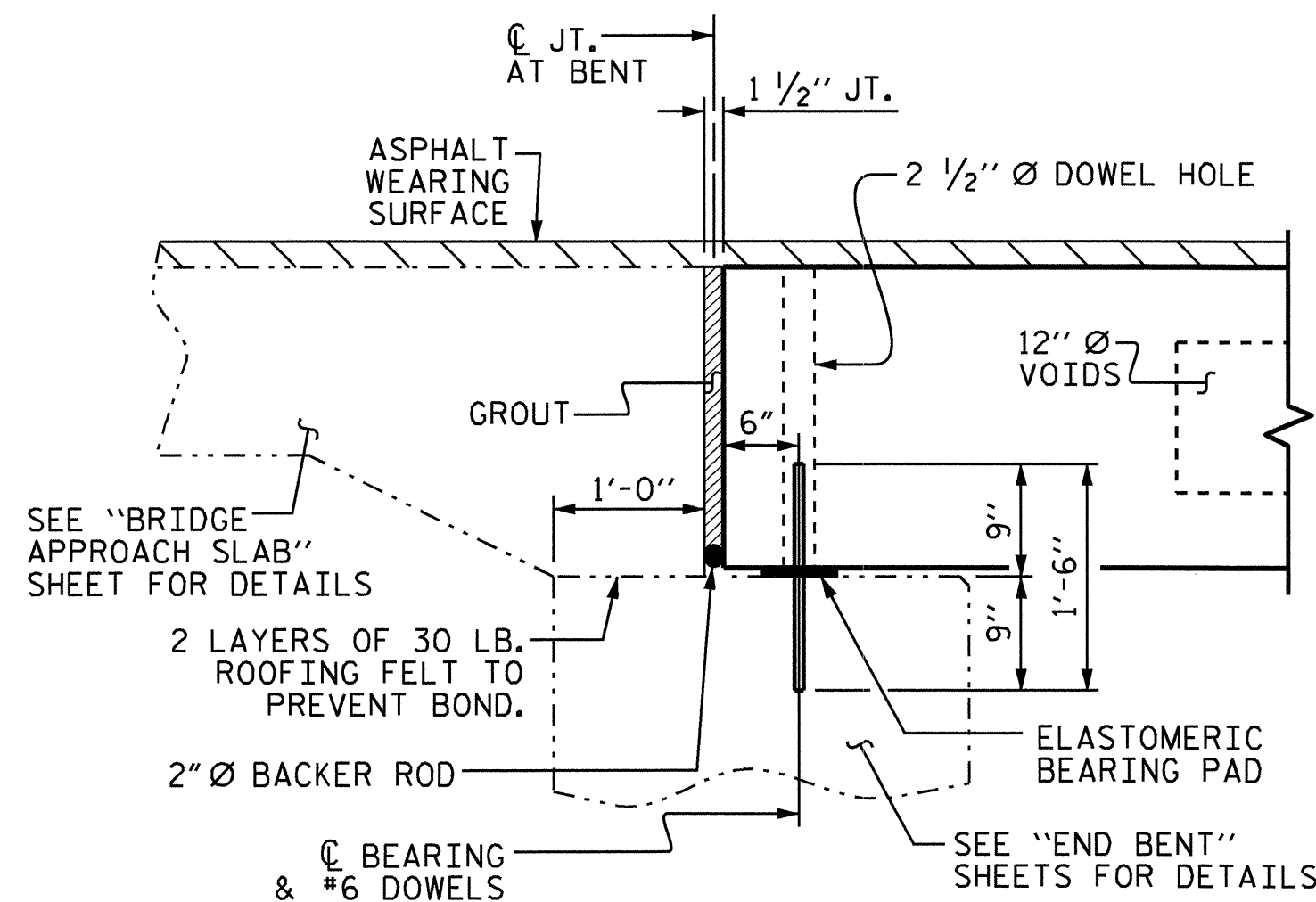
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

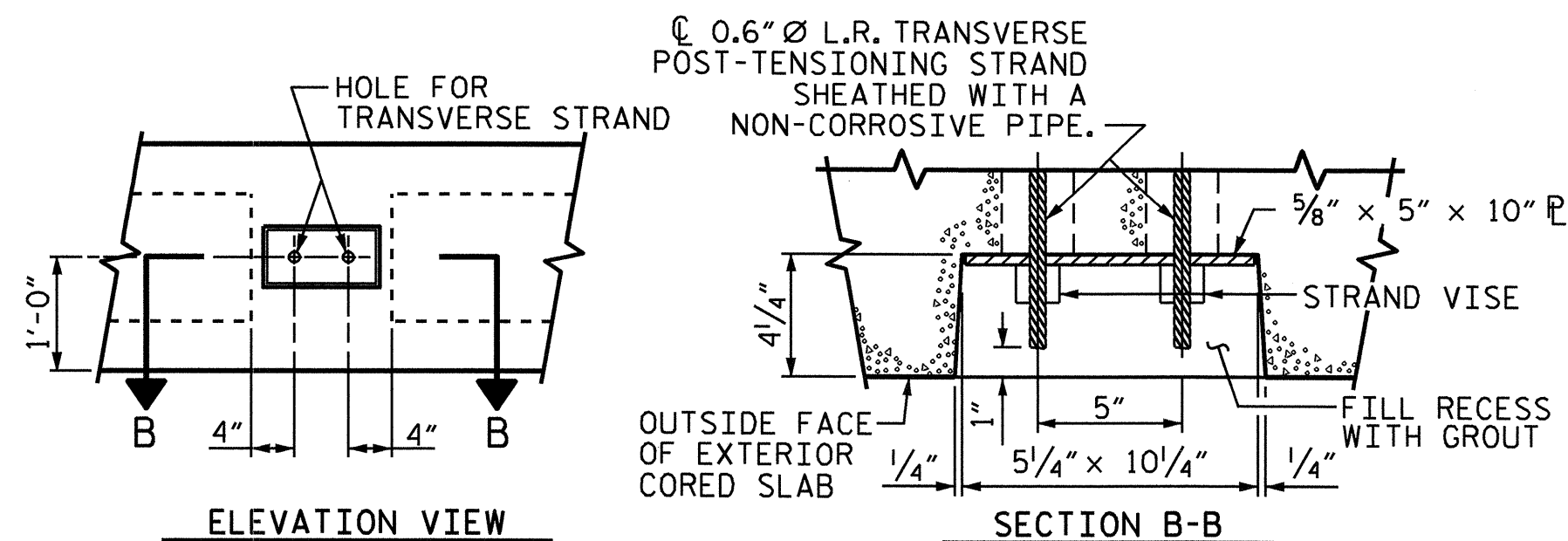
HALF SECTION
THROUGH VOIDS

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

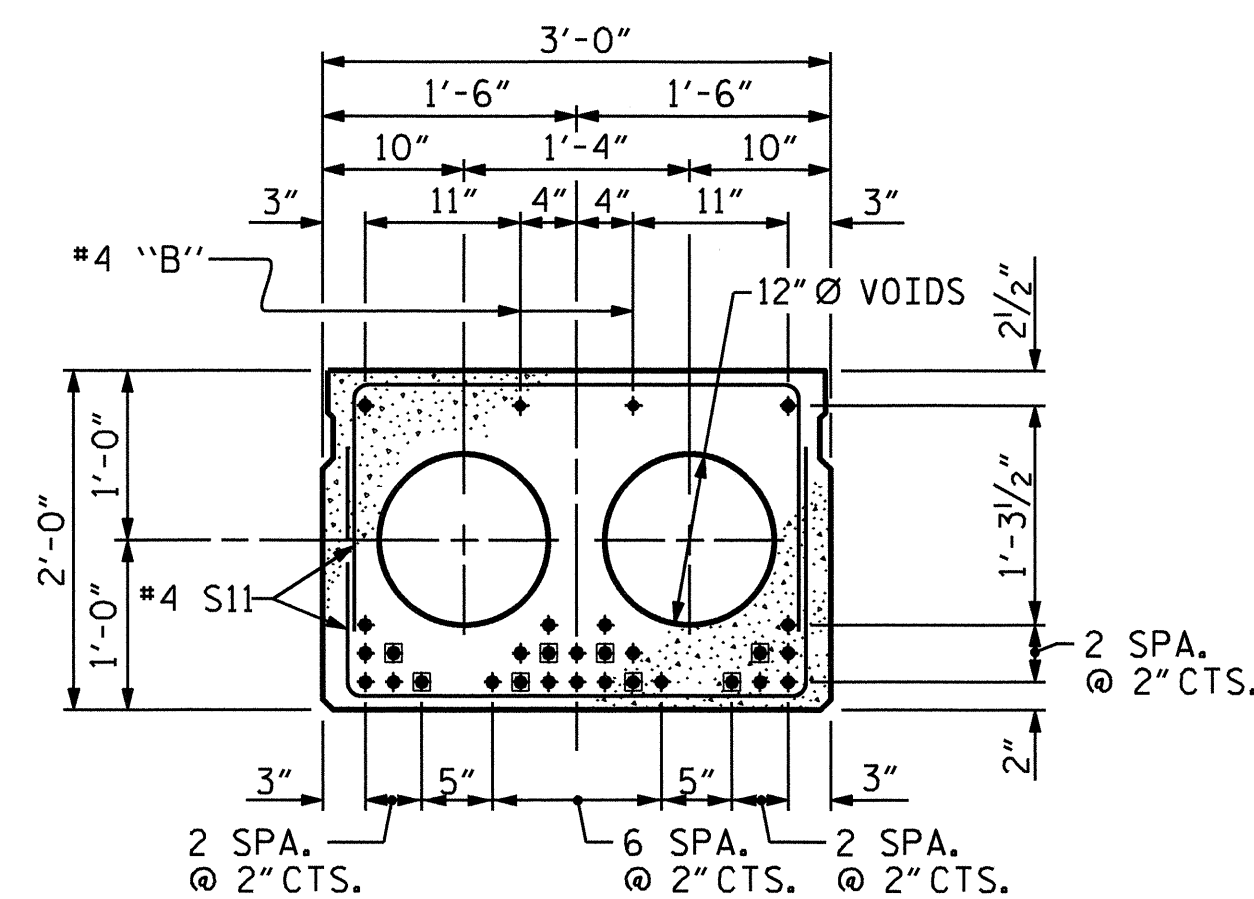
FIXED END



SECTION AT END BENT



GROUTED RECESS AT END OF
POST-TENSIONED STRAND OF CORED SLABS

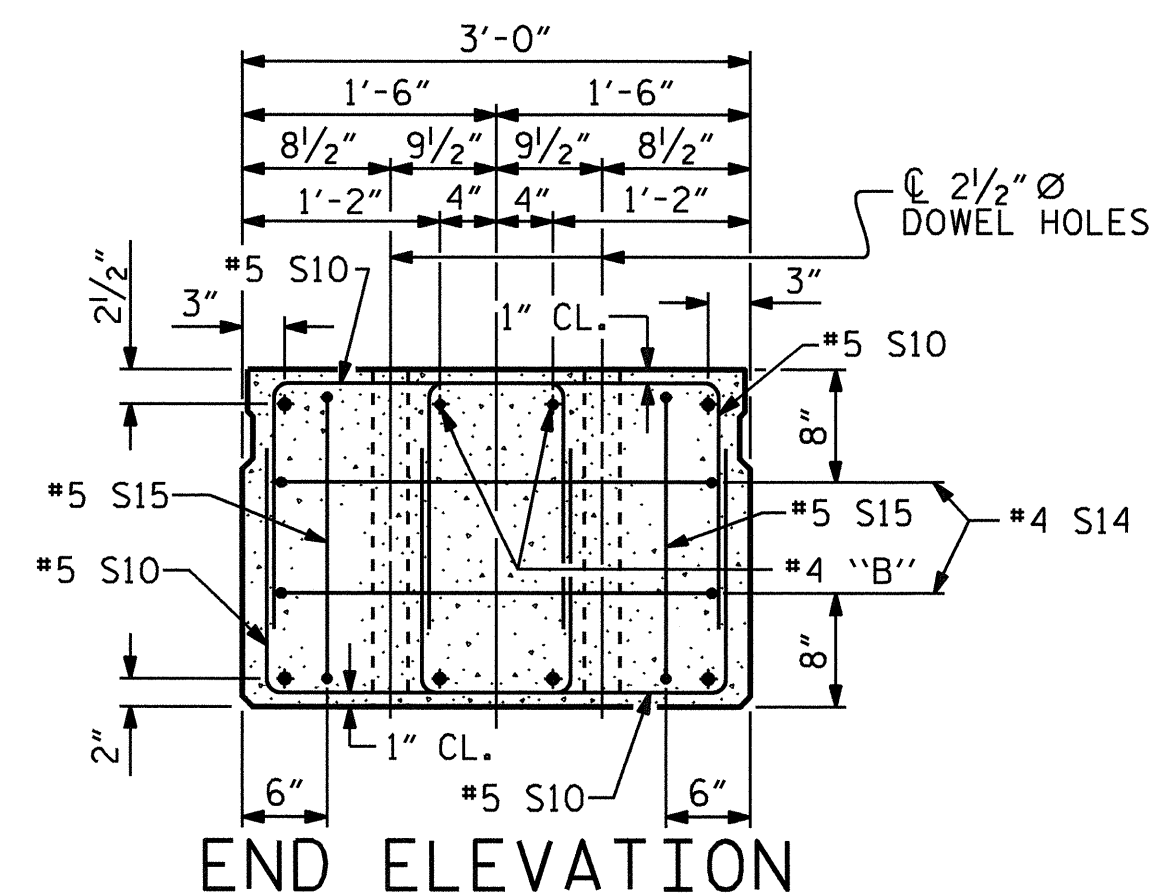


STRAND LAYOUT FOR 70' UNIT
(28 STRANDS REQUIRED)

INTERIOR SLAB SECTION
0.6" Ø LOW RELAXATION

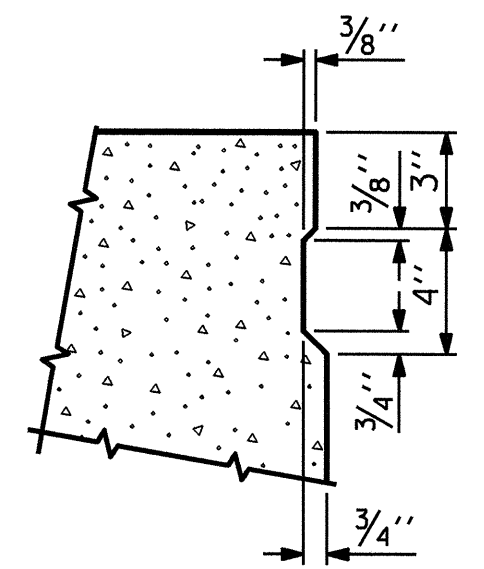
■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



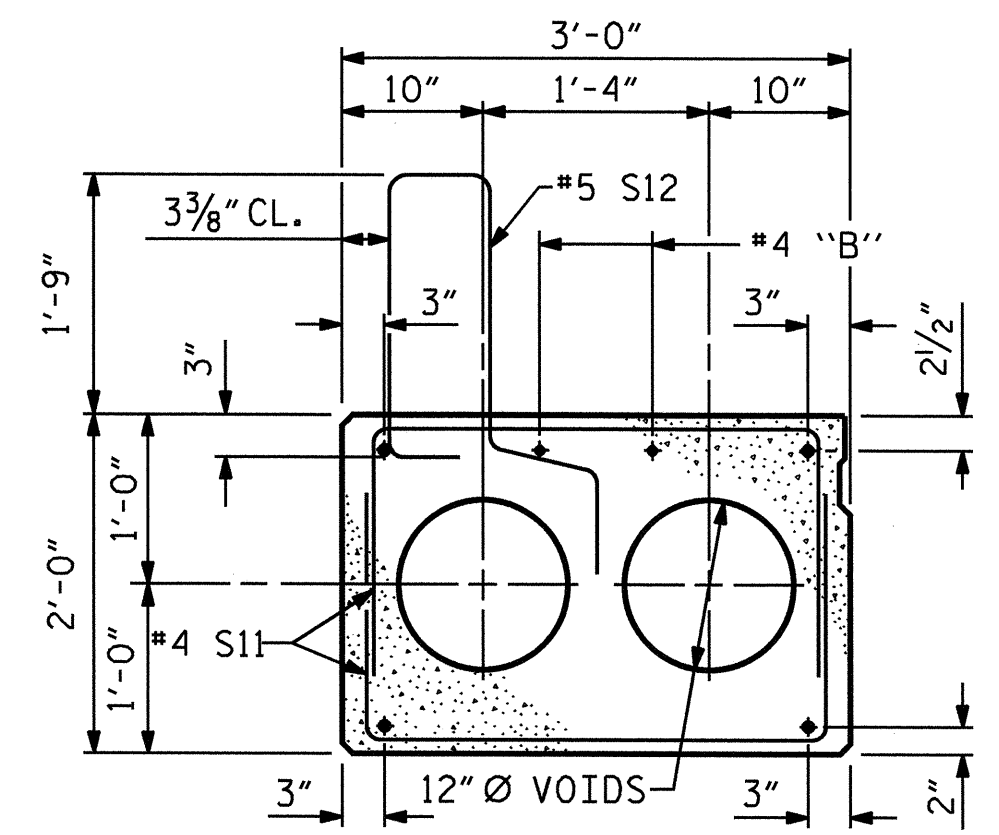
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



EXTERIOR SLAB SECTION
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

ASSEMBLED BY : PEGGY PARISI DATE : 8-24-10
CHECKED BY : B.N. BARODAWALA DATE : 9-2-10
DRAWN BY : MAA 6/10
CHECKED BY : MKT 7/10

12-SEP-2011 11:41
R:\Structures\FINAL PLANS\STR #2\4473.sd.ts.02.dgn
nruffin

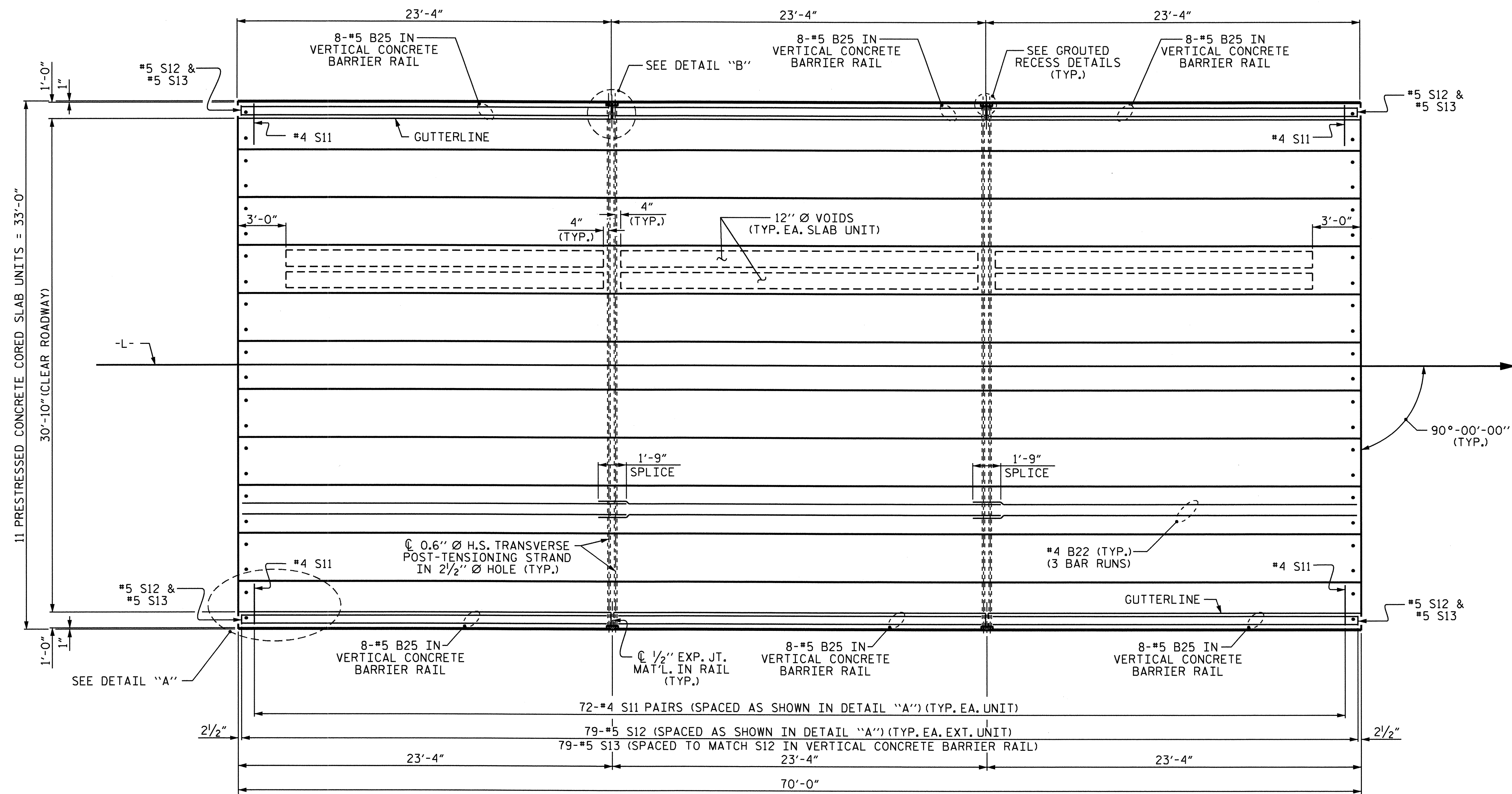
PROFESSIONAL ENGINEER
SEAL 14045
TIMOTHY C. COGGINS

PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 20+14.00 -L-

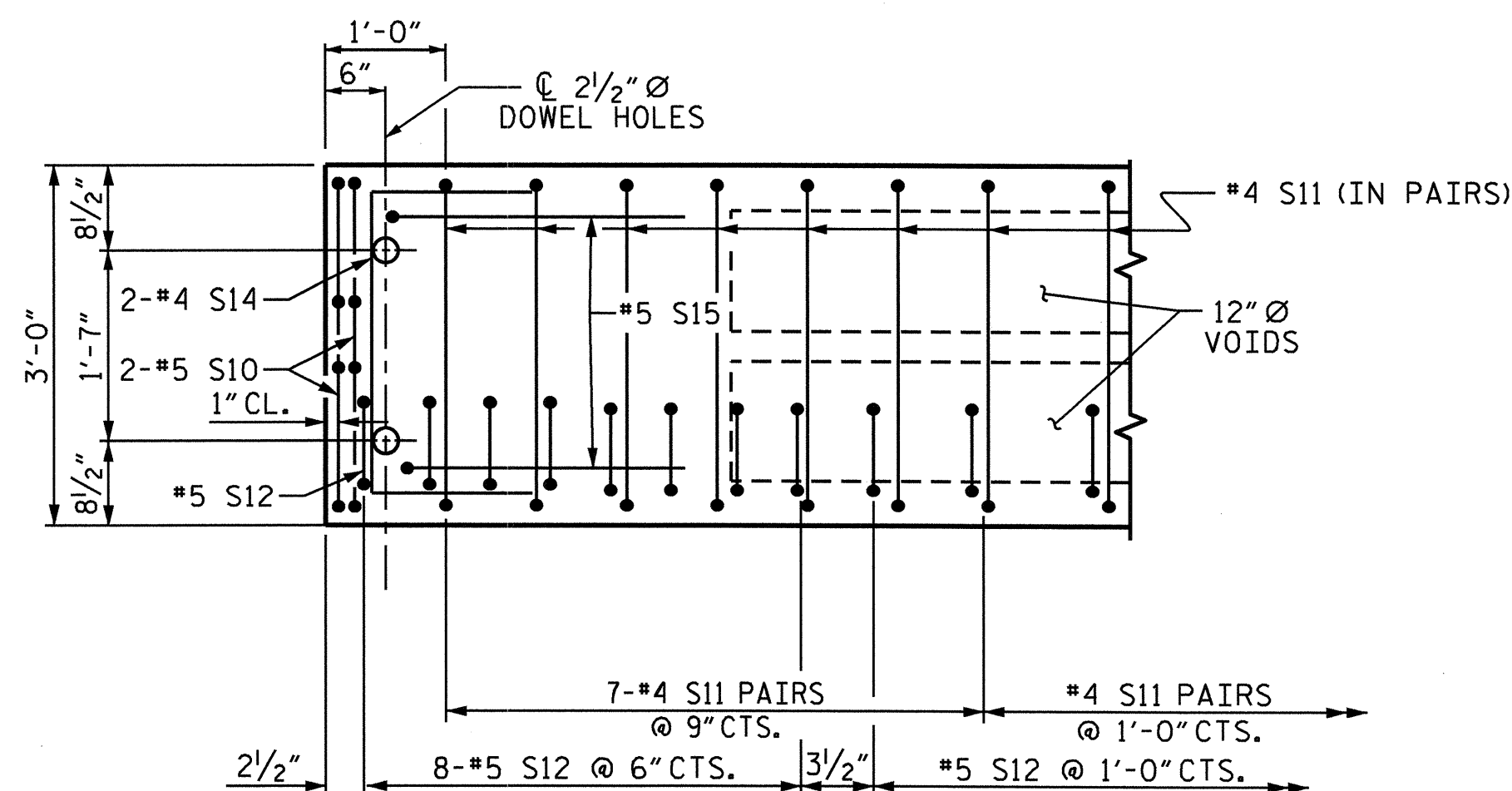
SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD 3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-25					TOTAL SHEETS 39

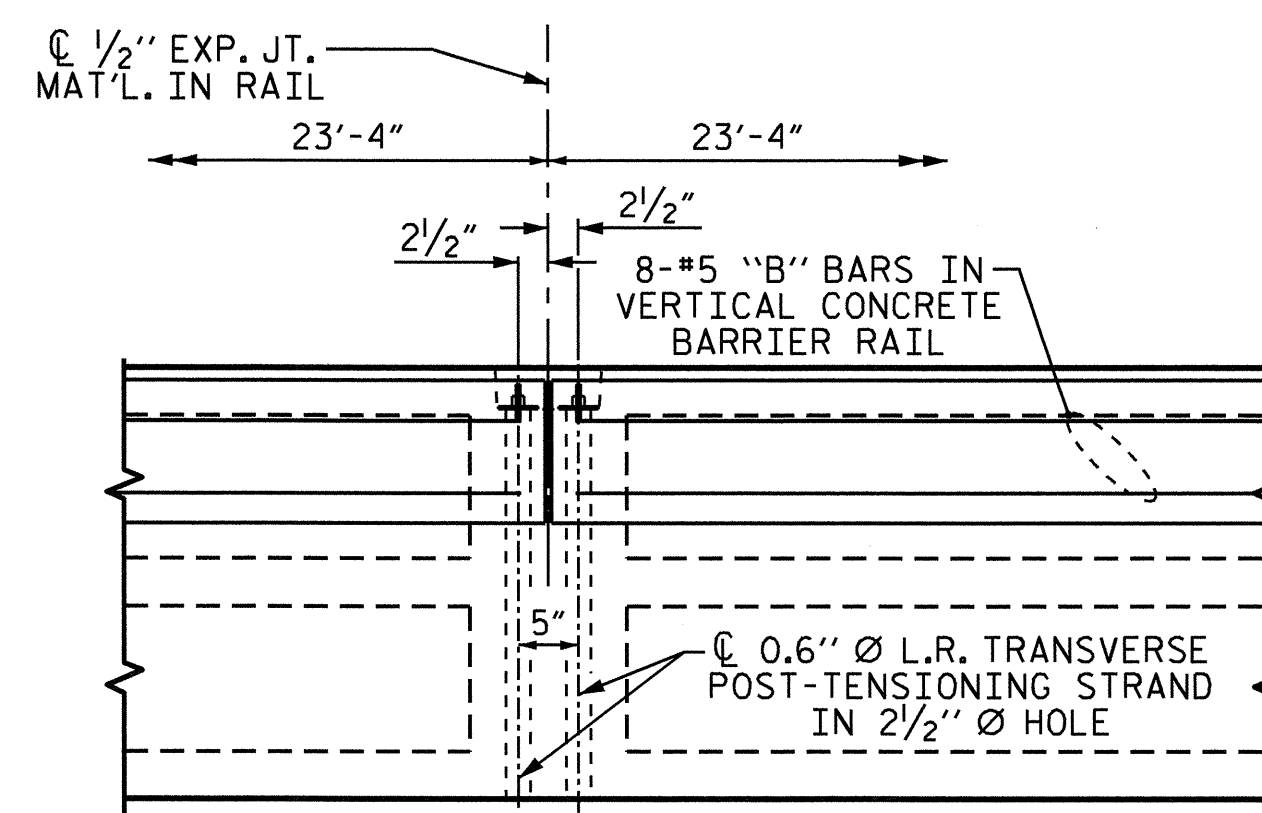
STR. #2 STD. NO. 24PCS4_33_90S



PLAN OF UNIT



DETAIL "A"



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

ASSEMBLED BY : PEGGY PARISI DATE : 8-24-10
 CHECKED BY : B.N. BARODAWALA DATE : 9-2-10
 DRAWN BY : MAA 6/10
 CHECKED BY : MKT 7/10

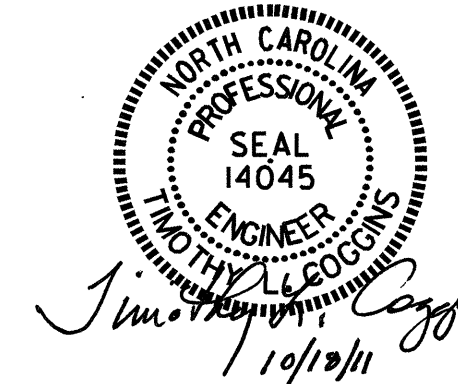
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.

12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR #2\B4473.sd.ts.02.dgn
 nruffin

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 70' UNIT
 30'-10" CLEAR ROADWAY
 90° SKEW



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			39

STR. #2 STD. NO. 24PCS_33_90S_70L

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 1/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS, THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

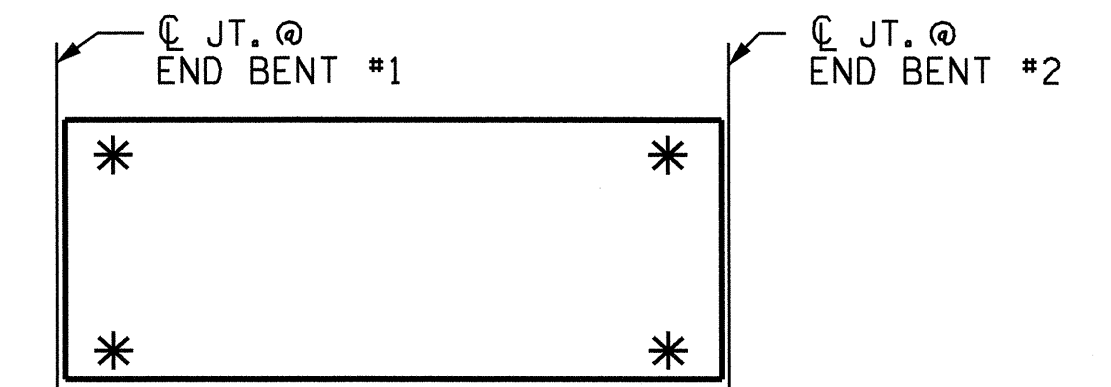
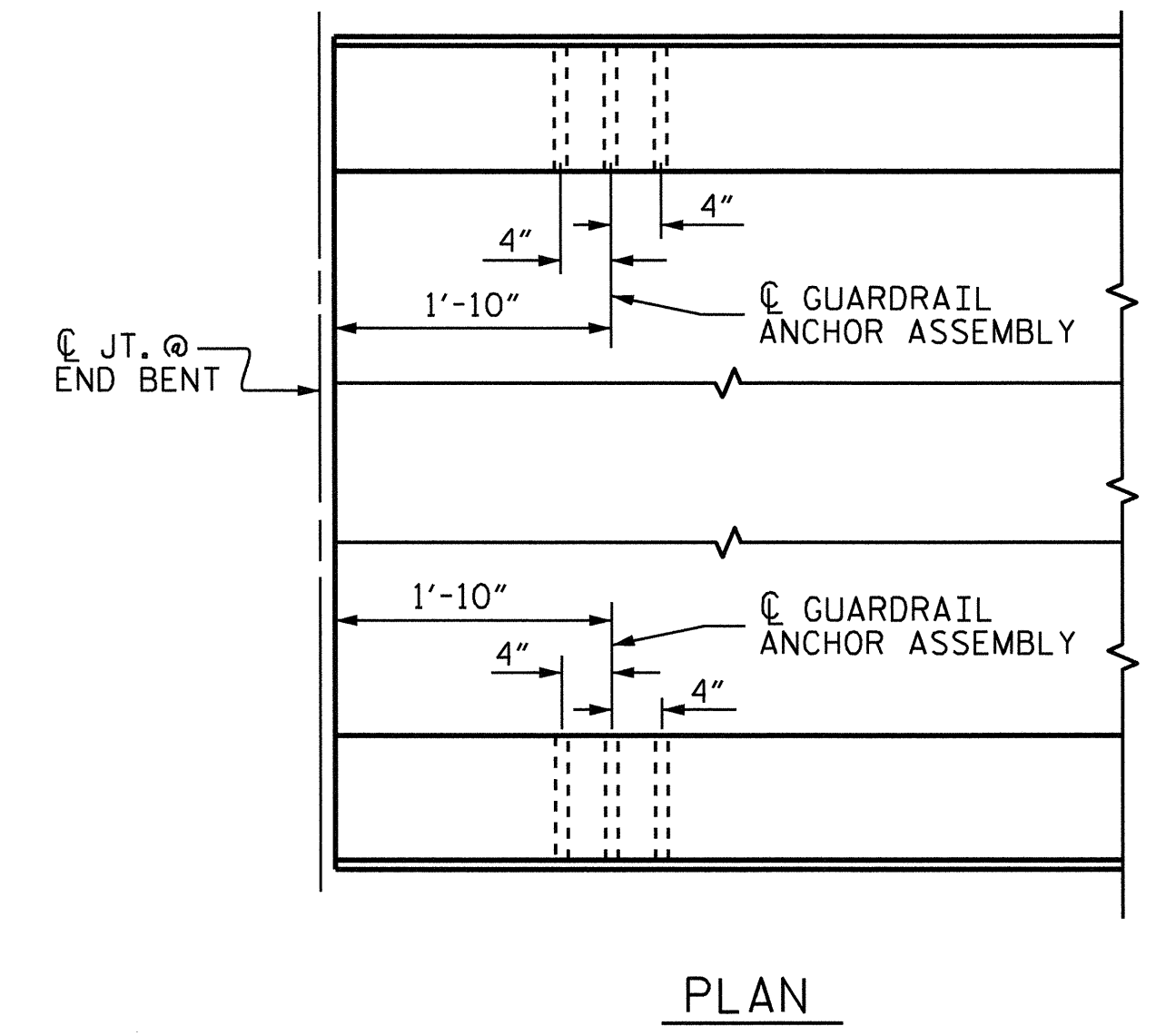
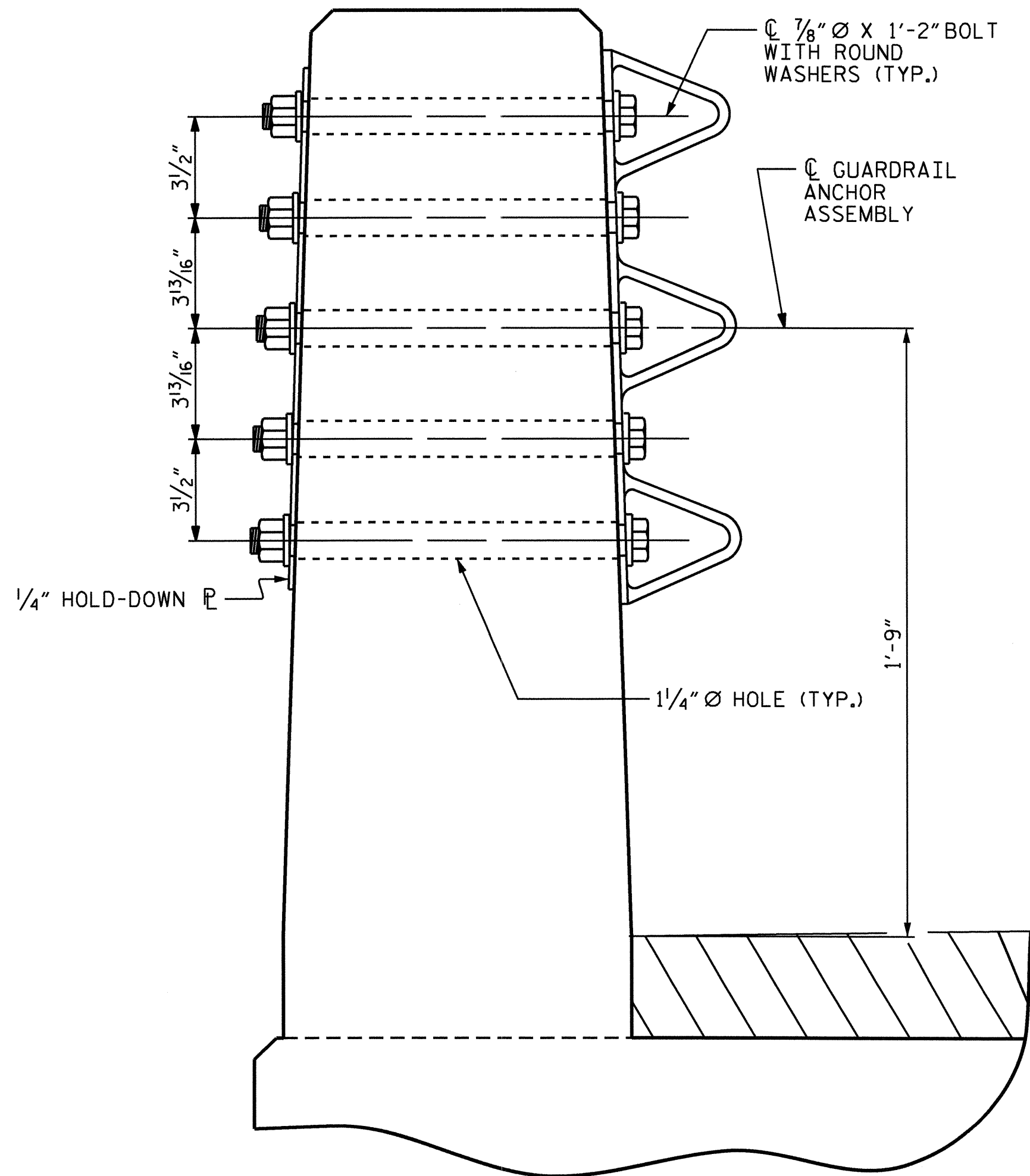
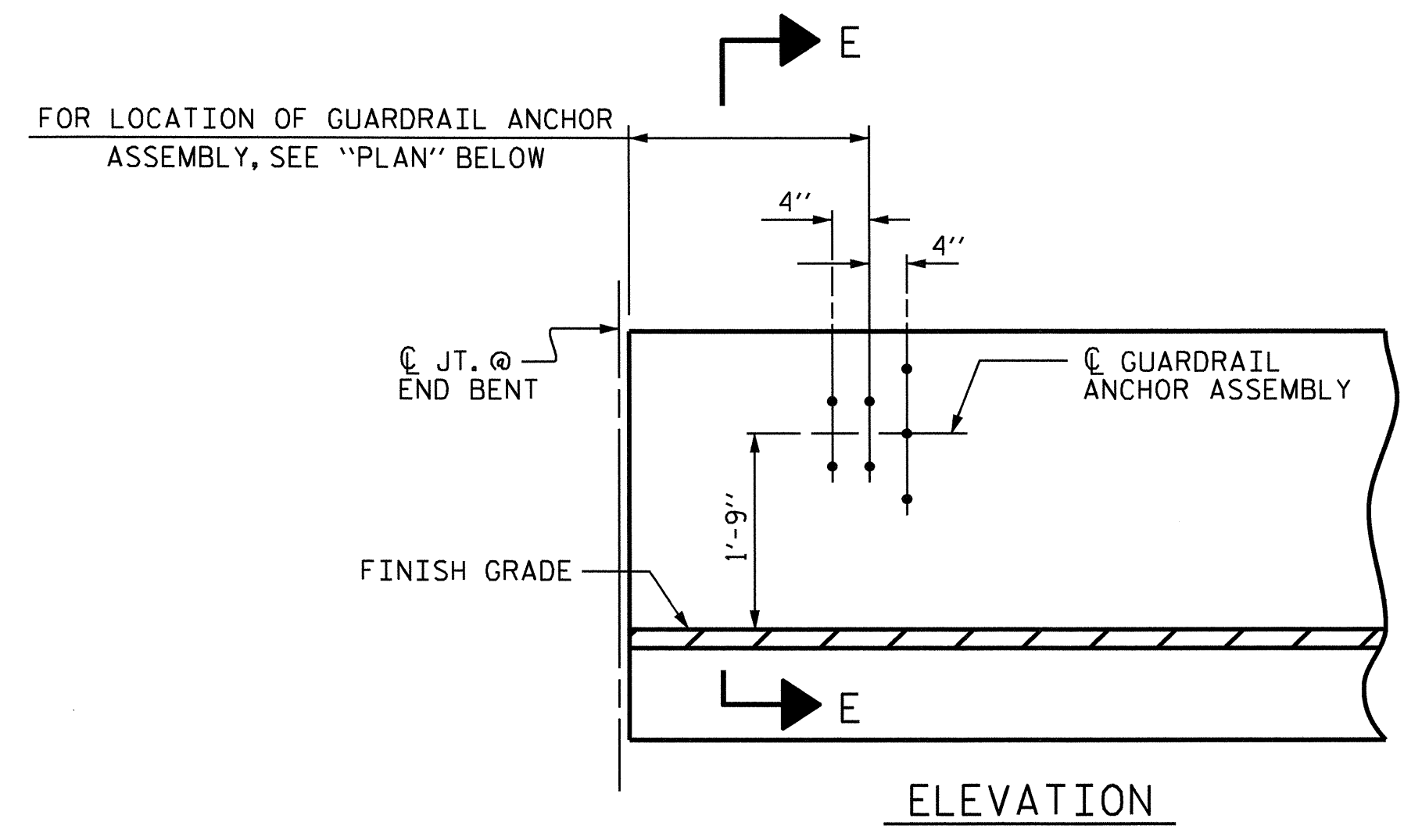
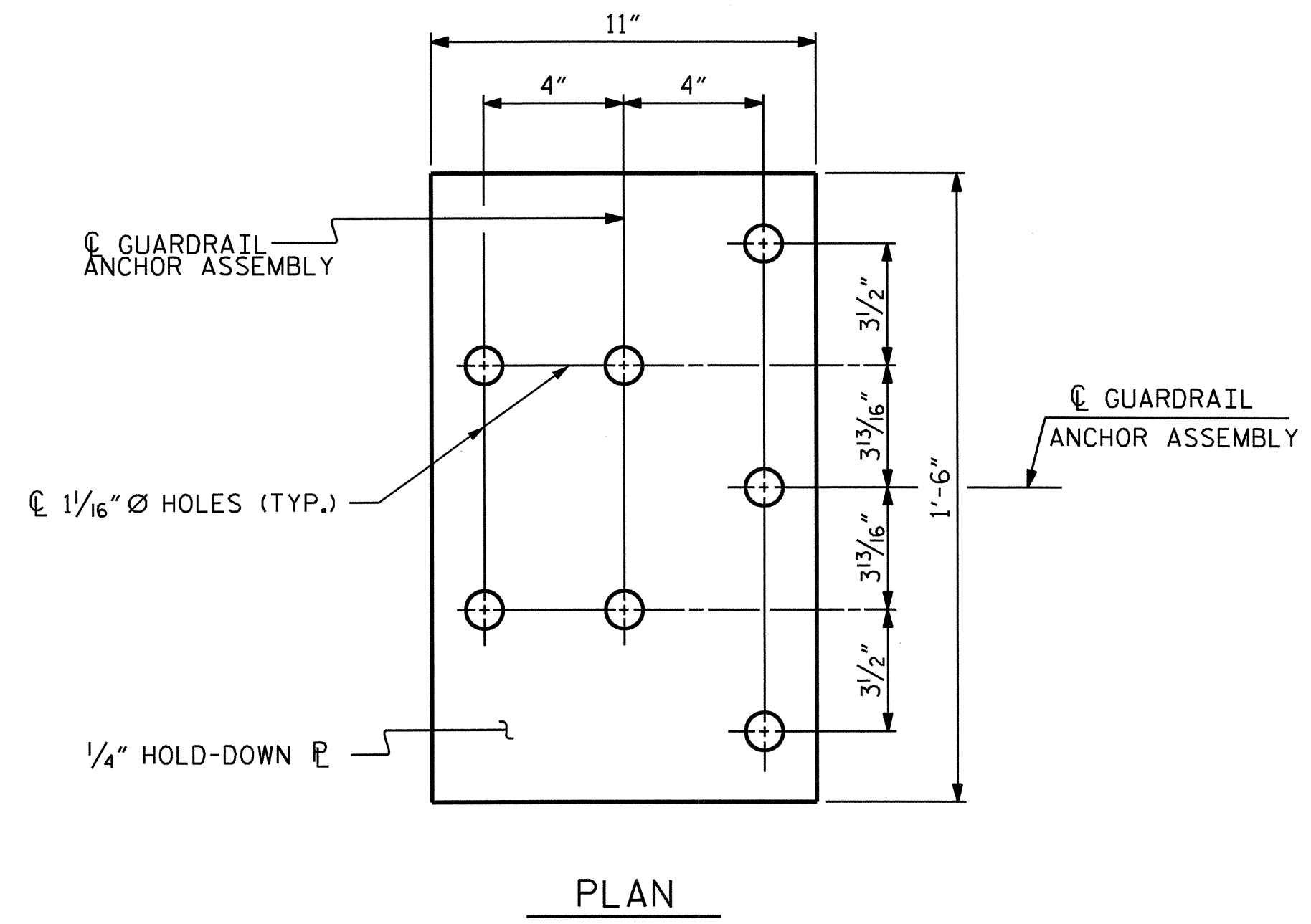
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



LOCATION OF ANCHORS FOR GUARDRAIL
END BENT #1 SHOWN, END BENT #2 SIMILAR.

SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS

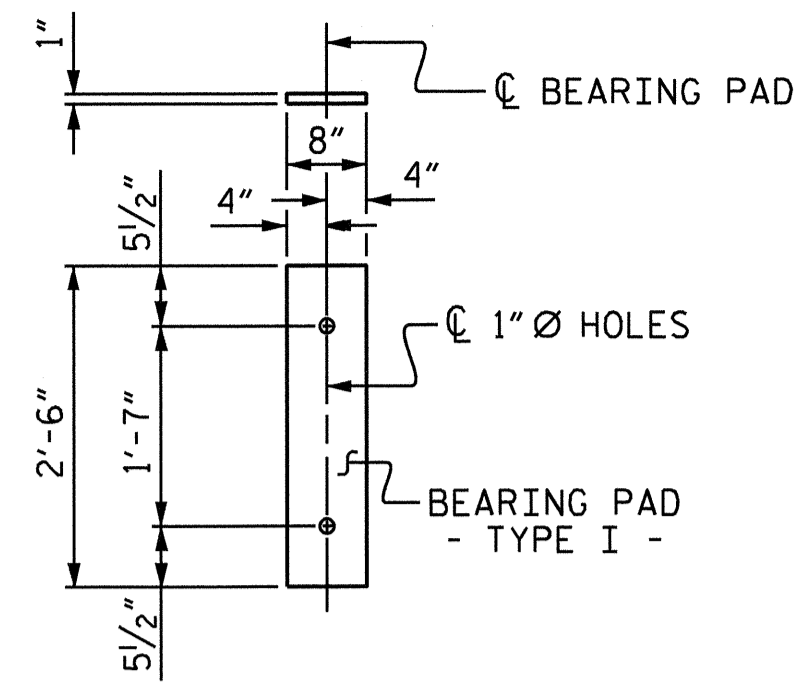
ASSEMBLED BY : PEGGY PARISI DATE : 5-24-11
CHECKED BY : B.N. BARODAWALA DATE : 5-24-11
DRAWN BY : MAA 5/10
CHECKED BY : GM 5/10

12-SEP-2011 11:41
R:\Structures\FINAL PLANS\STR *2\b4473.sd.ts.02.dgn
nruffin



PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 20+14.00 -L-
SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-27
STANDARD GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL						
REVISIONS						TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



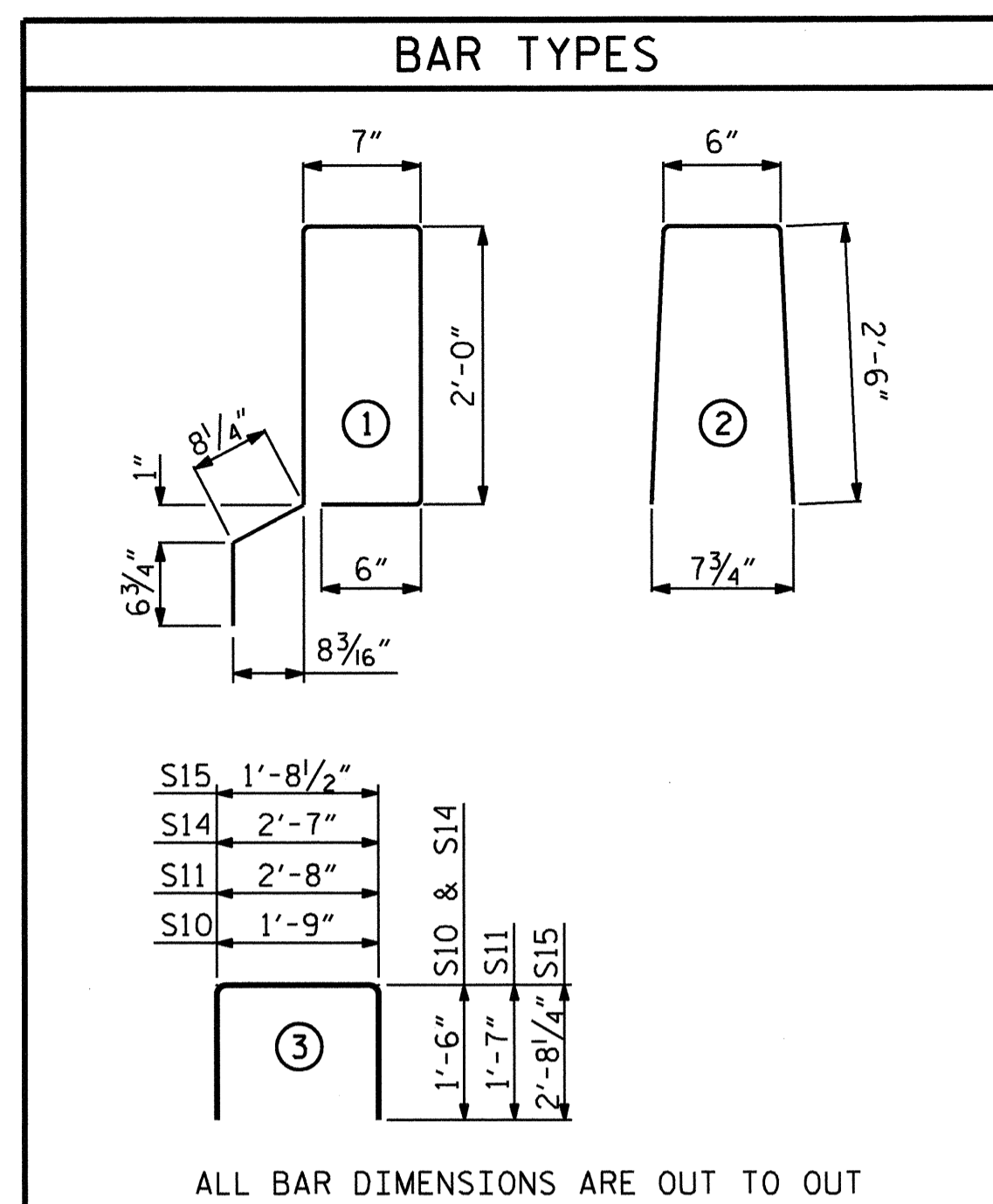
FIXED END
(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLABS REQUIRED			
70' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	9	70'-0"	630'-0"
TOTAL	11		770'-0"



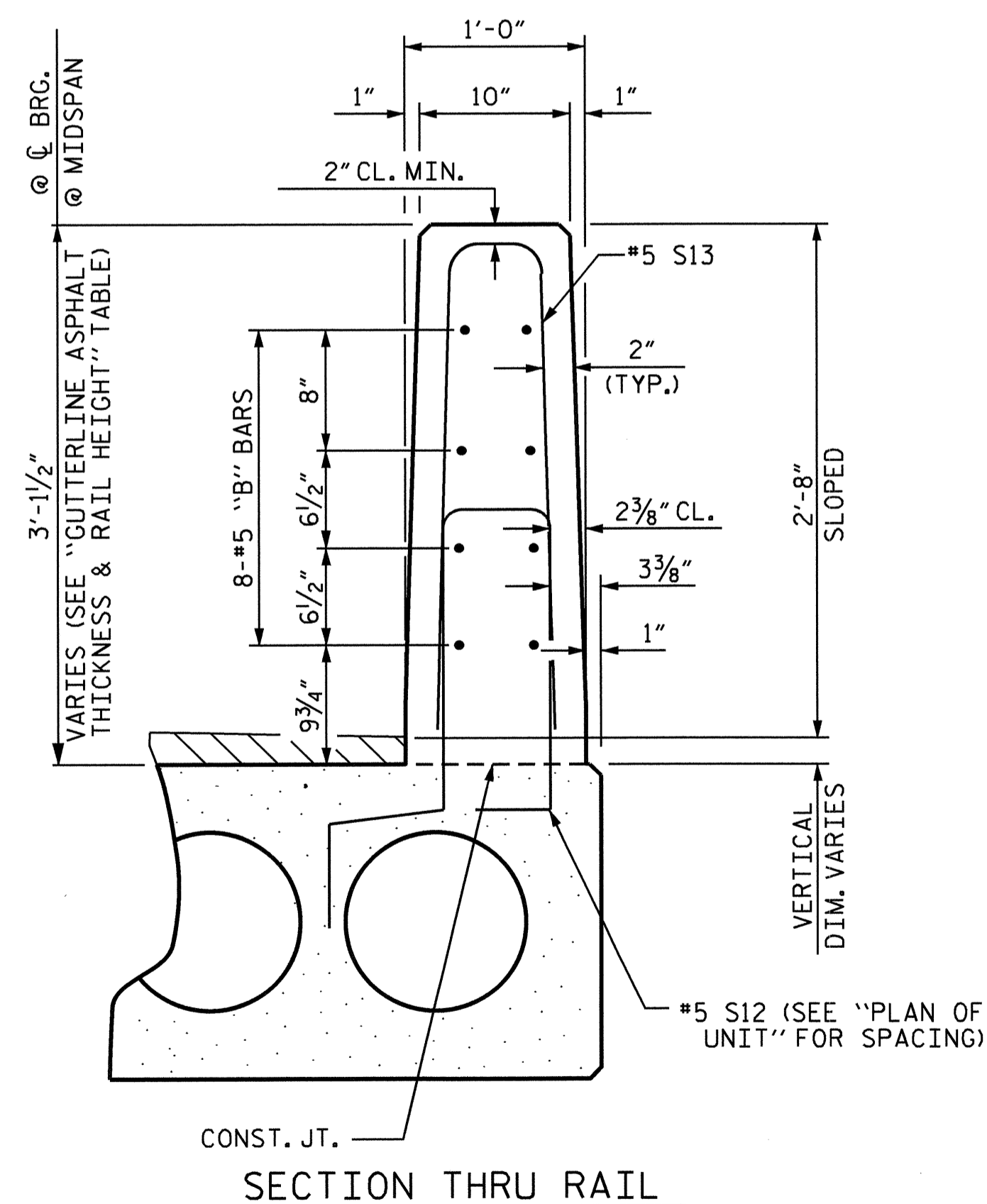
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
70' UNIT						
*B25	48	48	*5	STR	22'-11"	1147
*S13	158	158	*5	2	5'-6"	906
* EPOXY COATED REINFORCING STEEL			LBS.		2053	
CLASS AA CONCRETE			CU.YDS.		14.8	
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN. FT.		140.25	

DEAD LOAD DEFLECTION AND CAMBER	
70' CORED SLAB UNIT	3'-0" x 2'-0"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	4 5/16" ↑
FINAL CAMBER	1 3/16" ↓
	3 1/2" ↑

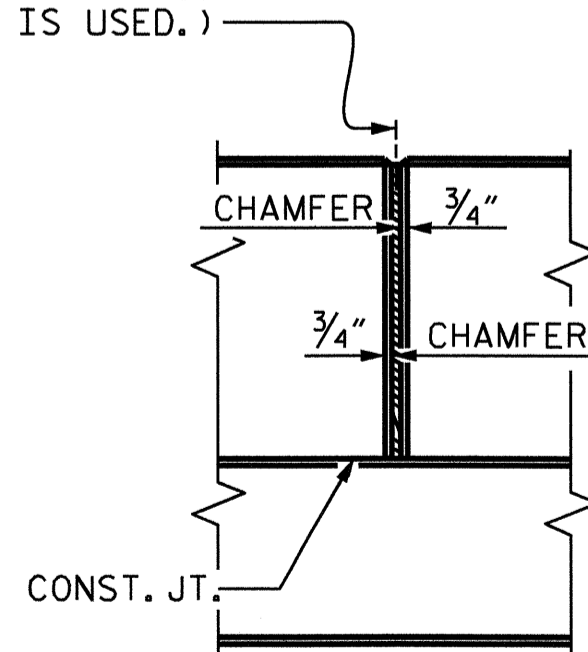
** INCLUDES FUTURE WEARING SURFACE

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
70' UNITS	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
	1 1/4"	2'-10"



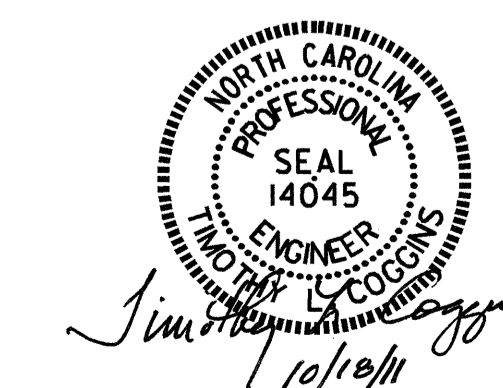
SECTION THRU RAIL

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B22	6	*4	STR	24'-6"	98	24'-6"	98
S10	8	*5	3	4'-9"	40	4'-9"	40
S11	144	*4	3	5'-10"	561	5'-10"	561
*S12	79	*5	1	6'-4"	522		
S14	4	*4	3	5'-7"	15	5'-7"	15
S15	4	*5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	744	LBS.	744
* EPOXY COATED REINFORCING STEEL				LBS.	522		
7000 P.S.I. CONCRETE				CU. YDS.	11.8		11.8
0.6" Ø L.R. STRANDS				No.	28		28



NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE STRANDS SHALL BE 0.6" Ø AND TENSIONED TO 43,950 POUNDS.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500

PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 20+14.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

ASSEMBLED BY: PEGGY PARISI DATE: 8-24-10
CHECKED BY: B.N. BARODAWALA DATE: 9-2-10
DRAWN BY: MAA 6/10
CHECKED BY: MKT 7/10

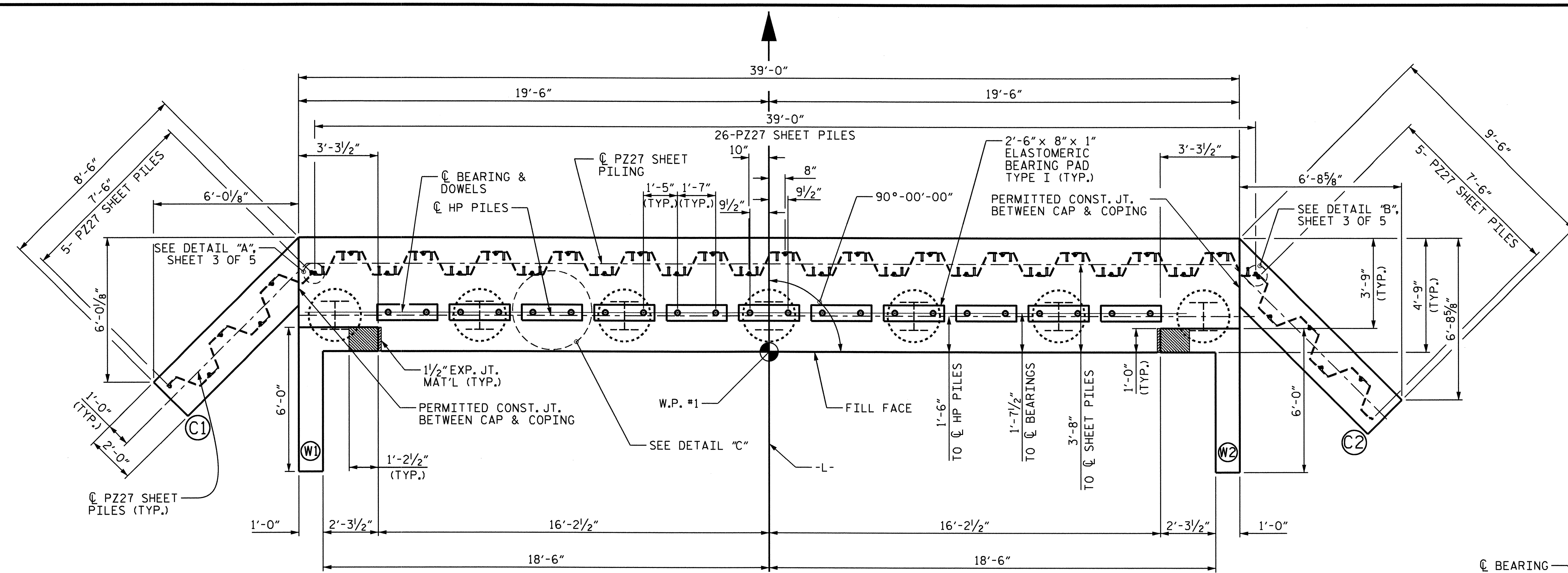
VERTICAL CONCRETE BARRIER RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			39

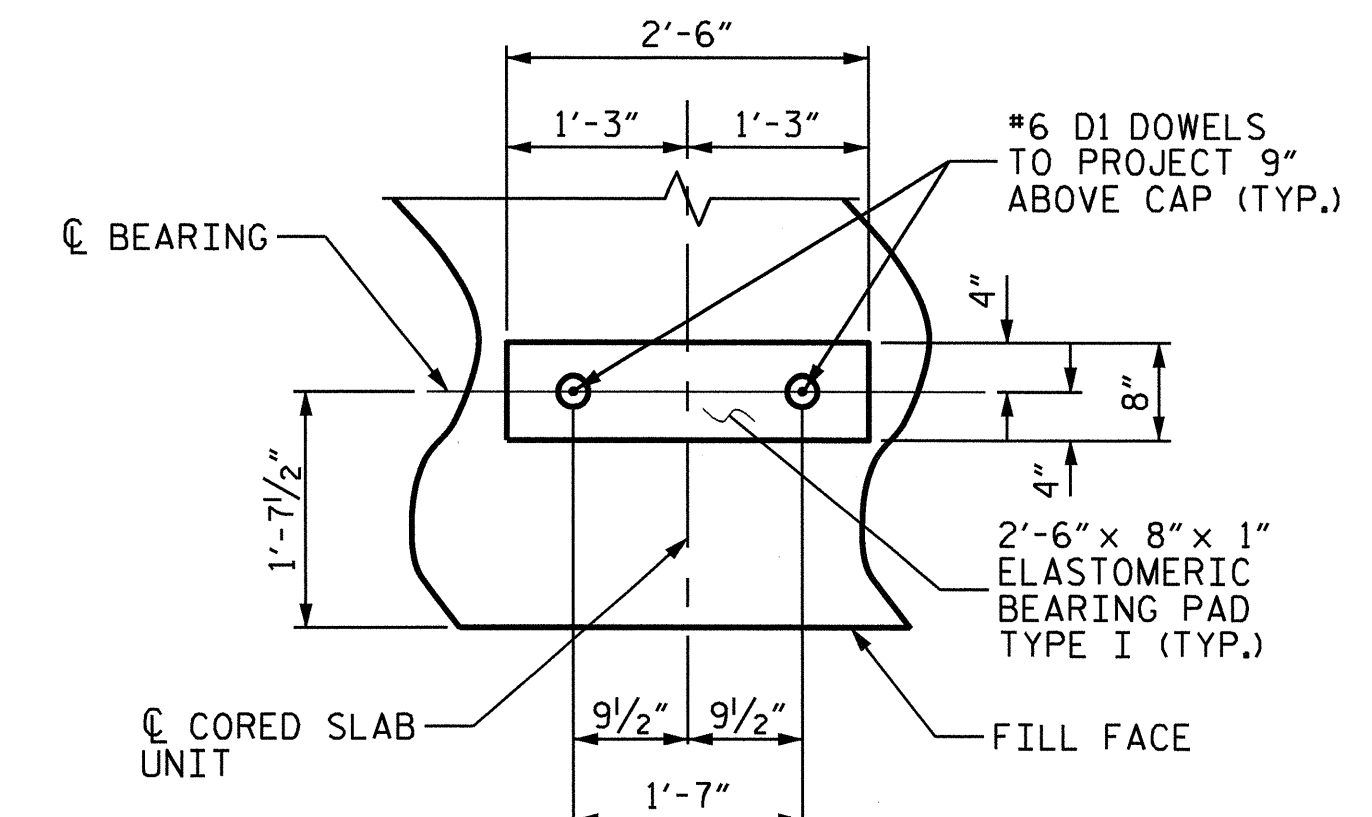
STR. #2 STD. NO. 24PCS3-33-90S

--- NOTES ---

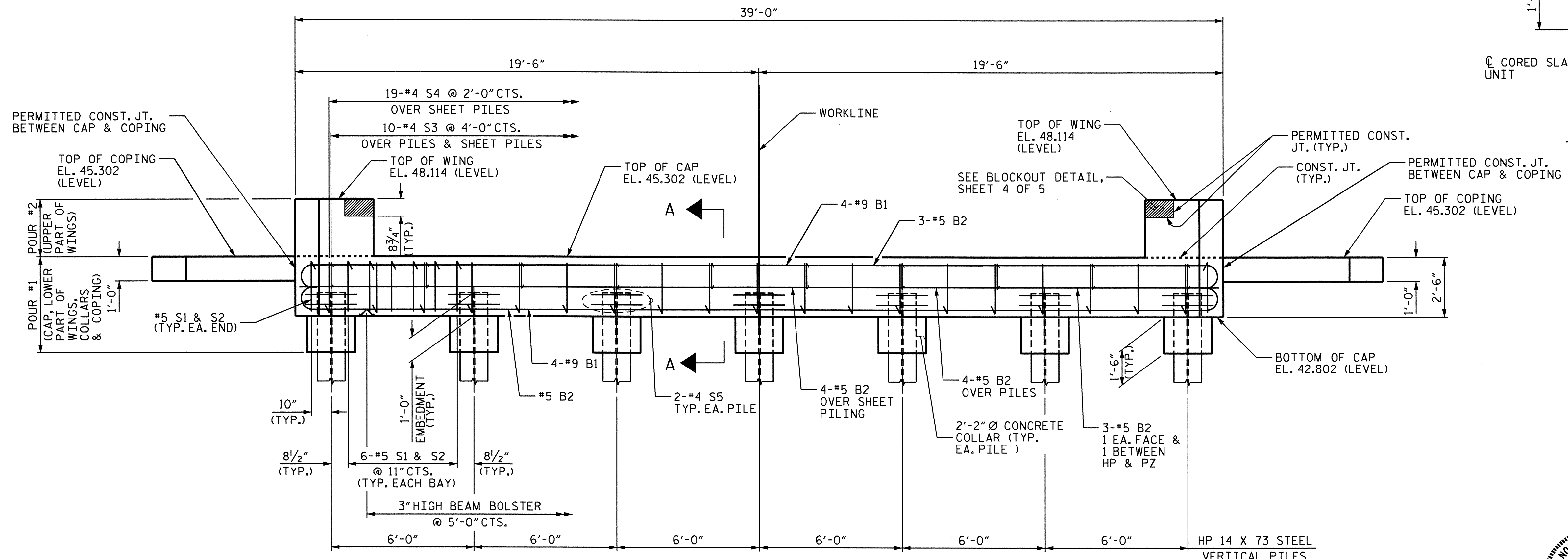
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
 STEEL SHEET PILES SHALL BE HOT ROLLED.
 FOR ELEVATION VIEW OF PZ27 SHEET PILES, SEE SHEET 2 OF 5.



PLAN



DETAIL "C"



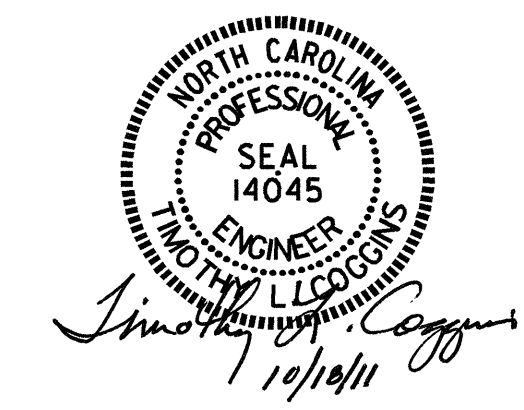
ELEVATION

SHEET PILING NOT SHOWN FOR CLARITY.

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1

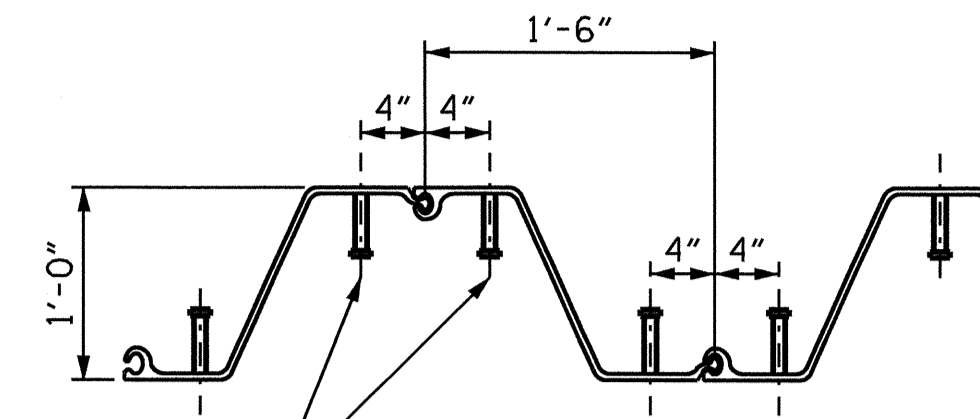


DRAWN BY: Nat M Ruffin DATE: 5-23-11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR #2\b4473.sd.eb.02.dgn
 nruffin

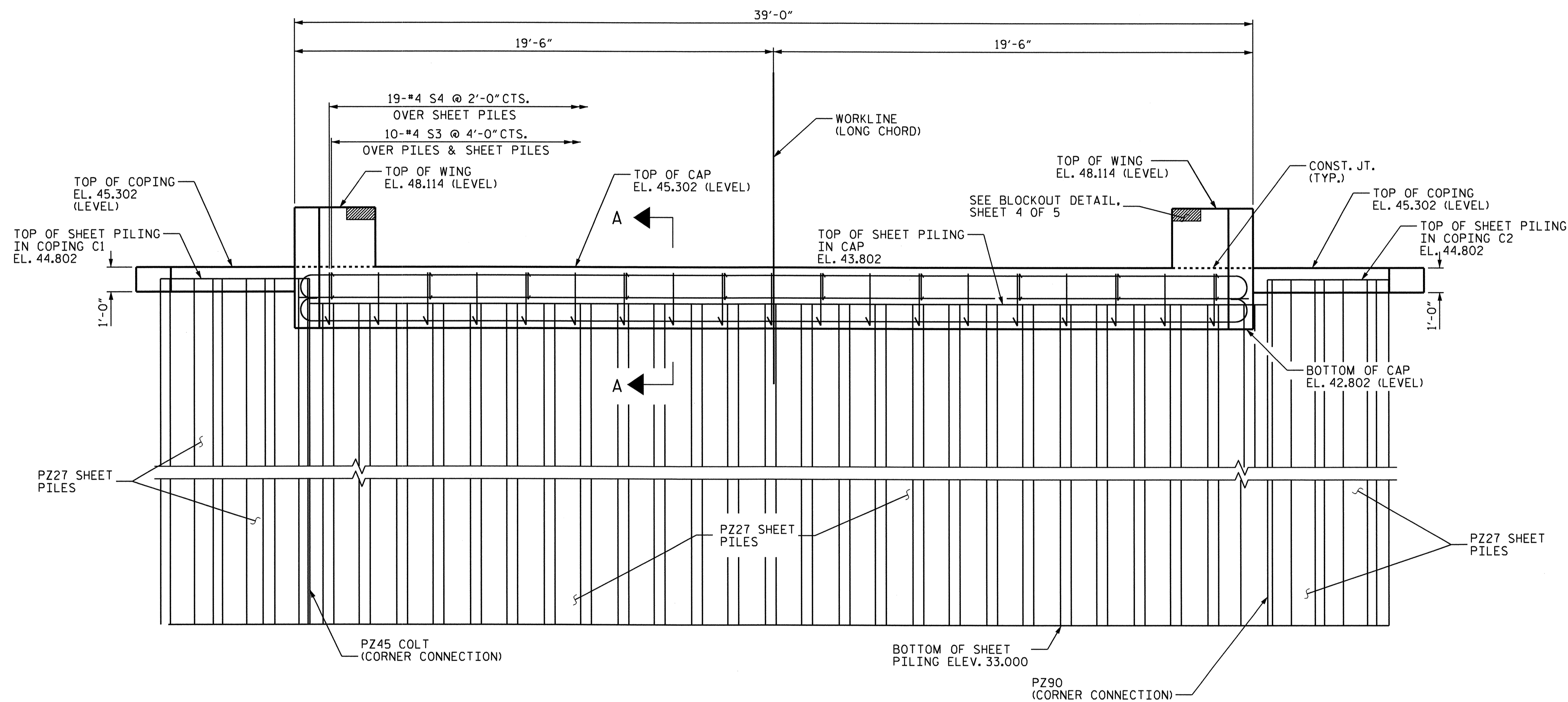
REVISIONS						SHEET NO. S-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

STR. #2 NC006



3/4" Ø x 5" ANCHOR STUDS
WELDED TO SHEET PILES
(2 STUDS PER SHEET PILE
ONLY IN THE CAP)

ANCHOR STUD DETAILS



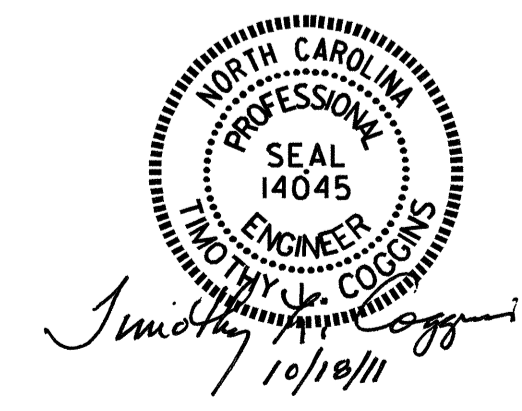
ELEVATION
HP PILES NOT SHOWN FOR CLARITY.

PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 20+14.00 -L-
SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

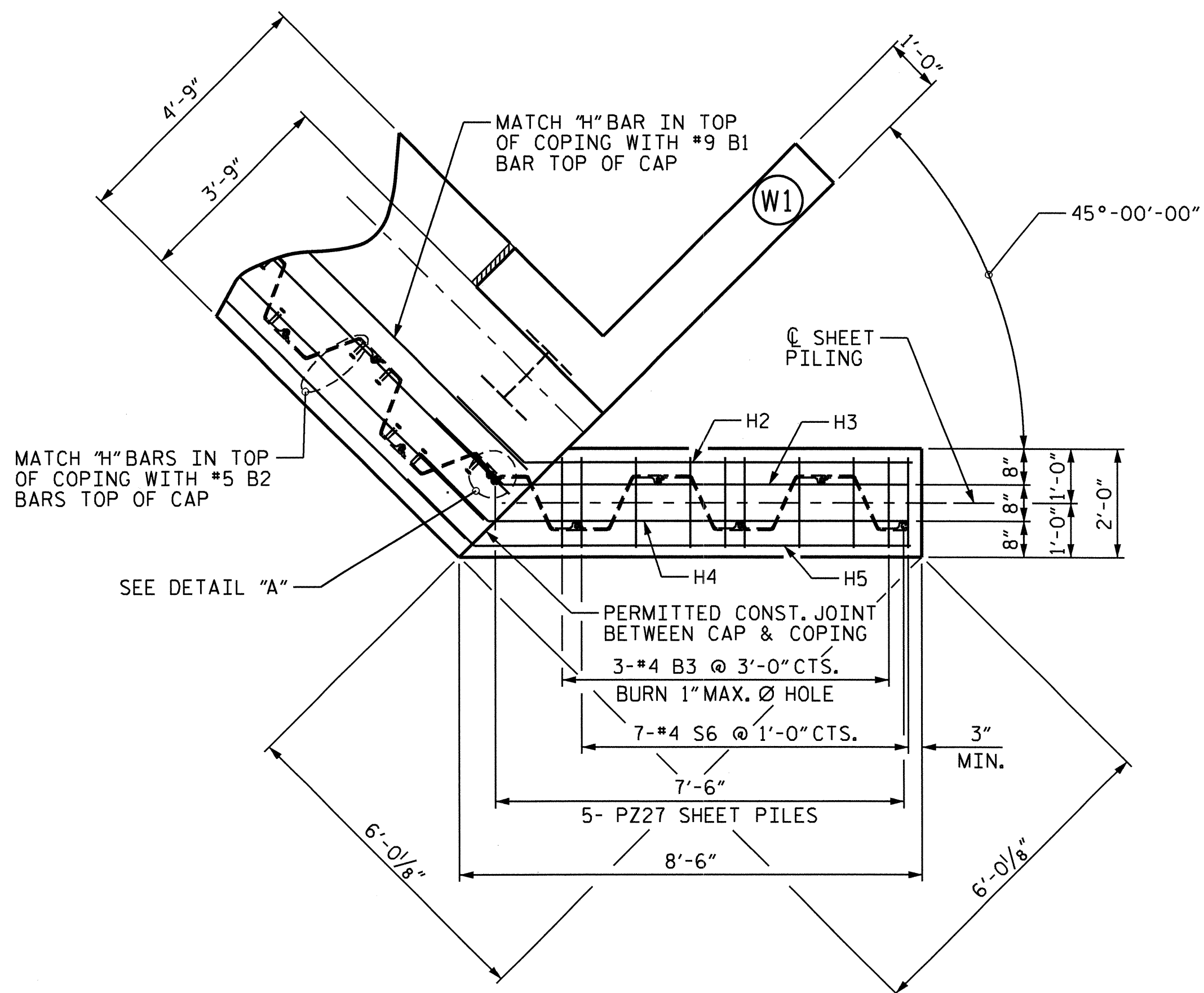
**SUBSTRUCTURE
END BENT #1**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS 39
2			4			

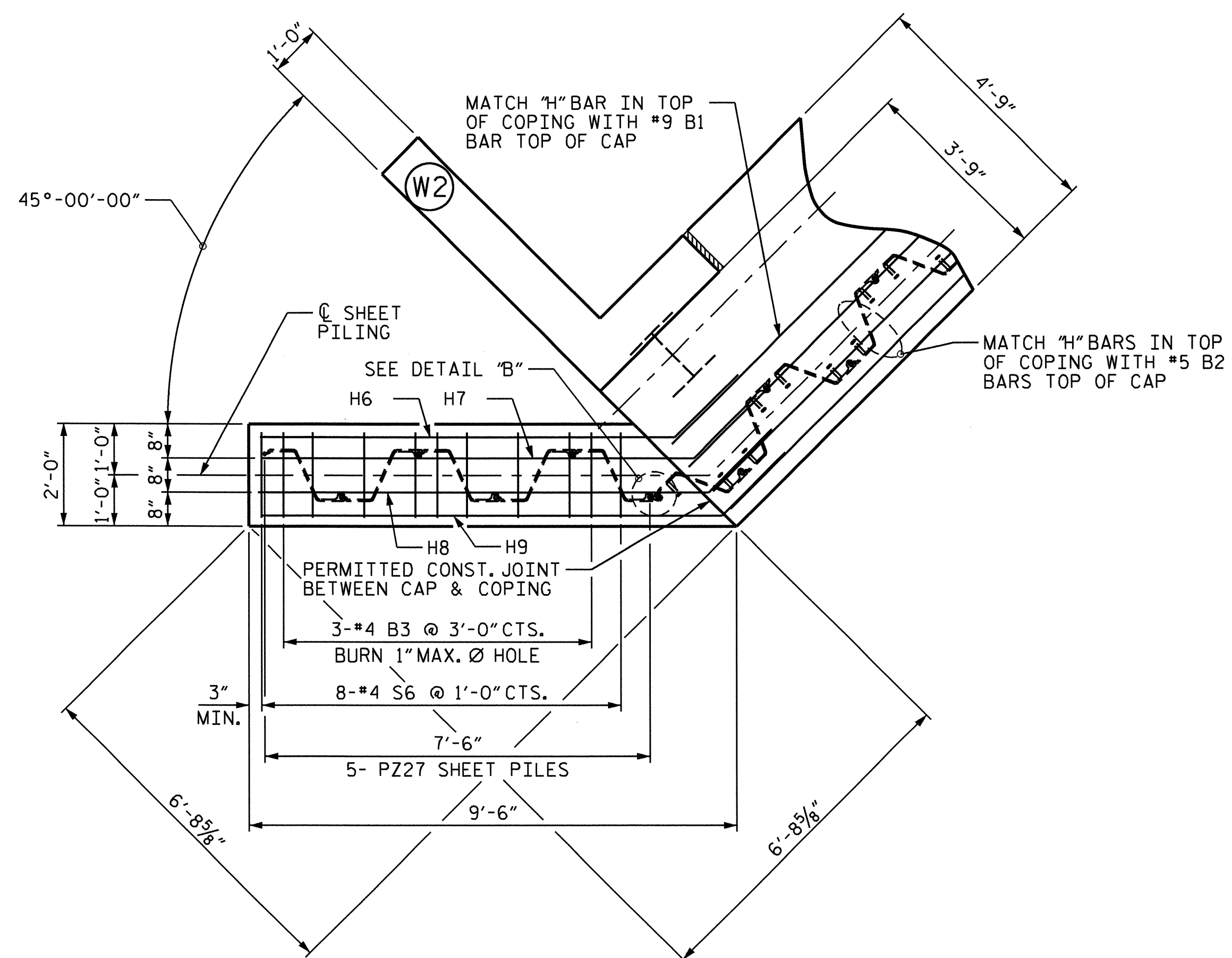


DRAWN BY: N.M. Ruffin DATE: 5-23-11
CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

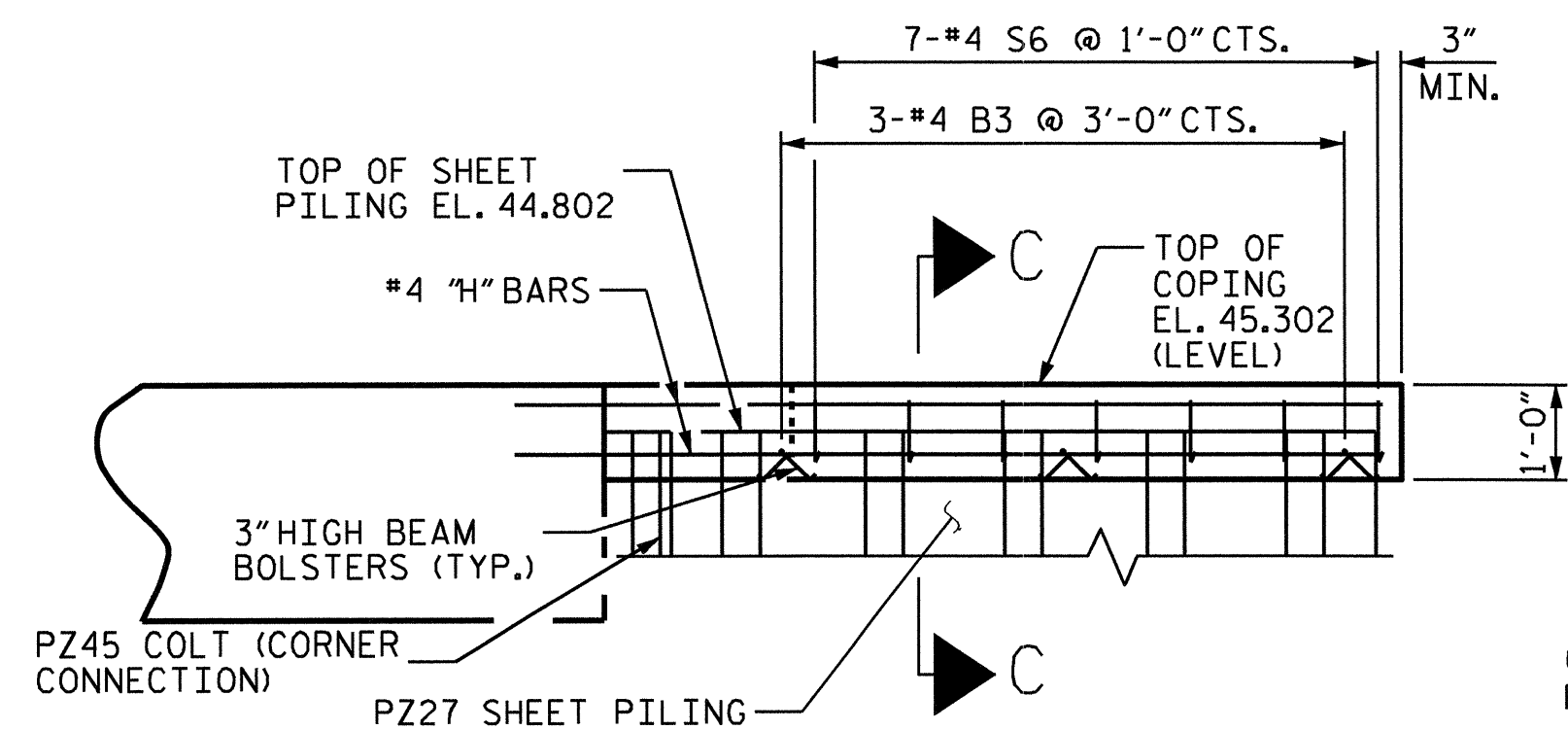
12-SEP-2011 11:41
R:\Structures\FINAL PLANS\STR #2\B4473.sd.eb.02.dgn
nruffin



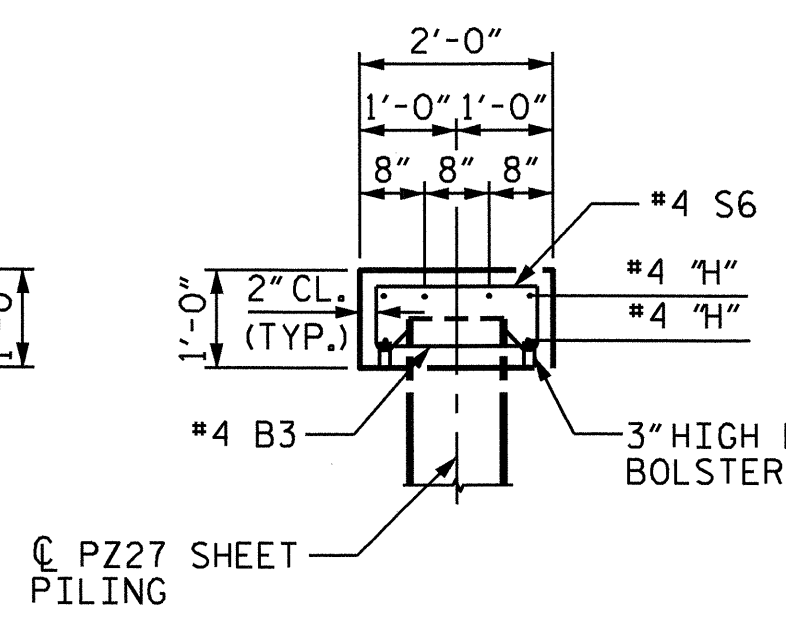
PLAN OF COPING C1



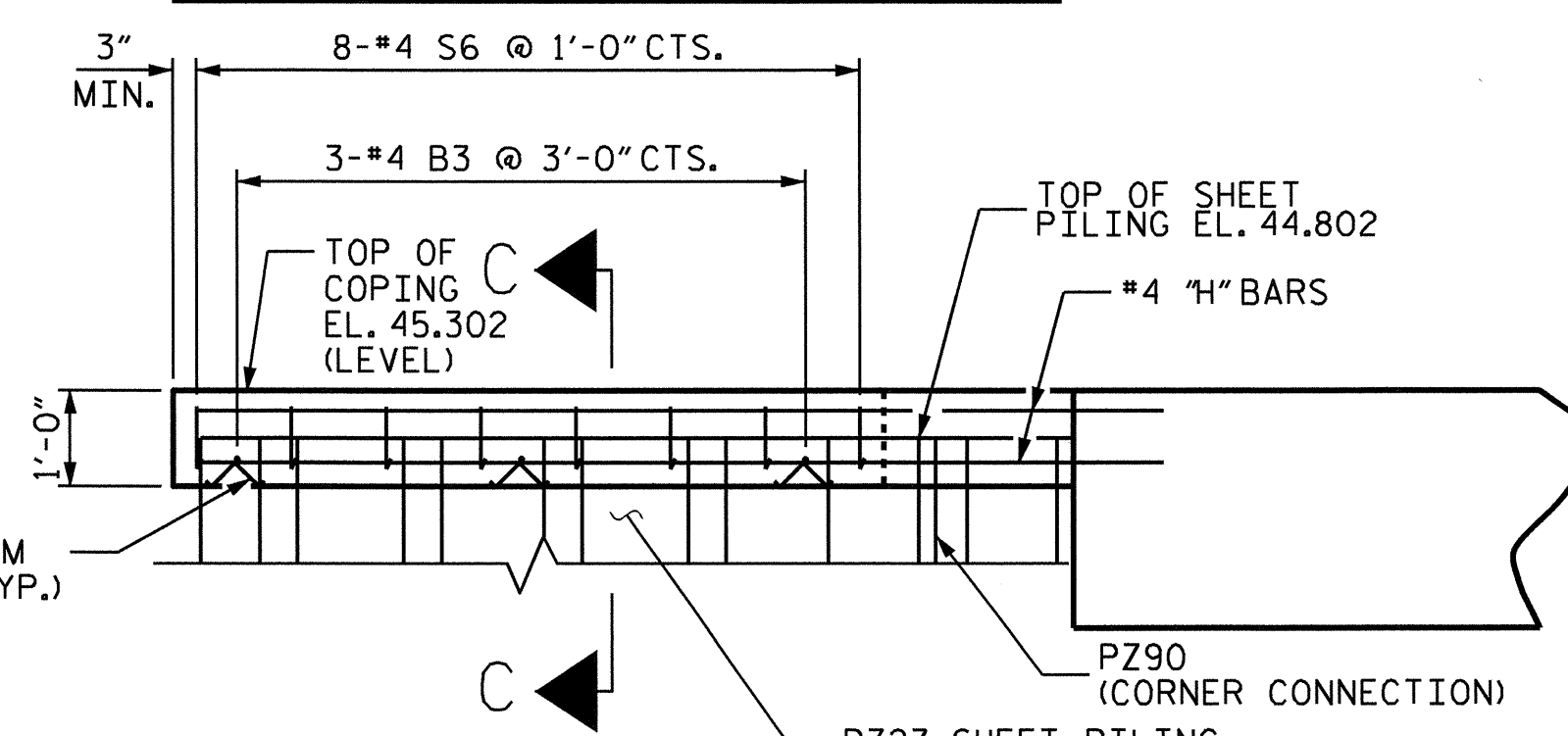
PLAN OF COPING C2



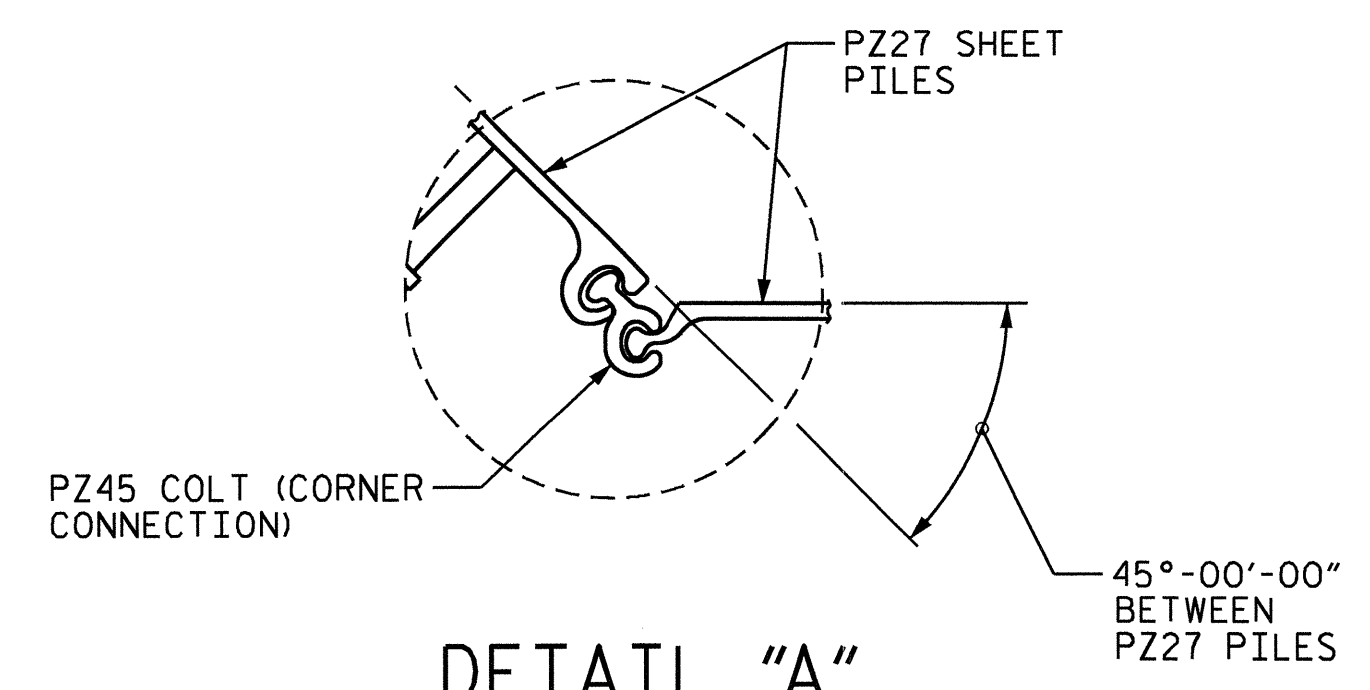
ELEVATION OF COPING C1
(WING NOT SHOWN FOR CLARITY)



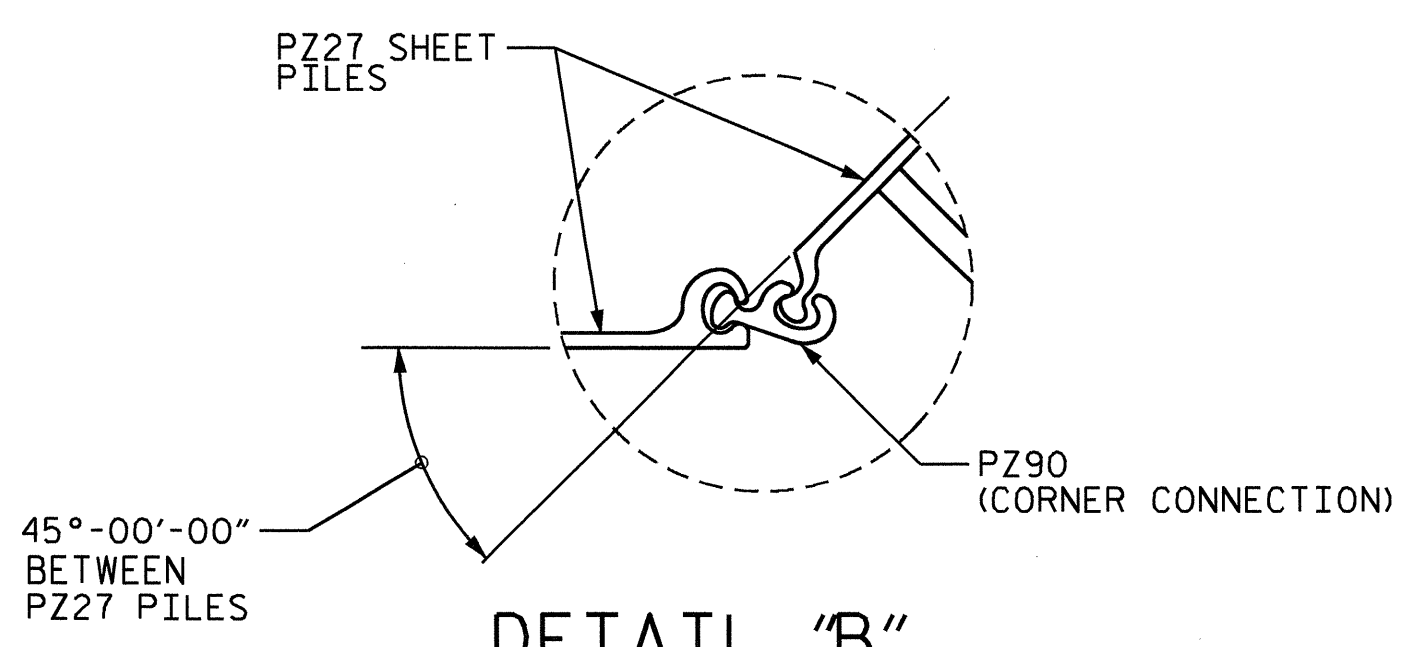
SECTION C-C



ELEVATION OF COPING C2
(WING NOT SHOWN FOR CLARITY)



DETAIL "A"



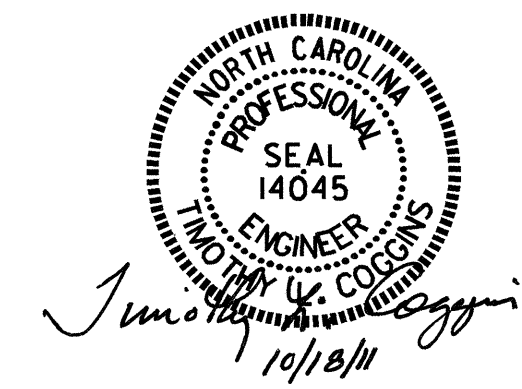
DETAIL "B"

DRAWN BY: Nal M. Ruffin DATE: 5/2/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

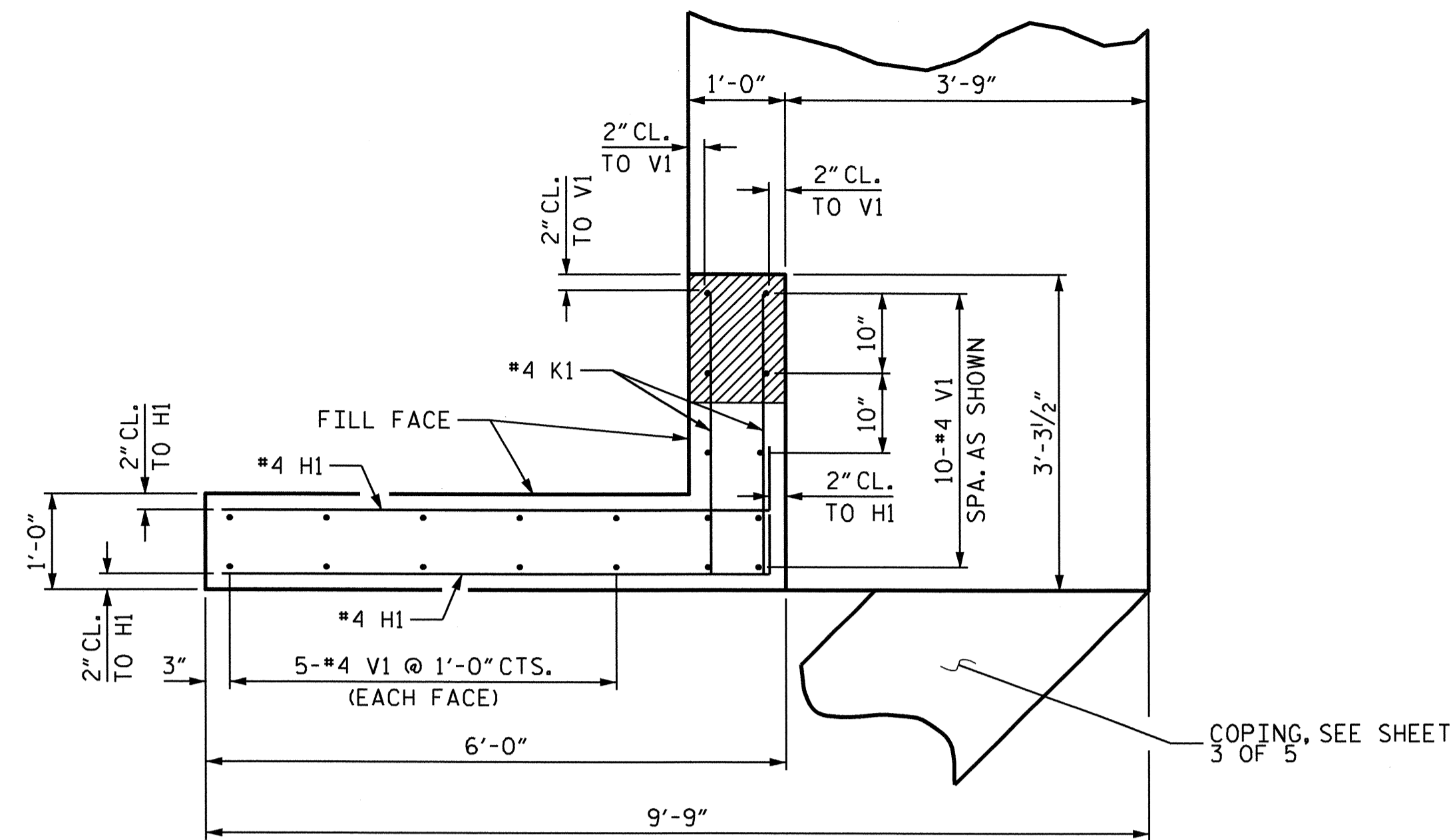
12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR *2\B4473.sd.eb.02.dgn
 nruffin

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-
 SHEET 3 OF 5

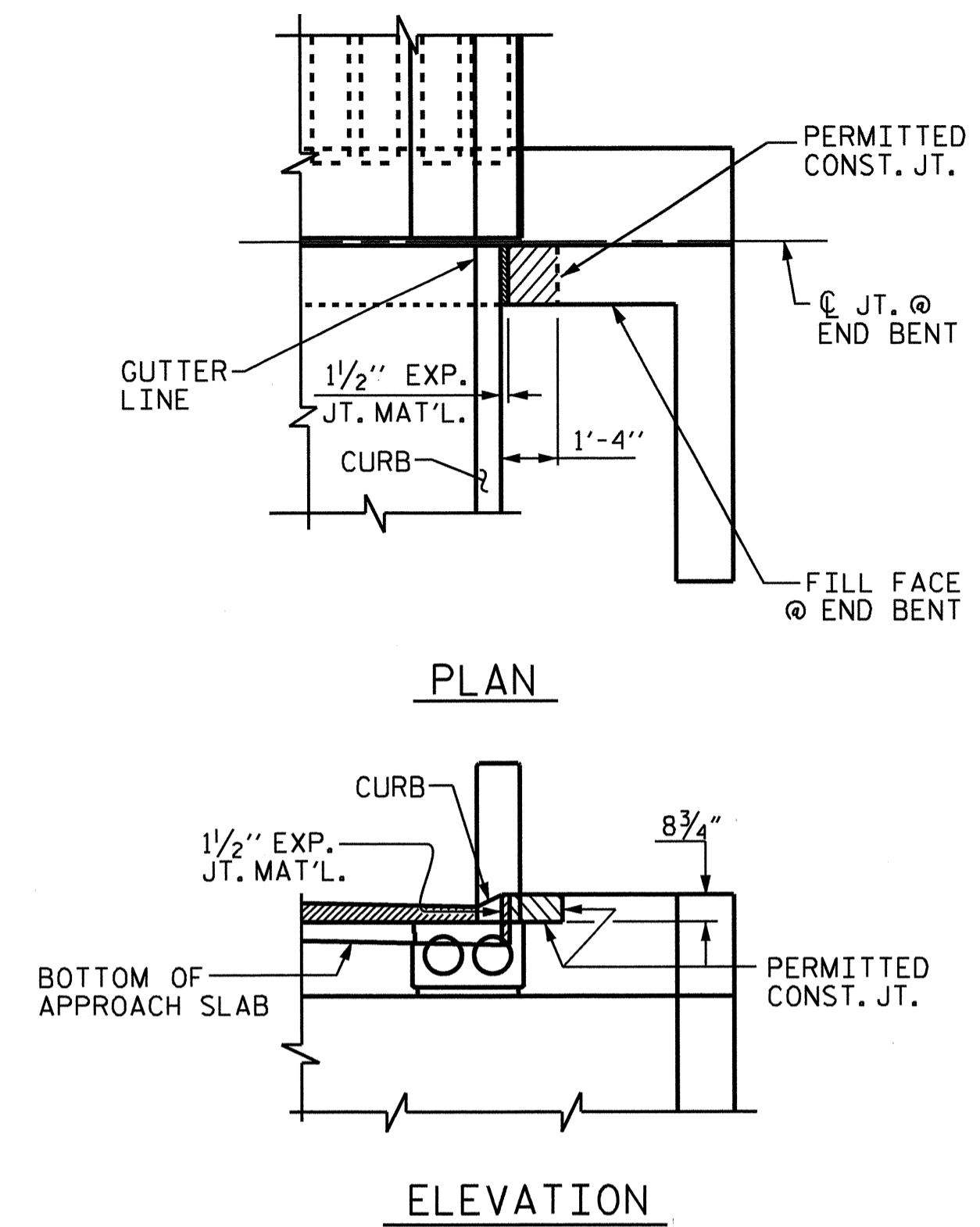
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-31
SUBSTRUCTURE END BENT #1						TOTAL SHEETS 39
REVISIONS						NO. BY: DATE: NO. BY: DATE: NO. BY: DATE:
1			3			
2			4			
3						



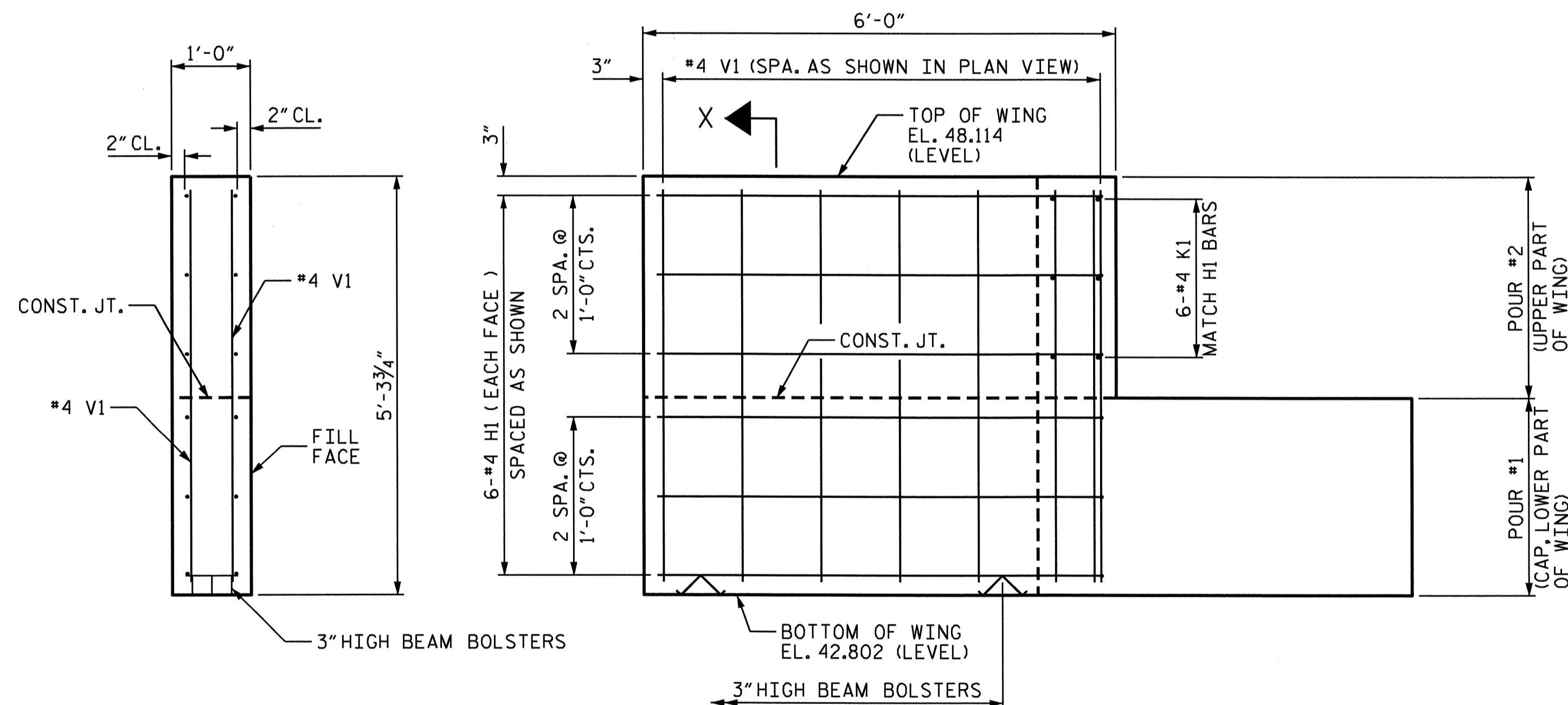
STR. #2 NC005



PLAN OF WING W2
PLAN OF WING W1 SIMILAR



BLOCKOUT IN WING WALL FOR CORED SLAB



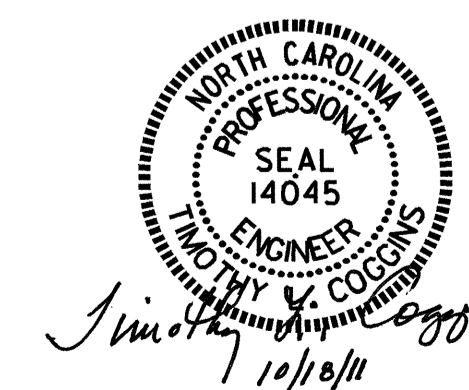
SECTION X-X

ELEVATION OF WING W2
ELEVATION OF WING W1 SIMILAR

PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 20+14.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT #1



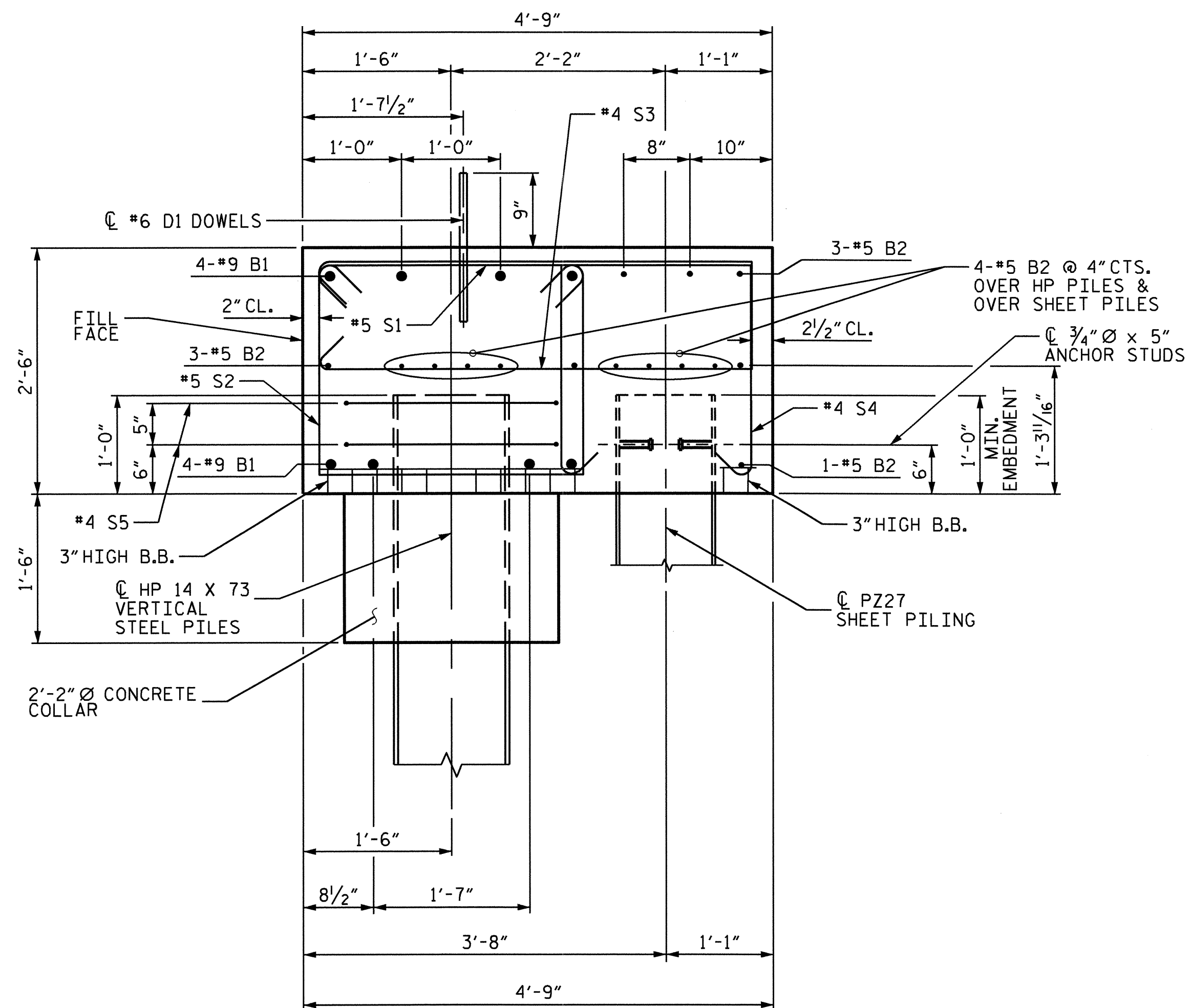
DRAWN BY : Nat M. Ruffin DATE : 5/12/11
CHECKED BY : B.N. BARODAWALA DATE : 6-10-11

11-OCT-2011 12:32
R:\TIP\Projects-B\B4473\Structures\FINAL PLANS\STR *2\b4473.sd eb.02.dgn
toverette

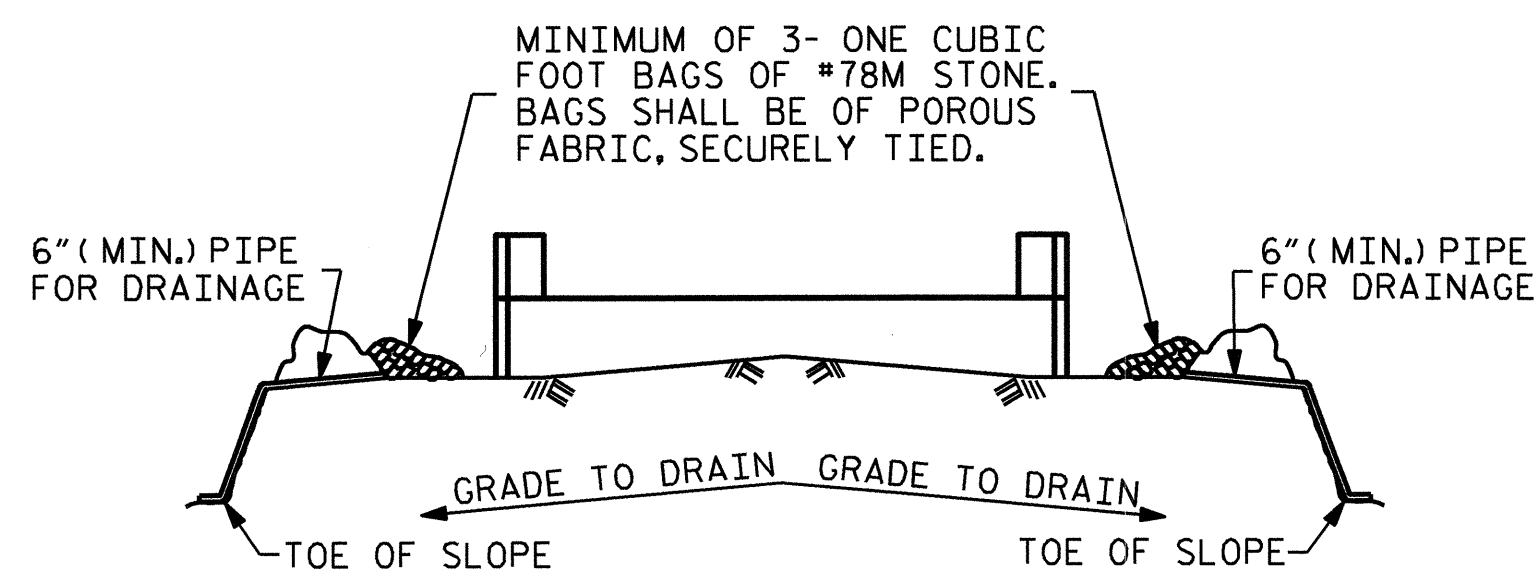
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32	
1			3			TOTAL SHEETS	39
2			4				

STR. #2

NC005



SECTION A-A THRU CAP

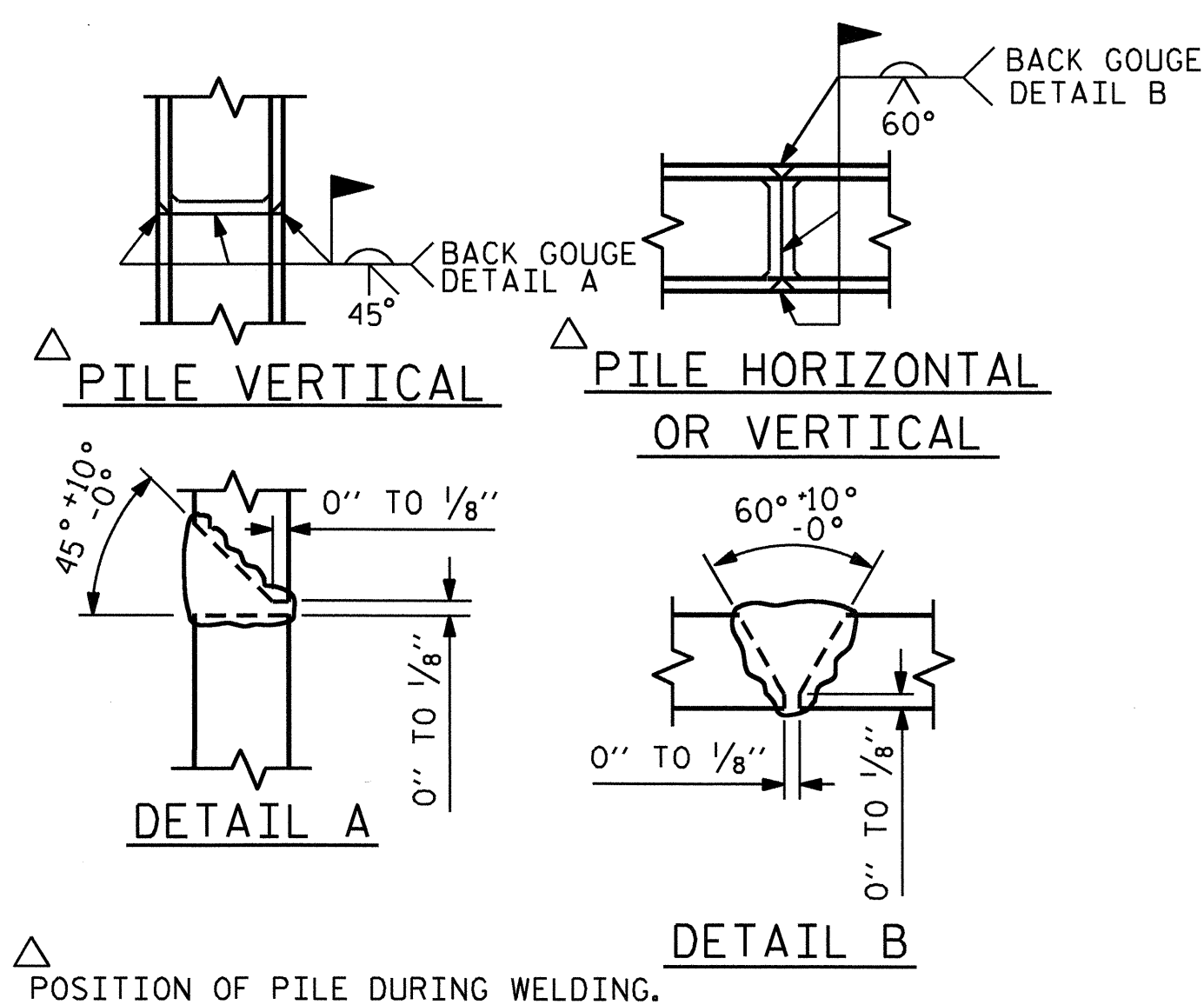


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

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

TEMPORARY DRAINAGE AT END BENT



POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES					
S2	2'-8"	S2	S3	S4	S6
S3	1'-1"				
S4	1'-11"				
S6	1'-8"				

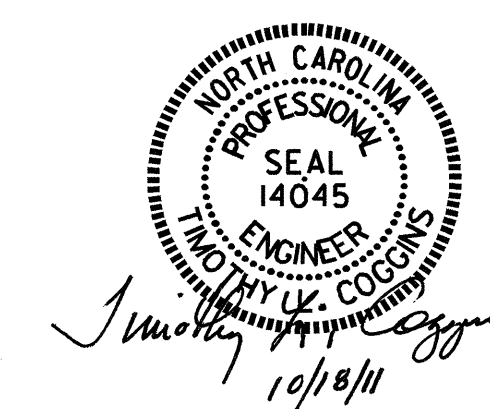
END BENT #1 BILL OF MATERIAL							
BAR NO	SIZE	TYPE	LENGTH	WEIGHT			
B1	8	9	1	41'-0"	1115		
B2	15	5	STR	38'-8"	605		
B3	6	4	STR	1'-8"	7		
D1	22	6	STR	1'-6"	50		
H1	24	4	5	6'-4"	102		
H2	2	4	6	9'-3"	12		
H3	1	4	6	9'-6"	6		
H4	1	4	6	9'-10"	7		
H5	2	4	6	10'-2"	14		
H6	2	4	6	10'-2"	14		
H7	1	4	6	10'-6"	7		
H8	1	4	6	10'-10"	7		
H9	2	4	6	11'-0"	15		
K1	12	4	STR	2'-11"	23		
S1	38	5	2	3'-7"	142		
S2	38	5	3	7'-10"	310		
S3	10	4	3	10'-7"	71		
S4	19	4	3	6'-11"	88		
S5	14	4	4	7'-6"	70		
S6	15	4	3	3'-8"	37		
V1	40	4	STR	4'-11"	131		
REINFORCING STEEL					lbs.	2,833	
CLASS "A" CONCRETE BREAKDOWN							
POUR #1 CONCRETE COLLARS, CAP, LOWER WINGS, & COPING							
					20.7 C.Y.		
POUR #2 UPPER WINGS							
					1.7 C.Y.		
TOTAL					22.4 C.Y.		
HP 14 x 73 STEEL PILES							
No. = 7					LIN. FEET.	315	
PILE REDRIVES							
EACH						7	
18" STEEL SHEET PILES							
NO. PZ45 COLT = 1							
NO. PZ90 = 1							
NO. PZ27 = 36							
TOTAL NO.					= 38	SQ. FT.	598

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1



REVISIONS				SHEET NO.
NO.	BY:	DATE:		S-33
1			3	TOTAL SHEETS
2			4	39

DRAWN BY: Neil M. Ruffin DATE: 5/12/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

--- NOTES ---

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

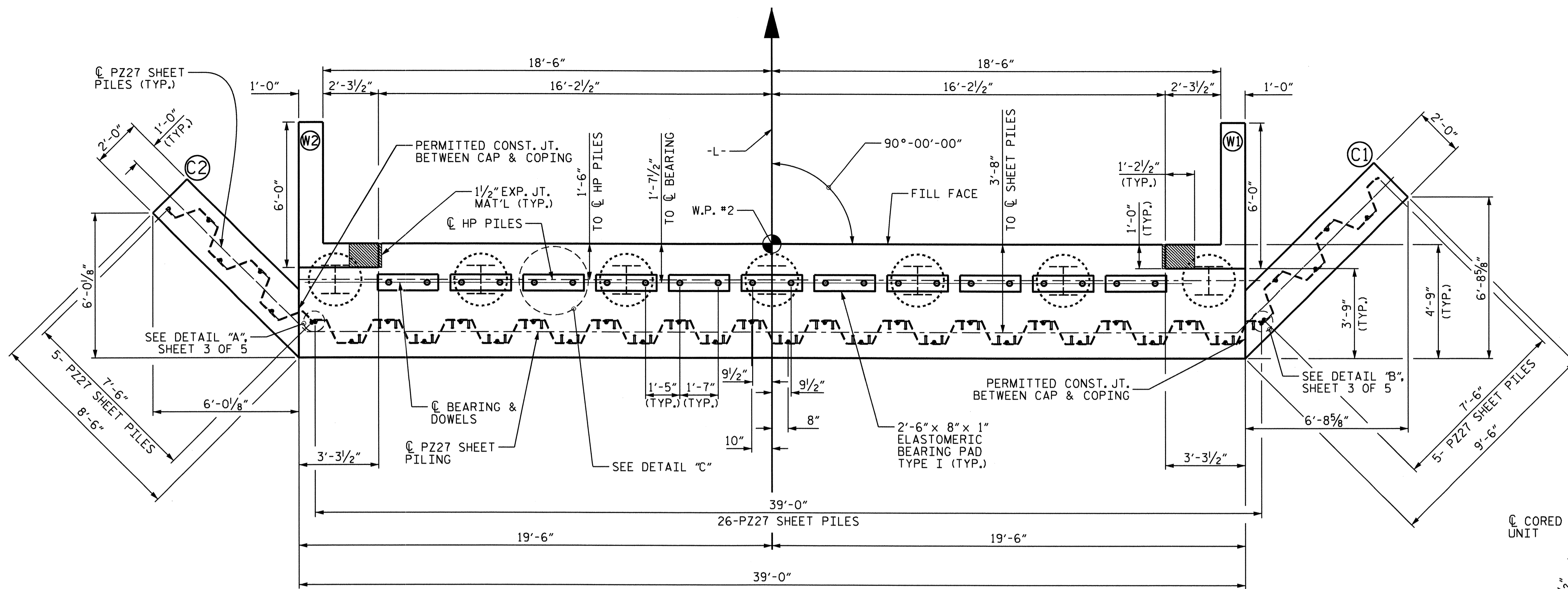
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

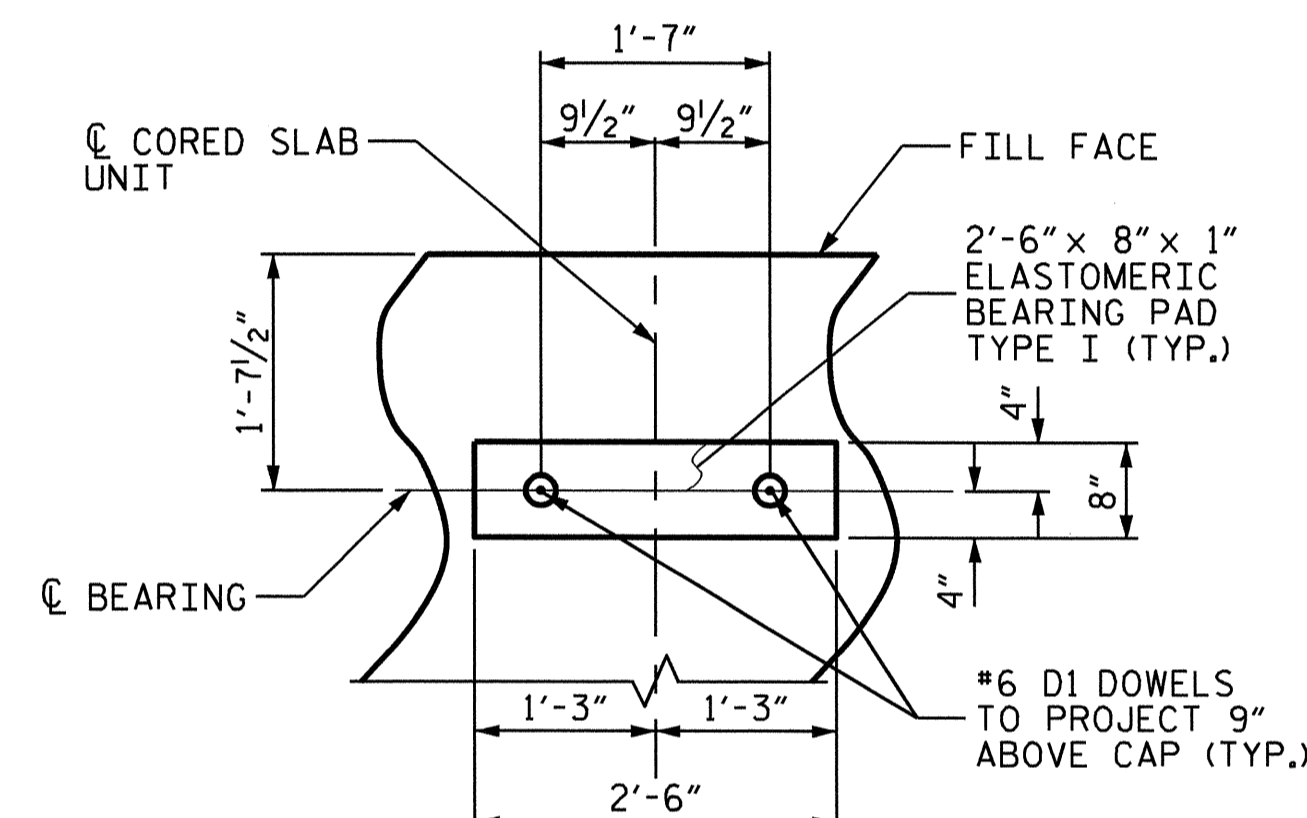
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALLS AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

STEEL SHEET PILES SHALL BE HOT ROLLED.

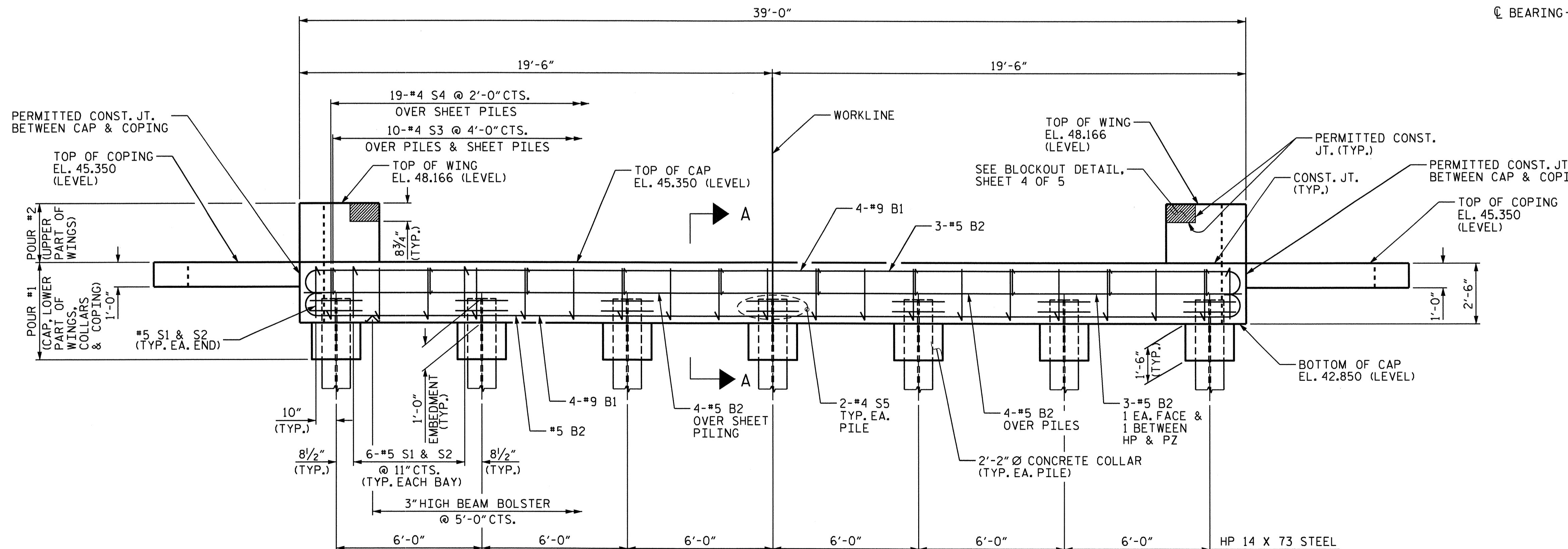
FOR ELEVATION VIEW OF PZ27 SHEET PILES, SEE SHEET 2 OF 5.



PLAN



DETAIL "C"

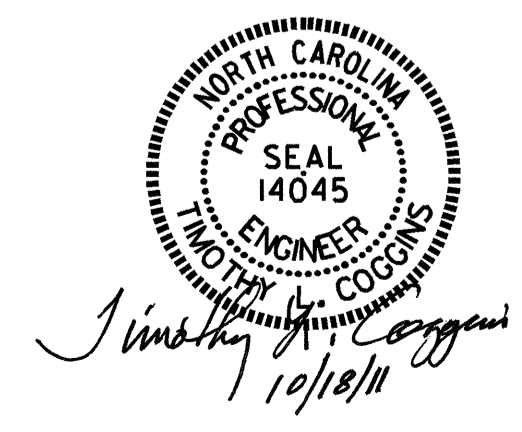


ELEVATION

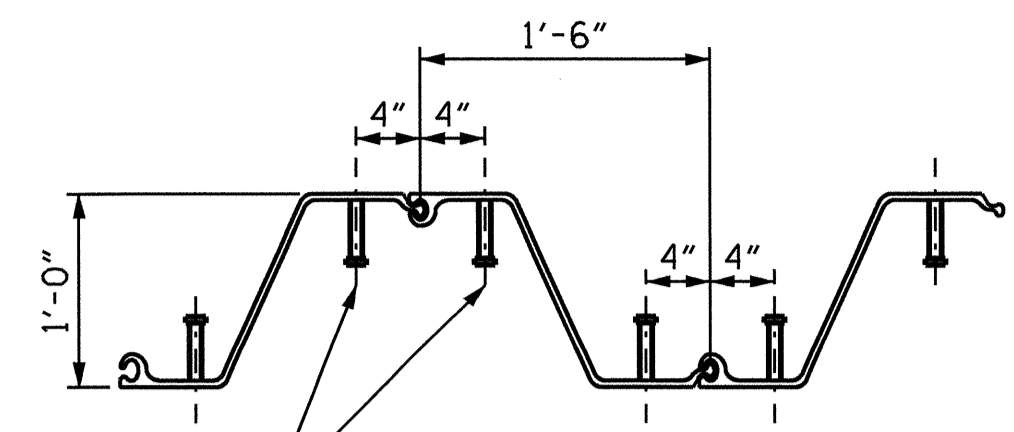
SHEET PILING NOT SHOWN FOR CLARITY.

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-
 SHEET 1 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-34
TOTAL SHEETS					39

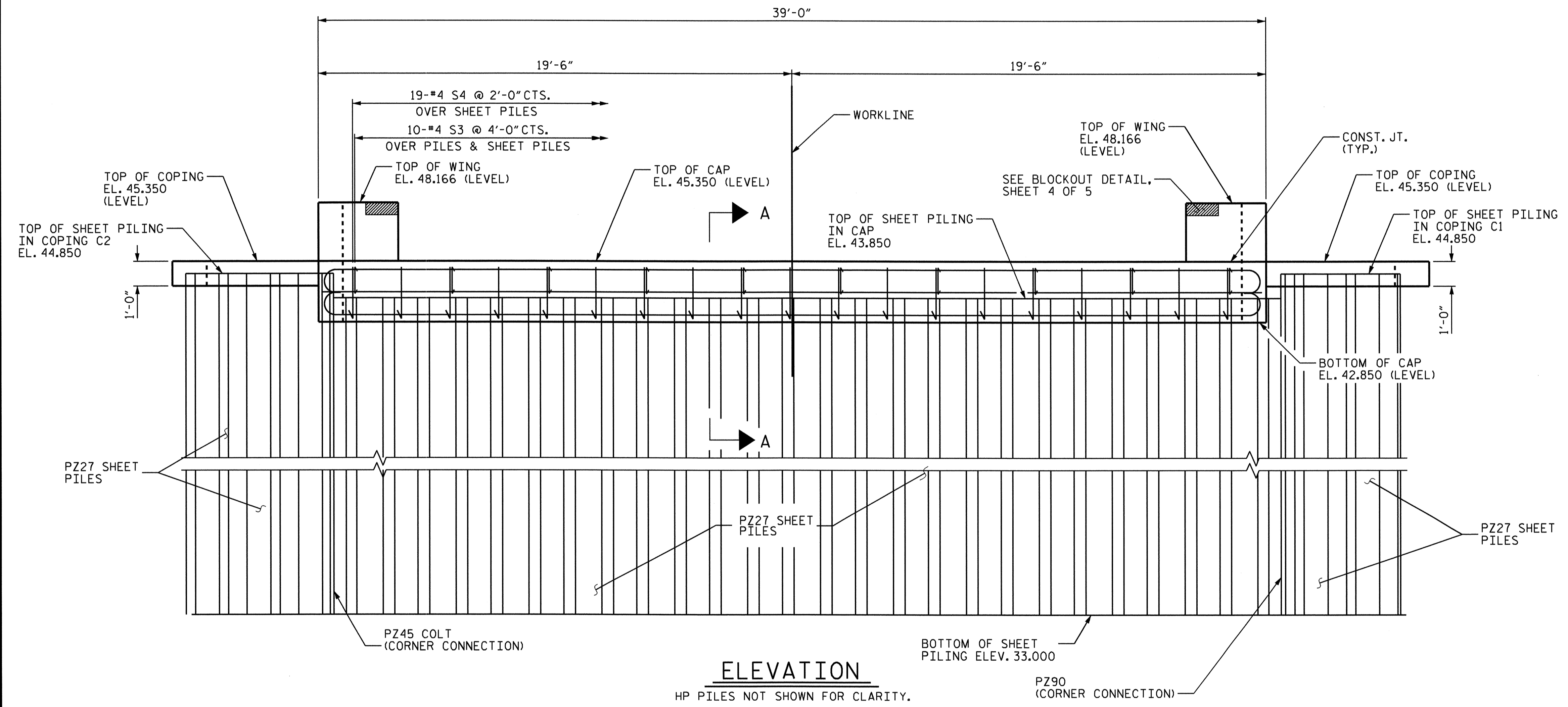


DRAWN BY: N.M. Ruffin DATE: 5-23-11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11



3/4" Ø x 5" ANCHOR STUDS
 WELDED TO SHEET PILES
 (2 STUDS PER SHEET PILE
 ONLY IN THE CAP)

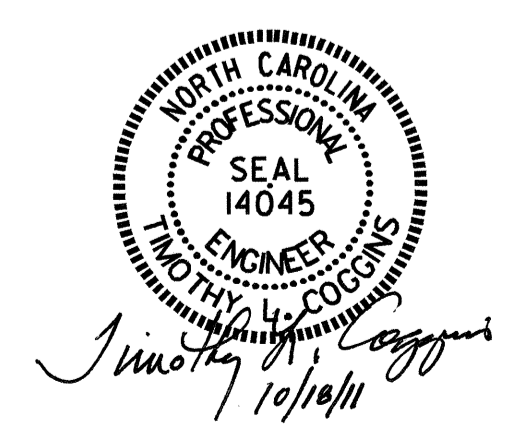
ANCHOR STUD DETAILS



ELEVATION
 HP PILES NOT SHOWN FOR CLARITY.

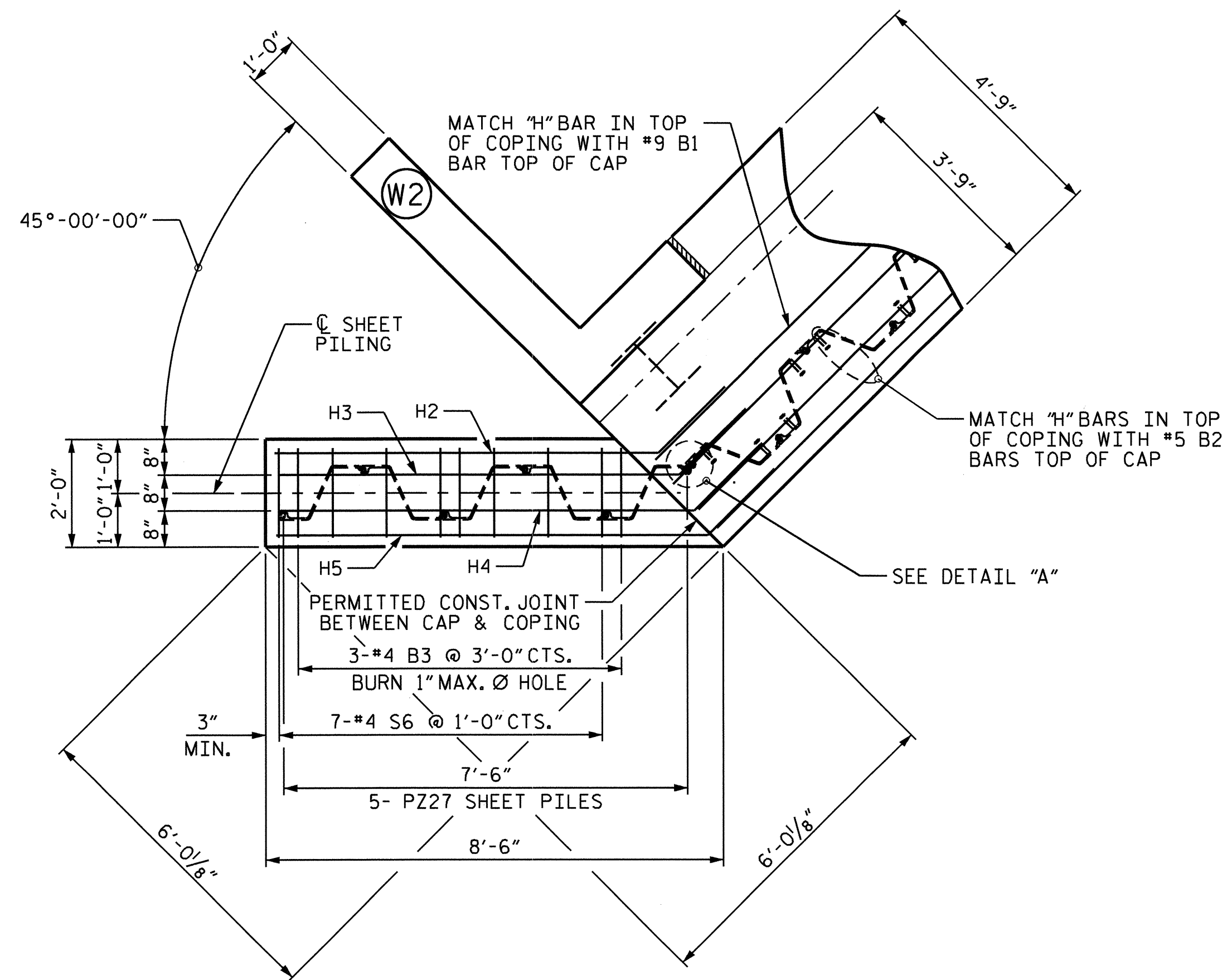
PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-
 SHEET 2 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-35
SUBSTRUCTURE END BENT #2						TOTAL SHEETS 39
REVISIONS						SHEET NO. S-35 TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

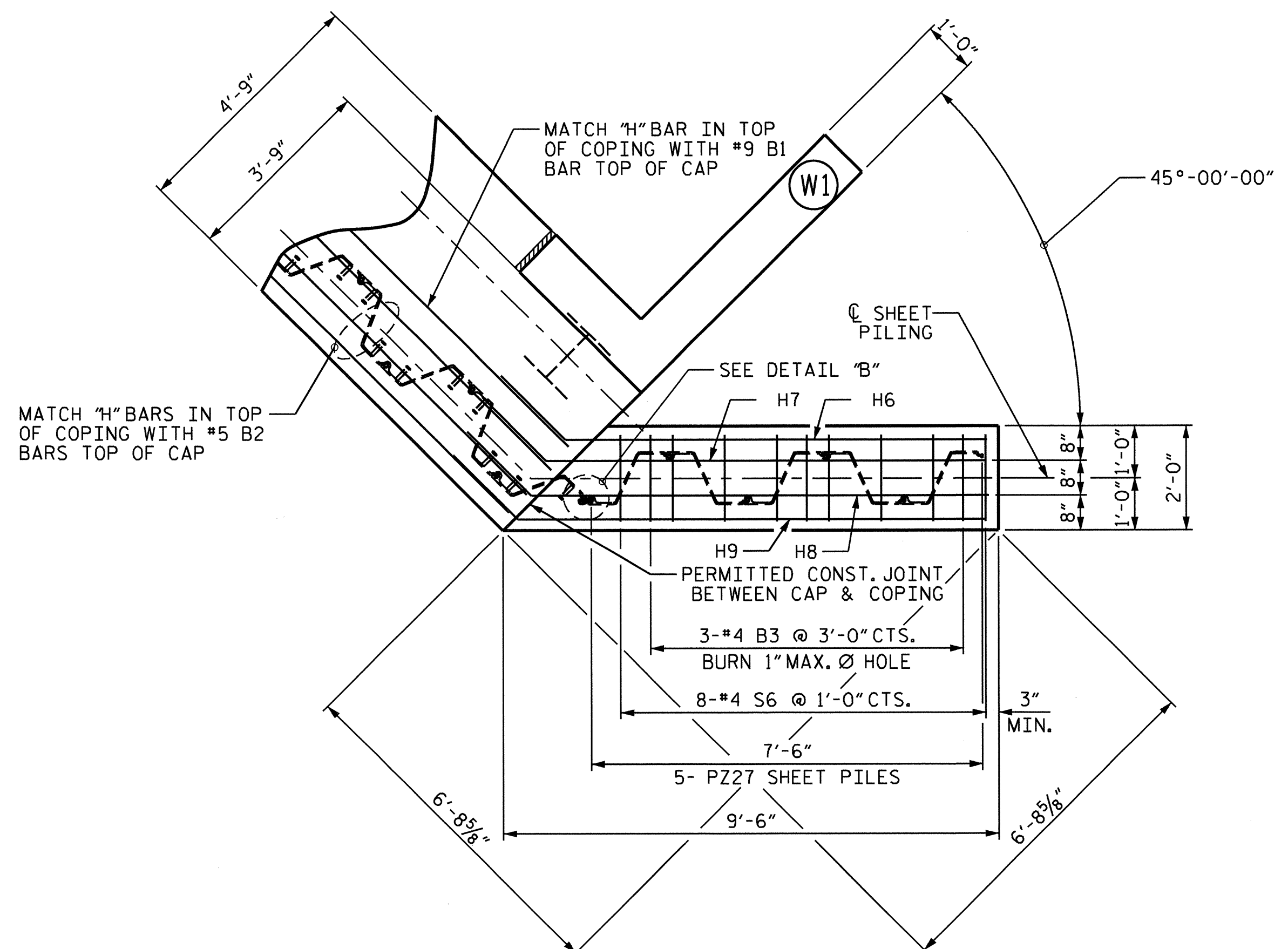


DRAWN BY: Nat M. Ruffin DATE: 5/23/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

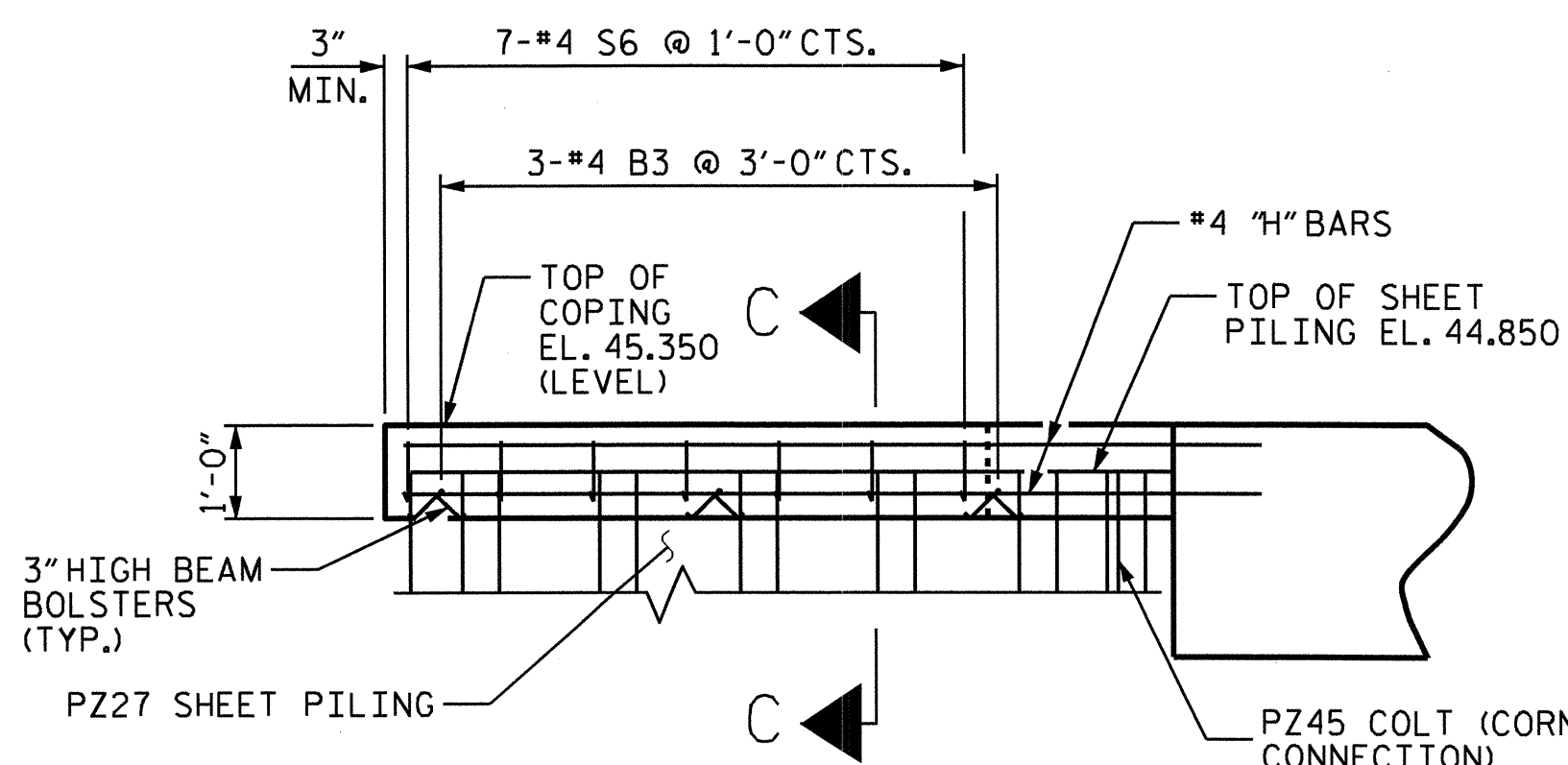
12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR #2\B4473.sd.eb.02.dgn
 nruffin



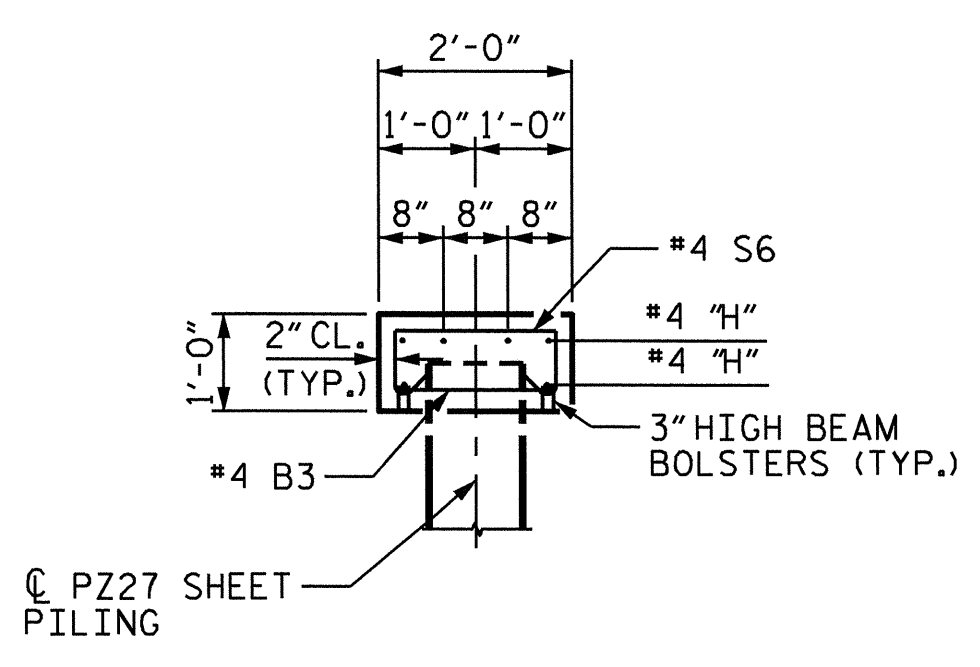
PLAN OF COPING C2



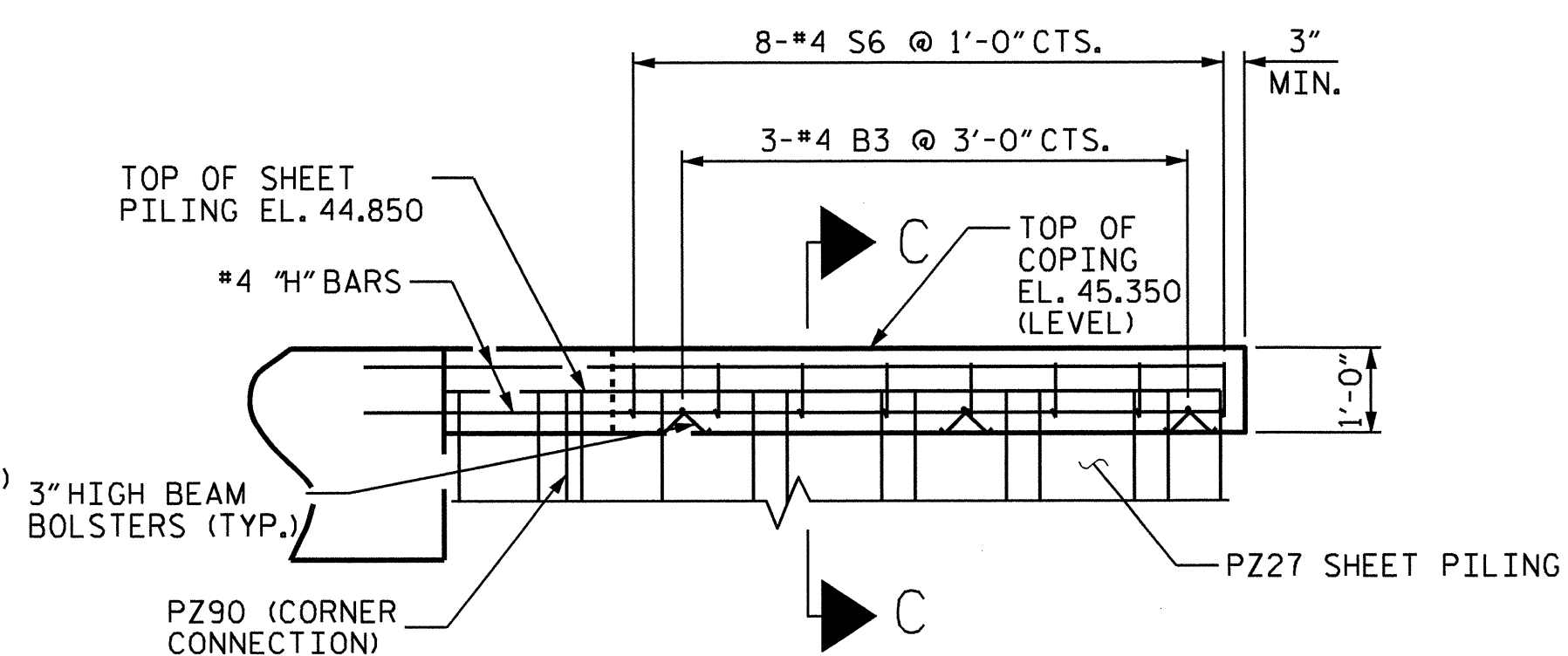
PLAN OF COPING C1



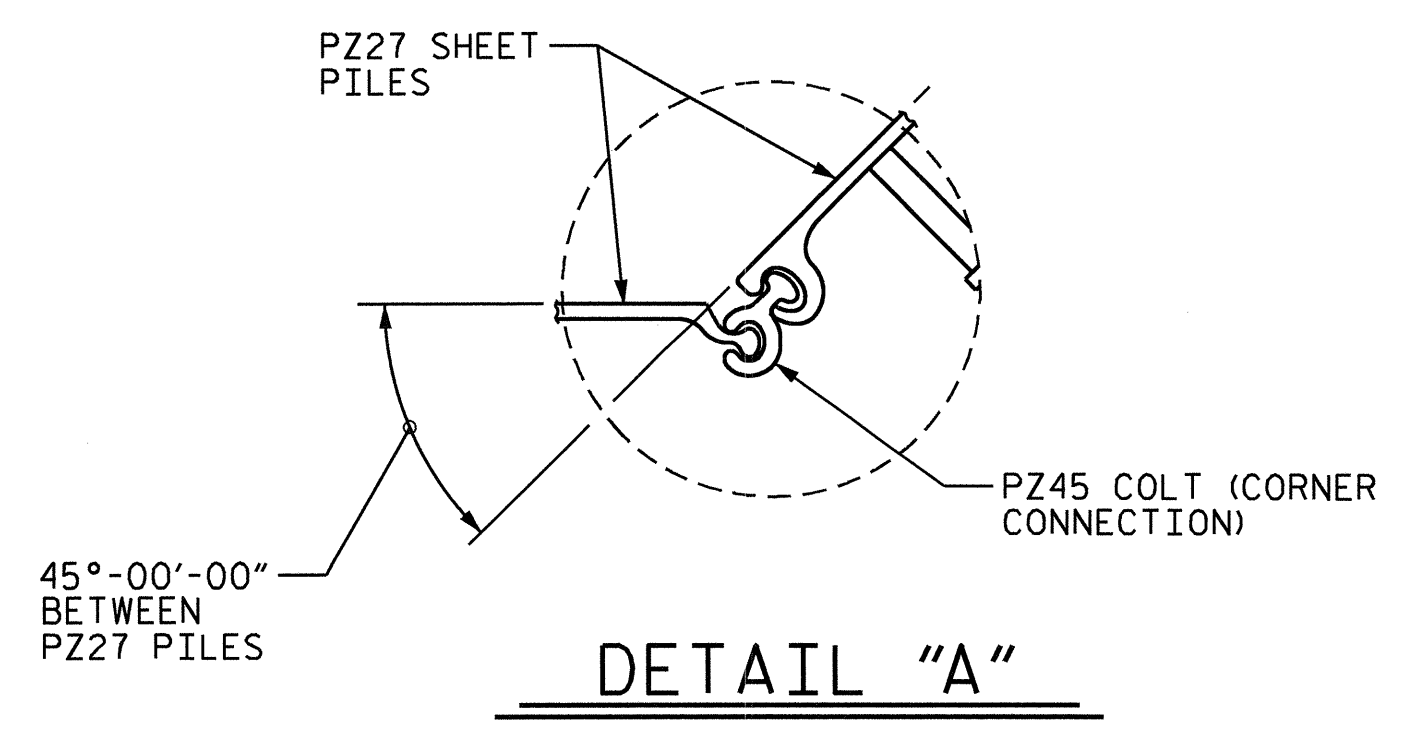
ELEVATION OF COPING C2
(WING NOT SHOWN FOR CLARITY)



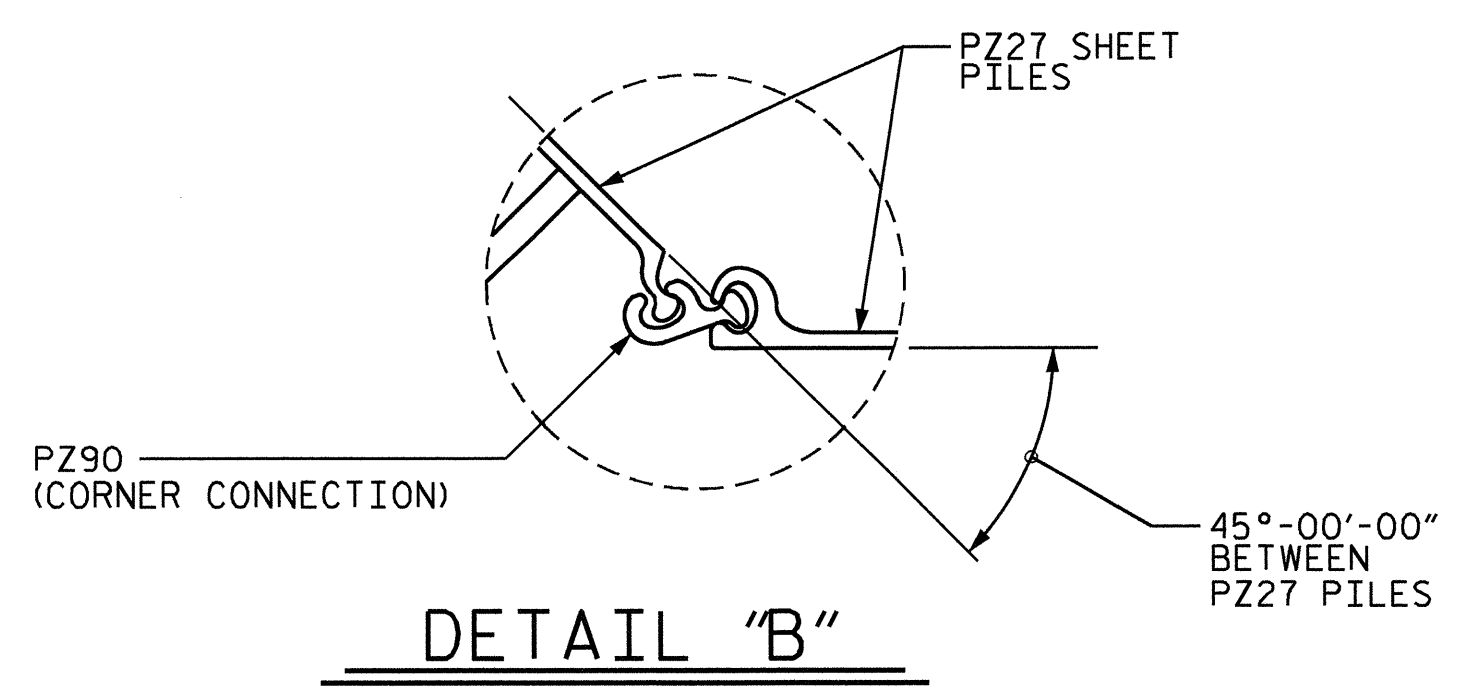
SECTION C-C



ELEVATION OF COPING C1
(WING NOT SHOWN FOR CLARITY)



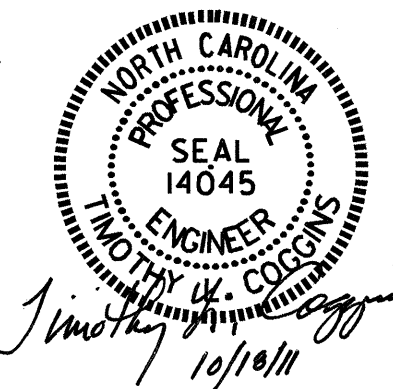
DETAIL "A"



DETAIL "B"

DRAWN BY: Nail M. Kuffin DATE: 5/12/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

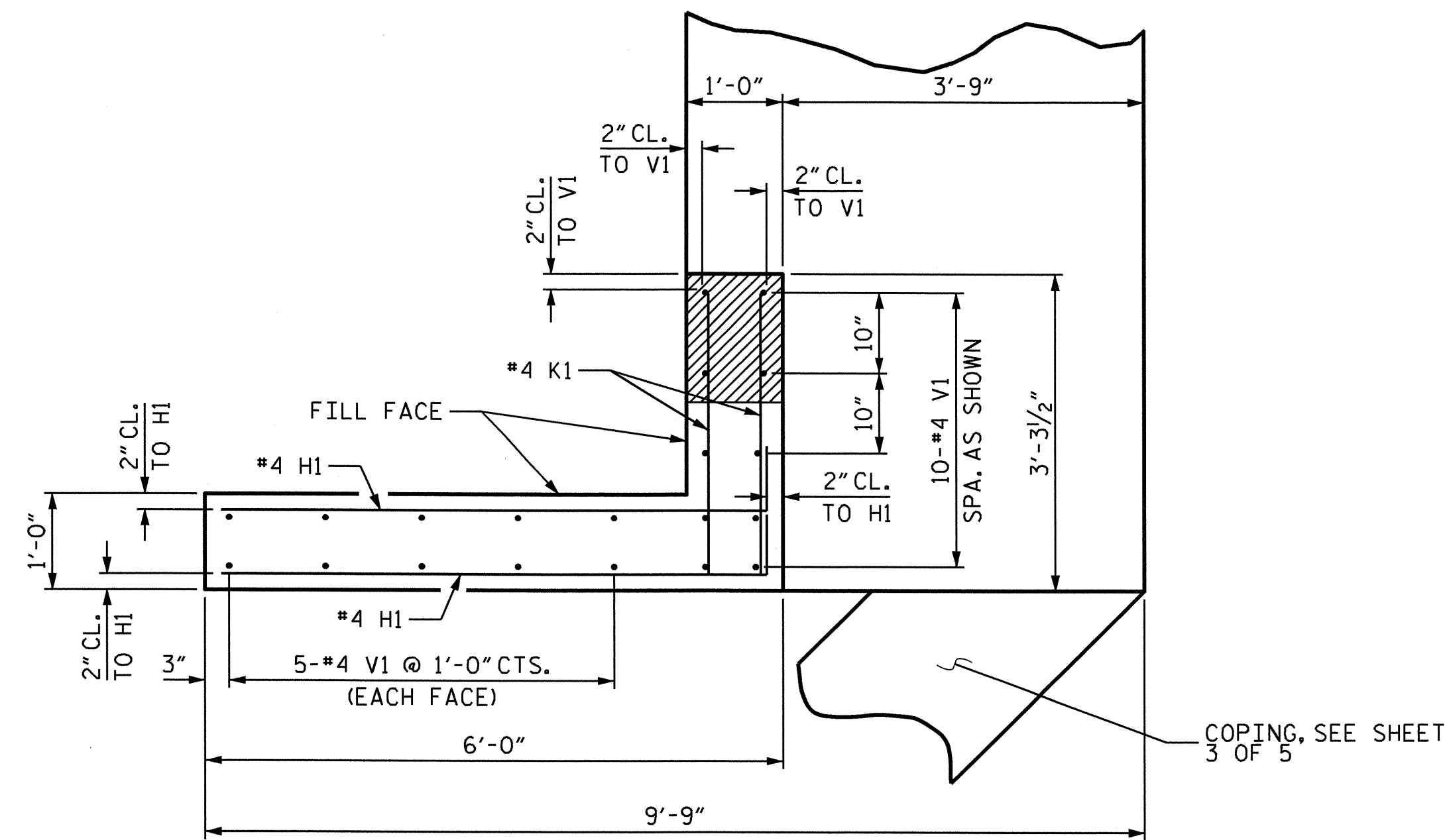
12-SEP-2011 11:41
 R:\Structures\FINAL PLANS\STR *2\4473.sd.eb.02.dgn
 nruflin



PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-
 SHEET 3 OF 5

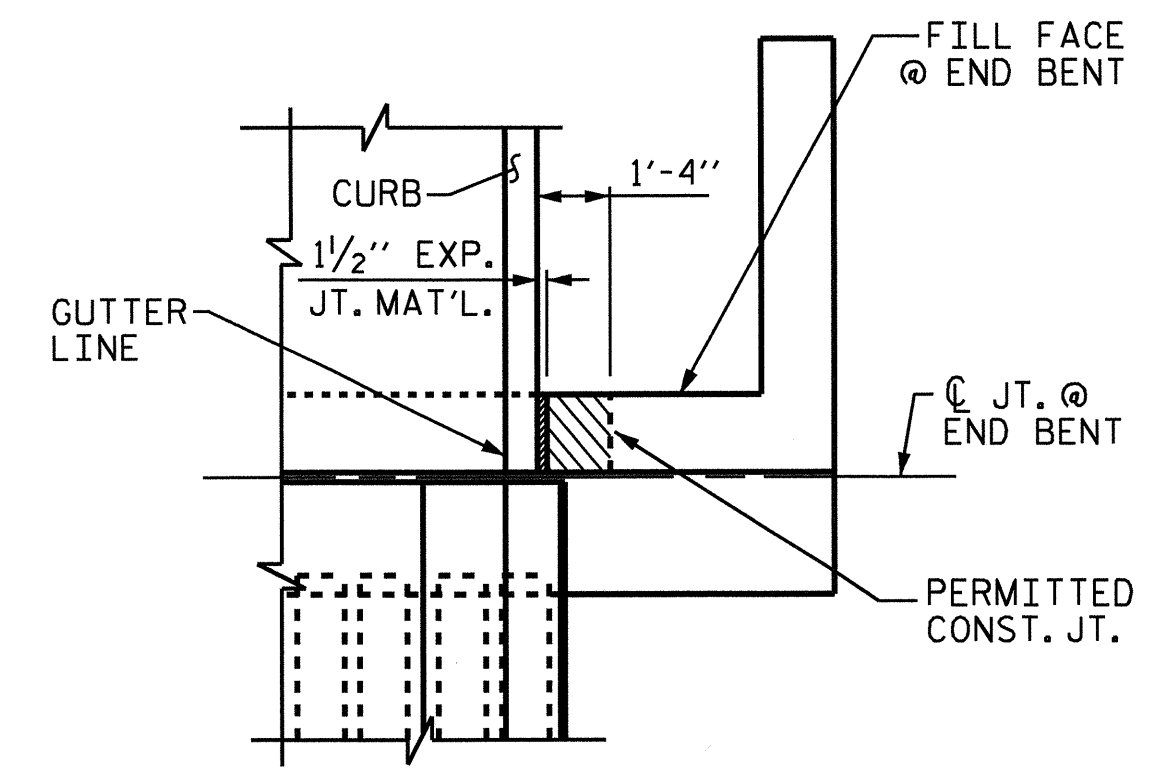
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-36
SUBSTRUCTURE END BENT #2						
REVISIONS						TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

STR. #2 NC005

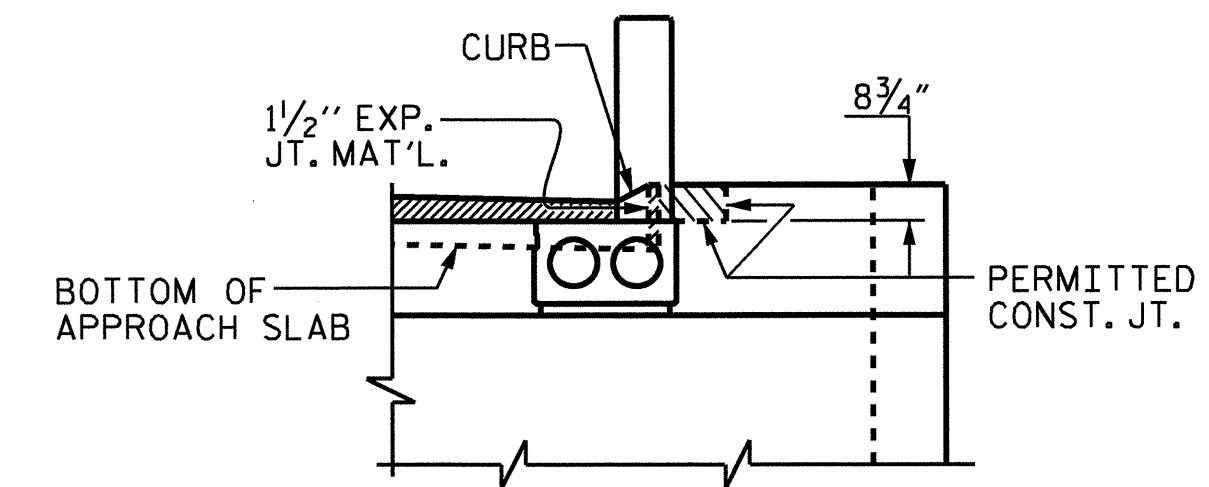


PLAN OF WING W2

PLAN OF WING W1 SIMILAR

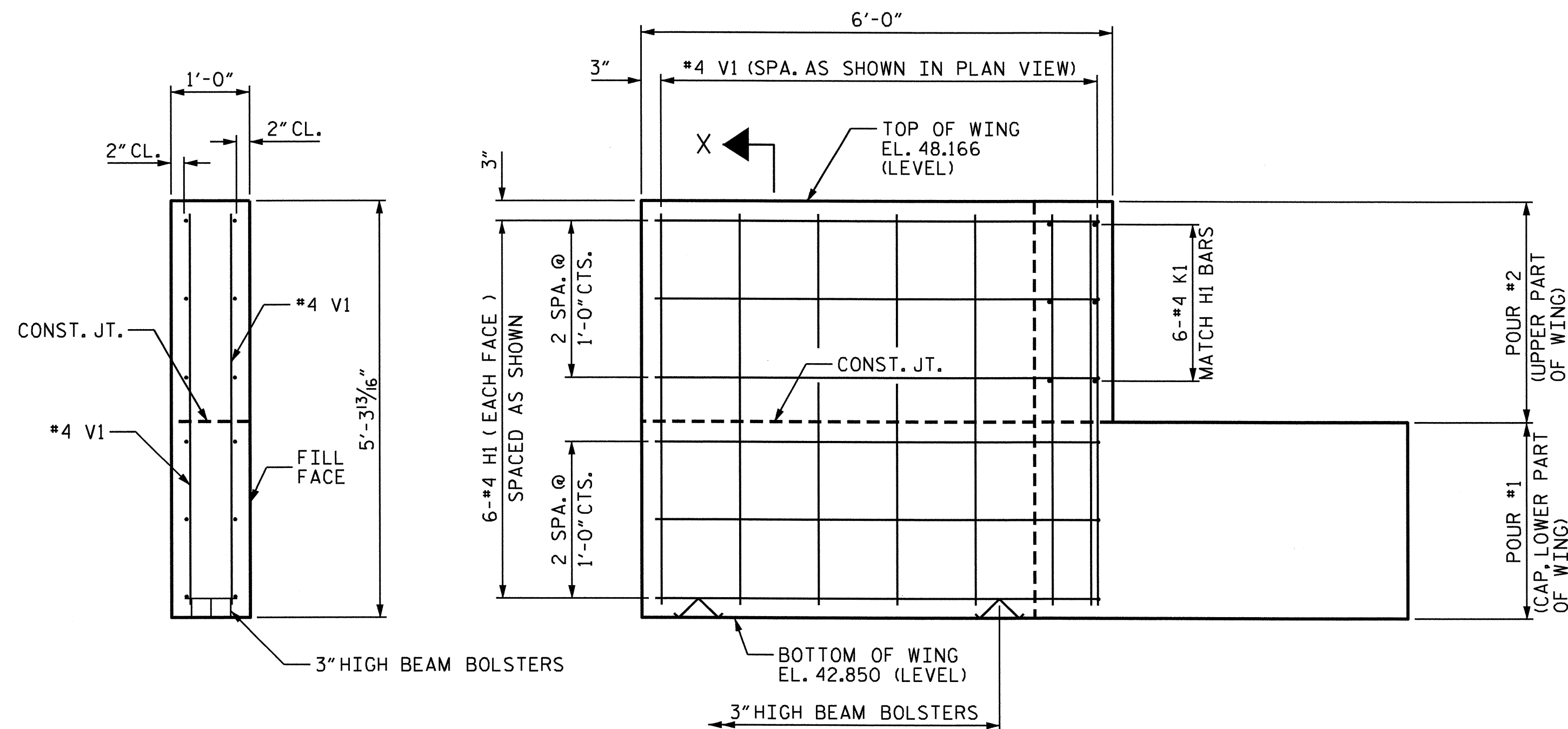


PLAN



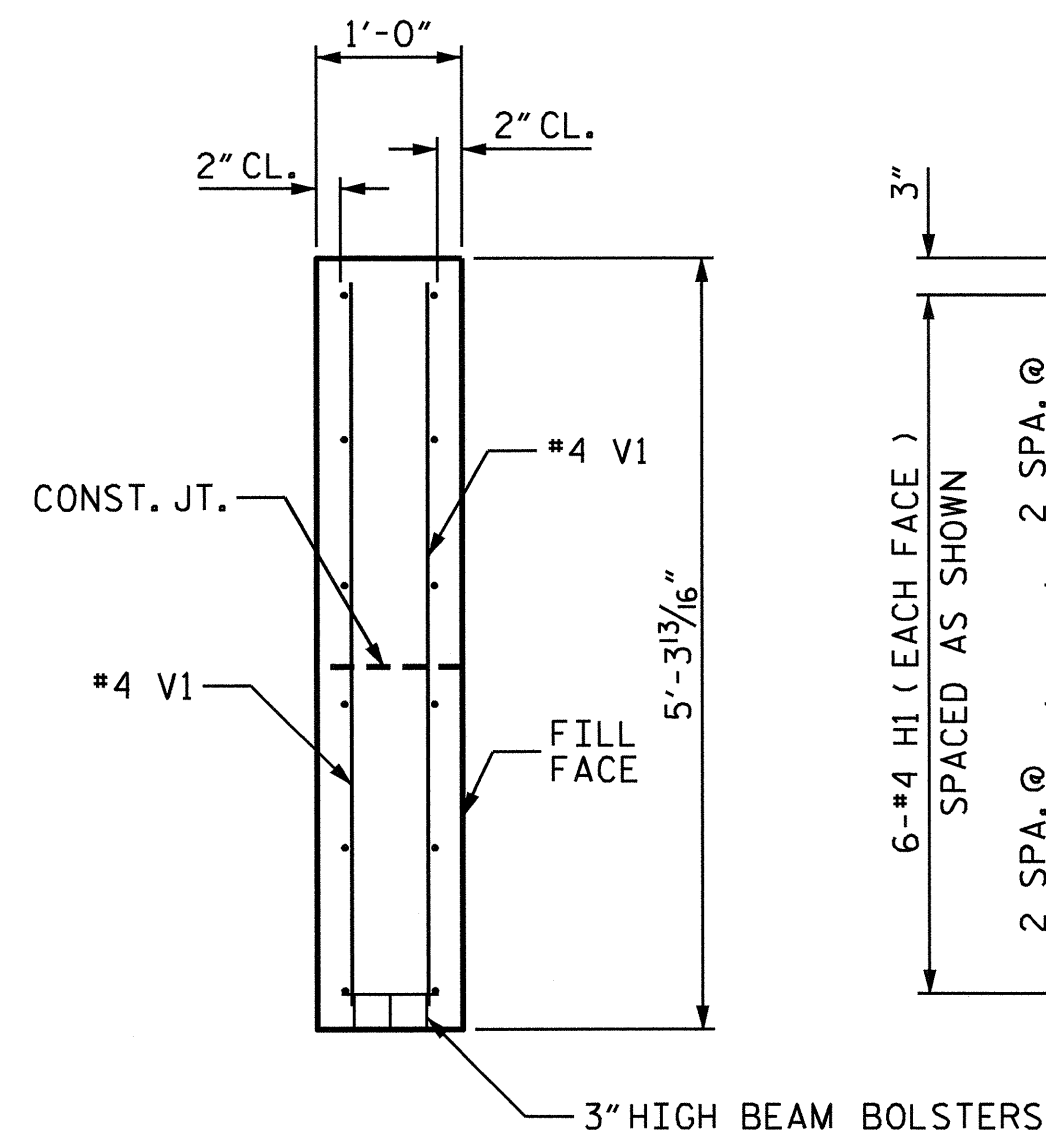
ELEVATION

BLOCKOUT IN WING WALL FOR CORED SLAB



ELEVATION OF WING W2

ELEVATION OF WING W1 SIMILAR

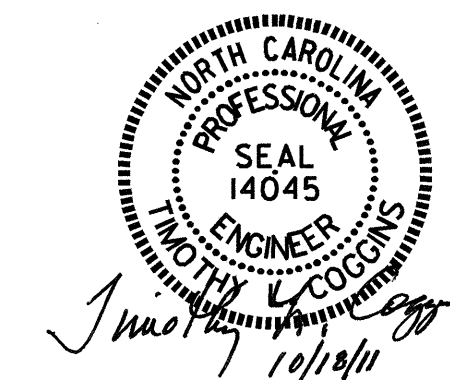


SECTION X-X

PROJECT NO. B-4473
COLUMBUS COUNTY
 STATION: 20+14.00 -L-

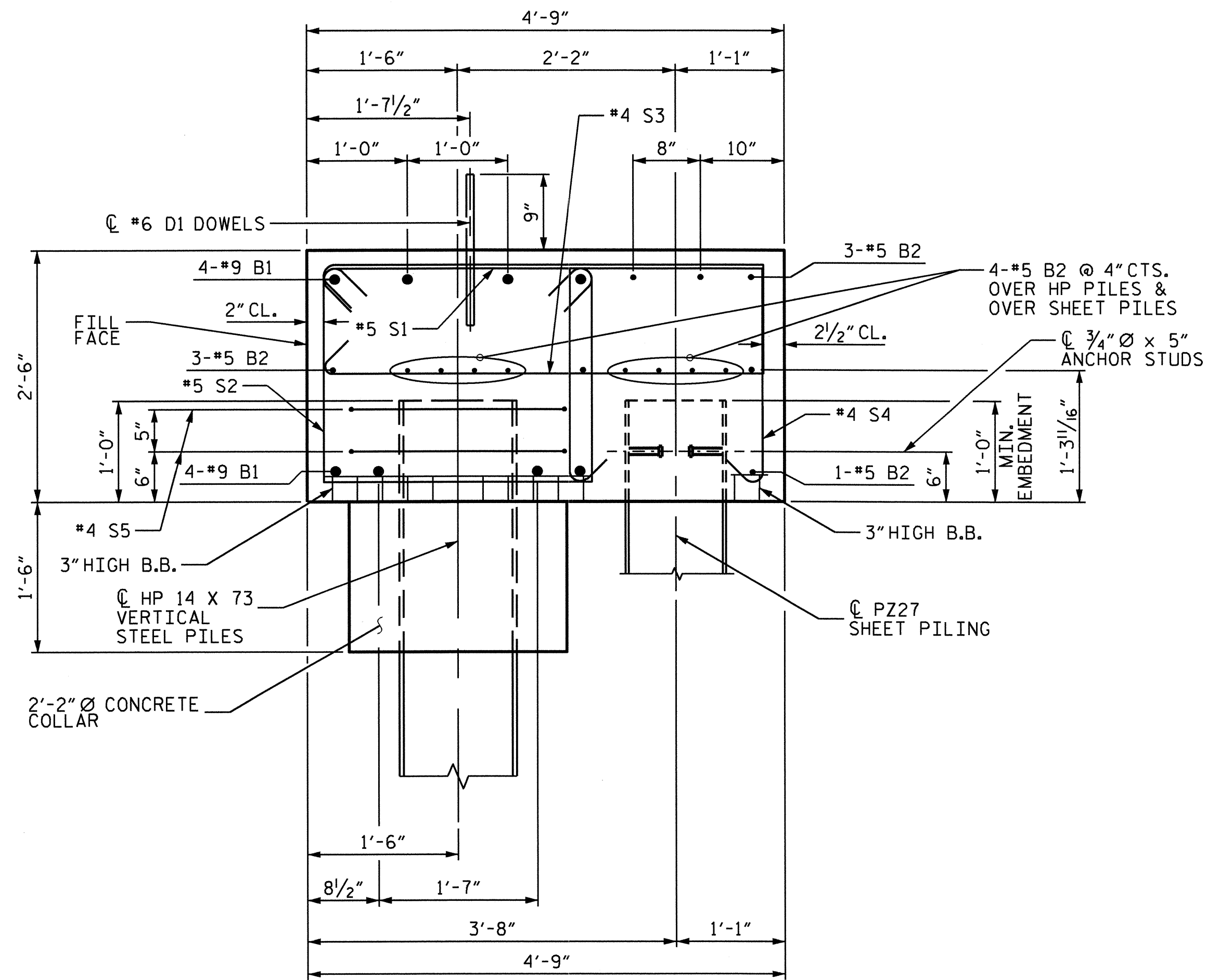
SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2

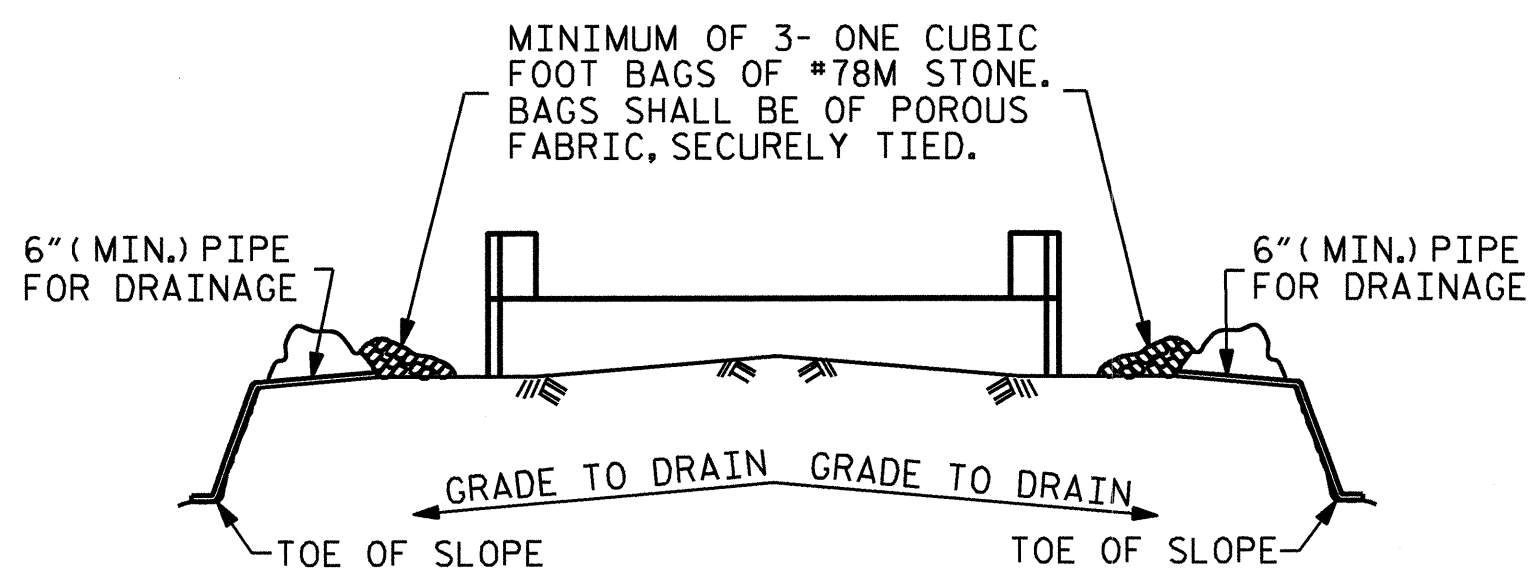


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: Nail M. Ruffin DATE: 5/12/11
 CHECKED BY: B.N. BARODAWALA DATE: 6-10-11



SECTION A-A THRU CAP

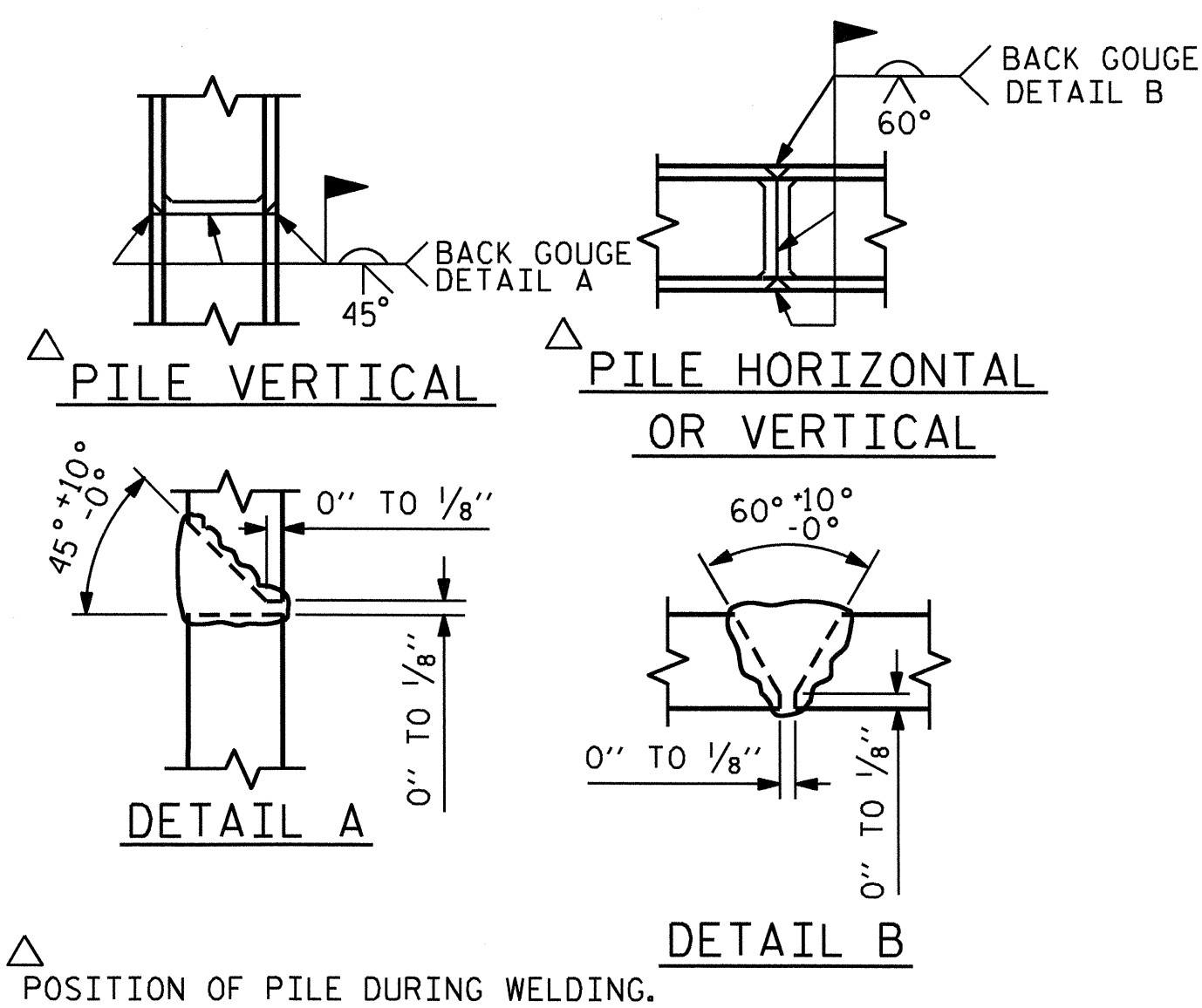


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

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

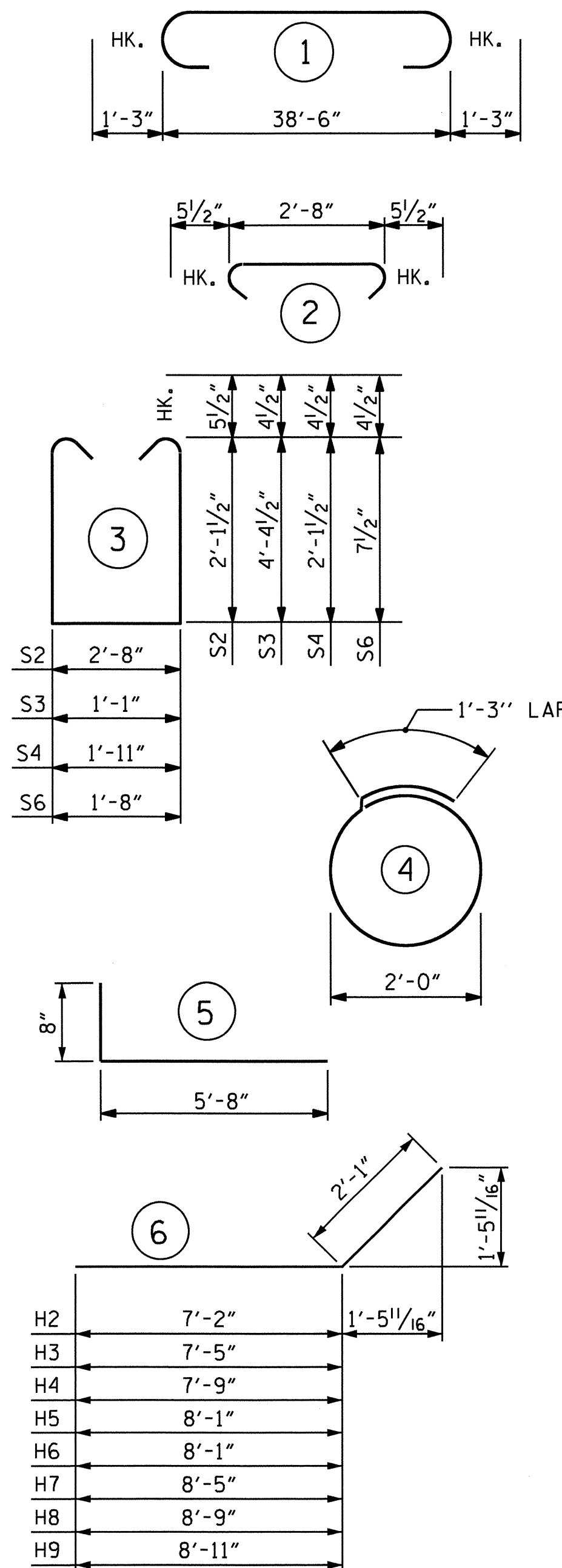
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

POSITION OF PILE DURING WELDING.

BAR TYPES



END BENT #2
BILL OF MATERIAL

BAR NO	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	9	41'-0"	1115	
B2	15	5	38'-8"	605	
B3	6	4	1'-8"	7	
D1	22	6	STR	1'-6"	50
H1	24	4	5	6'-4"	102
H2	2	4	6	9'-3"	12
H3	1	4	6	9'-6"	6
H4	1	4	6	9'-10"	7
H5	2	4	6	10'-2"	14
H6	2	4	6	10'-2"	14
H7	1	4	6	10'-6"	7
H8	1	4	6	10'-10"	7
H9	2	4	6	11'-0"	15
K1	12	4	STR	2'-11"	23
S1	38	5	2	3'-7"	142
S2	38	5	3	7'-10"	310
S3	10	4	3	10'-7"	71
S4	19	4	3	6'-11"	88
S5	14	4	4	7'-6"	70
S6	15	4	3	3'-8"	37
V1	40	4	STR	4'-11"	131

REINFORCING STEEL lbs. 2,833

CLASS "A" CONCRETE BREAKDOWN

POUR #1 CONCRETE COLLARS, CAP, LOWER WINGS, & COPING	20.7 C.Y.
POUR #2 UPPER WINGS	1.7 C.Y.
TOTAL	22.4 C.Y.

HP 14 x 73 STEEL PILES

No. = 7	LIN. FEET	350
---------	-----------	-----

PILE REDRIVES EACH 7

18" STEEL SHEET PILES

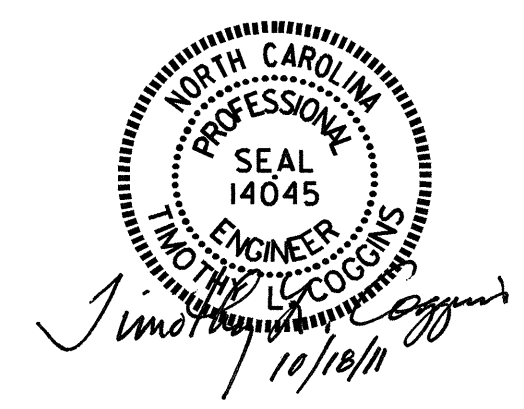
NO. PZ45 COLT = 1	
NO. PZ90 = 1	
NO. PZ27 = 36	
TOTAL NO. = 38	SO. FT. 601

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4473
COLUMBUS COUNTY
STATION: 20+14.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT #2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS 39
2			4			

DRAWN BY: Ned M. Ruffin DATE: 5/22/11
CHECKED BY: B.N. BARODAWALA DATE: 6-10-11

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

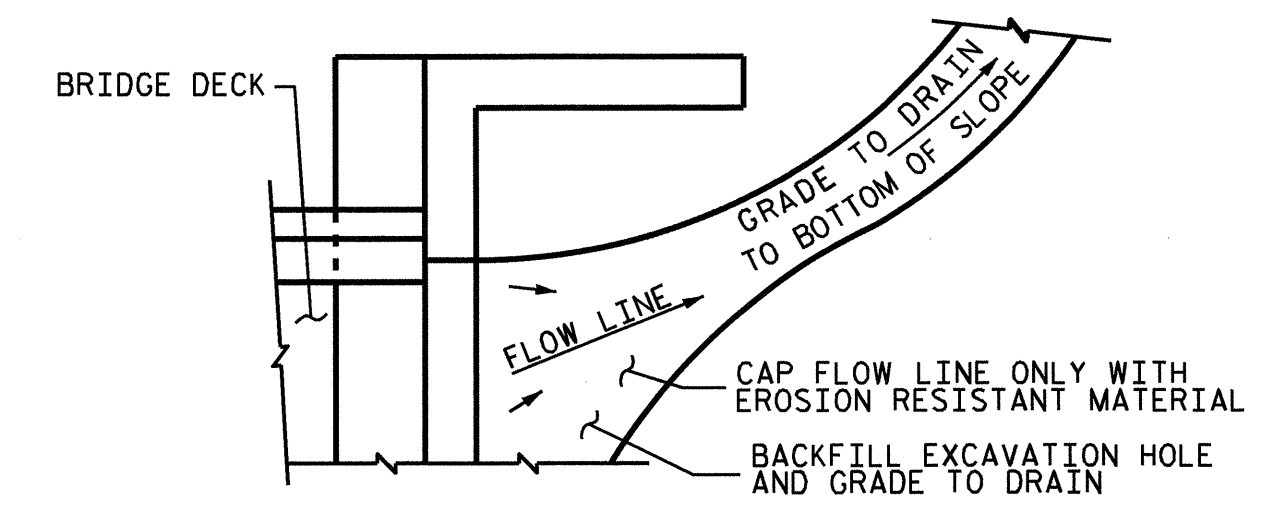
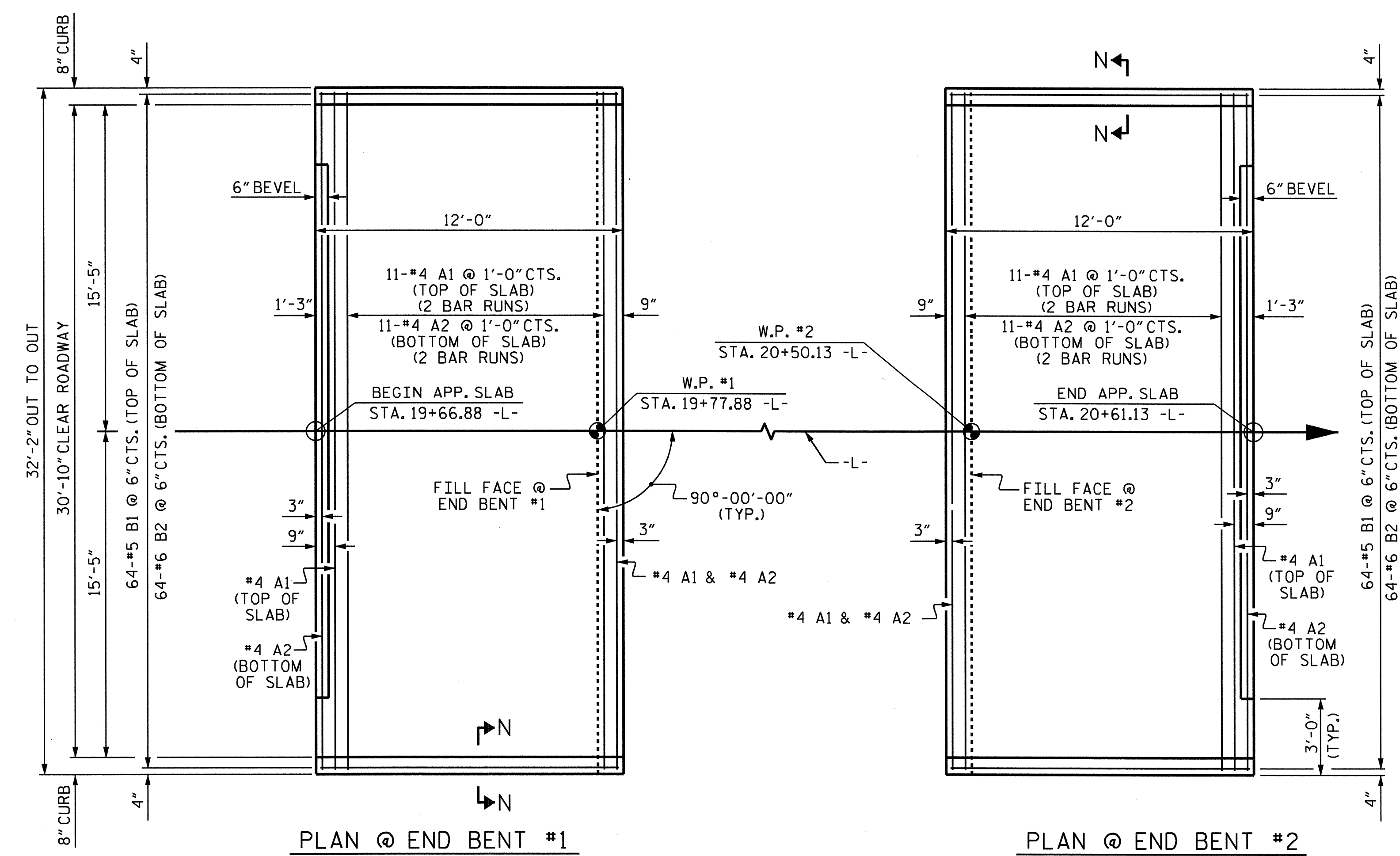
THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

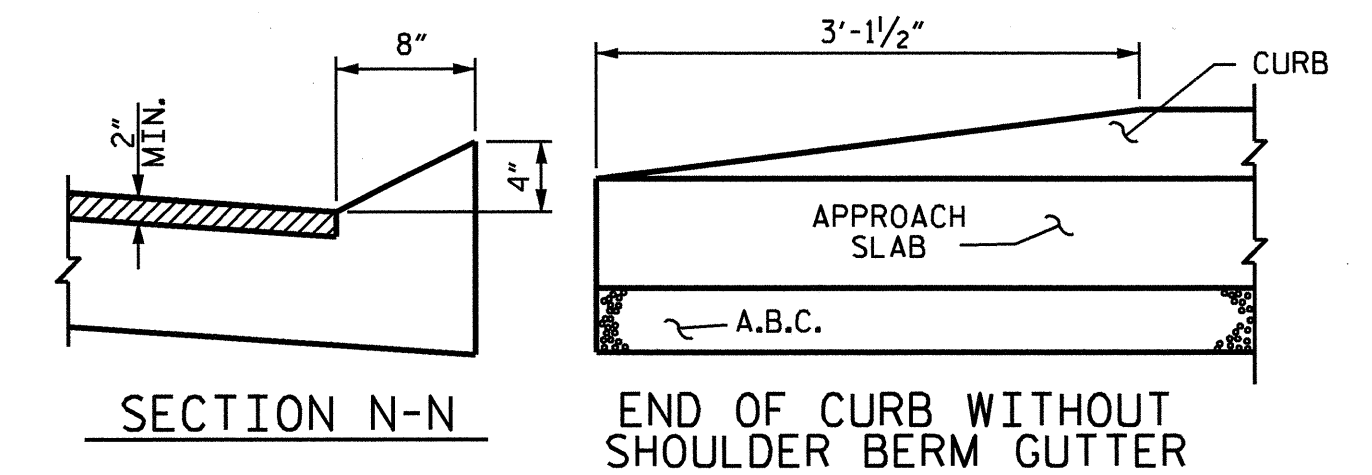
APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
* B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	17.2
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
* B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	17.2



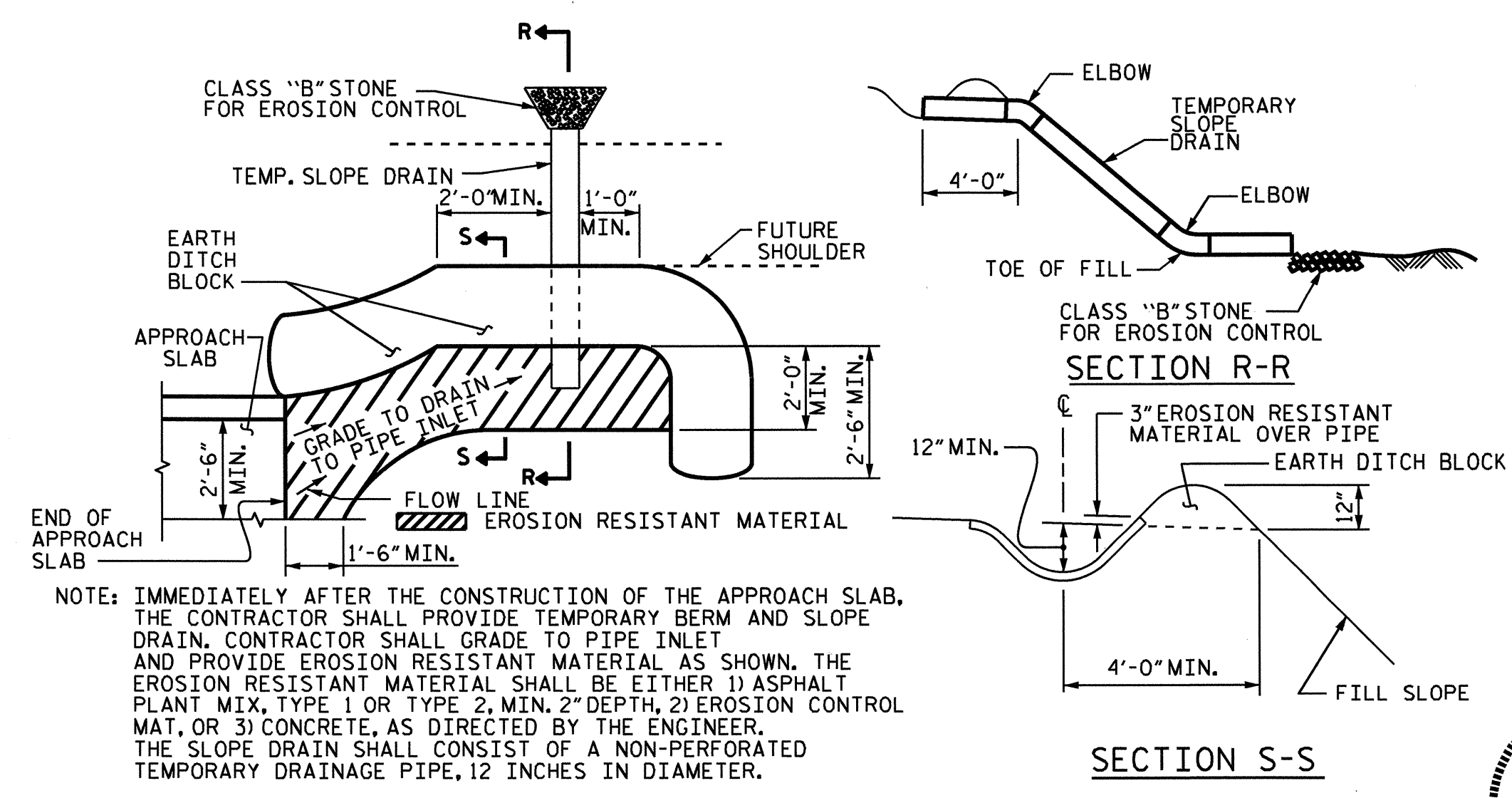
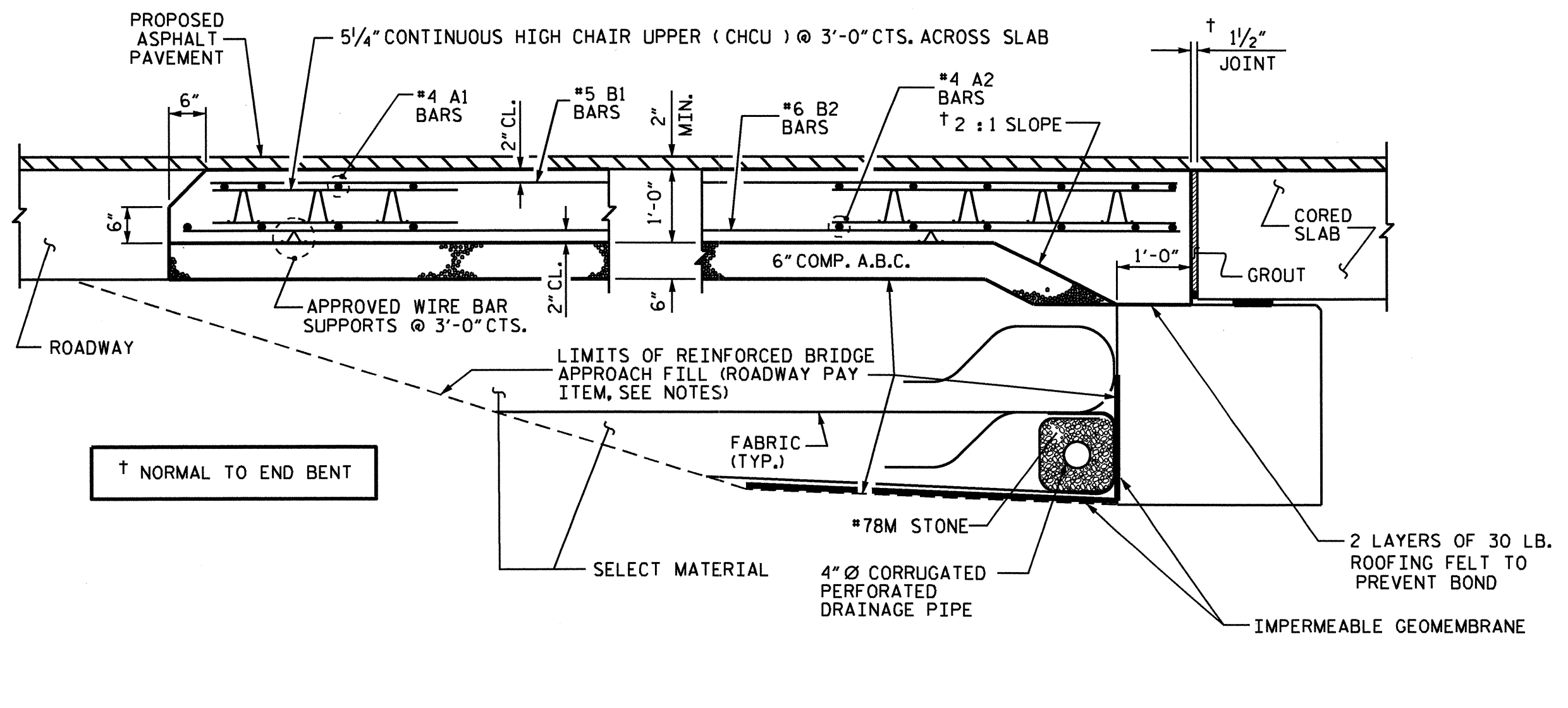
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



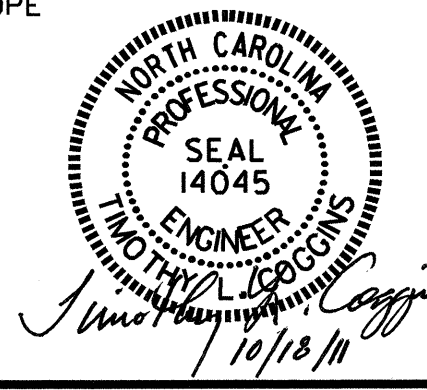
PROJECT NO. B-4473
 COLUMBUS COUNTY
 STATION: 20+14.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)

ASSEMBLED BY: JASON WILSON DATE: 4/30/10
 CHECKED BY: M.D. PISO DATE: 5/12/10
 DRAWN BY: SHS/MAA 5-09
 CHECKED BY: BCH 5-09

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 39



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. FINISH 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