

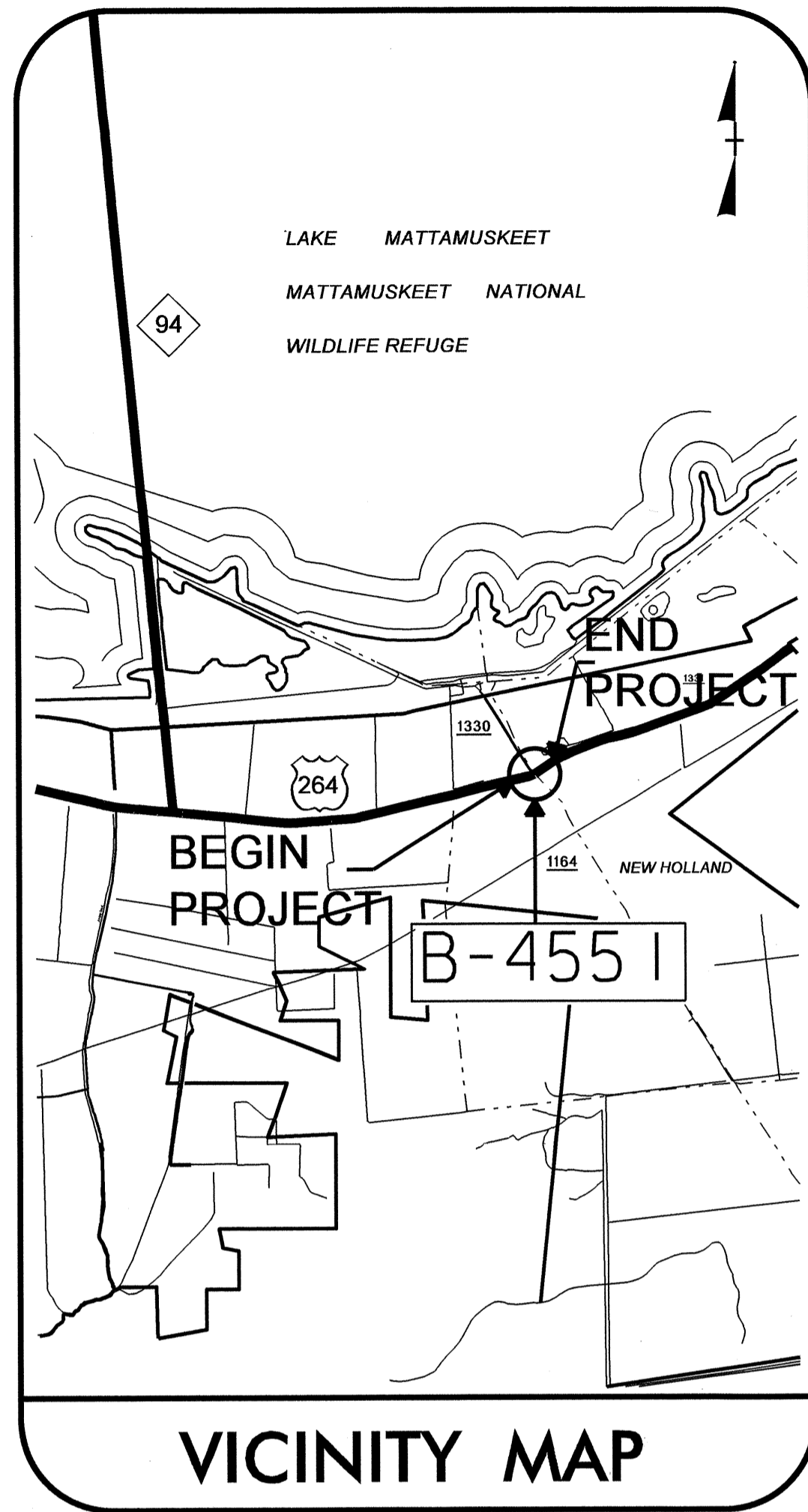
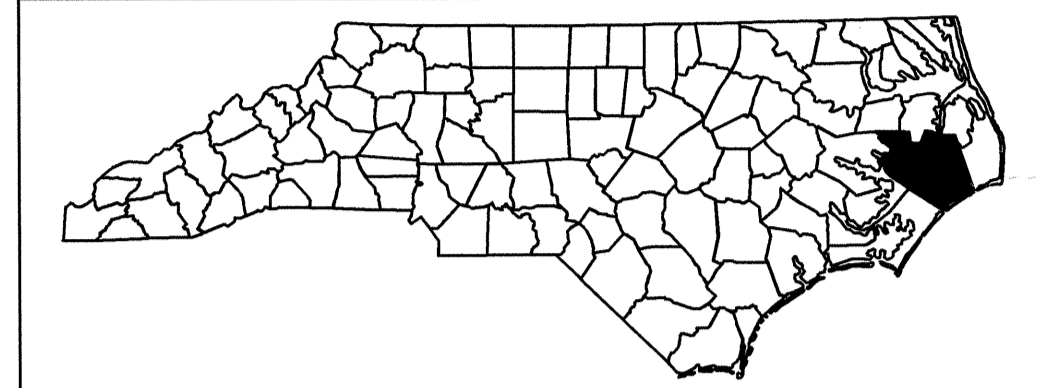
CONTRACT: C202910 TIP PROJECT: B-4551

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

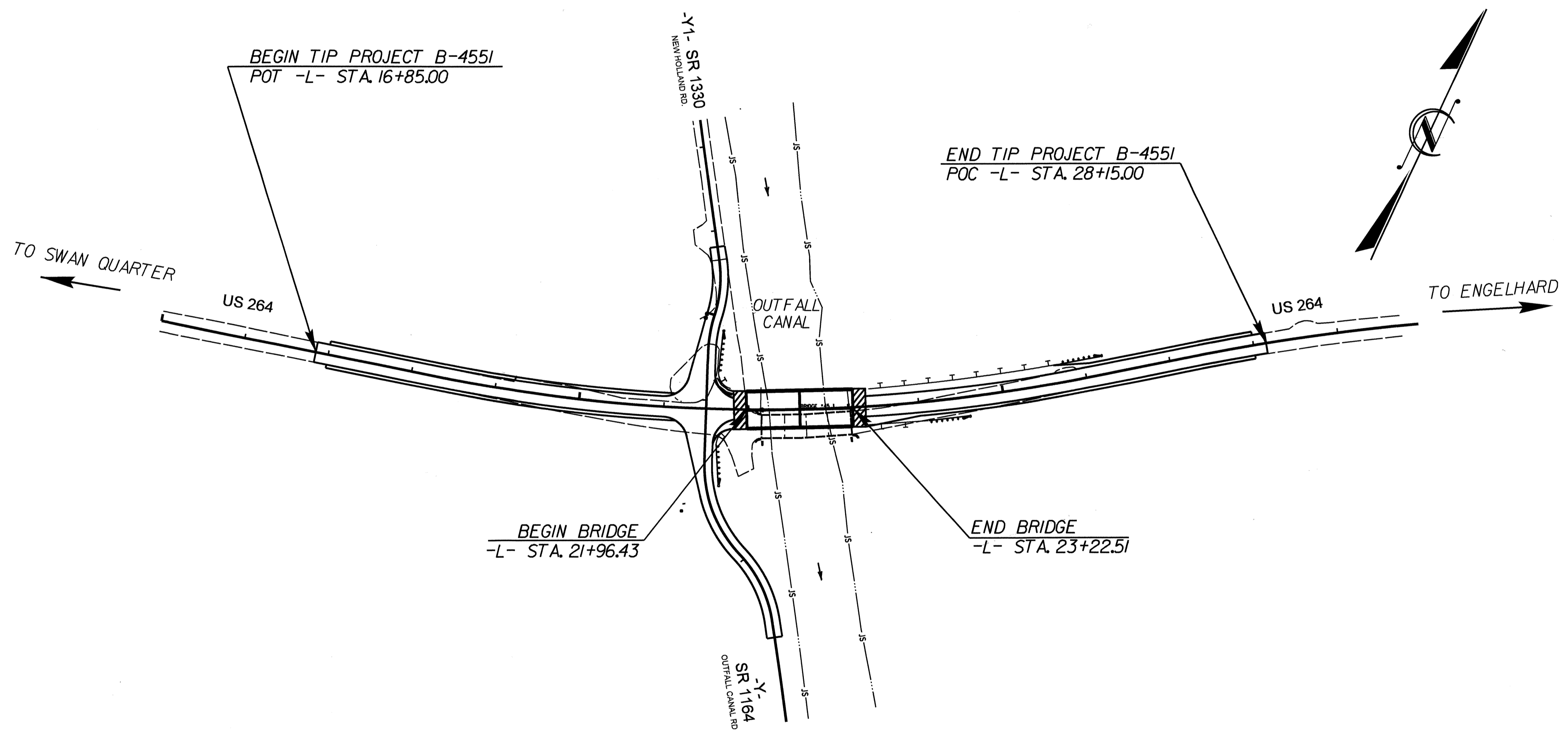
HYDE COUNTY

LOCATION : BRIDGE NO. 45 OVER A CANAL ON US 264
TYPE OF WORK : GRADING, PAVING, DRAINAGE, AND STRUCTURE

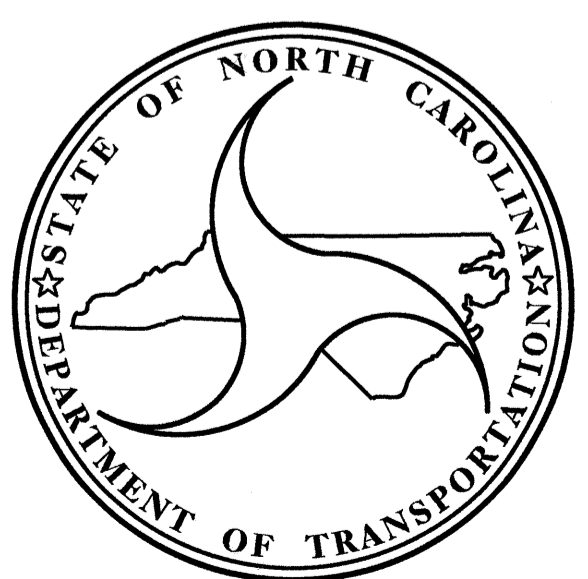
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4551		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33764.1.1	BRSTP-0264 (23)	PE	
33764.2.1	BRSTP-0264 (23)	RW & UTIL.	
33764.3.1	BRSTP-0264 (23)	CONST.	



VICINITY MAP



STRUCTURE



DESIGN DATA

ADT 2010 =	2,820
ADT 2030 =	4,200
DHV =	10 %
D =	60 %
T =	5 % *
V =	60 MPH
* TTST 2% DUAL 3%	
FUNC CLASS = MINOR ARTERIAL	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4551 =	0.190 MI.
LENGTH OF STRUCTURE TIP PROJECT B-4551 =	0.024 MI.
TOTAL LENGTH OF TIP PROJECT B-4551 =	0.214 MI.

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 BIRCH RIDGE DR. RALEIGH, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE: January 17, 2012	N. N. BULLOCK, PE PROJECT ENGINEER
	A. K. PASCHAL, PE PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

DATE

17-AUG-2011 15:40
RA:STRUCTUR68\Final Plans\B4551.dwg, TSK,dgn
jshawk

HORIZONTAL CURVE DATA

PI STA = 22+24.770 -L-
 $\Delta = 22^\circ 24' 19.9''$ (L.T.)
 L = 762.55'
 T = 386.21'
 R = 1950.00'
 Se = 0.04 FT./FT.

GRADE DATA

+0.7532 % Δ -0.9495 %
 P.I. = 22+70.00 -L-
 EL. = 7.40
 V.C. = 260 FT.

NOTES :

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
 THE EXISTING STRUCTURE CONSISTING OF FOUR (4 @ 26'-0") REINFORCED CONCRETE DECK SPANS ON CONTINUOUS STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 28'-0" AND SUPPORTED BY REINFORCED CONCRETE END BENTS AND BENTS WITH TIMBER PILES AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. SEE SPECIAL PROVISION FOR "REMOVAL OF EXISTING STRUCTURE @ STA. 22+60.00 -L-".
 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.
 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.
 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. THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 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.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ADDITIONAL NOTES SEE SHEET 3 OF 3.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

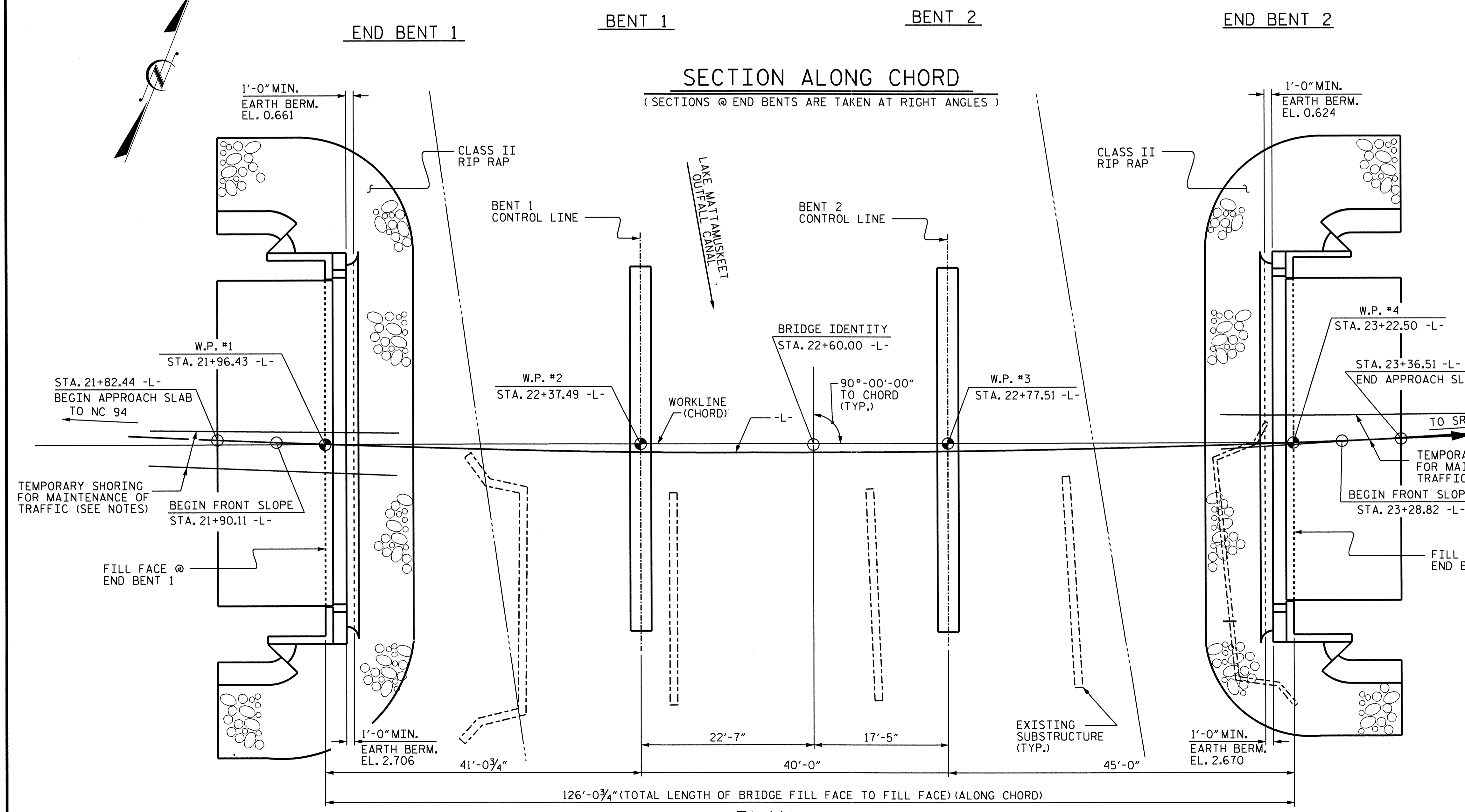
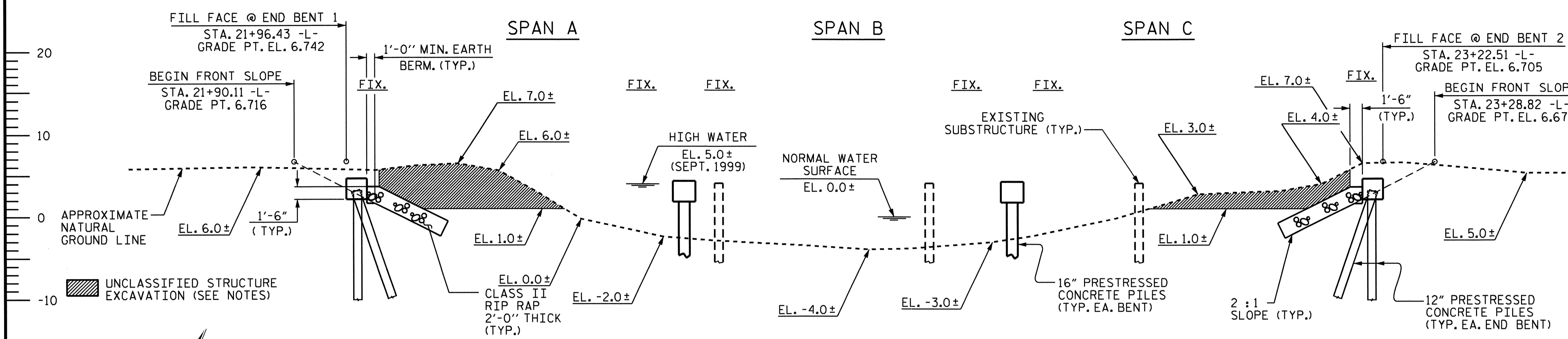
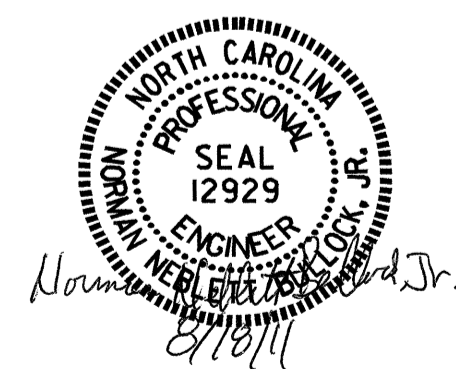
PROJECT NO. B-4551
 HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 45

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

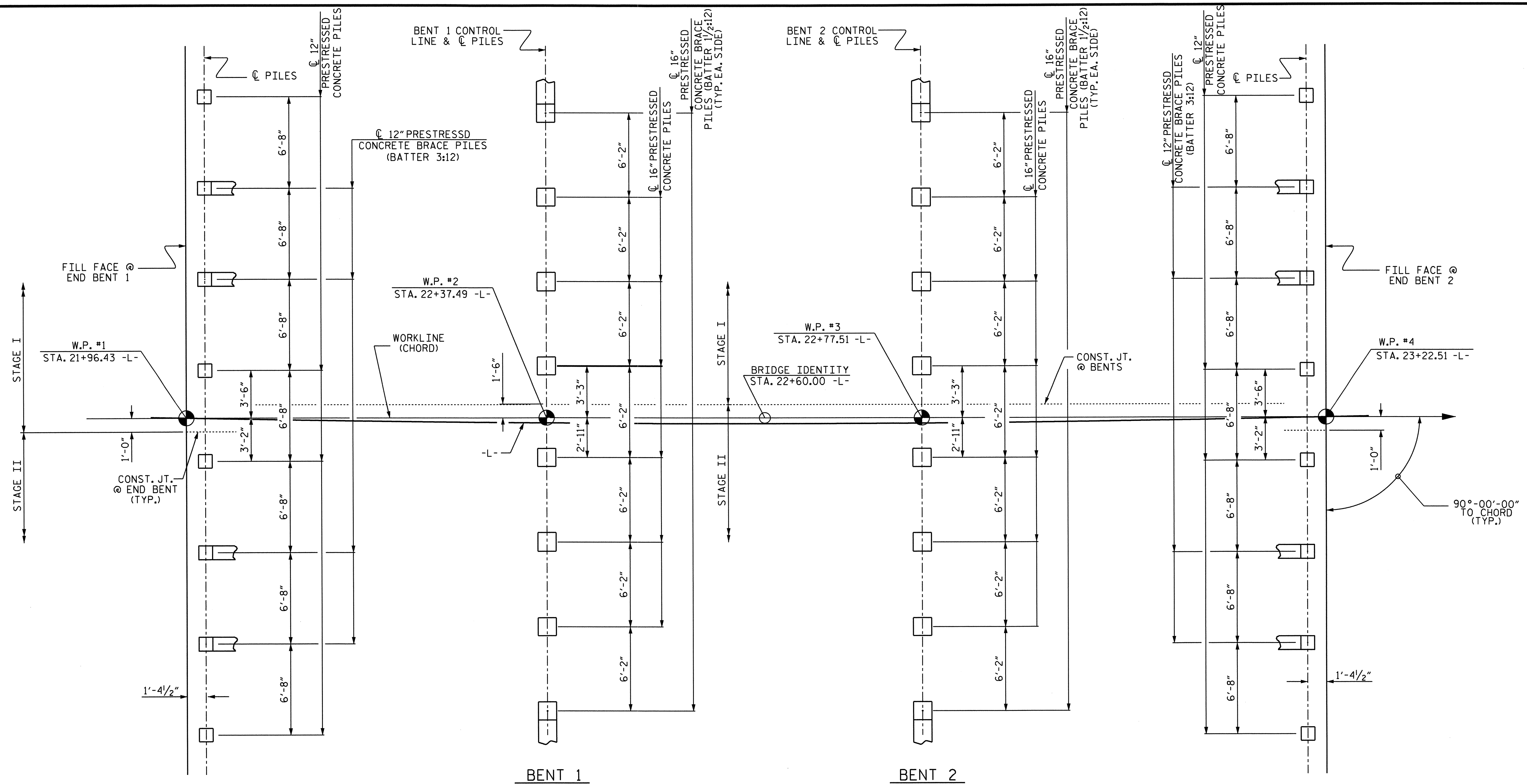
GENERAL DRAWING
 FOR BRIDGE ON US 264
 OVER LAKE MATTAMUSKEET
 OUTFALL CANAL
 BETWEEN NC 94 AND SR 1116

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



PLAN

DRAWN BY : M. E. FOWLER DATE : 4/5/10
 CHECKED BY : J. G. KHARVA DATE : 4/1/11



FOUNDATION LAYOUT

(DIMENSIONS LOCATING END BENT AND BENT PILES ARE SHOWN TO CENTERLINE OF PILES)

END BENT 1

END BENT 2

FOUNDATION NOTES :

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 65 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE.

PILES AT BENT 1 AND BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

INSTALL PILES AT BENT 1 & BENT 2 TO A TIP ELEVATION NO HIGHER THAN -38 FT.

SCOUR CRITICAL ELEVATION FOR BOTH BENTS 1 AND 2 IS ELEVATION -17.0 FT. SCOUR CRITICAL ELEVATION ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING THE FIRST PRODUCTION PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1, BENT 1, BENT 2 AND END BENT 2.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 25-50 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1 AND END BENT 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 45-70 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT 1 AND BENT 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH PILES PROVISION.

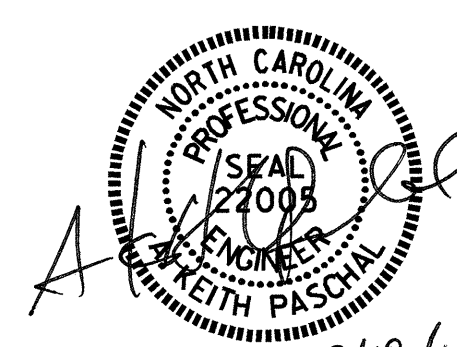
OBSERVE A 1-MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT AND SURCHARGE MATERIAL TO A MINIMUM ELEVATION OF 1 FT ABOVE FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT 2. FOR STAGE 1 ONLY.

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US 264
 OVER LAKE MATTAMUSKEET
 OUTFALL CANAL
 BETWEEN NC 94 AND SR 1116



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

DRAWN BY : M. E. FOWLER DATE : 4/7/10
 CHECKED BY : J.G. KHARVA DATE : 4/1/11

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	PDA ASSISTANCE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL	12" PRESTRESSED CONCRETE PILES	16" PRESTRESSED CONCRETE PILES	PILE REDRIVES	ONE BAR METAL RAIL	1'-2" X 2'-7 3/4" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS			
	LUMP SUM	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE						LUMP SUM					232.63	247.63					LUMP SUM	45	1853.44
END BENT 1				LUMP SUM	16.2		2468	8	240	4			115	128					
BENT 1					19.2		2912			4									
BENT 2					19.2		2912			4									
END BENT 2				LUMP SUM	16.2		2468	8	320	4			110	123					
TOTAL	LUMP SUM	2	2	LUMP SUM	70.8	LUMP SUM	10760	16	560	16	800	16	232.63	247.63	225	251	LUMP SUM	45	1853.44

NOTES: (CONT'D.)

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

CLASS AA CONCRETE SHALL BE USED IN ALL BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. NO SEPARATE PAYMENT WILL BE MADE FOR THE CALCIUM NITRITE CORROSION INHIBITOR.

ALL BAR SUPPORTS USED IN THE PARAPETS AND BENT CAPS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

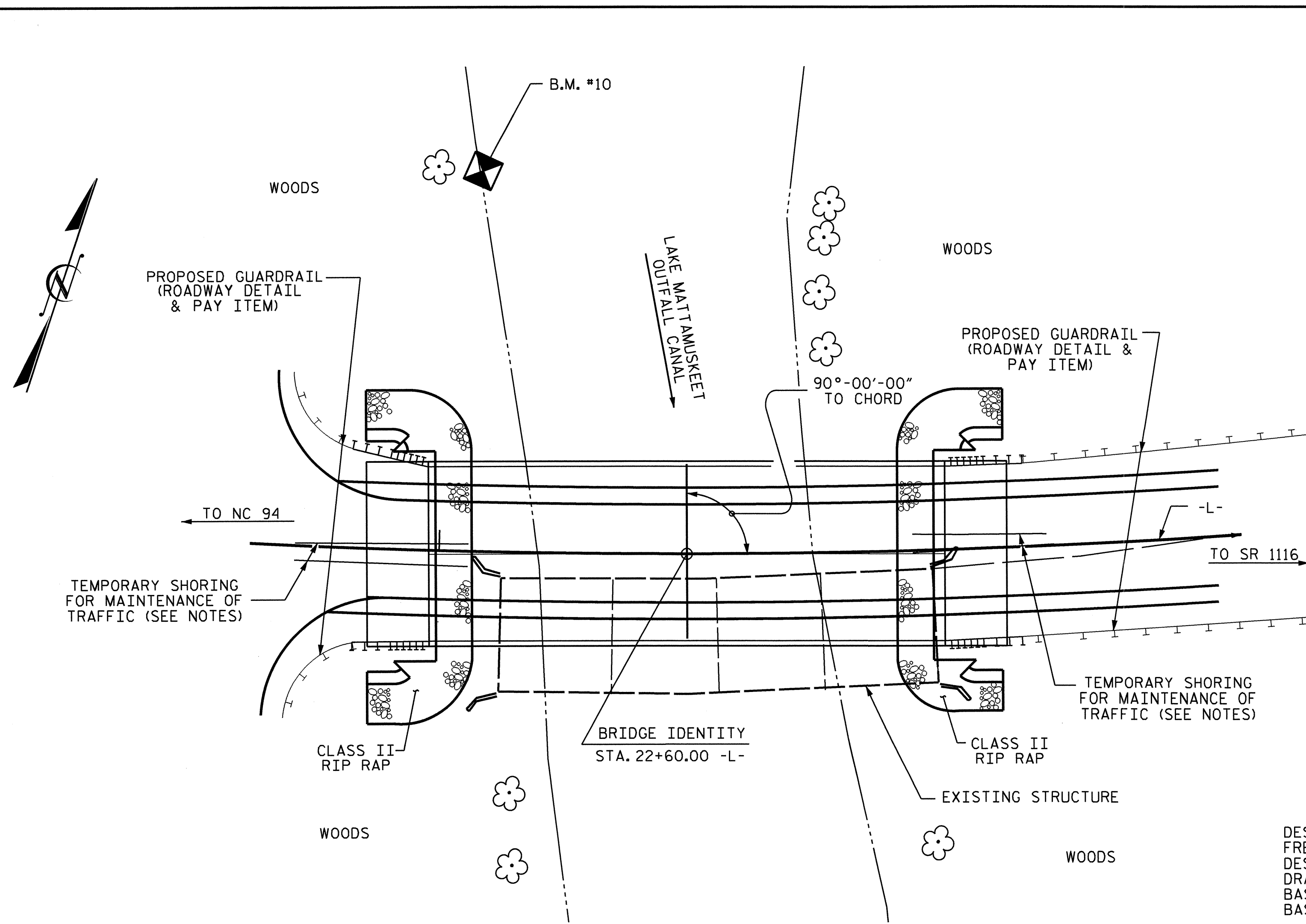
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

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 22+60.00 -L-."

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

B.M. #10: RR SPIKE IN BASE OF 24" PINE TREE 92' LT. OF STA. 22+09.00 -L- EL. 5.370



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	=	N/A C.F.S.
FREQUENCY OF DESIGN FLOOD	=	50 YRS.
DESIGN HIGH WATER ELEVATION	=	N/A
DRAINAGE AREA	=	N/A SQ. MI.
BASIC DISCHARGE (0100)	=	N/A C.F.S.
BASIC HIGH WATER ELEVATION	=	N/A

OVERTOPPING DATA

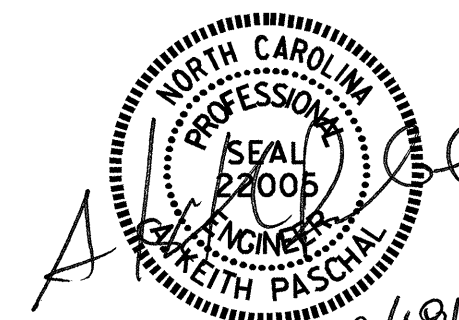
OVERTOPPING DISCHARGE	=	N/A C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	=	N/A YRS. +
OVERTOPPING FLOOD ELEVATION	=	N/A

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US 264
 OVER LAKE MATTAMUSKEET
 OUTFALL CANAL
 BETWEEN NC 94 AND SR 1116



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

DRAWN BY : M.E. FOWLER DATE : 4/7/10
 CHECKED BY : J.G. KHARVA DATE : 5/10/11

LOAD FACTORS:

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

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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.15	--	1.75	0.282	1.48	C	EL	21.406	0.538	1.18	C	EL	2.141	0.80	0.282	1.15	C	EL	21.406		
	HL-93(OPr)	N/A	--	1.53	--	1.35	0.282	1.92	C	EL	21.406	0.538	1.53	C	EL	2.141	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.39	49.946	1.75	0.282	1.82	C	EL	21.406	0.538	1.39	C	EL	2.141	0.80	0.282	1.42	C	EL	21.406		
	HS-20(OPr)	36.000	--	1.80	64.745	1.35	0.282	2.36	C	EL	21.406	0.538	1.80	C	EL	2.141	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.73	36.912	1.40	0.282	4.39	C	EL	21.406	0.538	3.81	C	EL	2.141	0.80	0.282	2.73	C	EL	21.406	
		SNGARBS2	20.000	--	2.22	44.427	1.40	0.282	3.56	C	EL	17.125	0.538	2.80	C	EL	2.141	0.80	0.282	2.22	C	EL	21.406	
		SNAGRIS2	22.000	--	2.17	47.771	1.40	0.282	3.45	C	EL	17.125	0.538	2.64	C	EL	2.141	0.80	0.282	2.17	C	EL	21.406	
		SNCOTTS3	27.250	--	1.37	37.210	1.40	0.282	2.19	C	EL	21.406	0.538	1.91	C	EL	2.141	0.80	0.282	1.37	C	EL	21.406	
		SNAGGRS4	34.925	--	1.21	42.260	1.40	0.282	1.94	C	EL	21.406	0.538	1.65	C	EL	2.141	0.80	0.282	1.21	C	EL	21.406	
		SNS5A	35.550	--	1.18	41.890	1.40	0.282	1.89	C	EL	21.406	0.538	1.71	C	EL	2.141	0.80	0.282	1.18	C	EL	21.406	
		SNS6A	39.950	--	1.11	44.437	1.40	0.282	1.79	C	EL	21.406	0.538	1.59	C	EL	2.141	0.80	0.282	1.11	C	EL	21.406	
	SNS7B	42.000	3	1.06	44.539	1.40	0.282	1.70	C	EL	21.406	0.538	1.61	C	EL	2.141	0.80	0.282	1.06	C	EL	21.406		
	TTST	TNAGRIT3	33.000	--	1.37	45.076	1.40	0.282	2.19	C	EL	21.406	0.538	1.87	C	EL	2.141	0.80	0.282	1.37	C	EL	21.406	
		TNT4A	33.075	--	1.38	45.674	1.40	0.282	2.22	C	EL	21.406	0.538	1.79	C	EL	2.141	0.80	0.282	1.38	C	EL	21.406	
		TNT6A	41.600	--	1.16	48.318	1.40	0.282	1.86	C	EL	21.406	0.538	1.74	C	EL	2.141	0.80	0.282	1.16	C	EL	21.406	
		TNT7A	42.000	--	1.19	49.784	1.40	0.282	1.90	C	EL	21.406	0.538	1.61	C	EL	2.141	0.80	0.282	1.19	C	EL	21.406	
		TNT7B	42.000	--	1.23	51.808	1.40	0.282	1.98	C	EL	21.406	0.538	1.54	C	EL	2.141	0.80	0.282	1.23	C	EL	21.406	
		TNAGRIT4	43.000	--	1.18	50.572	1.40	0.282	1.89	C	EL	21.406	0.538	1.48	C	EL	2.141	0.80	0.282	1.18	C	EL	21.406	
TNAGT5A		45.000	--	1.09	49.191	1.40	0.282	1.76	C	EL	21.406	0.538	1.52	C	EL	2.141	0.80	0.282	1.09	C	EL	21.406		
TNAGT5B	45.000	--	1.07	47.983	1.40	0.282	1.71	C	EL	21.406	0.538	1.40	C	EL	2.141	0.80	0.282	1.07	C	EL	21.406			

NOTES:

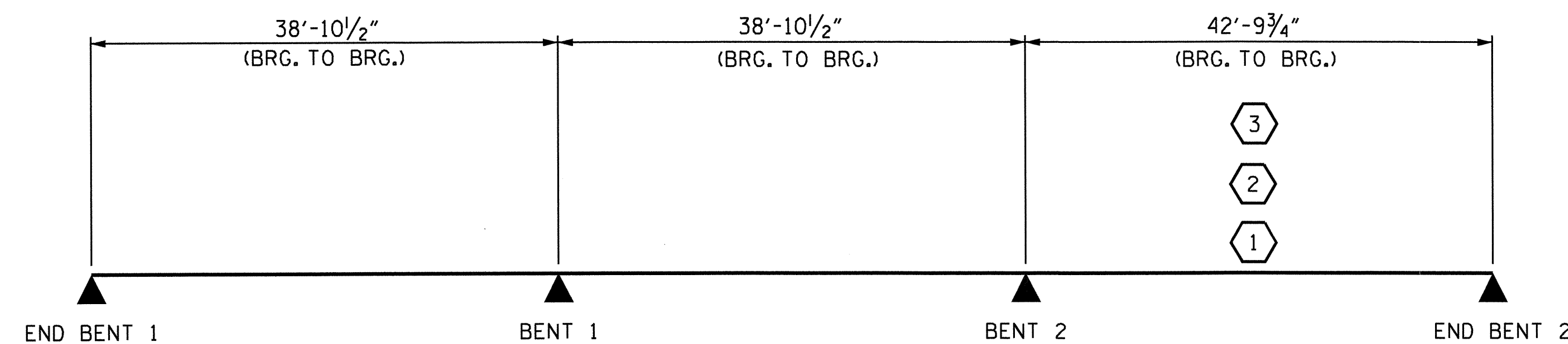
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

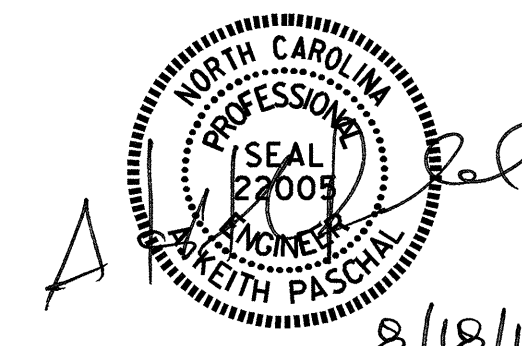
- 1.
- 2.
- 3.
- 4.

#	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-4551
 HYDE COUNTY
 STATION: 22+60.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)

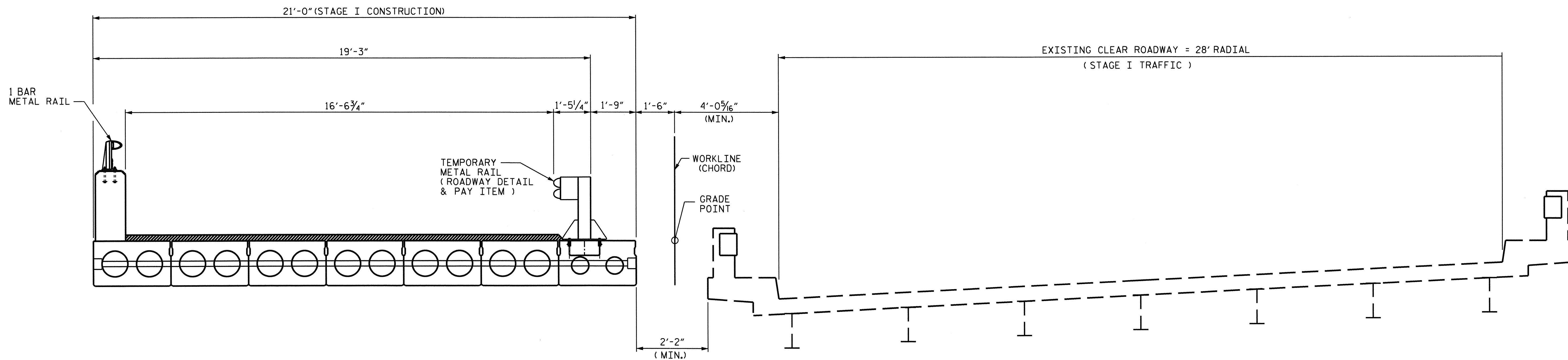
REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 30
2			4			

ASSEMBLED BY : J.D. HAWK DATE : 5/19/11
 CHECKED BY : O. PUIGSERVER DATE : 5/19/11
 DRAWN BY : MAA 1/08 REV. 11/2/08R MAA/GM
 CHECKED BY : GM/DI 2/08

NOTES:

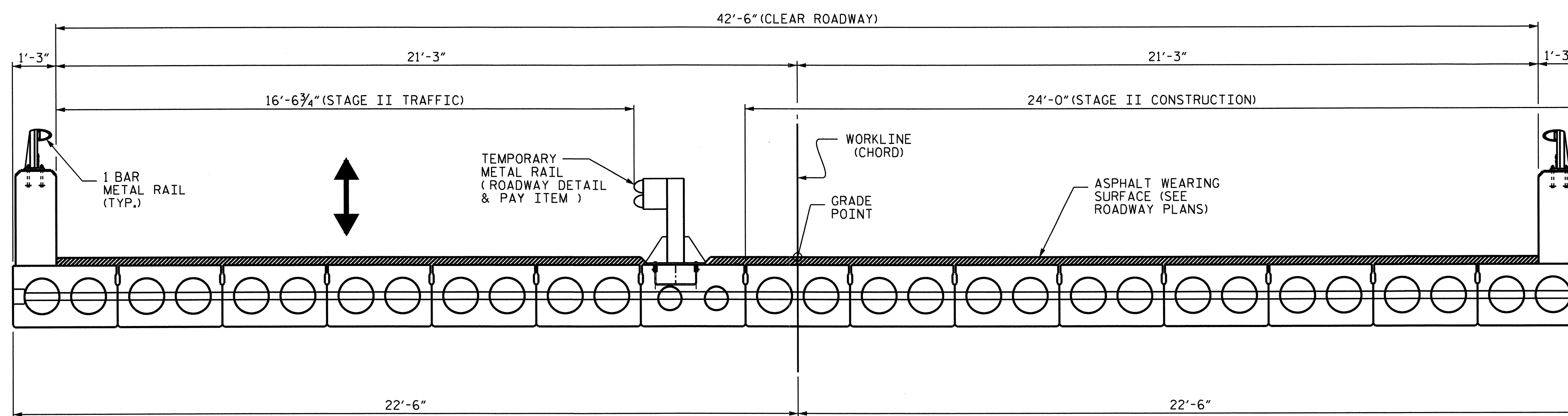
FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.

THE TEMPORARY METAL RAIL USED IN STAGE I IS A ROADWAY DETAIL AND PAY ITEM.



STAGE I CONSTRUCTION

EXISTING BRIDGE
STAGE I TRAFFIC



STAGE II TRAFFIC

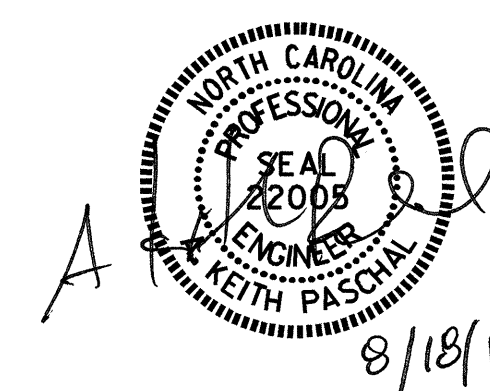
STAGE II CONSTRUCTION

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

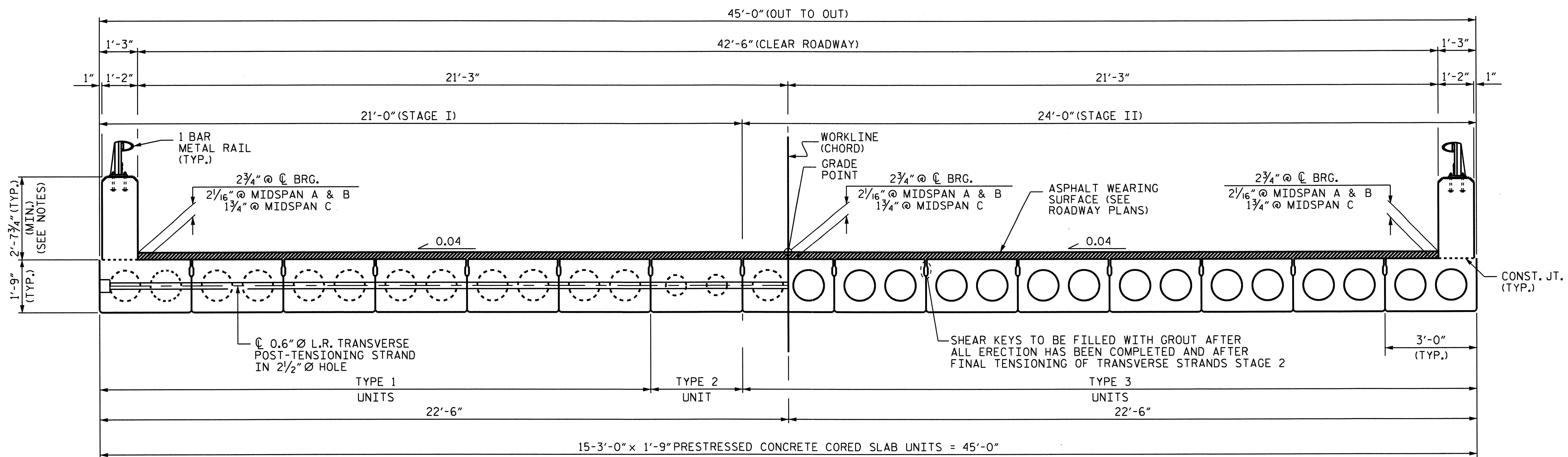
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 CONSTRUCTION
 SEQUENCE**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			30



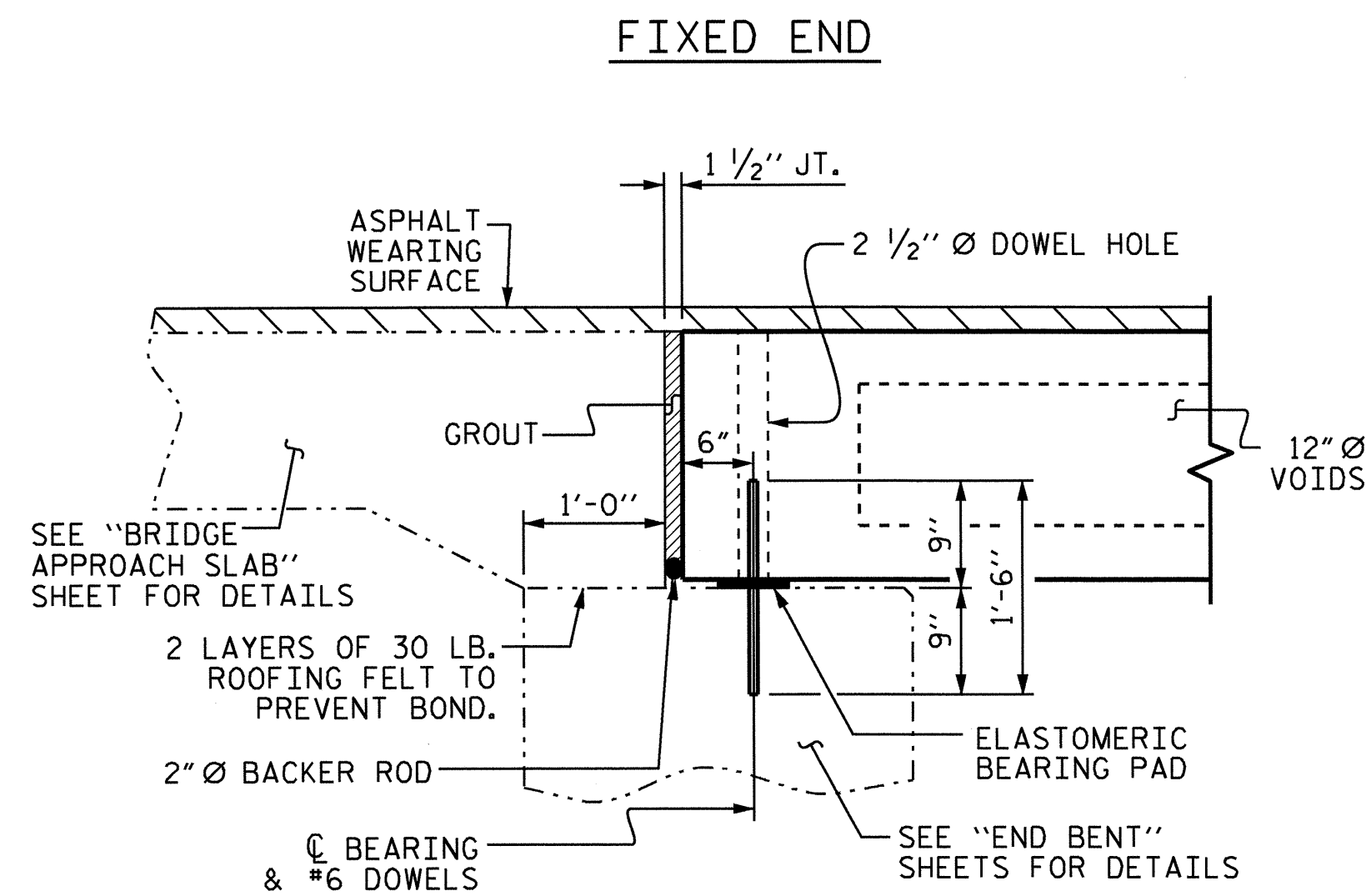
DRAWN BY : M. E. FOWLER DATE : 1/12/10
 CHECKED BY : J. MYA DATE : 3/25/11



HALF SECTION @ DIAPHRAGMS

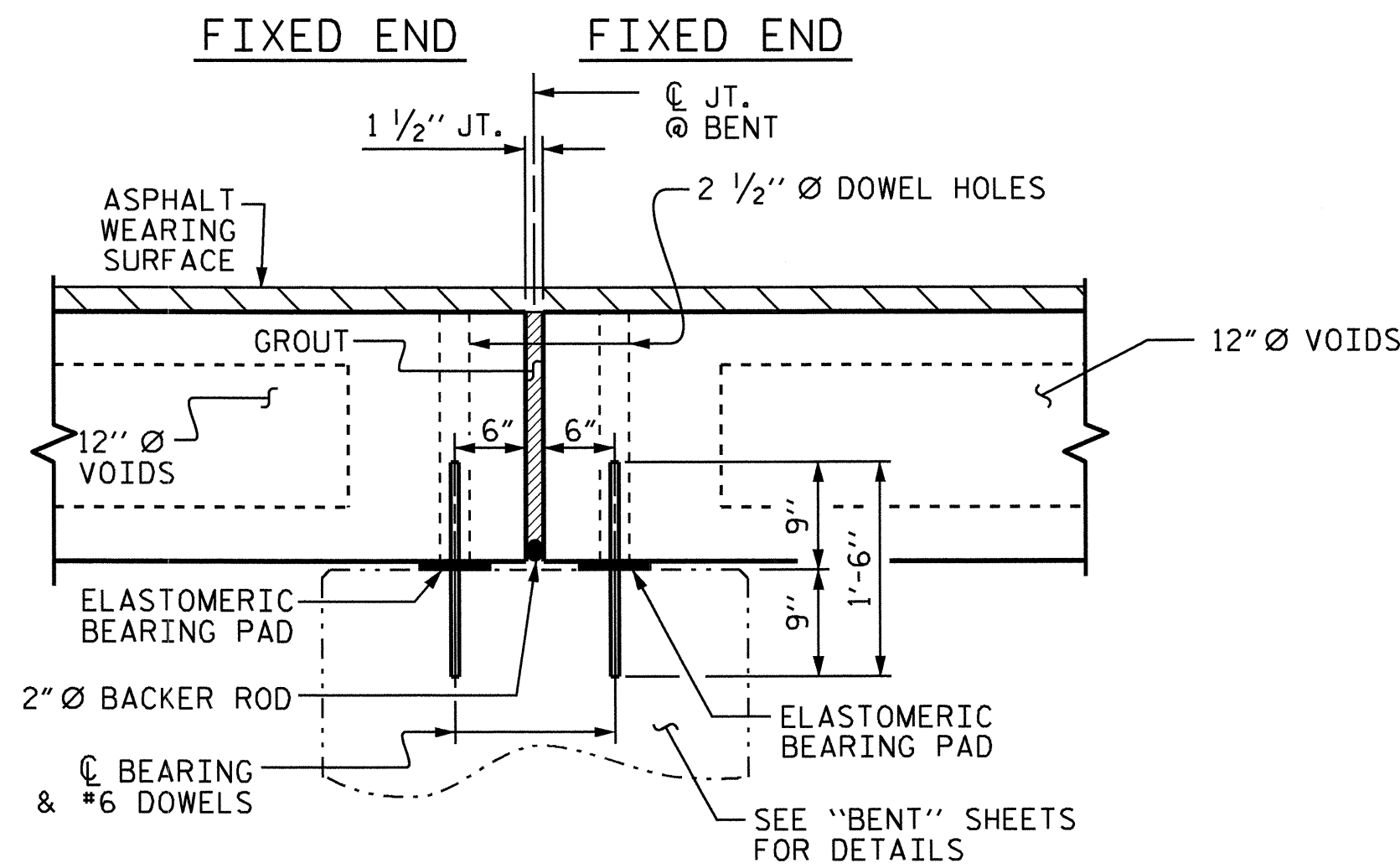
TYPICAL SECTION

HALF SECTION @ 12" Ø VOIDS



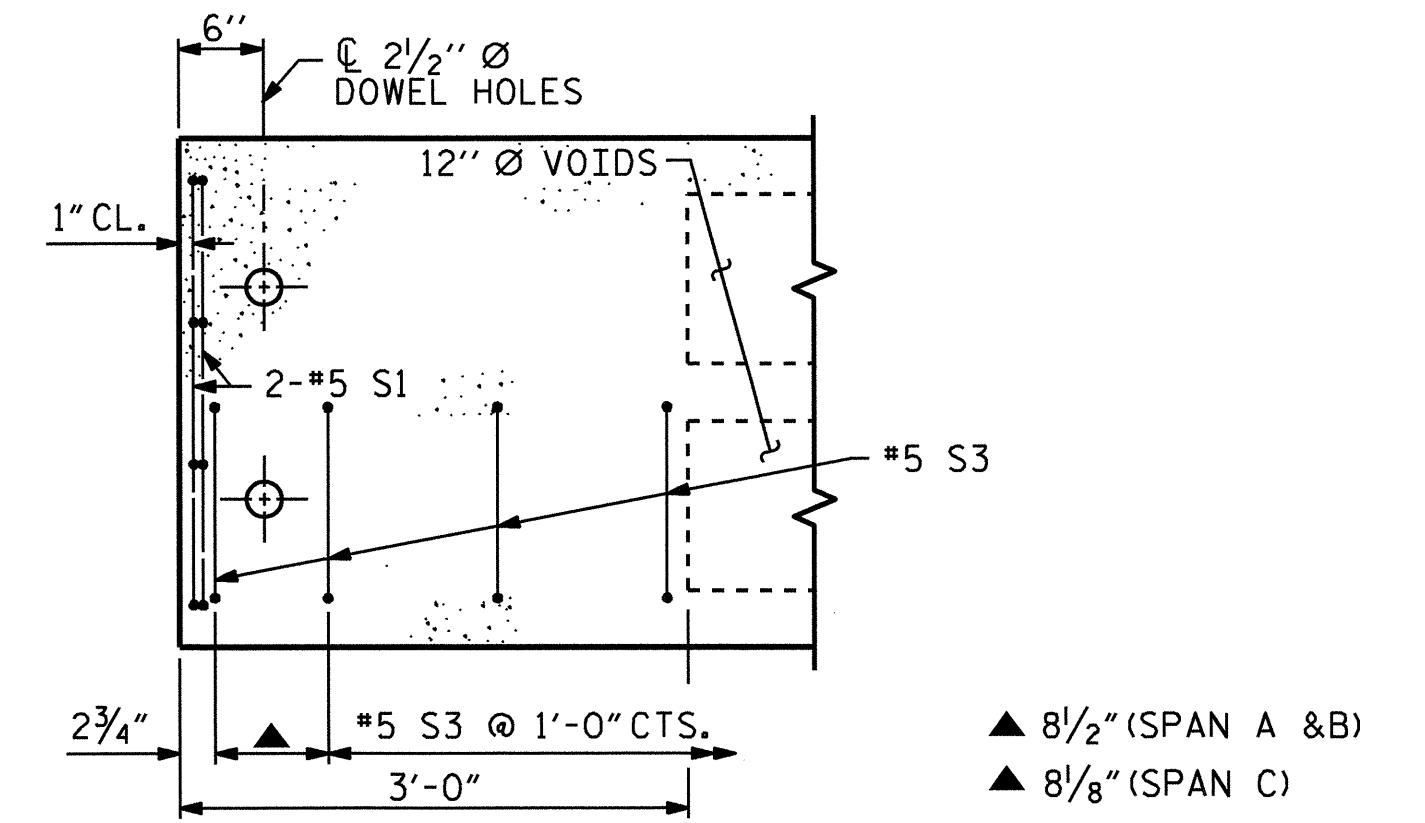
SECTION AT END BENT

(8" VOIDS FOR TYPE 2 UNIT)



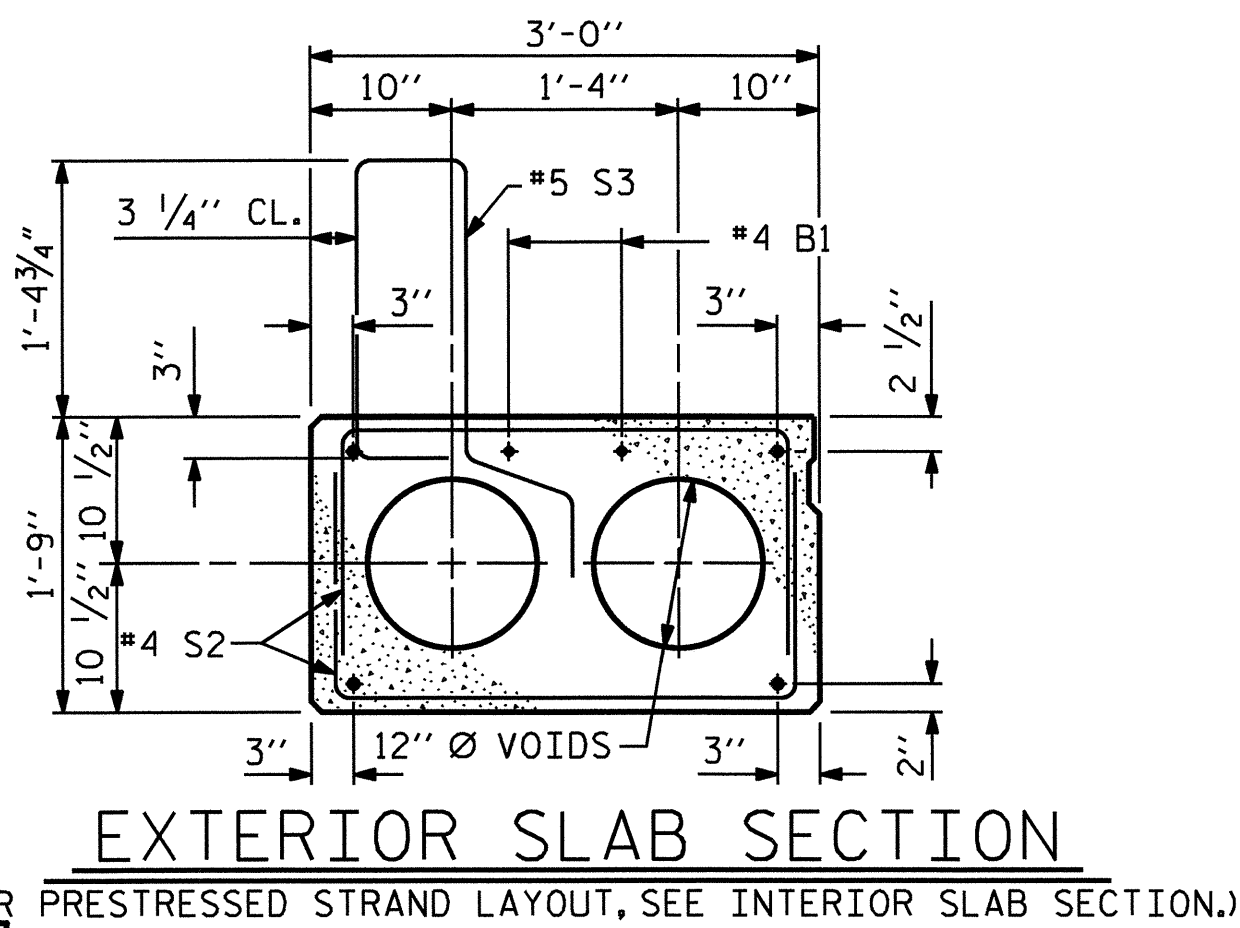
SECTION AT BENT

(8" VOIDS FOR TYPE 2 UNIT)

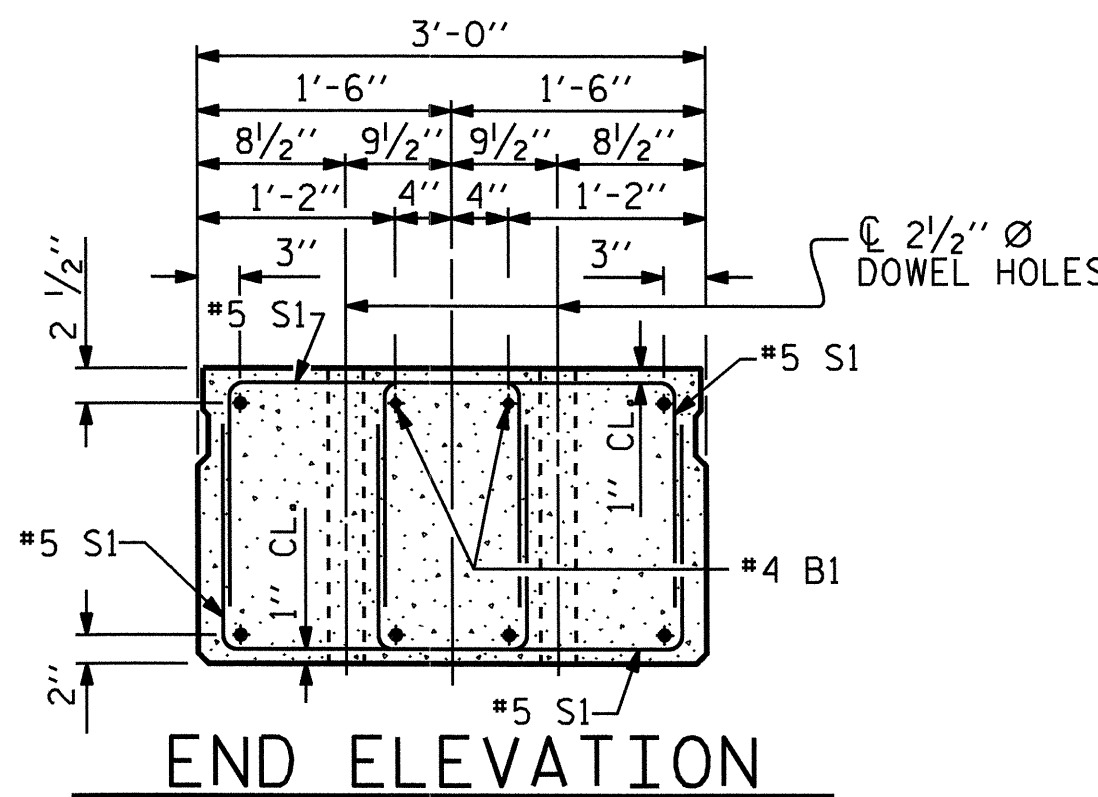


PART PLAN-EXTERIOR SECTION

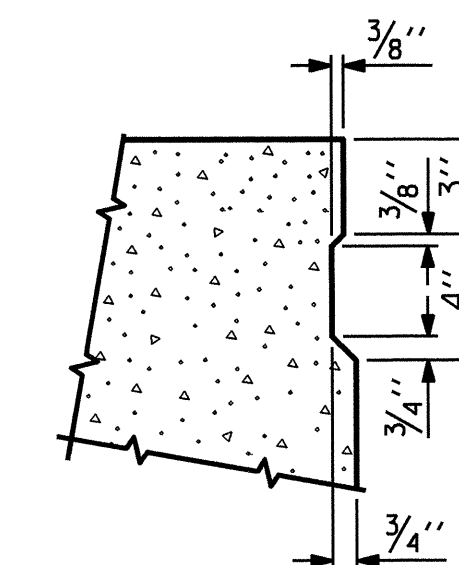
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



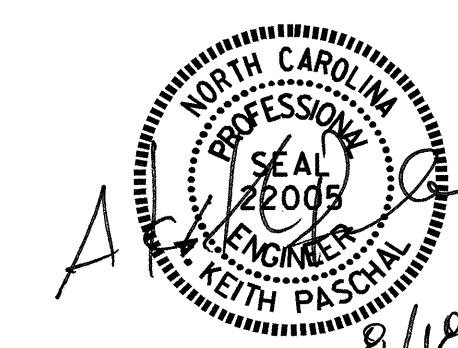
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



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



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

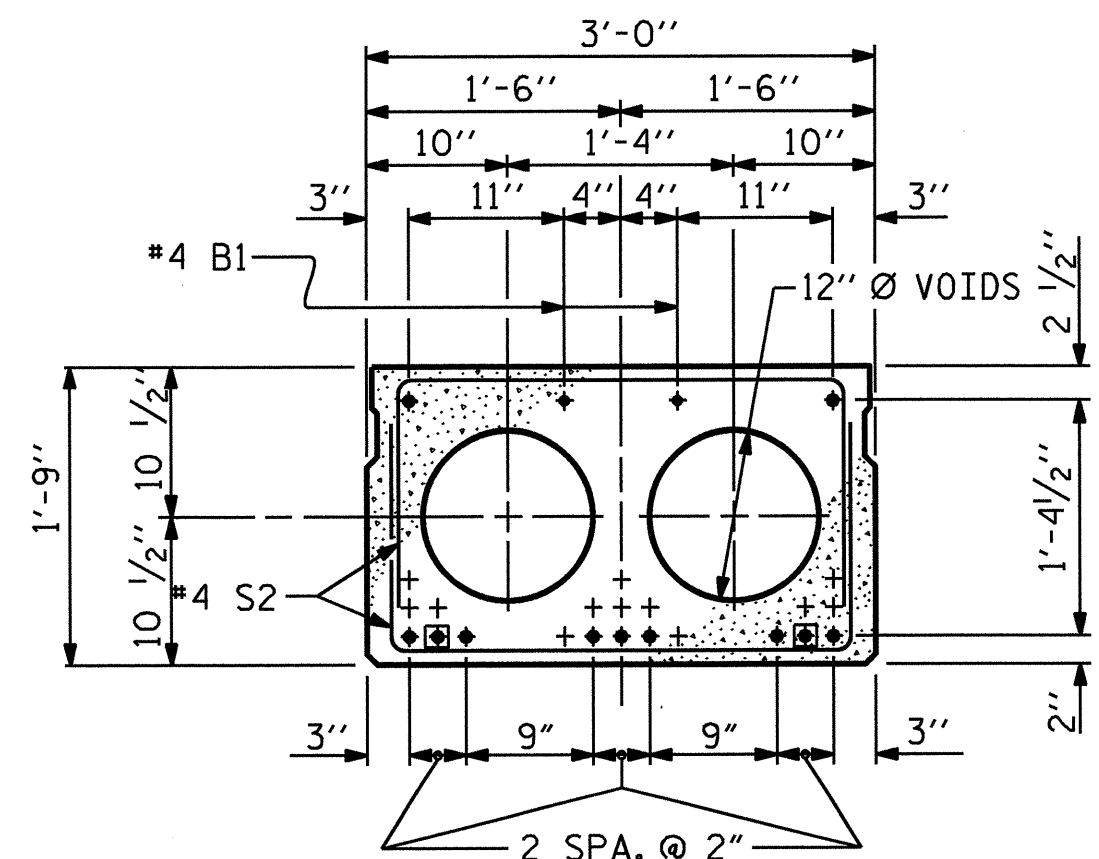


PROJECT NO. B-4551
HYDE COUNTY
STATION: 22+60.00 -L-
SHEET 1 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6	
1			3			TOTAL SHEETS	30
2			4				

ASSEMBLED BY : M. E. FOWLER	DATE : 2/2/10
CHECKED BY : J. MYA	DATE : 5/11/11
DRAWN BY : WJH 4/89	REV. 10/17/00 RWW/LES
CHECKED BY : FCJ 5/89	REV. 7/10/01RR RWW/LES
	REV. 5/1/06R TLA/GM

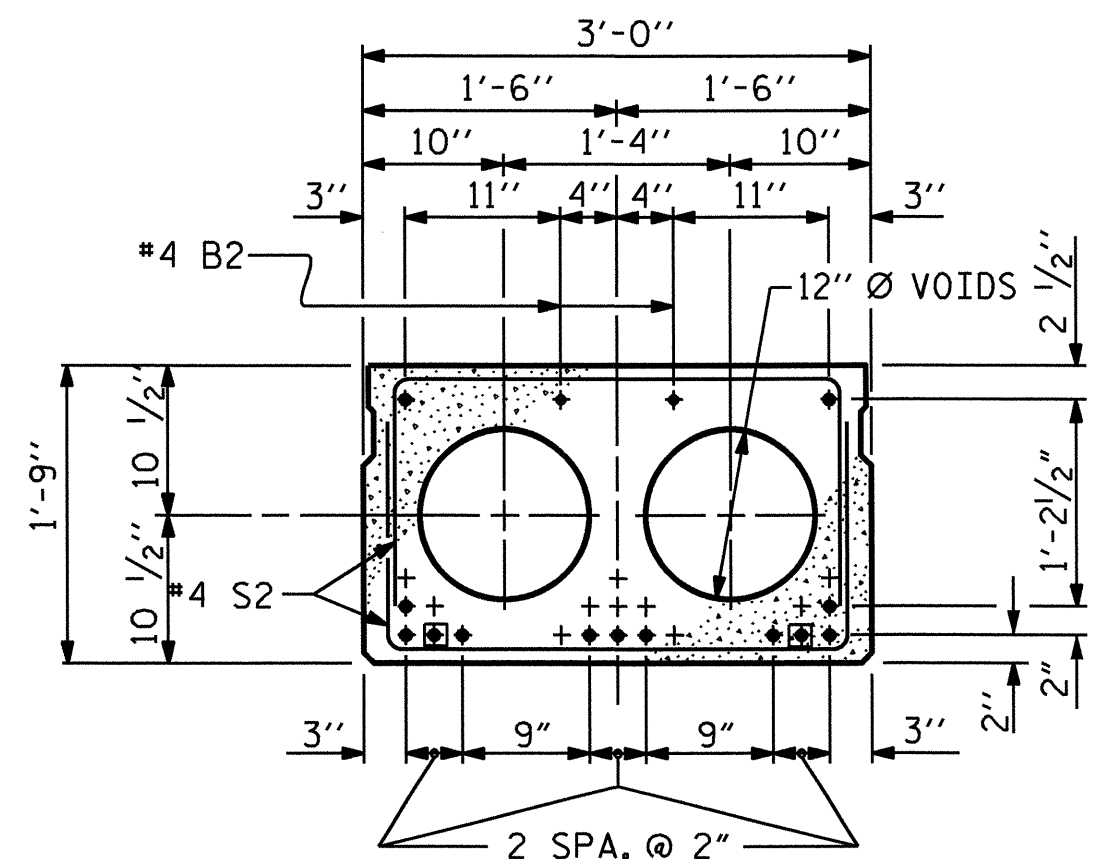


INTERIOR SLAB SECTION

(TYPES 1 AND 3)

0.6" Ø LOW RELAXATION STRAND LAYOUT SPAN A & B (11 STRANDS, 2 SHEATHED)

THE BOND SHALL BE BROKEN ON THE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORE SLAB UNIT.

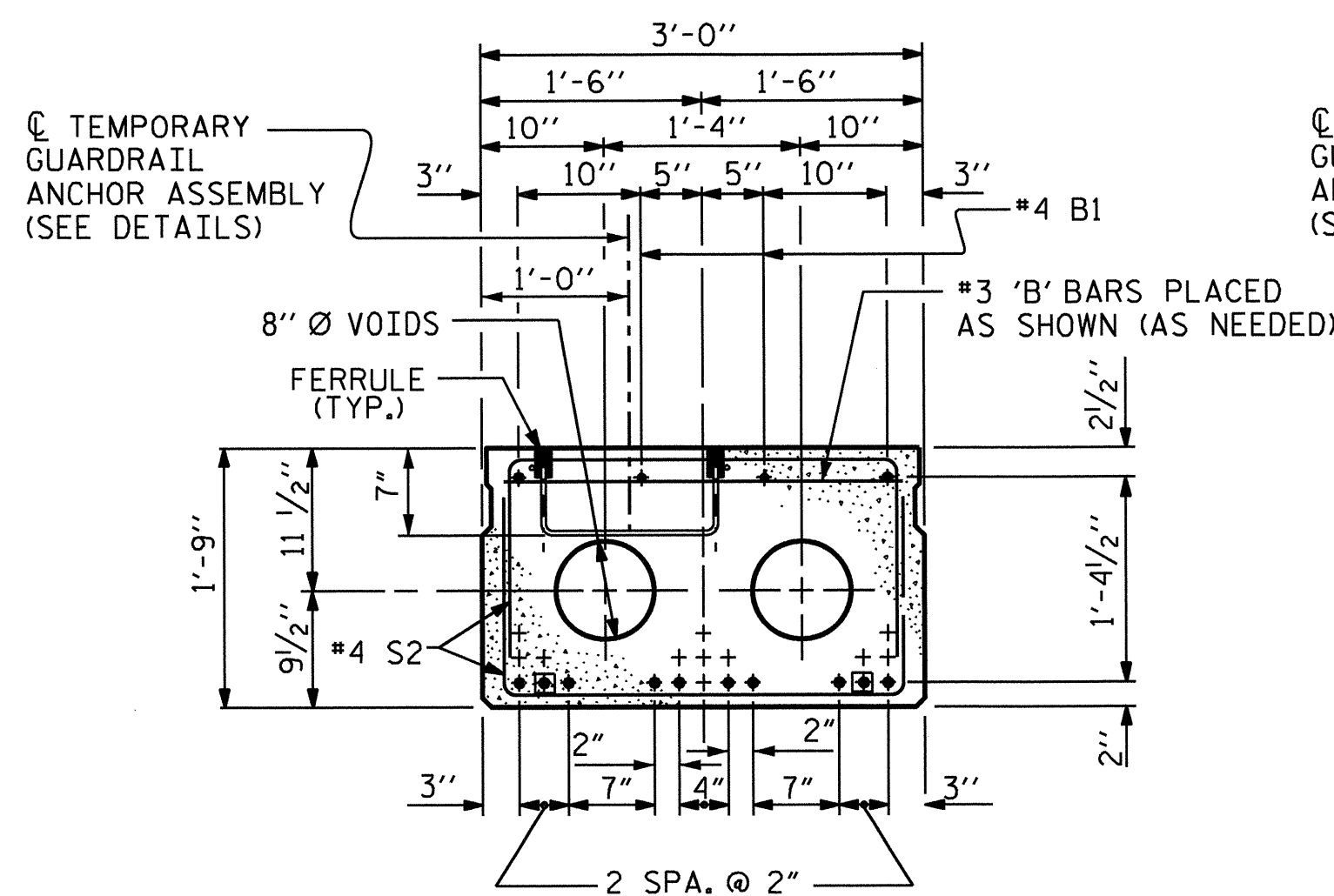


INTERIOR SLAB SECTION

(TYPES 1 AND 3)

0.6" Ø LOW RELAXATION STRAND LAYOUT SPAN C (13 STRANDS, 2 SHEATHED)

THE BOND SHALL BE BROKEN ON THE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORE SLAB UNIT.

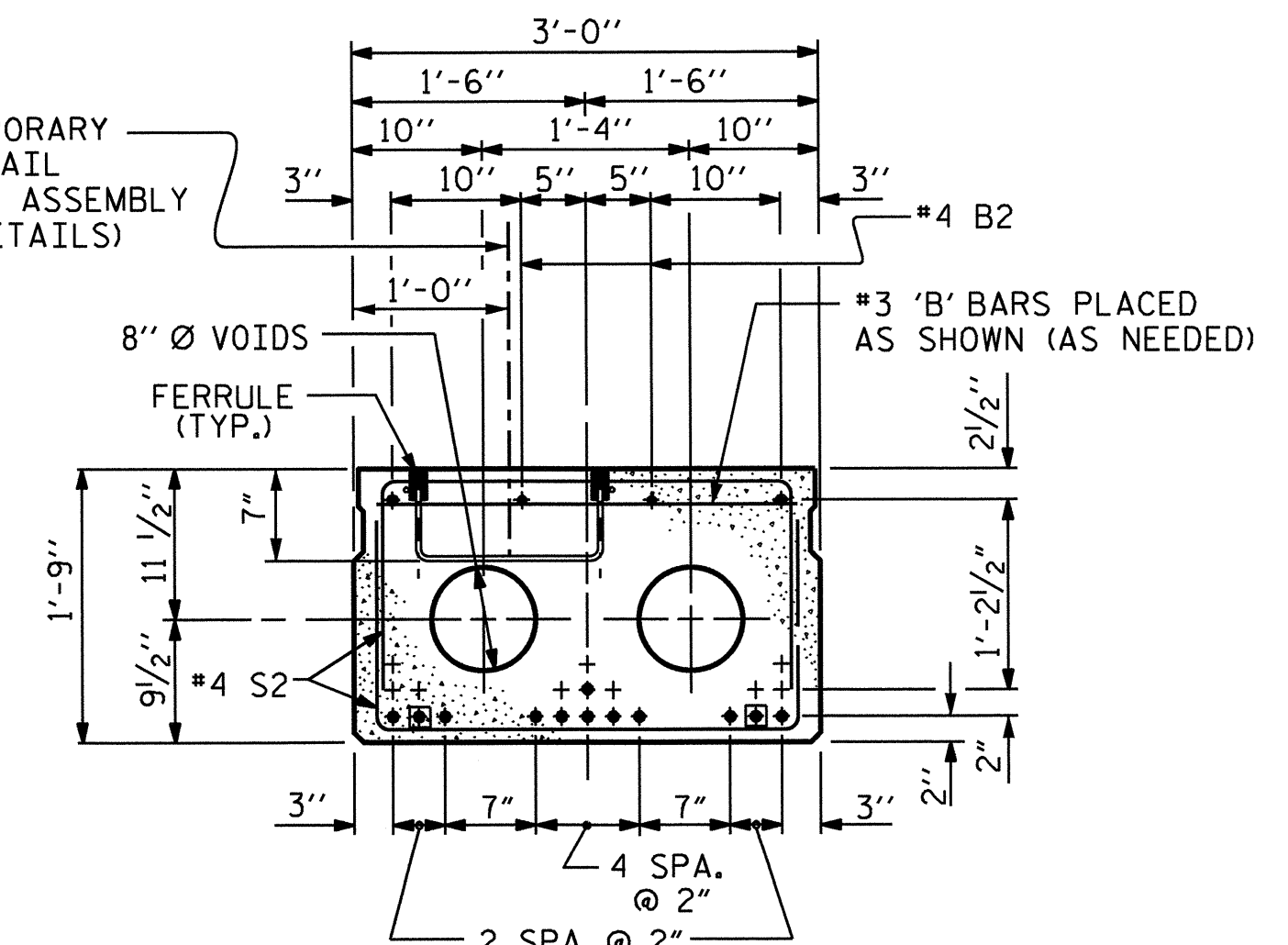


INTERIOR SLAB SECTION

(TYPE 2)

0.6" Ø LOW RELAXATION STRAND LAYOUT SPAN A & B (12 STRANDS, 2 SHEATHED)

THE BOND SHALL BE BROKEN ON THE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORE SLAB UNIT.

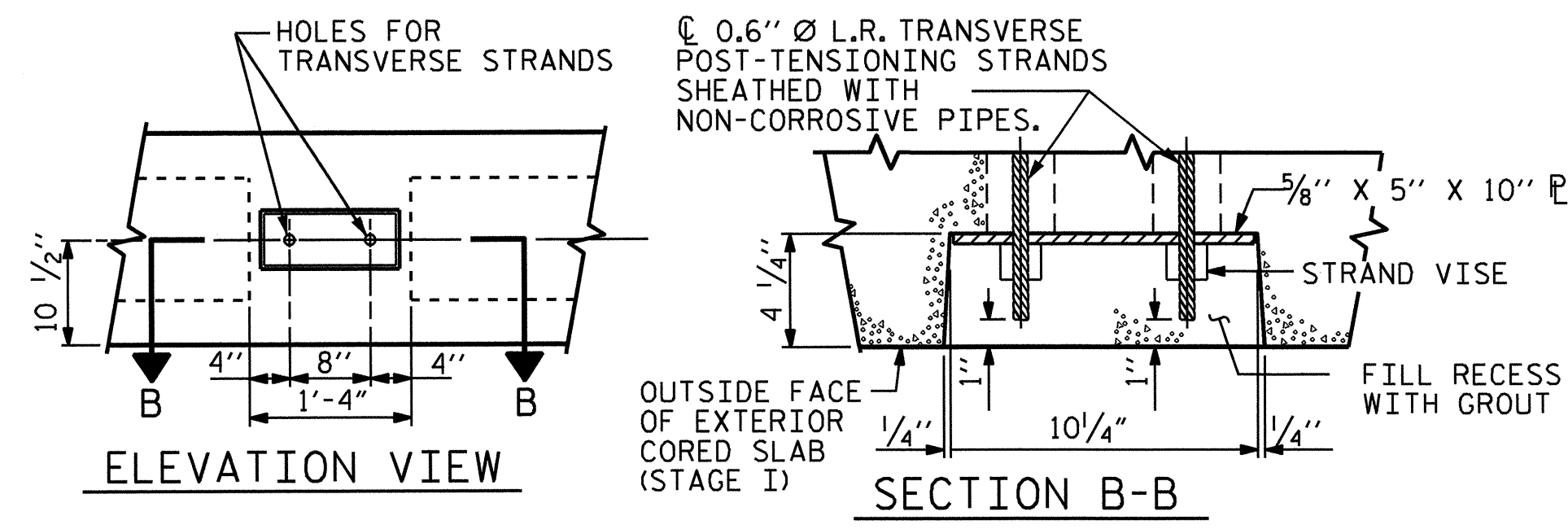


INTERIOR SLAB SECTION

(TYPE 2)

0.6" Ø LOW RELAXATION STRAND LAYOUT SPAN C (14 STRANDS, 2 SHEATHED)

THE BOND SHALL BE BROKEN ON THE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORE SLAB UNIT.



ELEVATION VIEW

SECTION B-B

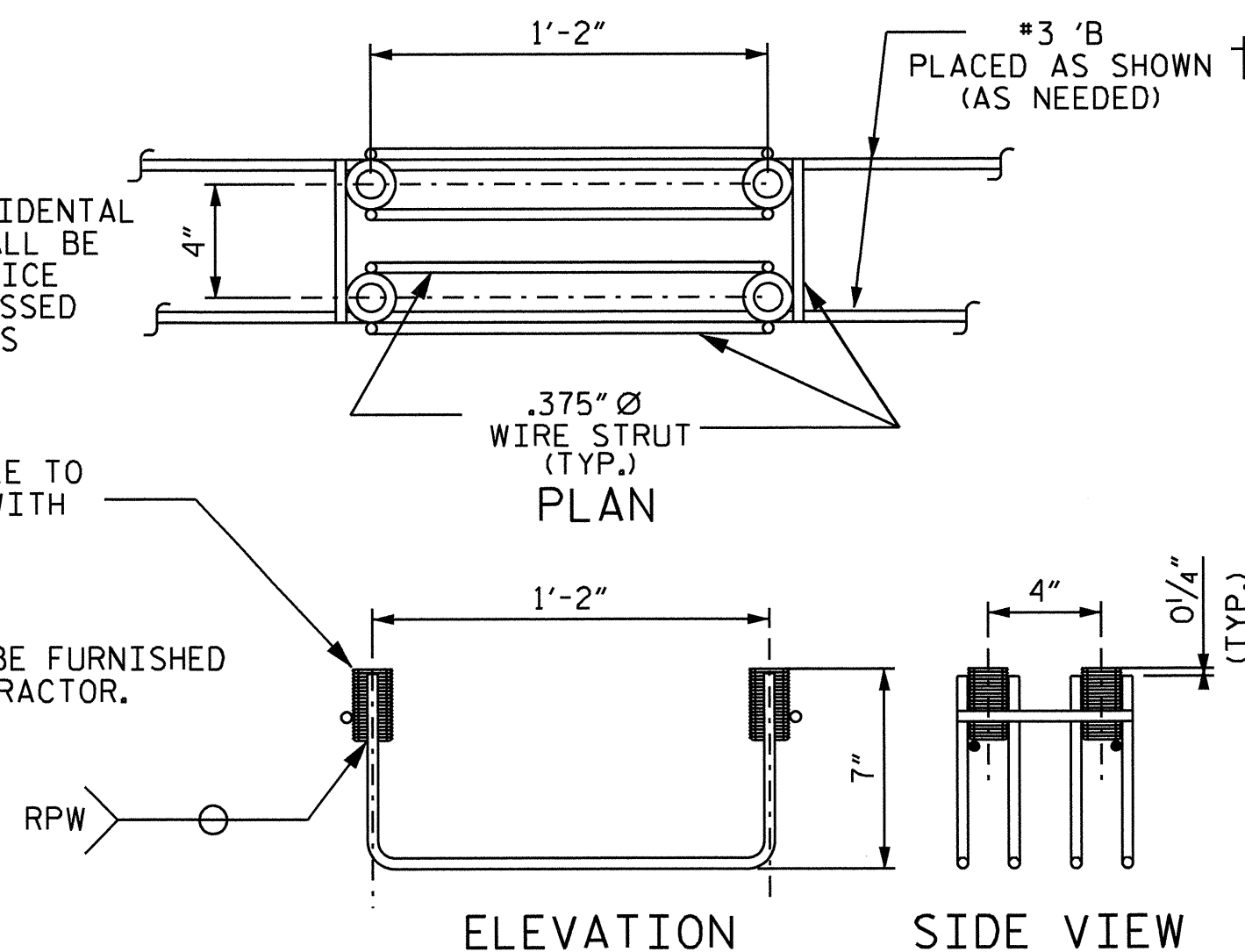
GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

(TYPE 1)

THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLABS

THREADED STEEL FERRULE TO FIT 1" Ø X 2 1/4" BOLT WITH ROUND WASHER

3/4" X 2 1/2" BOLTS TO BE FURNISHED BY THE BRIDGE CONTRACTOR.

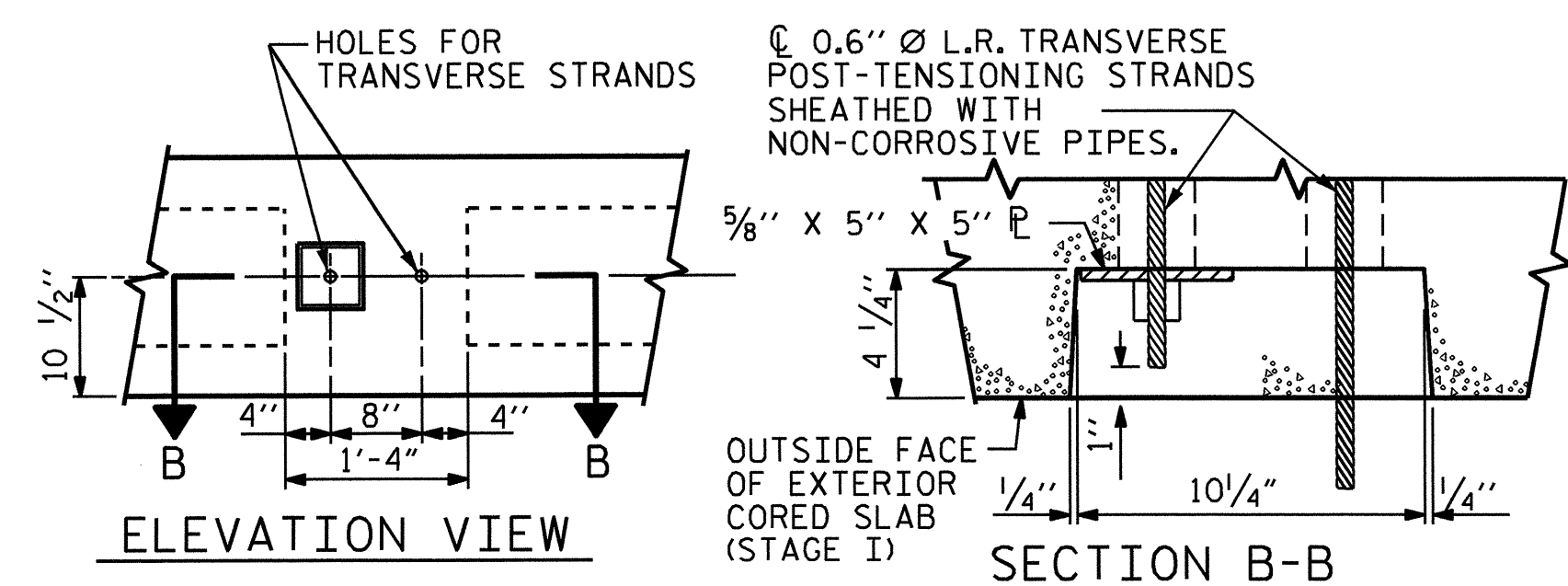


ELEVATION

SIDE VIEW

TEMPORARY GUARDRAIL ANCHOR ASSEMBLY

22 ASSEMBLIES REQUIRED IN THE CORED SLABS (7 FOR SPANS A & B, 8 FOR SPAN C)

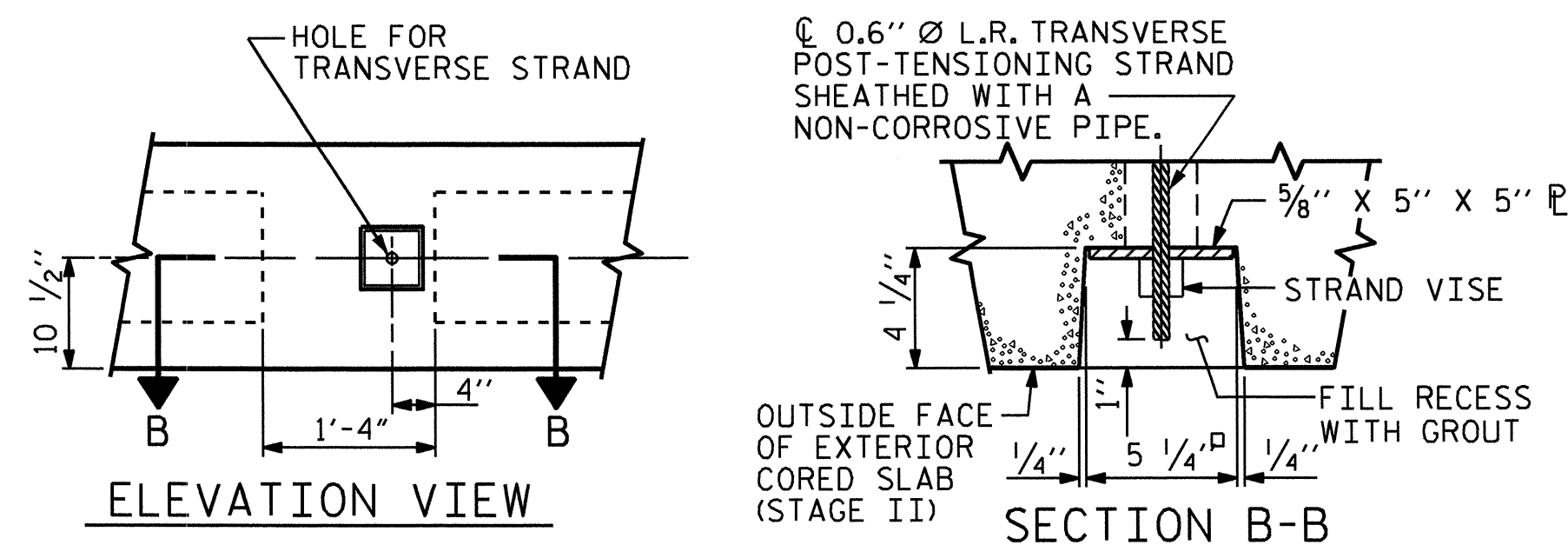


ELEVATION VIEW

SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

(TYPE 2)



ELEVATION VIEW

SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

(TYPE 3)

NOTES

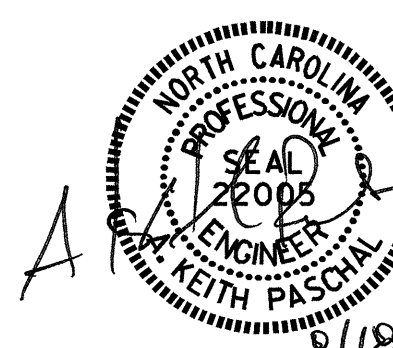
THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
 - B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS 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.
 - C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/2" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- TEMPORARY GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUR AS NECESSARY TO INSURE FIT.
- THE COST OF THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY COMPLETE IN PLACE SHALL BE INCLUDED IN THE UNIT CONTRACT BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.
- FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER.
- AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.
- TEMPORARY GUARDRAIL IS A ROADWAY DETAIL AND PAY ITEM.

PROJECT NO. B-4551
HYDE COUNTY
STATION: 22+60.00 -L-

SHEET 2 OF 8

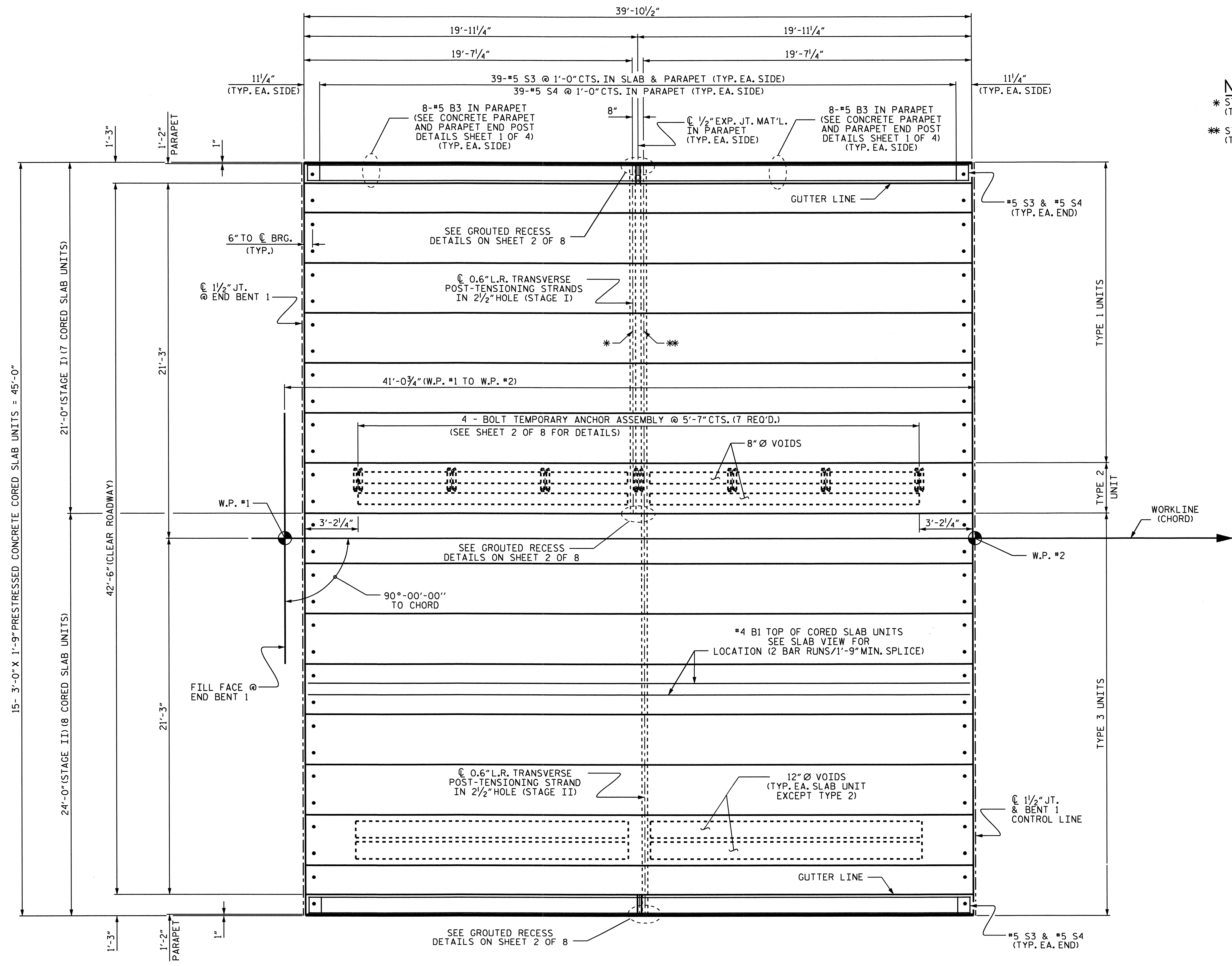
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT



REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 30
2			4			

(SHT 2) STD. NO. PCS2

ASSEMBLED BY : M. E. FOWLER	DATE : 2/2/10
CHECKED BY : J. MYA	DATE : 5/11/11
DRAWN BY : WJH 4/89	REV. 10/17/00 RWW/LES
CHECKED BY : FCJ 5/89	REV. 7/10/01RR RWW/LES
	REV. 5/1/06R TLA/GM



NOTES:
 * STRAND GOES THRU 7 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION).
 ** STRAND GOES THRU ALL 15 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION).

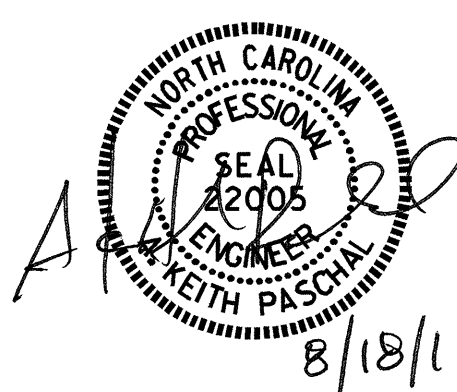
PLAN OF SPAN A

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-
 SHEET 3 OF 8

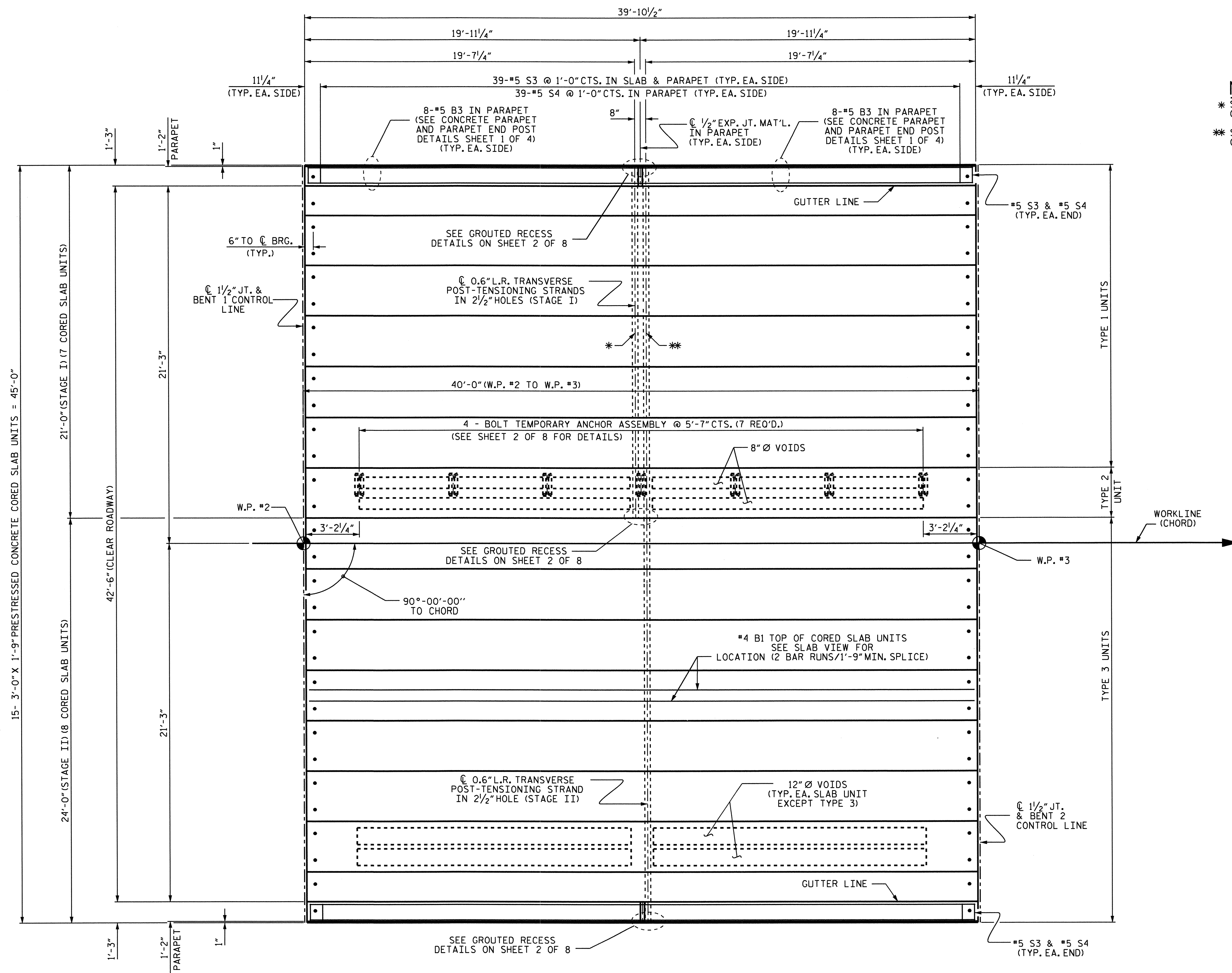
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN A**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS 30	
2			4				



DRAWN BY : M. E. FOWLER DATE : 1/19/10
 CHECKED BY : J. MYA DATE : 5/19/11



NOTES:
 * STRAND GOES THRU 7 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION).
 ** STRAND GOES THRU ALL 15 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION).

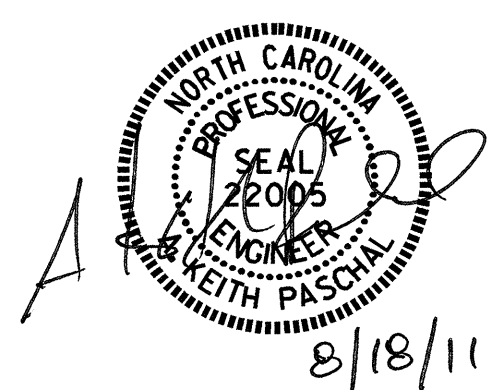
PLAN OF SPAN B

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 4 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

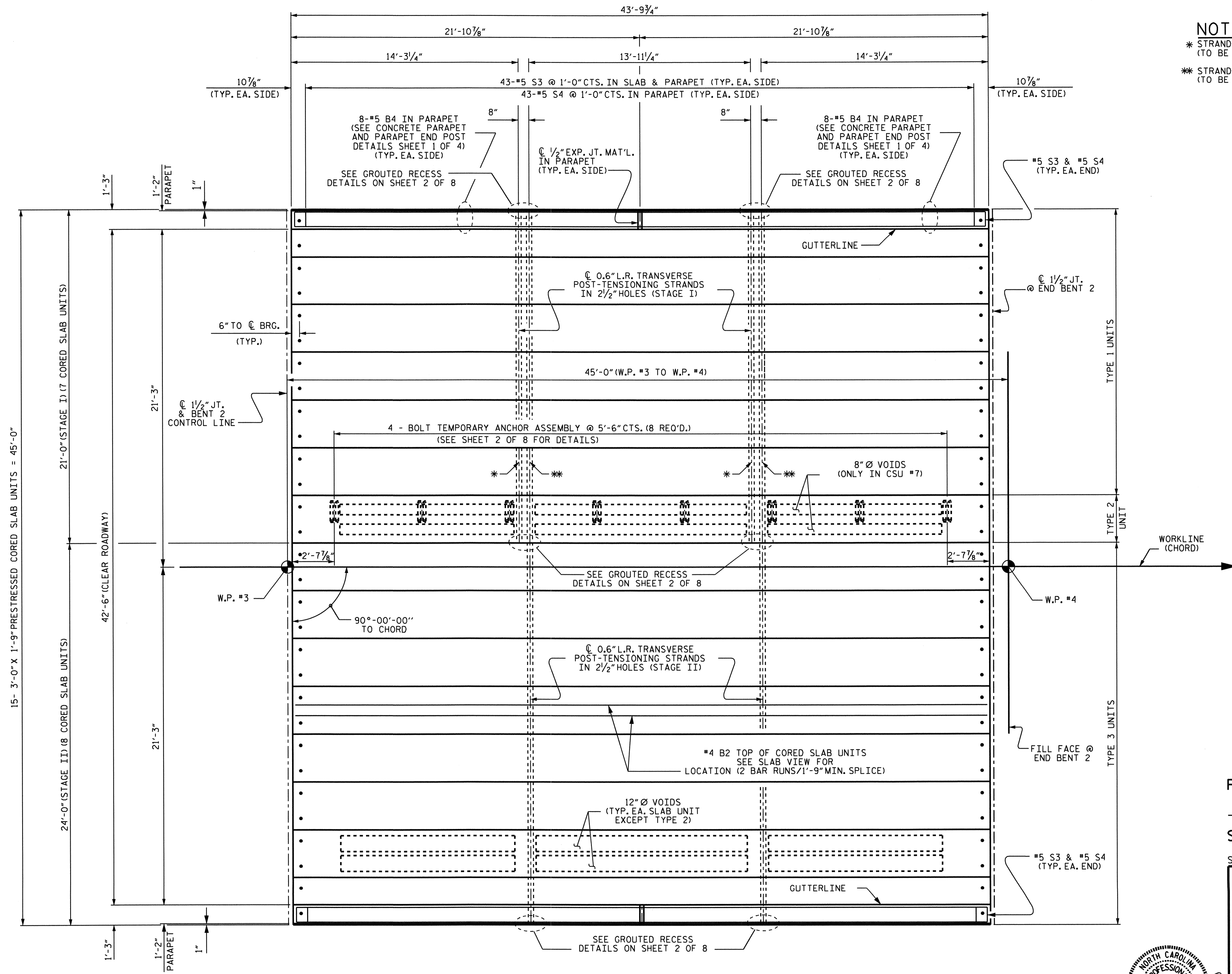
**SUPERSTRUCTURE
 PLAN OF SPAN B**



DRAWN BY : M. E. FOWLER DATE : 1/19/10
 CHECKED BY : J. MYA DATE : 5/19/11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			30

NOTES:
 * STRAND GOES THRU 7 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION).
 ** STRAND GOES THRU ALL 15 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION).



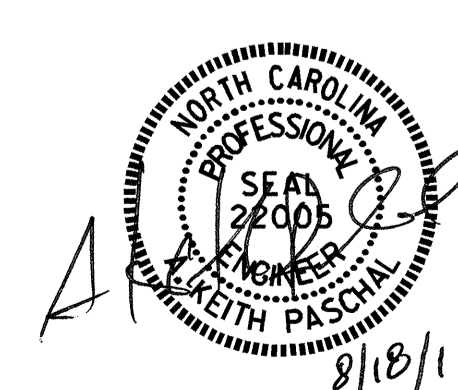
PLAN OF SPAN C

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 5 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

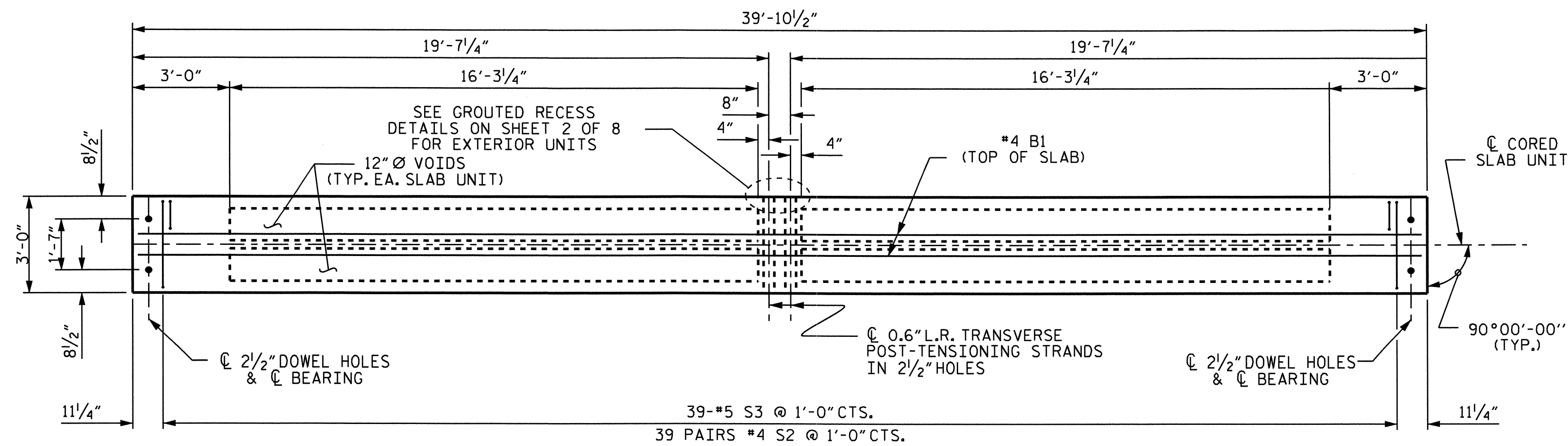
SUPERSTRUCTURE
 PLAN OF SPAN C



DRAWN BY: M.E. FOWLER DATE: 1/19/10
 CHECKED BY: J. MYA DATE: 5/19/11

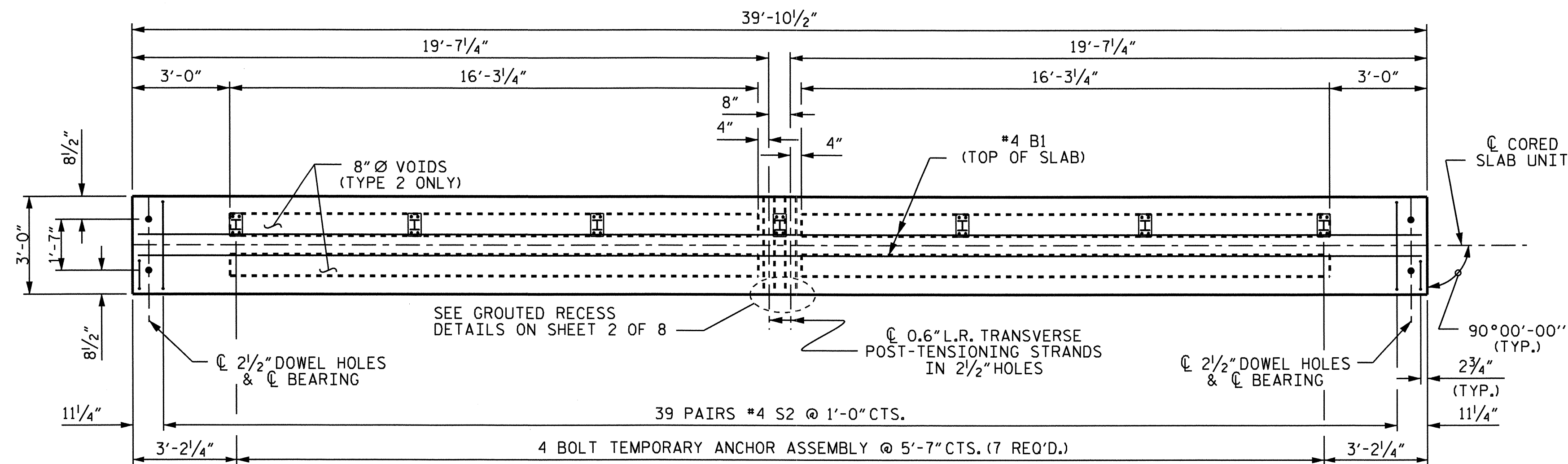
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 kpaschal

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			30	



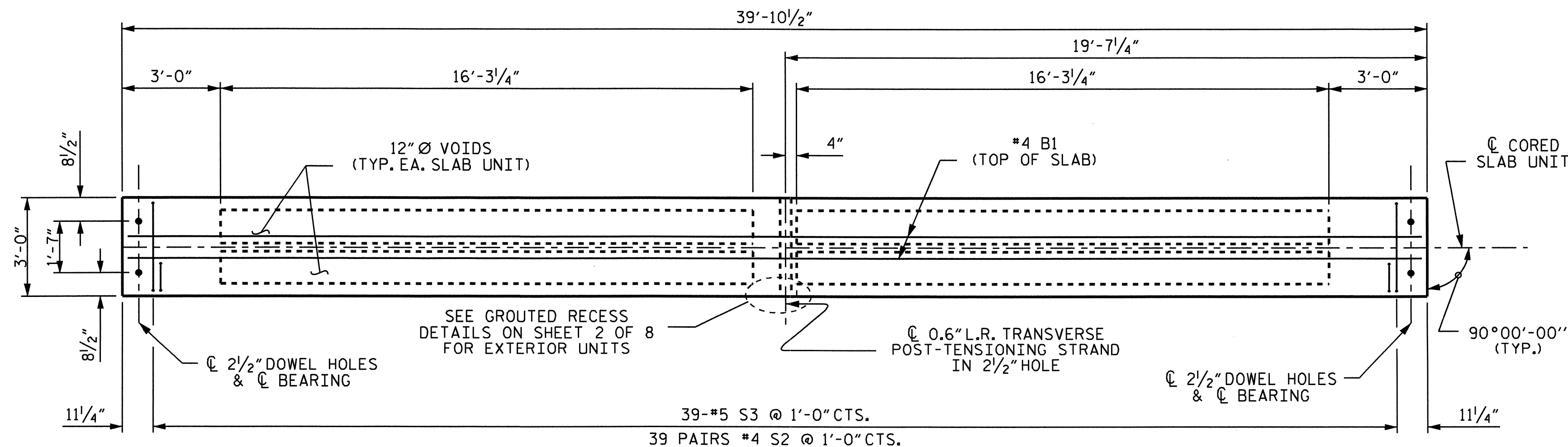
PLAN OF CORED SLAB UNIT STAGE I

(TYPE 1)
 EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
 FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
 SEE "PART PLAN-EXTERIOR SECTION" SHEET 1 OF 8.



PLAN OF CORED SLAB UNIT STAGE I

(TYPE 2)
 FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
 SEE "PART PLAN-EXTERIOR SECTION" SHEET 1 OF 8.



PLAN OF CORED SLAB UNIT STAGE II

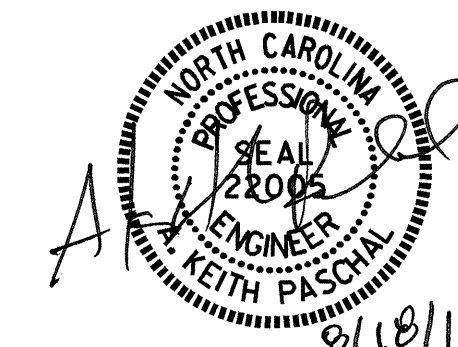
(TYPE 3)
 EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
 FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
 SEE "PART PLAN-EXTERIOR SECTION" SHEET 1 OF 8.

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 6 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

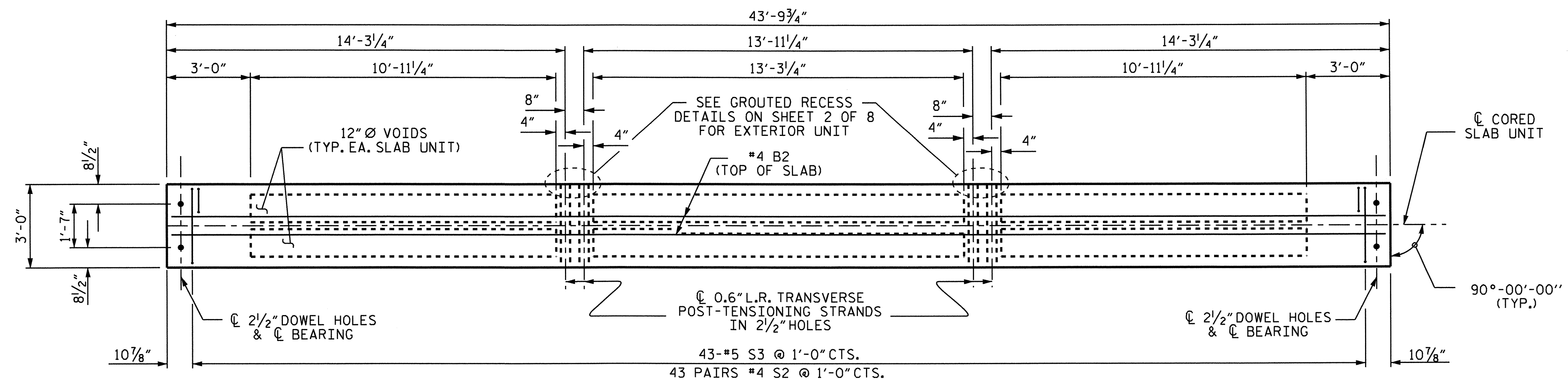
SUPERSTRUCTURE
 PLAN OF CORED
 SLAB UNITS
 (SPANS A & B)



DRAWN BY : M. E. FOWLER DATE : 2/3/11
 CHECKED BY : J. MYA DATE : 5/15/11

17-AUG-2011 13:39
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 jdhawk

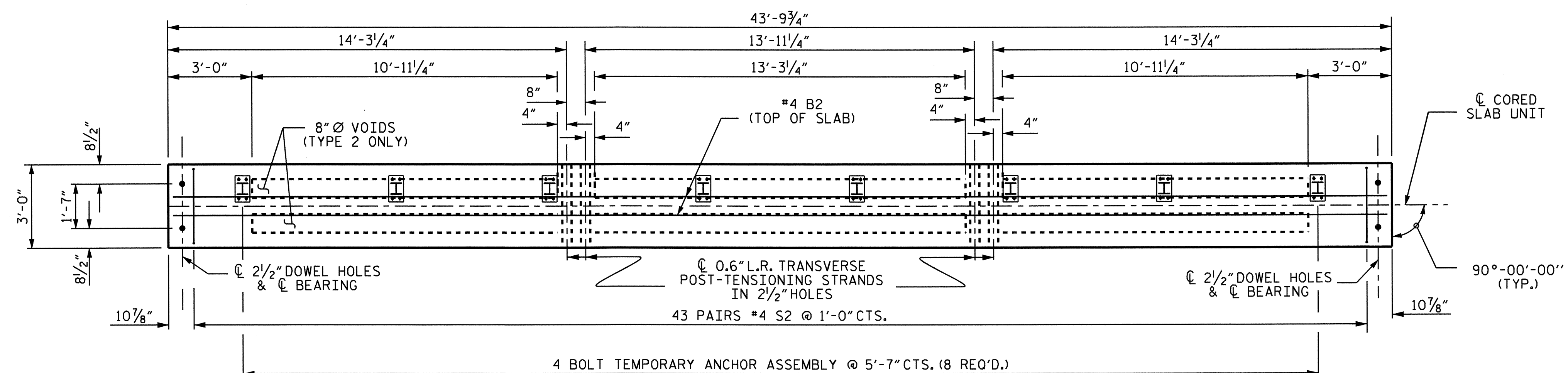
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-11
1			3			TOTAL SHEETS
2			4			30



PLAN OF CORED SLAB UNIT STAGE I

(TYPE 1)

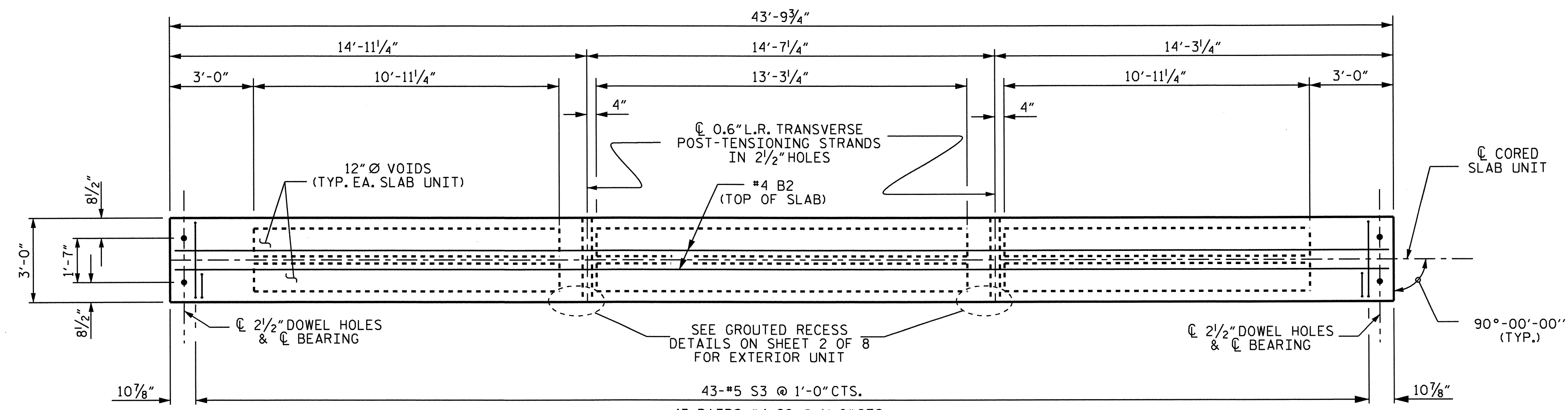
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
SEE "PART PLAN-EXTERIOR SECTION" SHEET 1 OF 8.



PLAN OF CORED SLAB UNIT STAGE I

(TYPE 2)

FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT, SEE "PART PLAN-EXTERIOR SECTION" SHEET 1 OF 8.



PLAN OF CORED SLAB UNIT STAGE II

(TYPE 3)

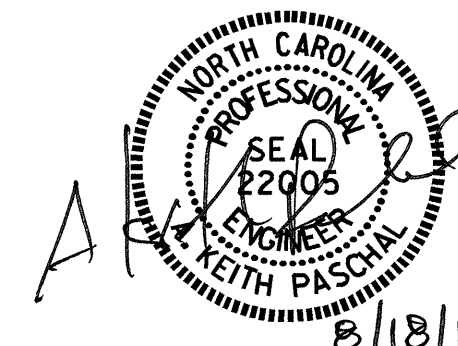
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
SEE "PART PLAN-EXTERIOR SECTION" SHEET 1 OF 8.

PROJECT NO. B-4551
HYDE COUNTY
STATION: 22+60.00 -L-

SHEET 7 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF CORED
SLAB UNITS
(SPAN C)



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-12
1			3			TOTAL SHEETS
2			4			30

DRAWN BY : M. E. FOWLER DATE : 2/3/11
CHECKED BY : J. MYA DATE : 5/15/11

**BILL OF MATERIAL FOR ONE CORED SLAB SECTION
SPANS A AND B**

				STAGE I				STAGE II					
				EXTERIOR UNIT		INTERIOR UNIT		TYPE 2 UNIT		EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	20'-8"	55	20'-8"	55	20'-8"	55	20'-8"	55	20'-8"	55
S1	8	#5	2	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35
S2	78	#4	2	5'-4"	278	5'-4"	278	5'-4"	278	5'-4"	278	5'-4"	278
*S3	41	#5	1	5'-10"	249					5'-10"	249		
REINFORCING STEEL LBS.				368		368		368		368		368	
*EPOXY COATED REINFORCING STEEL LBS.				249						249			
6500 P.S.I. CONCRETE CU. YDS.				5.8		5.8		6.8		5.8		5.8	
0.6" Ø L.R. STRANDS No.				11		11		12		11		11	

**BILL OF MATERIAL FOR ONE CORED SLAB SECTION
SPAN C**

				STAGE I				STAGE II					
				EXTERIOR UNIT		INTERIOR UNIT		TYPE 2 UNIT		EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	22'-8"	61	22'-8"	61	22'-8"	61	22'-8"	61	22'-8"	61
S1	8	#5	2	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35
S2	86	#4	2	5'-4"	306	5'-4"	306	5'-4"	306	5'-4"	306	5'-4"	306
*S3	45	#5	1	5'-10"	274					5'-10"	274		
REINFORCING STEEL LBS.				402		402		402		402		402	
*EPOXY COATED REINFORCING STEEL LBS.				274						274			
6500 P.S.I. CONCRETE CU. YDS.				6.4		6.4		7.5		6.4		6.4	
0.6" Ø L.R. STRANDS No.				13		13		14		13		13	

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R. 0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

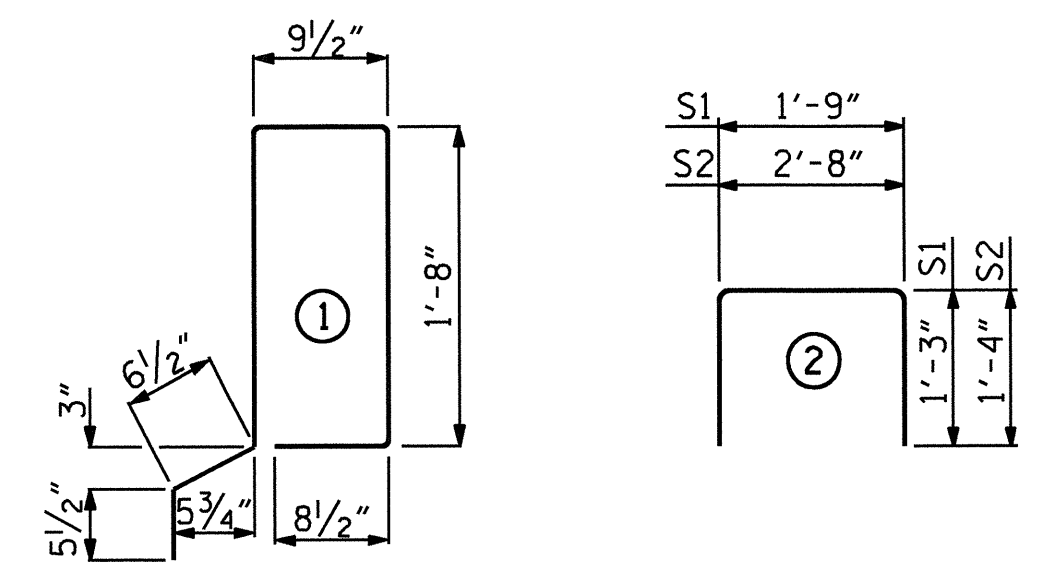
DEAD LOAD DEFLECTION AND CAMBER			
	SPAN A	SPAN B	SPAN C
	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	3/4"	3/4"	1 1/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8"	1/8"	1/8"
FINAL CAMBER	5/8"	5/8"	15/16"

** INCLUDES FUTURE WEARING SURFACE

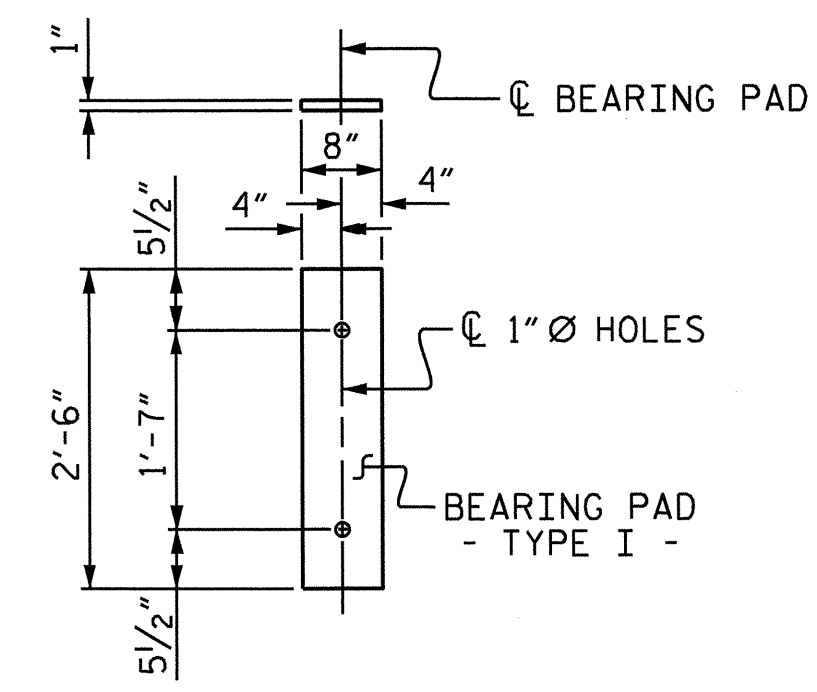
ASSEMBLED BY : M. E. FOWLER DATE : 2/2/10
 CHECKED BY : J. MYA DATE : 5/23/11
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE
 REV. 5/1/06R TLA/GM

17-AUG-2011 13:39 R:\Structures\Final Plans\B4551.SD.CS.dgn jdnwkw

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



**FIXED END
(TYPE I - 90 DEG'D.)
ELASTOMERIC BEARING DETAILS
(50 DUROMETER HARDNESS)**

CORED SLAB UNITS REQUIRED SPANS A AND B				
STAGE	NUMBER	LENGTH	TOTAL LENGTH	
STAGE I	EXTERIOR	2	39'-10 1/2"	79'-9"
	INTERIOR	12	39'-10 1/2"	478'-6"
	TOTAL	14		558'-3"
STAGE II	EXTERIOR	2	39'-10 1/2"	79'-9"
	INTERIOR	14	39'-10 1/2"	558'-3"
	TOTAL	16		638'-0"
CORED SLAB UNITS REQUIRED SPAN C				
STAGE	NUMBER	LENGTH	TOTAL LENGTH	
STAGE I	EXTERIOR	1	43'-9 3/4"	43'-9 3/4"
	INTERIOR	6	43'-9 3/4"	262'-10 1/2"
	TOTAL	7		306'-8 1/4"
STAGE II	EXTERIOR	1	43'-9 3/4"	43'-9 3/4"
	INTERIOR	7	43'-9 3/4"	306'-8 1/4"
	TOTAL	8		350'-6"
TOTAL	45		1853'-5 1/4"	

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, A POSITIVE 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 STRUCTURE 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 5200 PSI. FOR SPAN A, B AND C.

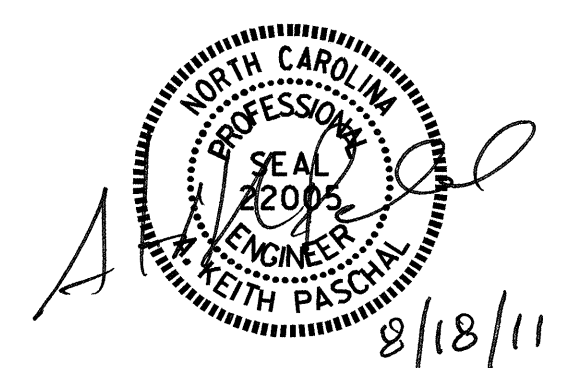
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE TO THE STANDARD SPECIFICATIONS. NO SEPARATE PAYMENT WILL BE MADE FOR CALCIUM NITRITE CORROSION INHIBITOR.

PRESTRESSED CONCRETE CORED SLAB UNITS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

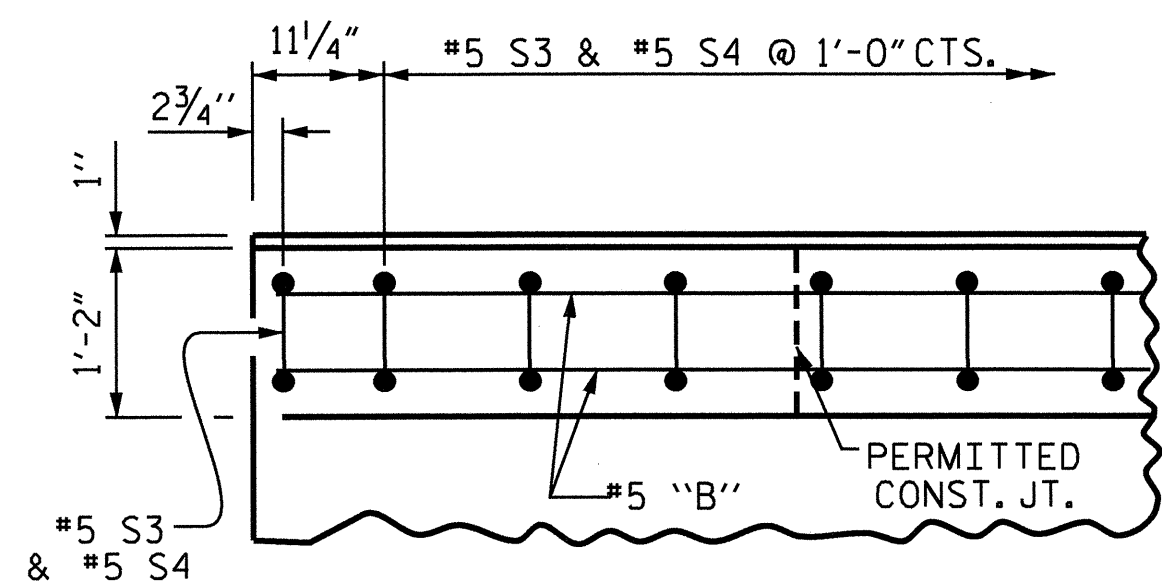


PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

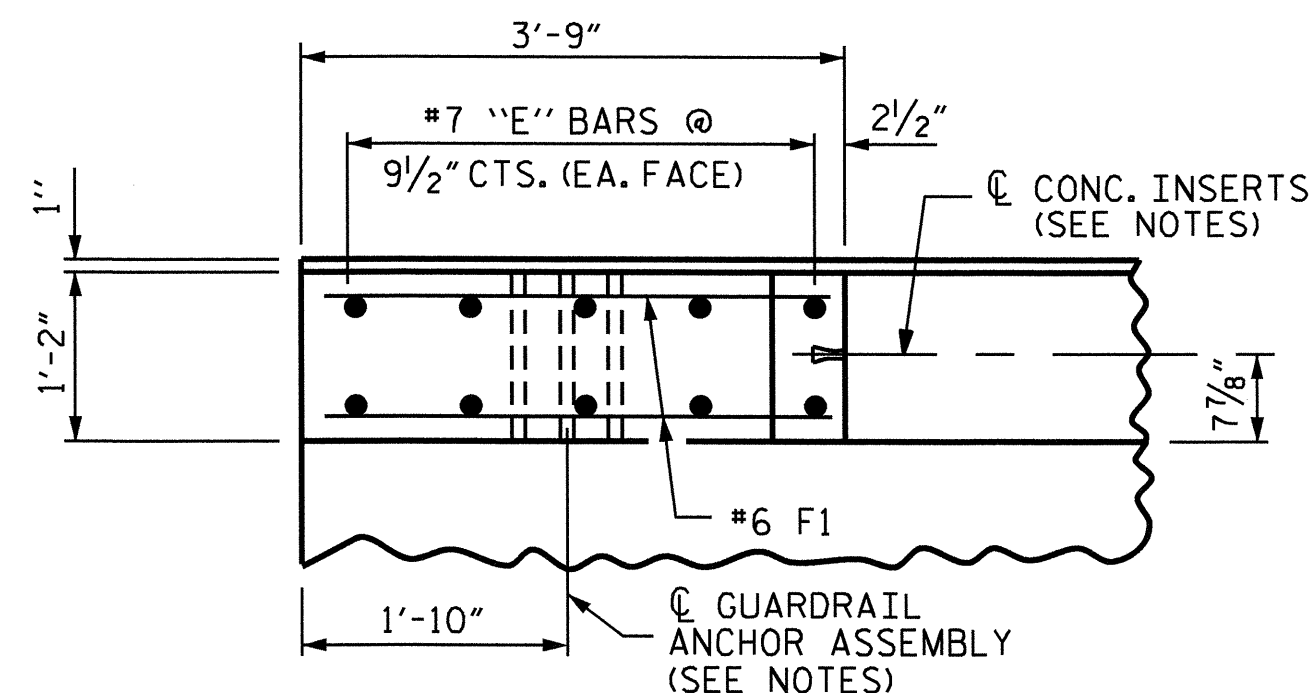
SHEET 8 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT

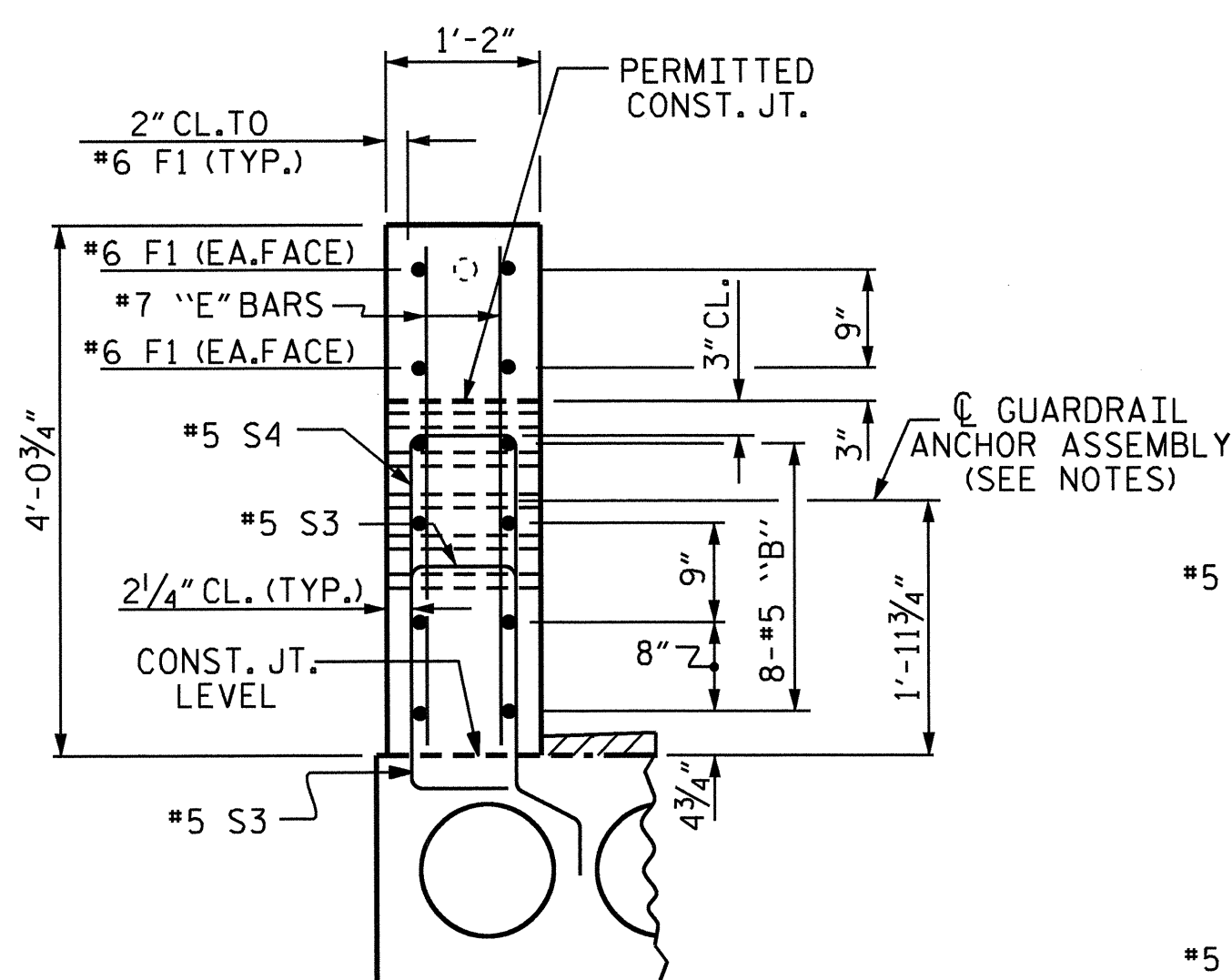
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 30
2			4			



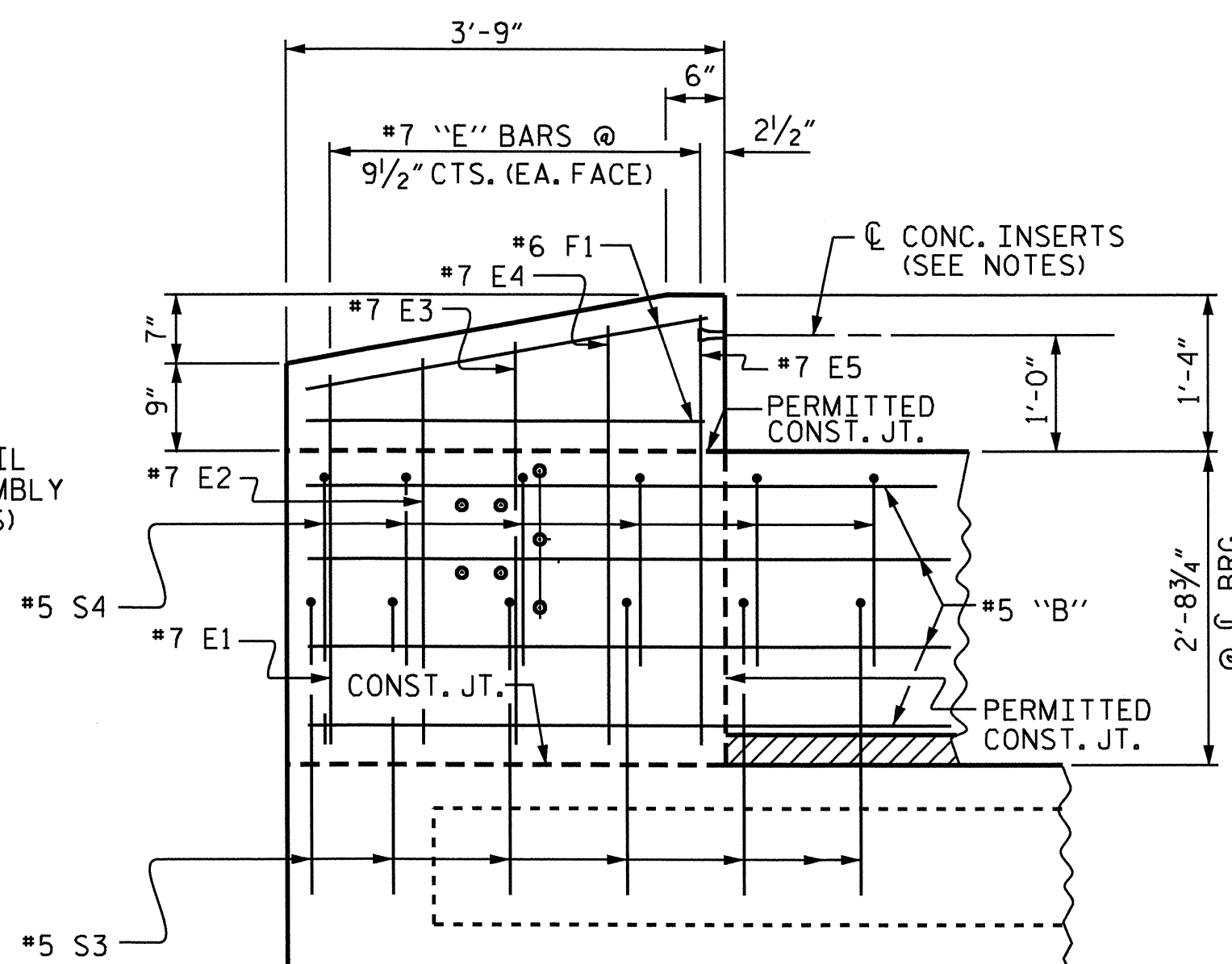
PLAN OF PARAPET



PLAN OF END POST

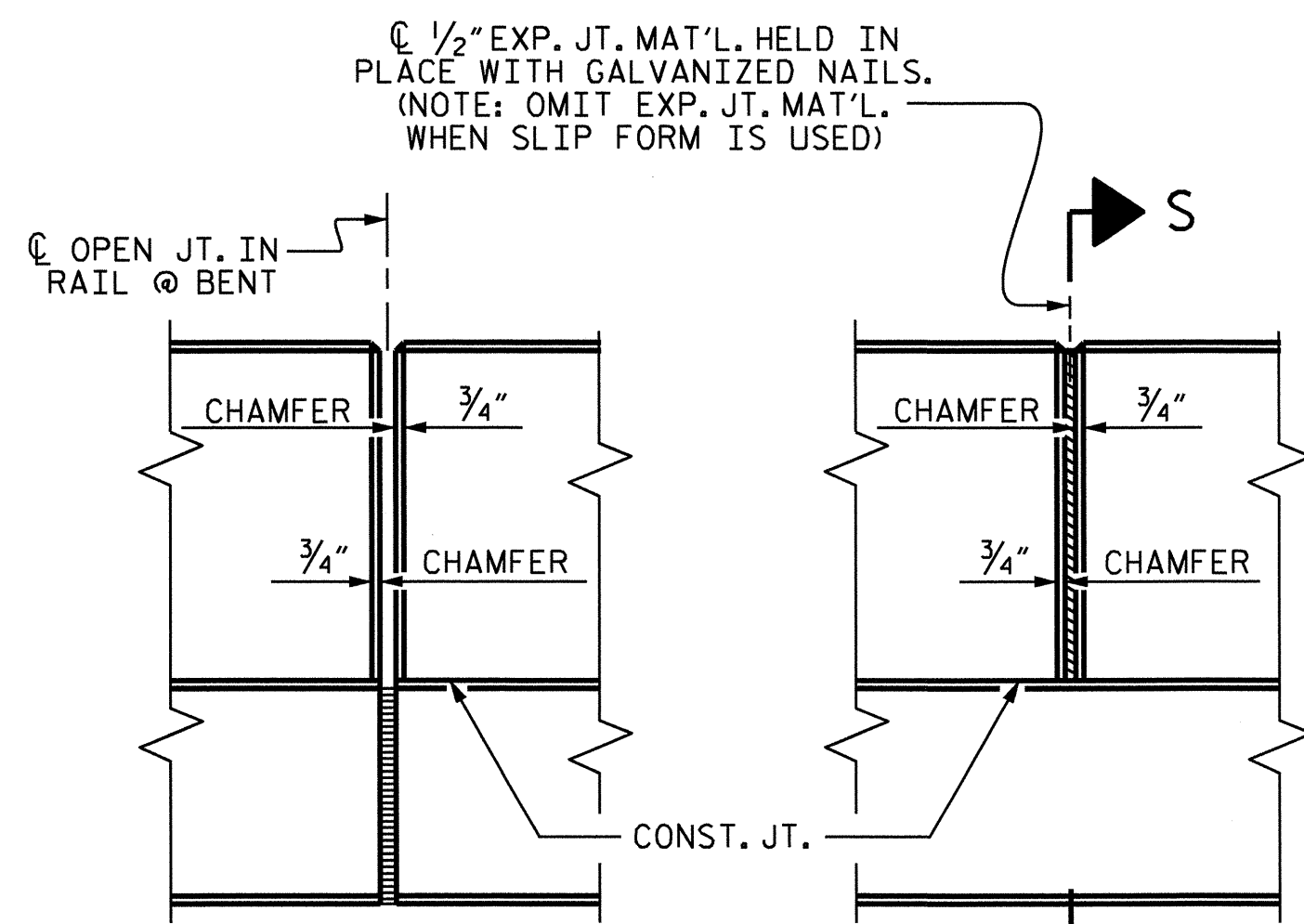


END VIEW

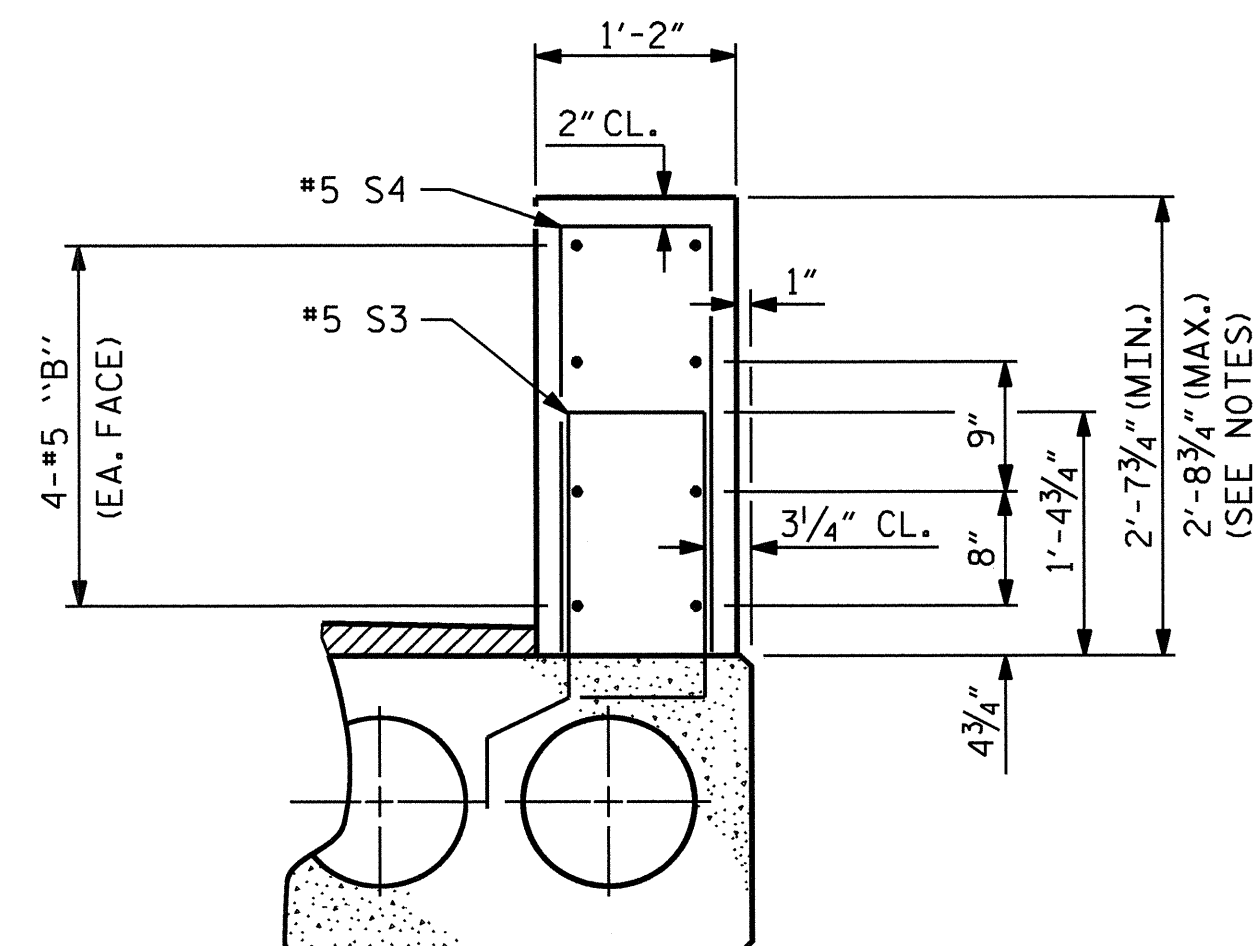


ELEVATION

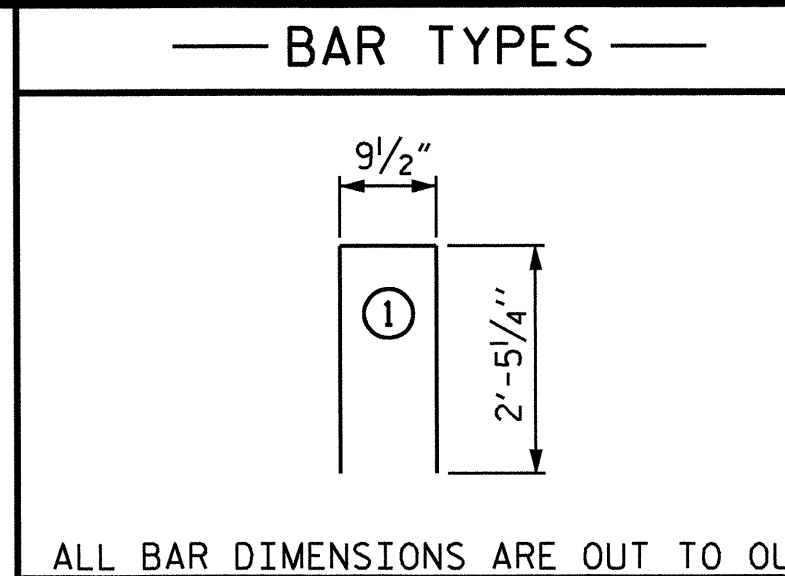
PARAPET AND END POST FOR TWO-BAR RAIL



ELEVATION AT EXPANSION JOINTS



TWO BAR METAL RAIL PARAPET SECTION



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
PARAPETS AND END POSTS

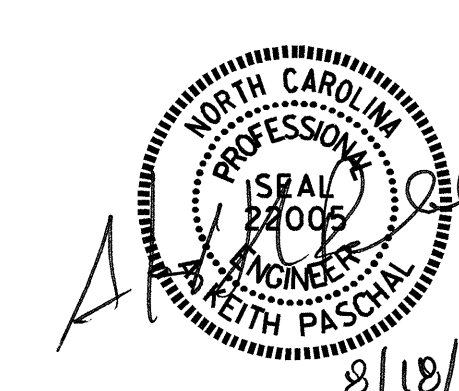
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B3	64	#5	STR	19'-7"	1307
* B4	32	#5	STR	21'-6"	718
* E1	8	#7	STR	3'-4"	55
* E2	8	#7	STR	3'-6"	57
* E3	8	#7	STR	3'-8"	60
* E4	8	#7	STR	3'-9"	61
* E5	8	#7	STR	3'-10"	63
* F1	16	#6	STR	3'-5"	82
* S4	254	#5	1	5'-8"	1501
* EPOXY COATED REINFORCING STEEL				LBS.	3904
CLASS AA CONCRETE				C.Y.	24.6
CONCRETE PARAPET				LIN. FT.	247.63

NOTES

ALL REINFORCING STEEL IN THE PARAPETS AND END POSTS SHALL BE EPOXY COATED.
 FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE SHEET 2 OF 4 & 3 OF 4.
 #5 S3 BARS ARE INCLUDED IN THE BILL OF MATERIAL FOR CORED SLAB UNITS.
 GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
 THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.
 THE 1/2" EXPANSION JOINT IN THE PARAPET MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE #5 S3 & #5 S4 BARS.
 FOR REINFORCING STEEL LAYOUT, SEE PLAN OF SPANS.

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET AND
 PARAPET END POST
 DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			30

DRAWN BY: M.FOWLER DATE: 2/3/11
 CHECKED BY: J.MYA DATE: 5/11/11

17-AUG-2011 14:19
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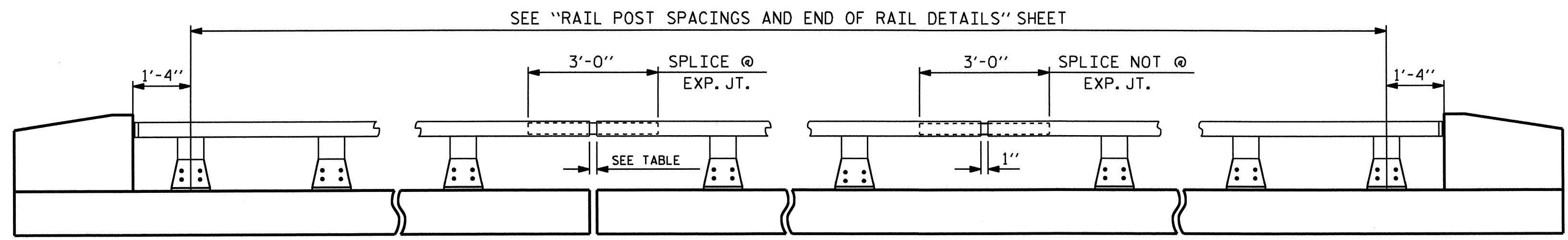


TABLE	
EXP. JT. @	RAIL OPENING
BENT 1	1 1/2"
BENT 2	1 1/2"

NOTES

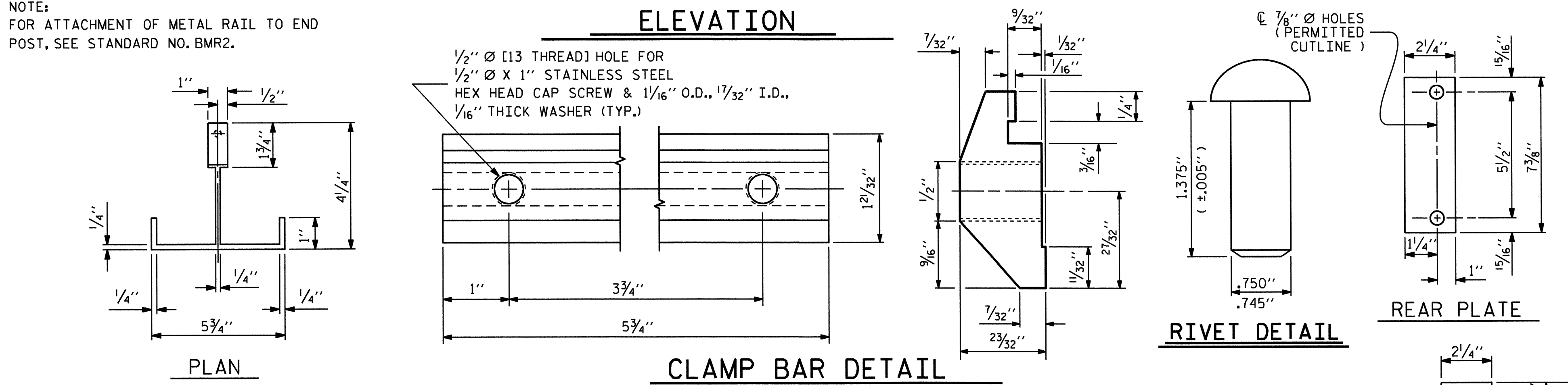
AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS
 MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

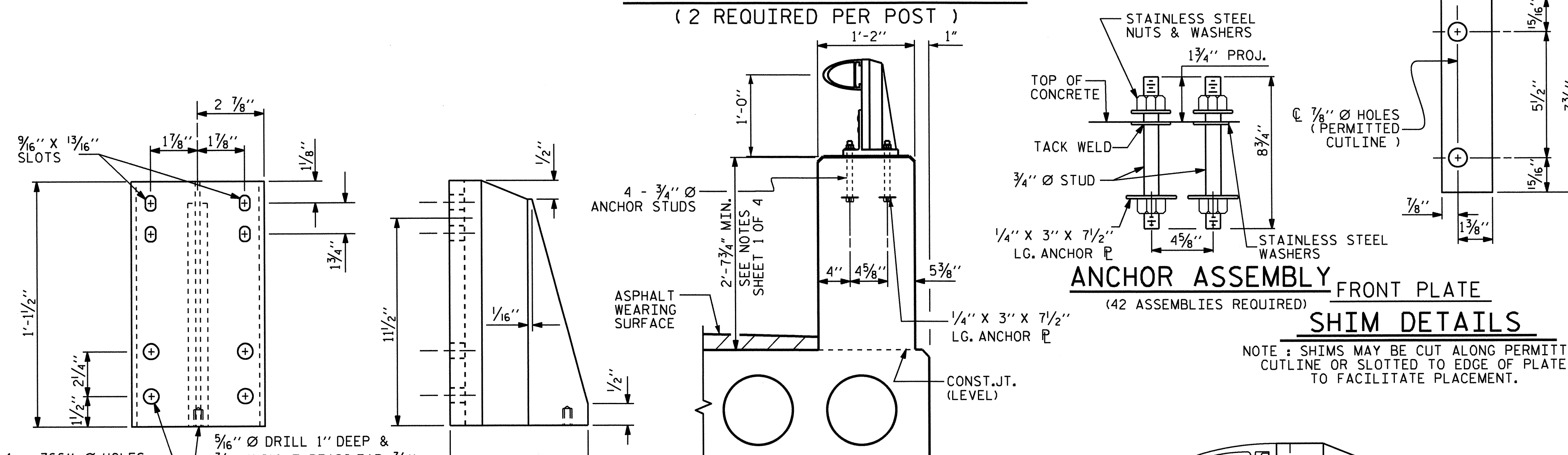
THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

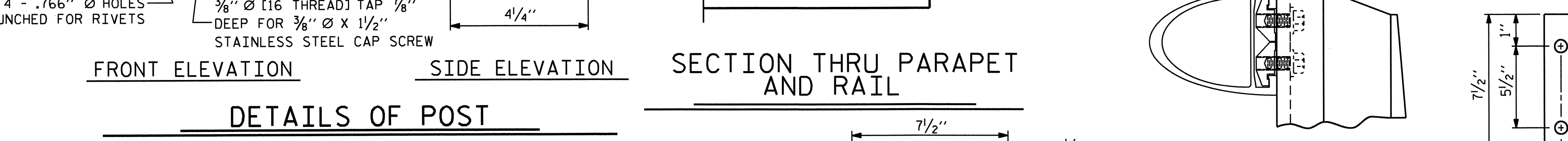
NOTE:
 FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



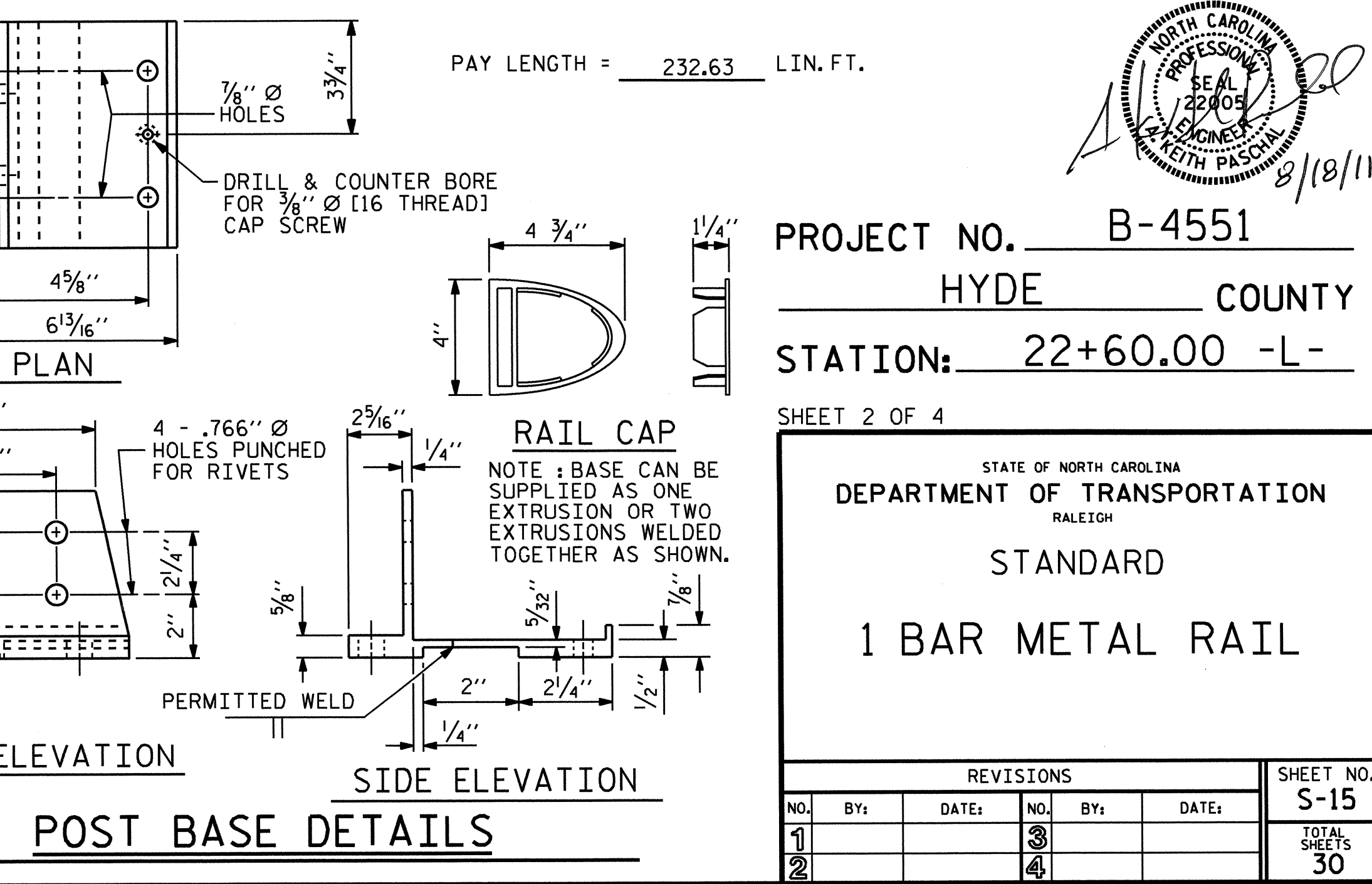
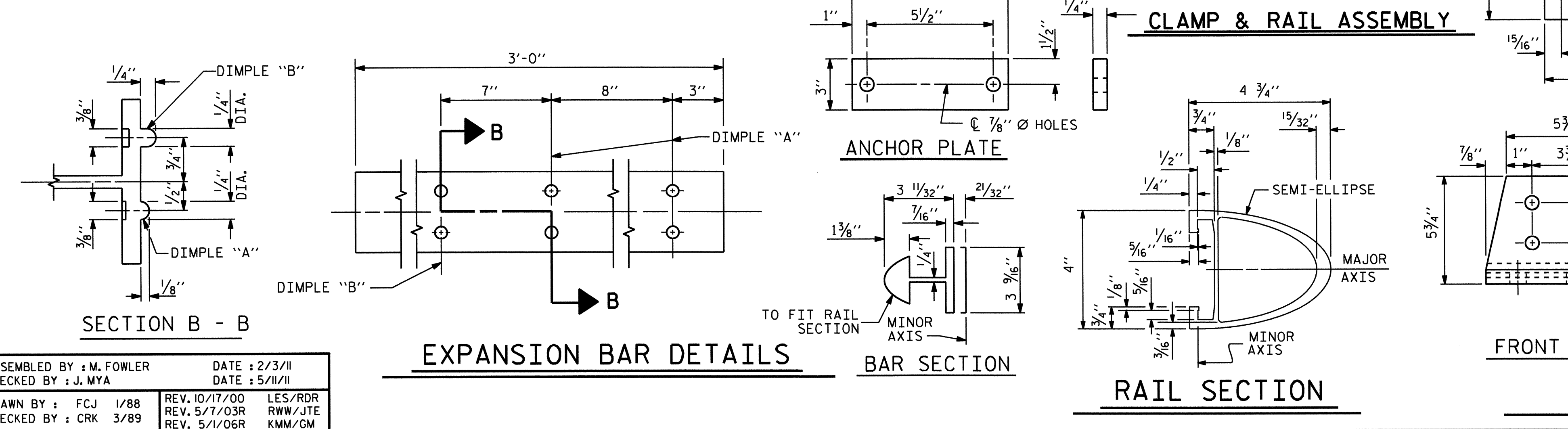
GALVANIZED STEEL RAILS
 MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:
 POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.
 RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.
 THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.
 SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.
 CLOSURE PLATES: CLOSURE PLATES SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.



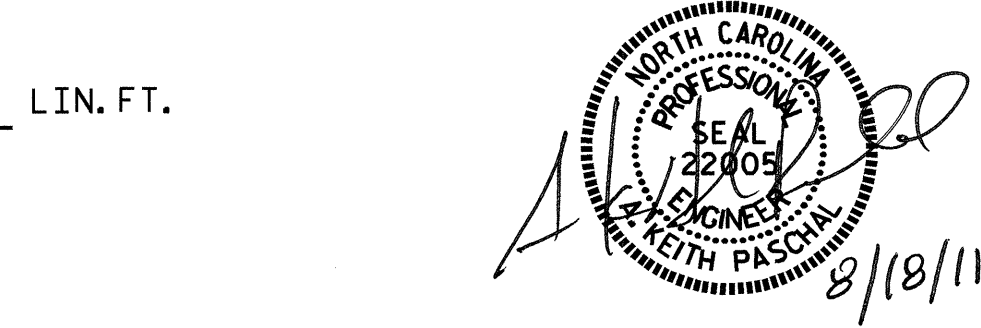
GENERAL NOTES
 RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.
 FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.
 MATERIAL FOR ANCHOR STUDS SHALL BE ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK, CLASS 2B THREAD, AND MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ANCHOR P SHALL BE AASHTO M270 GRADE 36.
 CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL.
 CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.
 METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.
 METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.



CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.
 TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST.
 SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.
 ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.
 MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.
 THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.
 WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS, NUTS AND WASHERS SHALL MEET THE SAME REQUIREMENTS AS THE ANCHOR STUDS, NUTS AND WASHERS FOR USE WITH THE ANCHOR ASSEMBLY.
 GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.



ASSEMBLED BY : M. FOWLER	DATE : 2/3/11
CHECKED BY : J. MYA	DATE : 5/11/11
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM

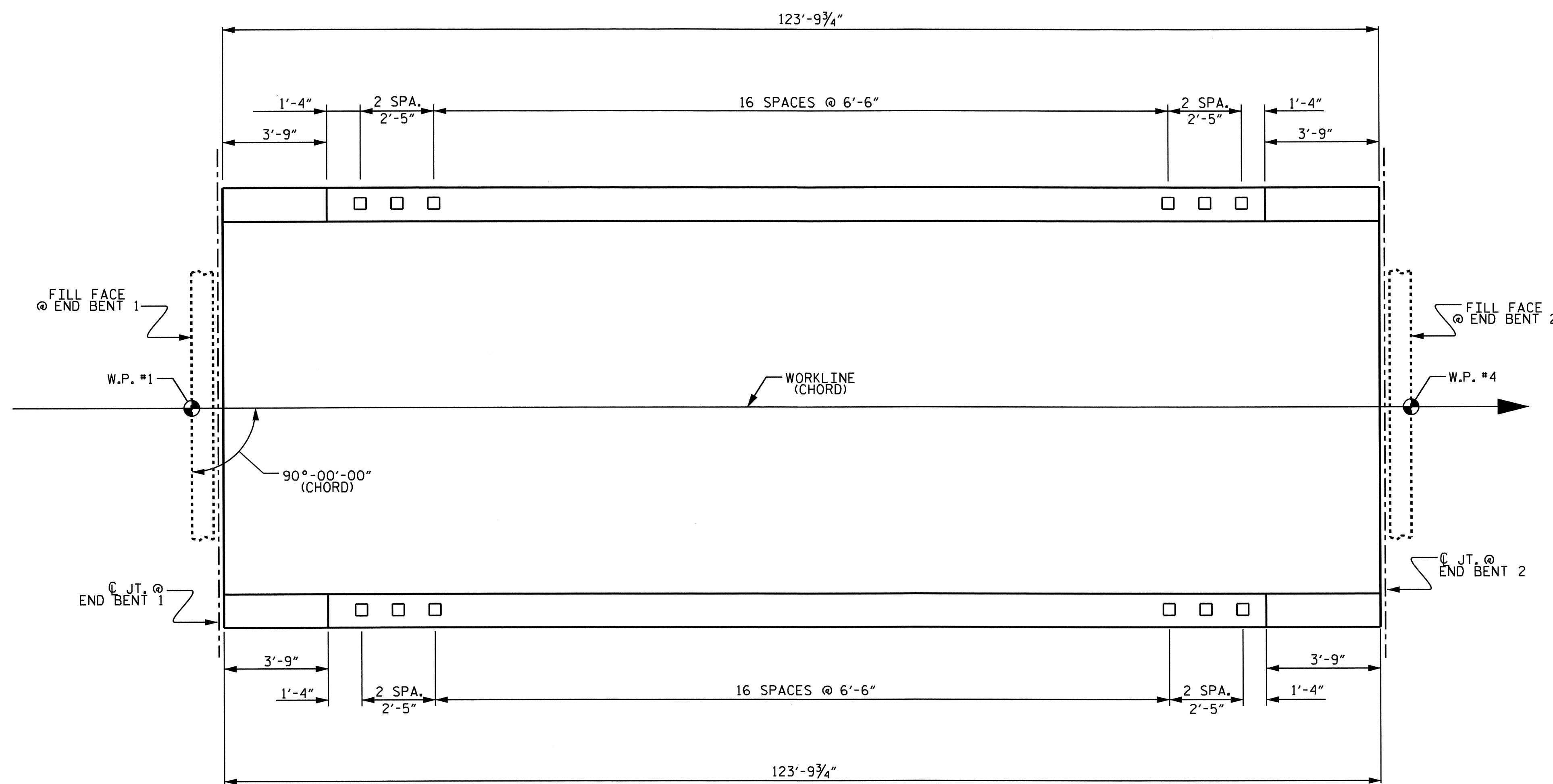


PAY LENGTH = 232.63 LIN. FT.
 PROJECT NO. B-4551
 HYDE COUNTY
 STATION: 22+60.00 -L-

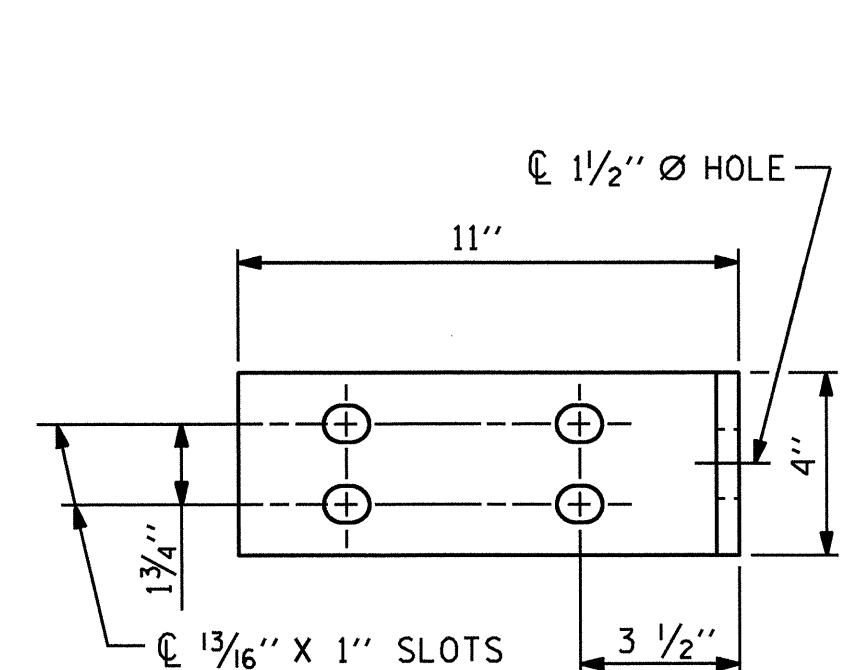
REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

STANDARD
1 BAR METAL RAIL

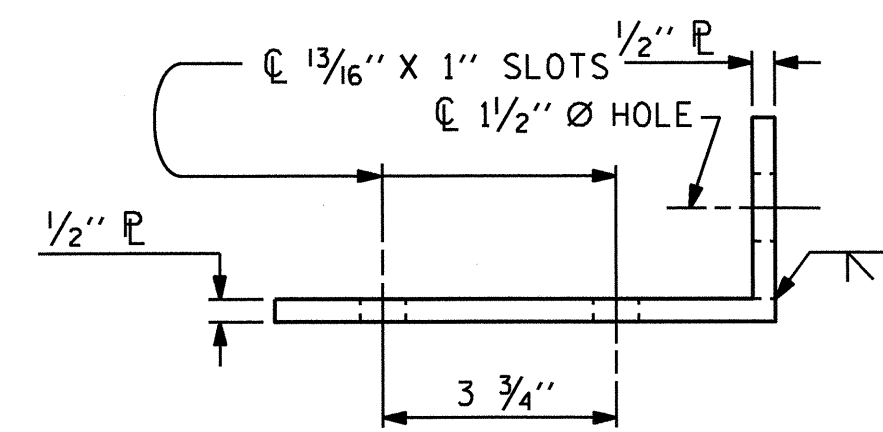
SHEET NO. S-15
 TOTAL SHEETS 30



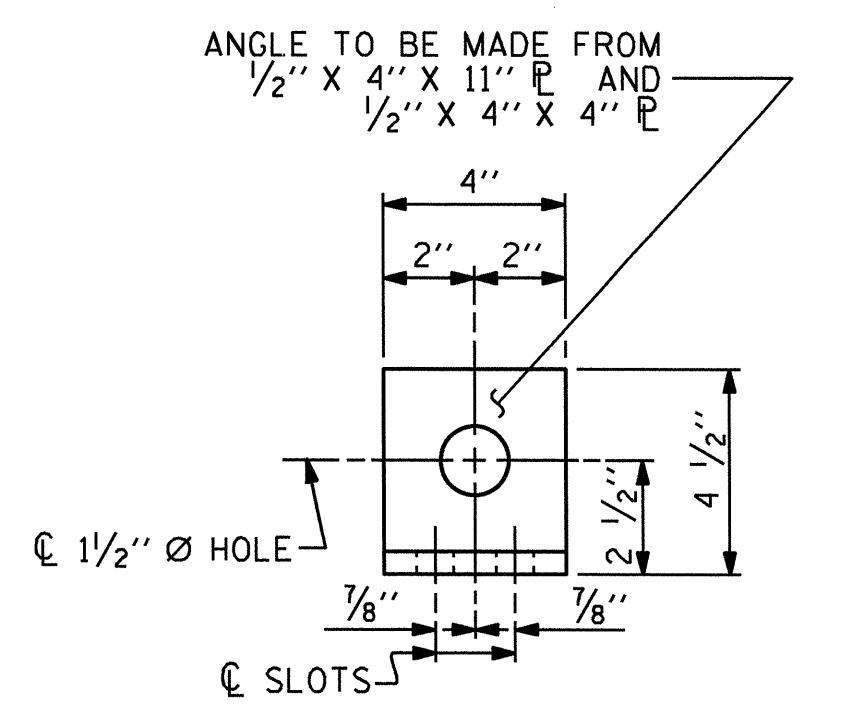
PLAN OF RAIL POST SPACINGS



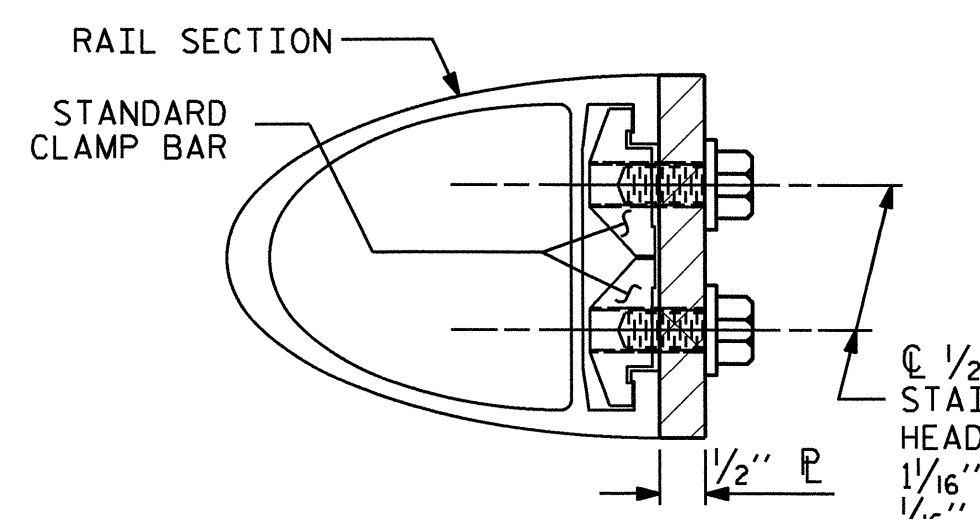
ELEVATION



TOP VIEW

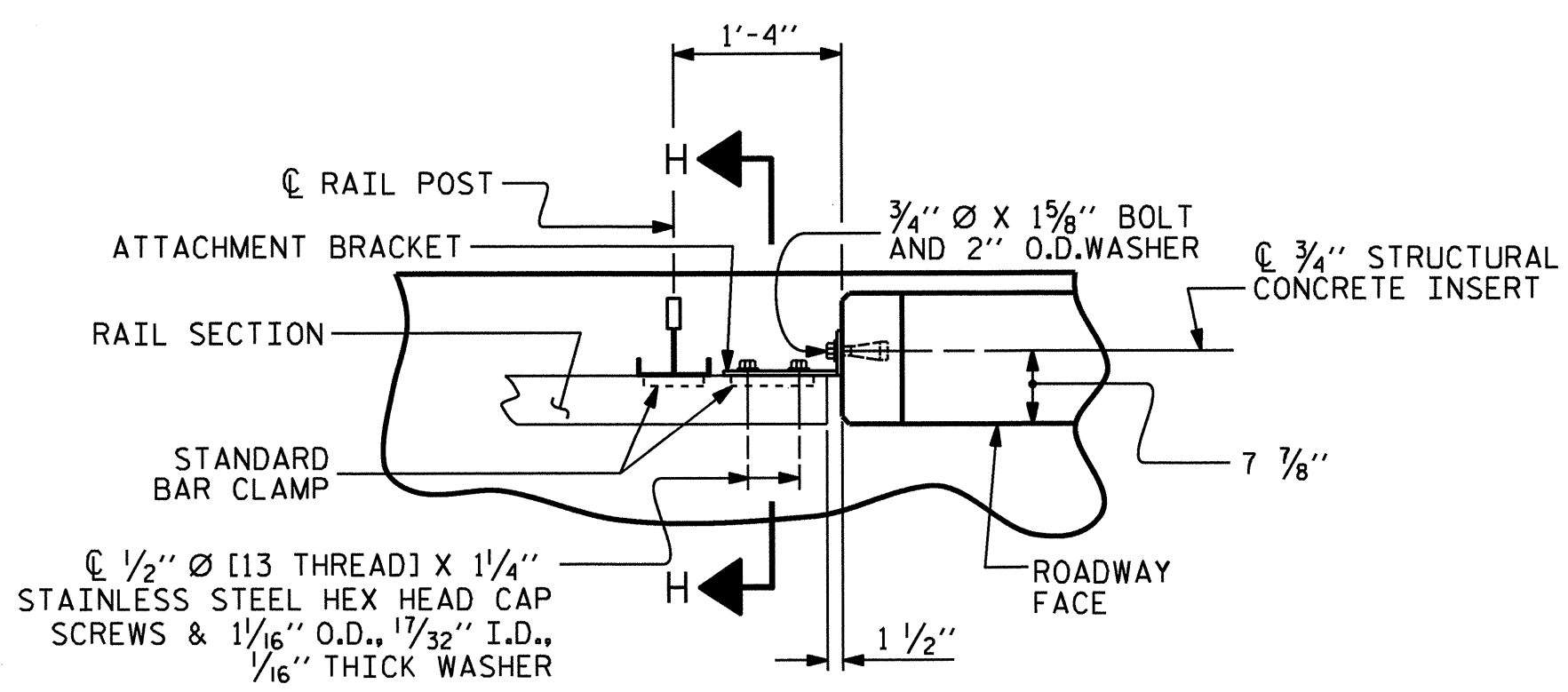


END VIEW (FIX AND EXP.)



SECTION H-H (FIX)

**FIXED
DETAILS FOR ATTACHING METAL RAIL TO END POST**



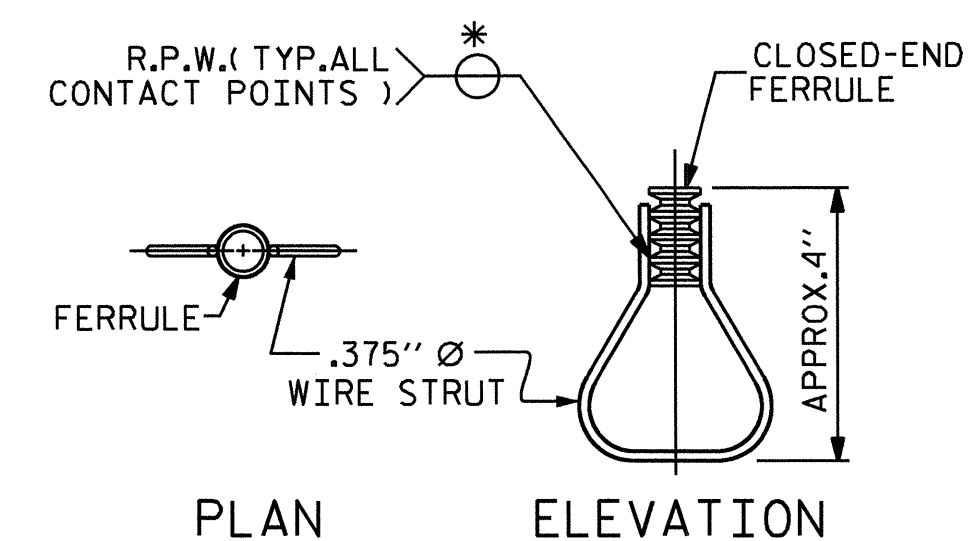
PLAN - RAIL AND END POST

NOTES

- STRUCTURAL CONCRETE INSERT**
- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

- METAL RAIL TO END POST CONNECTION**
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
 - CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.
- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.
- THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.
- THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD RAIL POST SPACINGS AND END OF RAIL DETAILS FOR ONE OR TWO BAR METAL RAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 30



ASSEMBLED BY : M. FOWLER	DATE : 2/3/10
CHECKED BY : J. MYA	DATE : 5/11/11
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

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

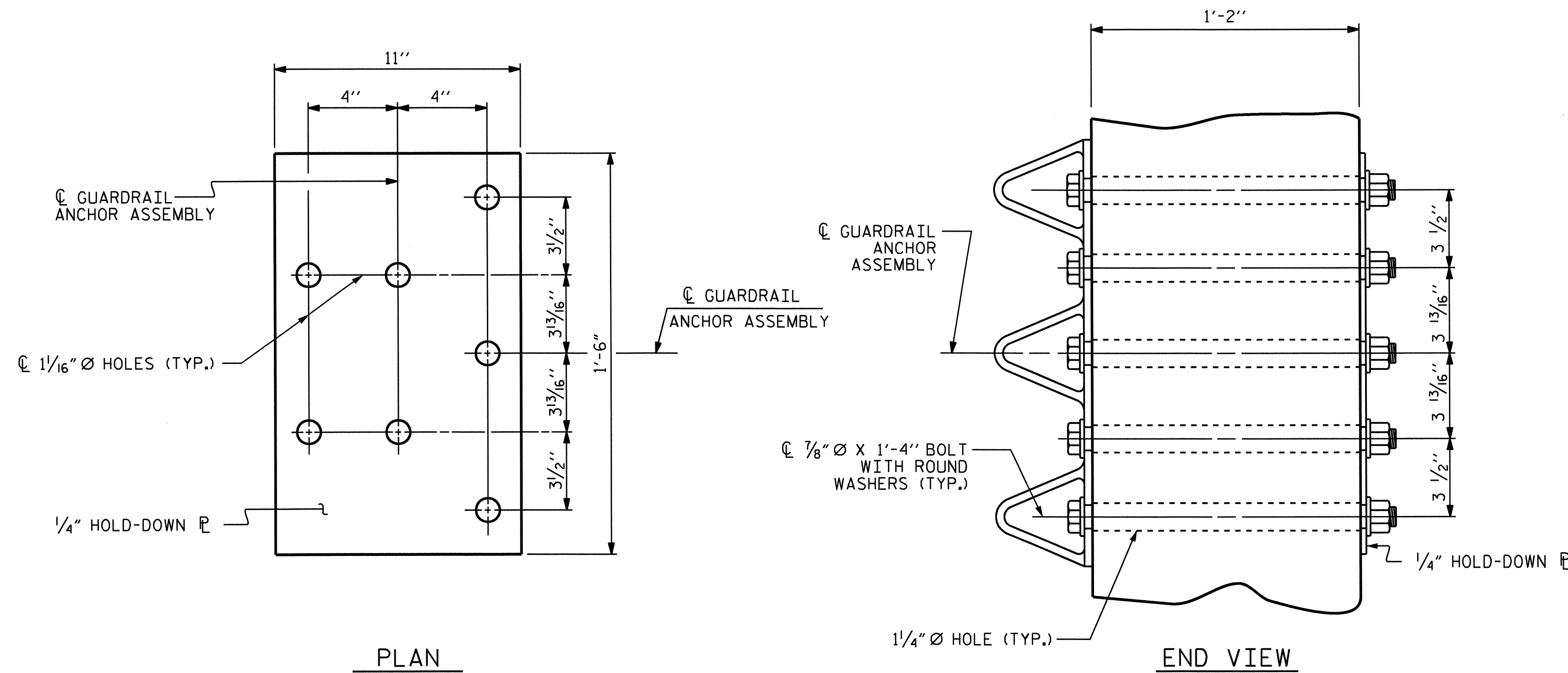
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

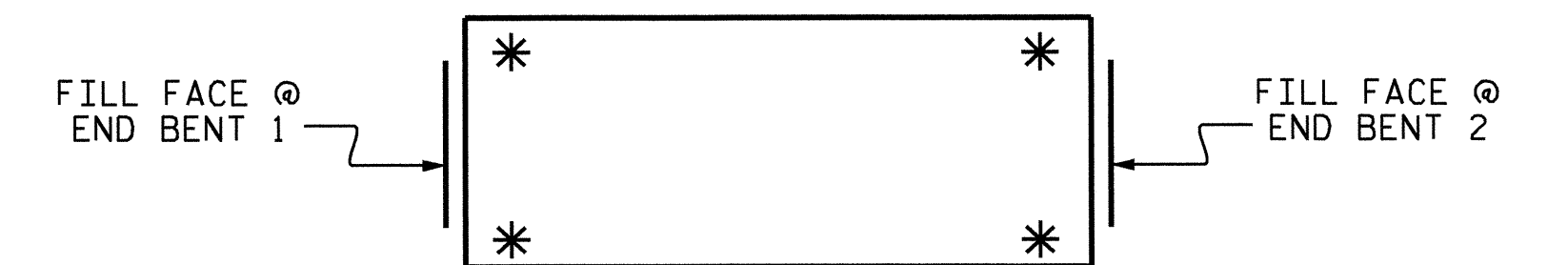
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST 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.

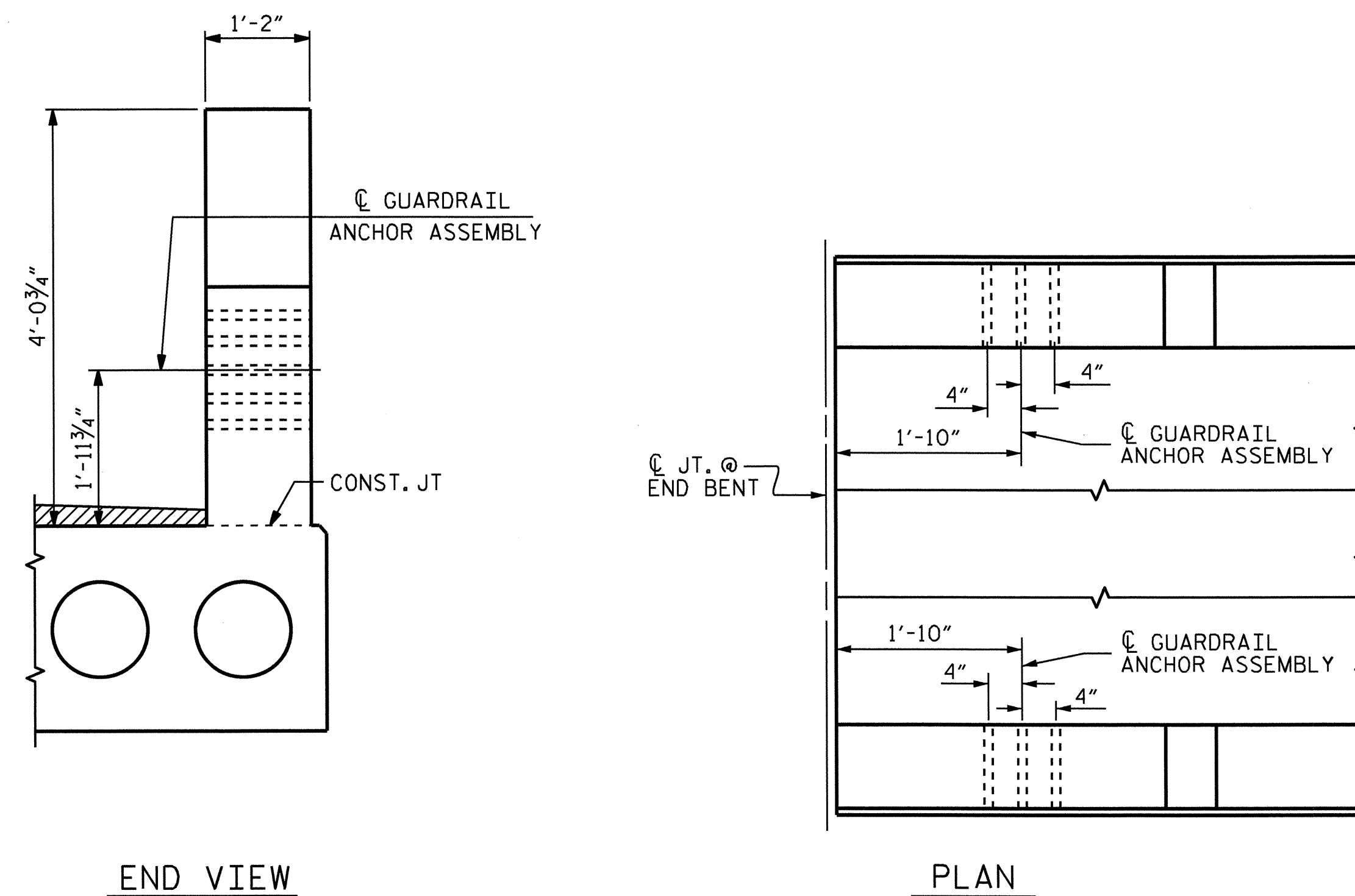


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

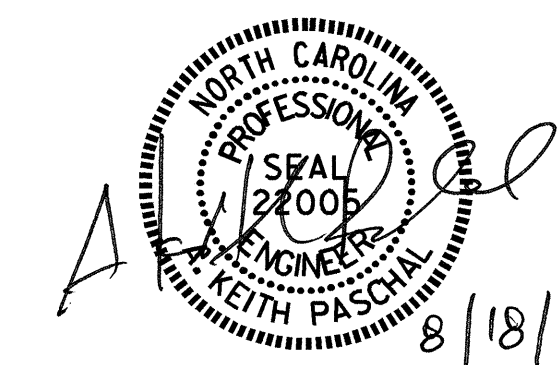
* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

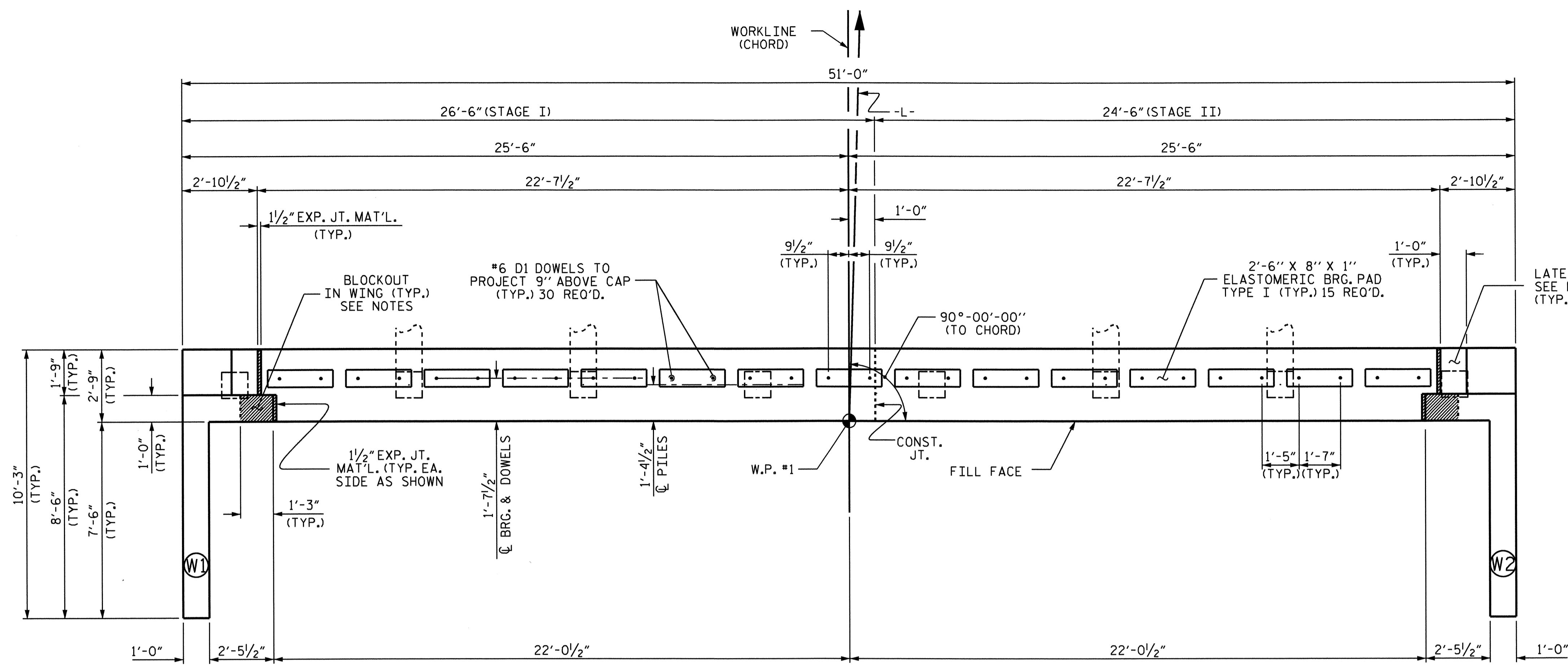
PROJECT NO. B-4551
 HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-17
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS						TOTAL SHEETS 30
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : M. FOWLER	DATE : 2/3/10
CHECKED BY : J. MYA	DATE : 2/24/10
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	



PLAN

NOTES

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

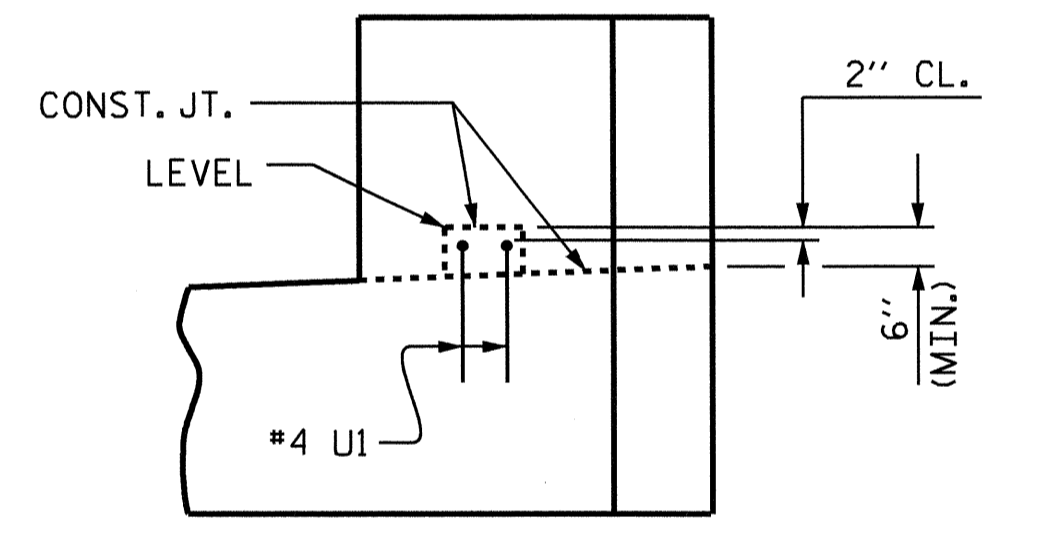
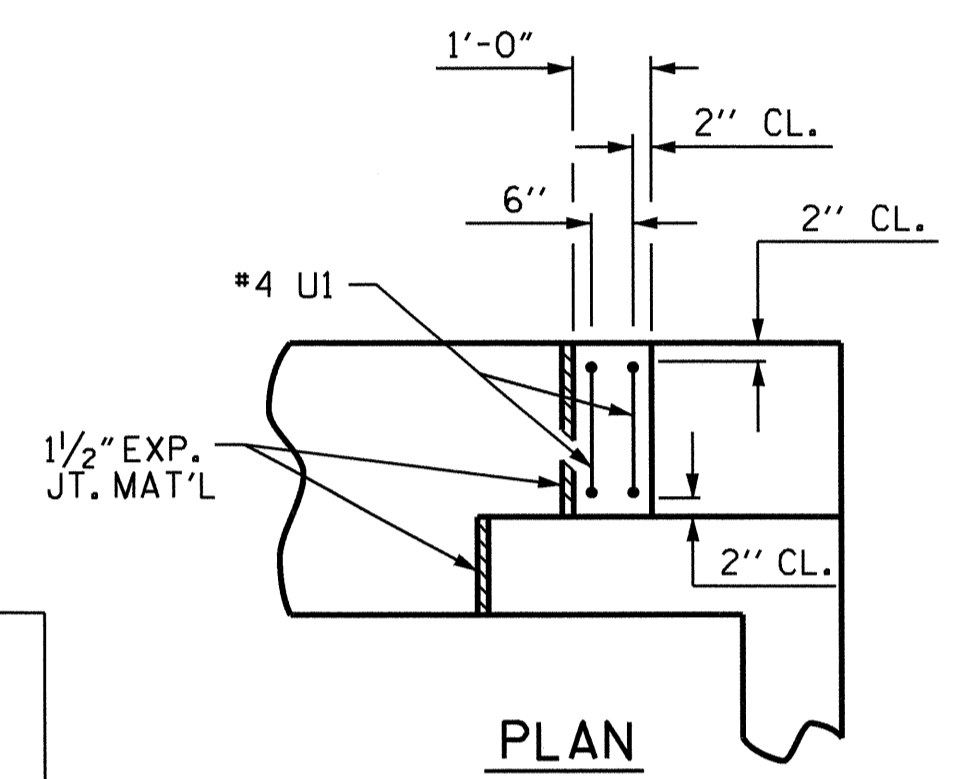
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

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.

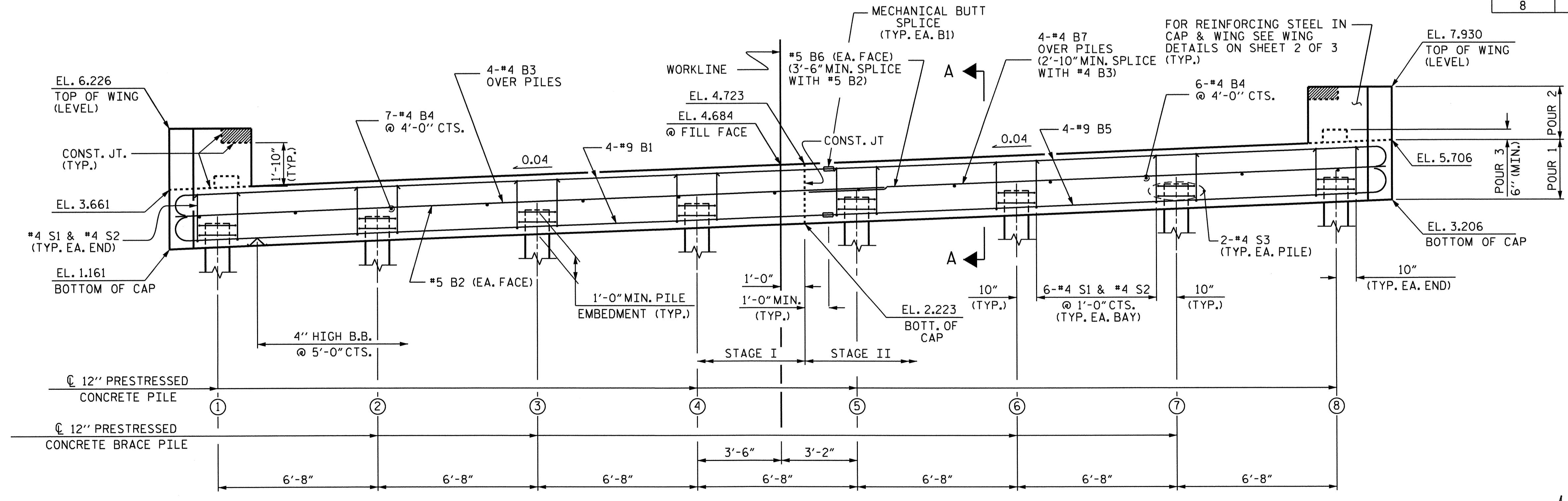
THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDES IF APPROVED BY THE ENGINEER.

TOP OF PILE ELEVATIONS	
PILE NUMBER	ELEVATION
1	2.241
2	2.509
3	2.776
4	3.043
5	3.310
6	3.578
7	3.845
8	4.112



ELEVATION

LATERAL GUIDE DETAIL
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



ELEVATION

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

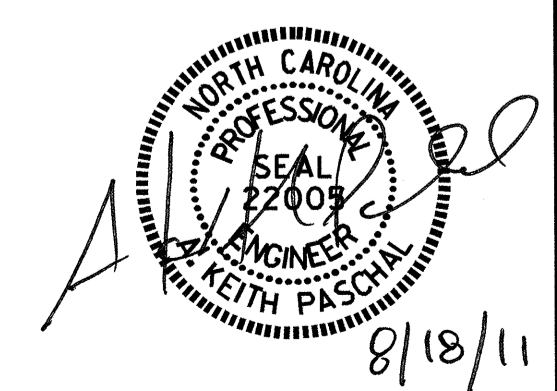
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1
 (STAGE I AND II)

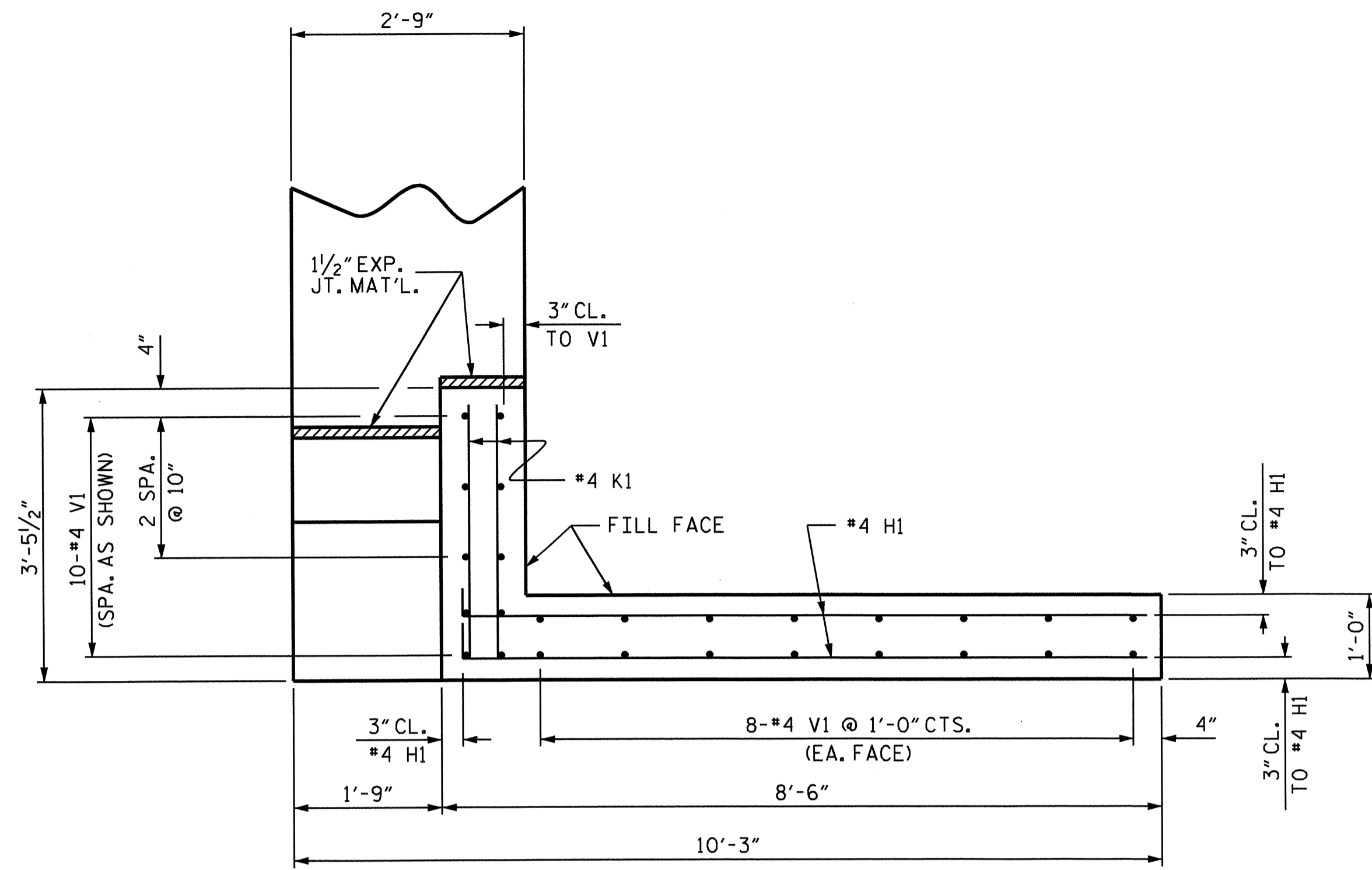
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. **S-18**
 TOTAL SHEETS **30**

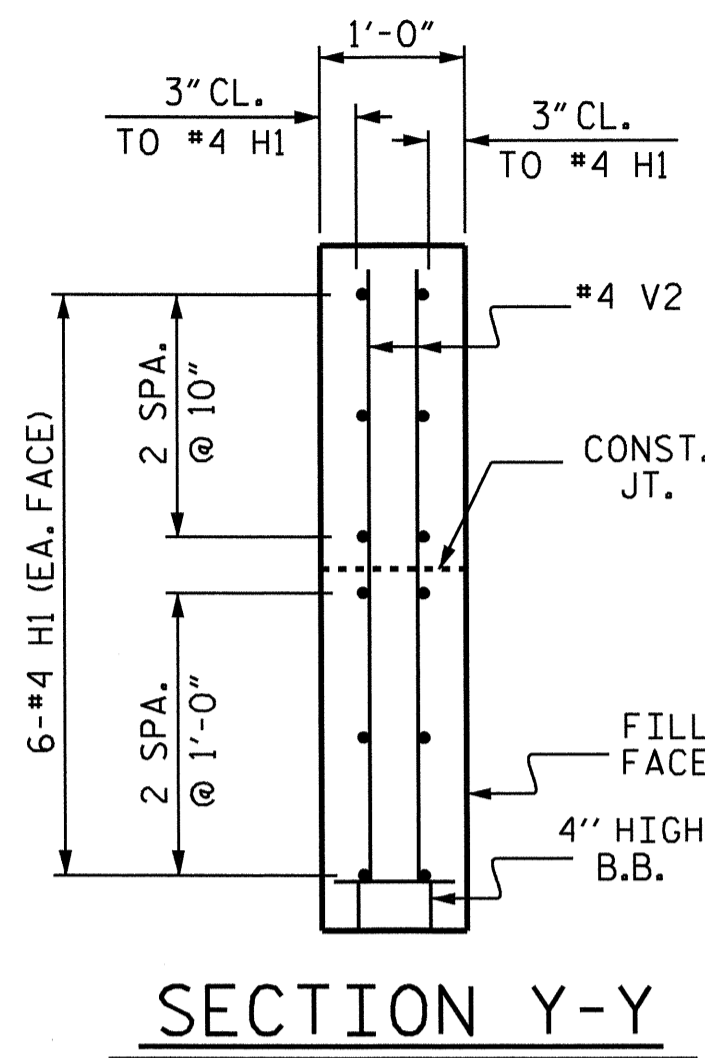


DRAWN BY: M. FOWLER DATE: 2/10/10
 CHECKED BY: J. MYA DATE: 4/15/11

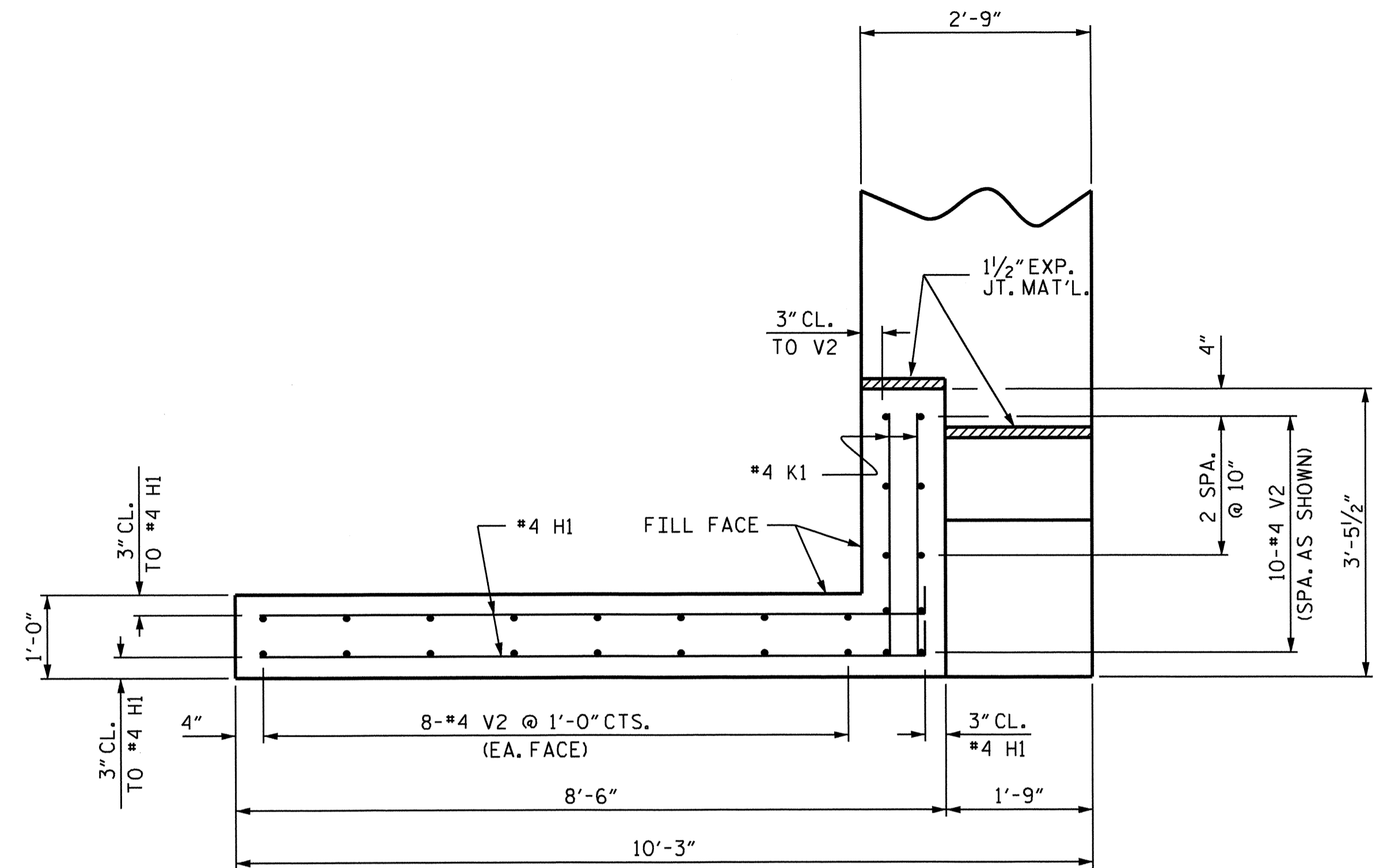
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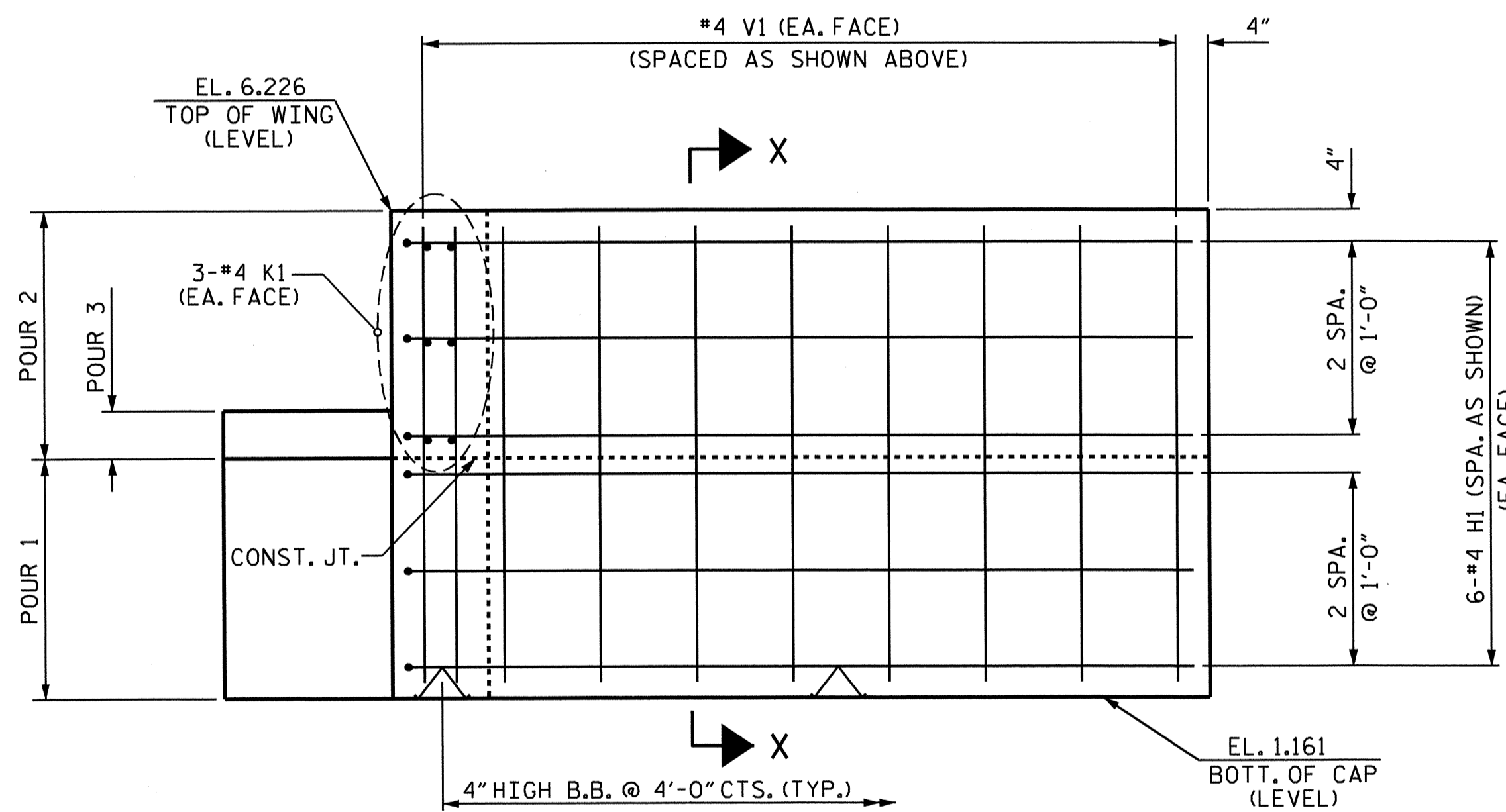
PLAN OF WING - W1
(STAGE I)



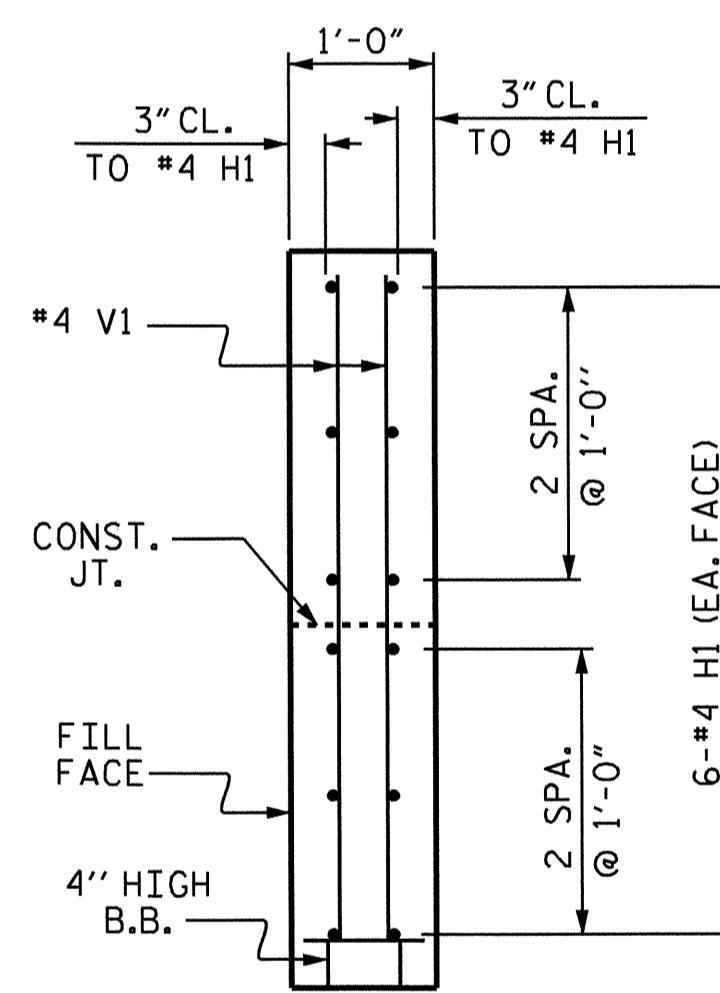
SECTION Y-Y



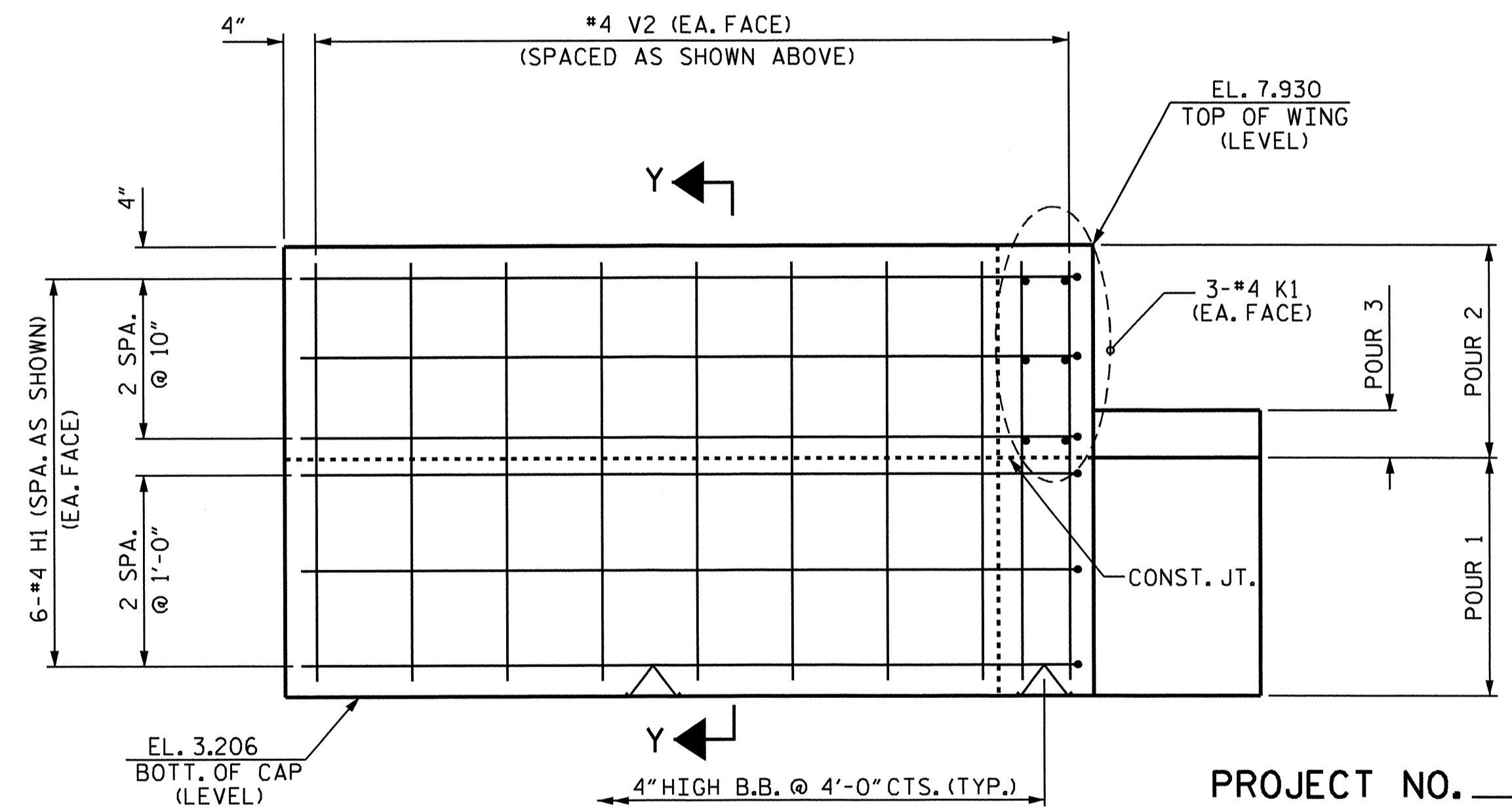
PLAN OF WING - W2
(STAGE II)



ELEVATION OF WING W1
(STAGE I)



SECTION X-X



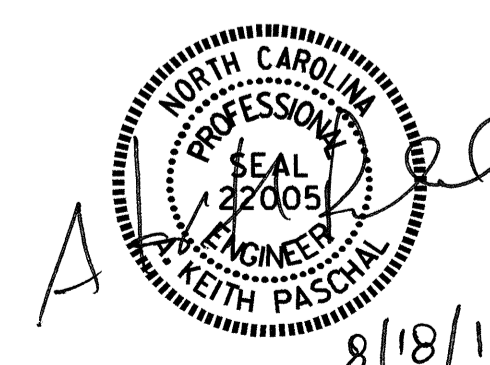
ELEVATION OF WING W2
(STAGE II)

PROJECT NO. B-4551
HYDE COUNTY
STATION: 22+60.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

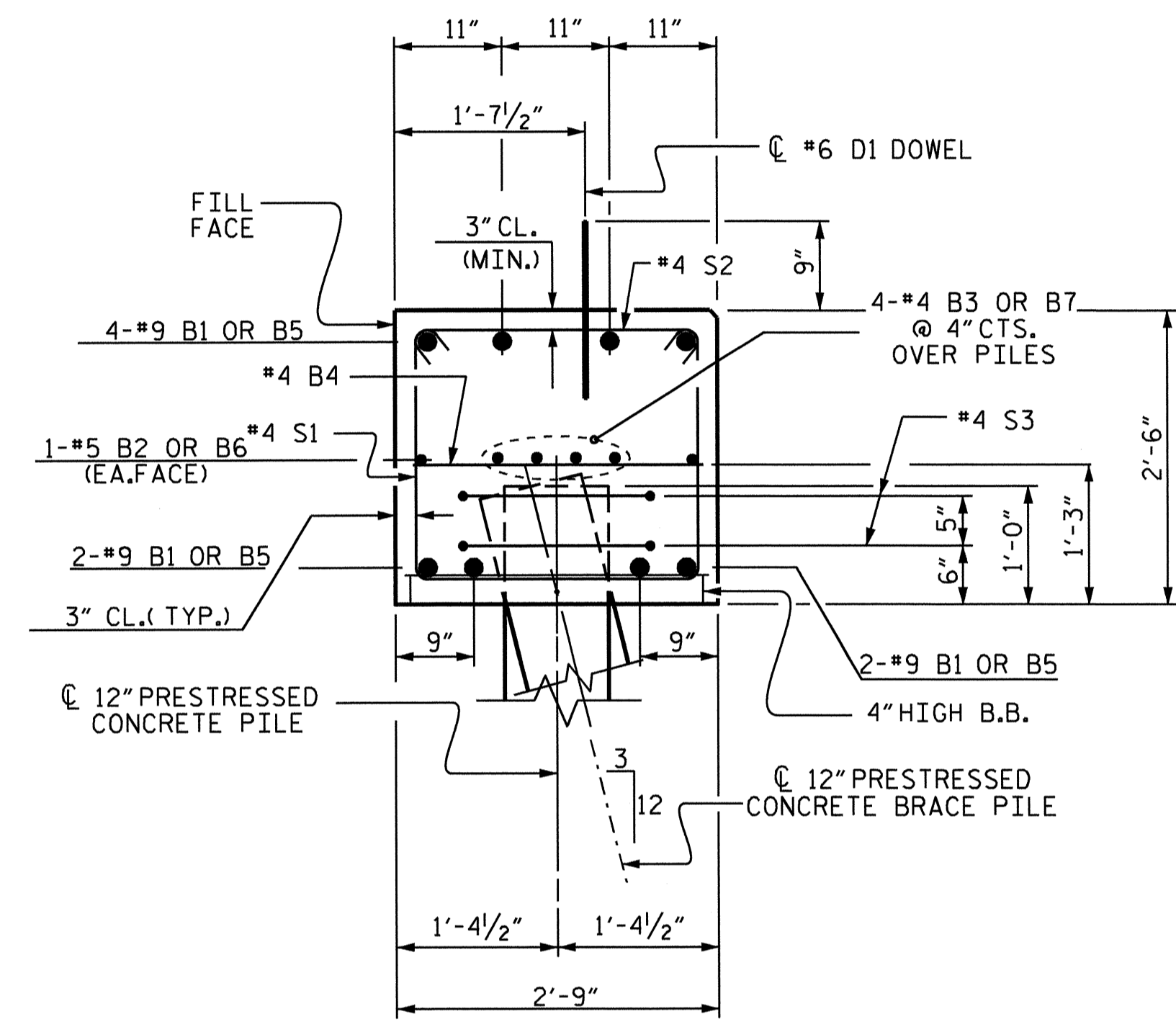
SUBSTRUCTURE
END BENT 1
(STAGE I AND II)



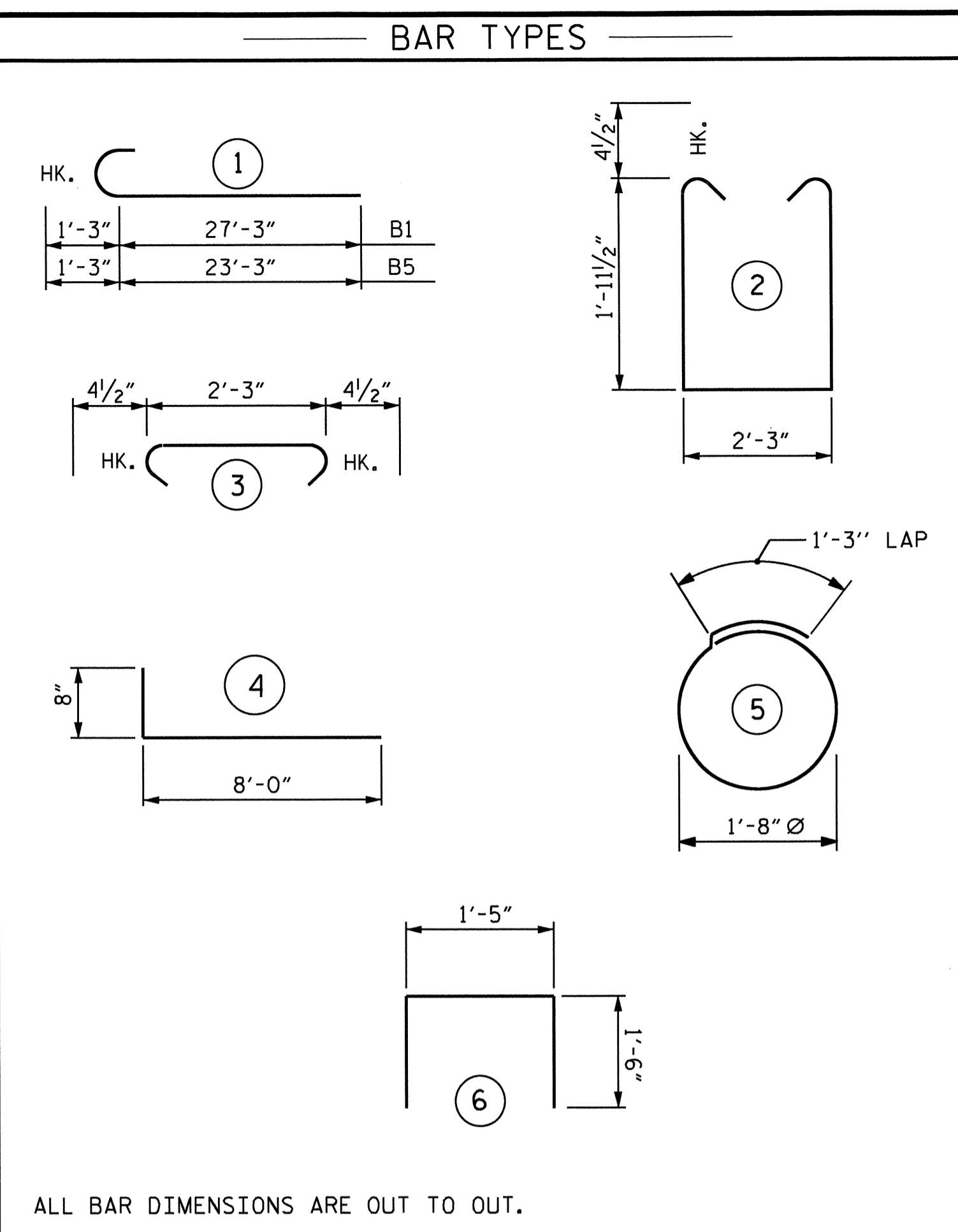
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
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2			4				



SECTION A-A

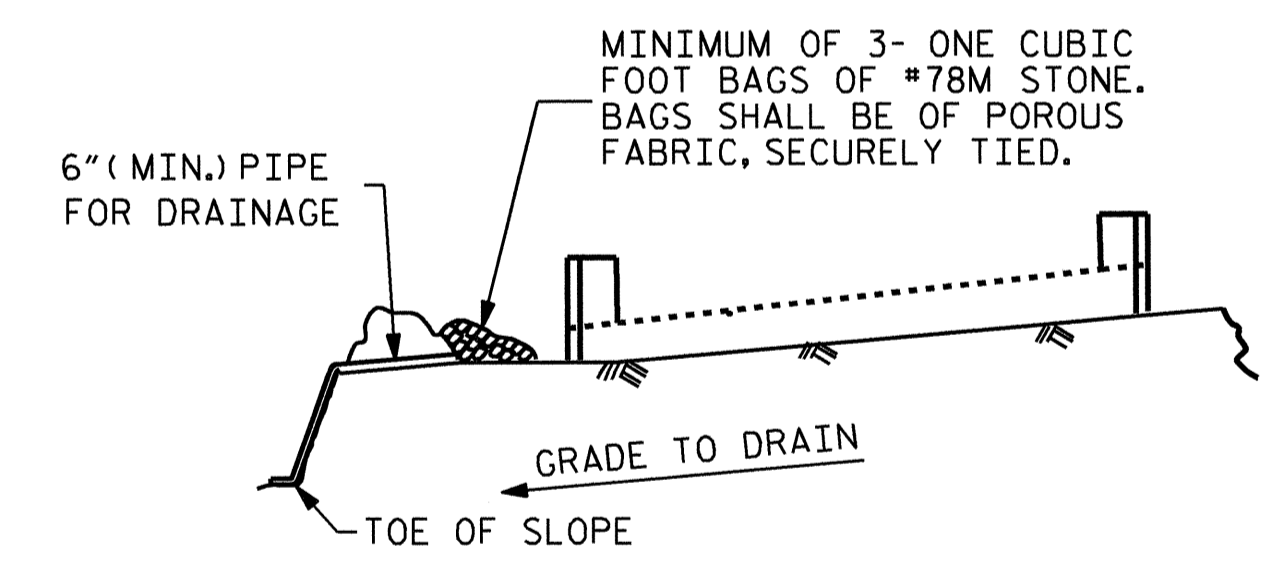


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL END BENT 1											
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	8	#9	1	28'-6"	775	*B4	6	#4	STR	2'-3"	9
*B2	2	#5	STR	29'-11"	62	*B5	8	#9	1	24'-5"	664
*B3	4	#4	STR	29'-3"	78	*B6	2	#5	STR	24'-1"	50
*B4	7	#4	STR	2'-3"	11	*B7	4	#4	STR	24'-1"	64
*D1	16	#6	STR	1'-6"	36	*D1	14	#6	STR	1'-6"	32
*H1	12	#4	4	8'-8"	69	*H1	12	#4	4	8'-8"	69
*K1	6	#4	STR	2'-11"	12	*K1	6	#4	STR	2'-11"	12
*S1	23	#4	2	6'-11"	106	*S1	21	#4	2	6'-11"	97
*S2	23	#4	3	3'-0"	46	*S2	21	#4	3	3'-0"	42
*S3	8	#4	5	6'-6"	35	*S3	8	#4	5	6'-6"	35
*U1	2	#4	6	4'-5"	6	*U1	2	#4	6	4'-5"	6
*V1	26	#4	STR	4'-6"	78	*V2	26	#4	STR	4'-3"	74
* EPOXY COATED REINFORCING STEEL LBS. 1314						* EPOXY COATED REINFORCING STEEL LBS. 1154					
CLASS AA CONCRETE BREAKDOWN						CLASS AA CONCRETE BREAKDOWN					
POUR 1 (CAP, & LOWER PART OF WING) ▲ 7.3 CU. YD.						POUR 1 (CAP, & LOWER PART OF WING) ▲ 6.8 CU. YD.					
POUR 2 UPPER PART OF WING 1.0 CU. YD.						POUR 2 UPPER PART OF WING 0.9 CU. YD.					
POUR 3 LATERAL GUIDE 0.1 CU. YD.						POUR 3 LATERAL GUIDE 0.1 CU. YD.					
TOTAL 8.4 CU. YD.						TOTAL 7.8 CU. YD.					
12" PRESTRESSED CONCRETE PILES No: 4 120 LIN.FT.						12" PRESTRESSED CONCRETE PILES No: 4 120					

TOTAL BILL OF MATERIAL	
* EPOXY COATED REINFORCING STEEL	= 2468 LBS.
CLASS AA CONCRETE TOTAL	= 16.2 CY.
12" PRESTRESSED CONCRETE PILES No: 8	= 240 LIN.FT.

▲ CONCRETE DISPLACED BY THE 12" CONCRETE PILES HAS BEEN DEDUCTED.



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

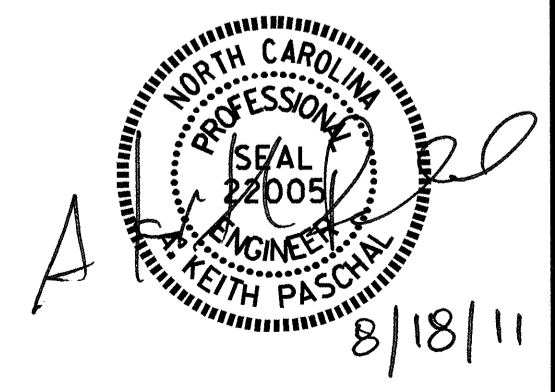
PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1
 (STAGE I AND II)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS	30
2			4				



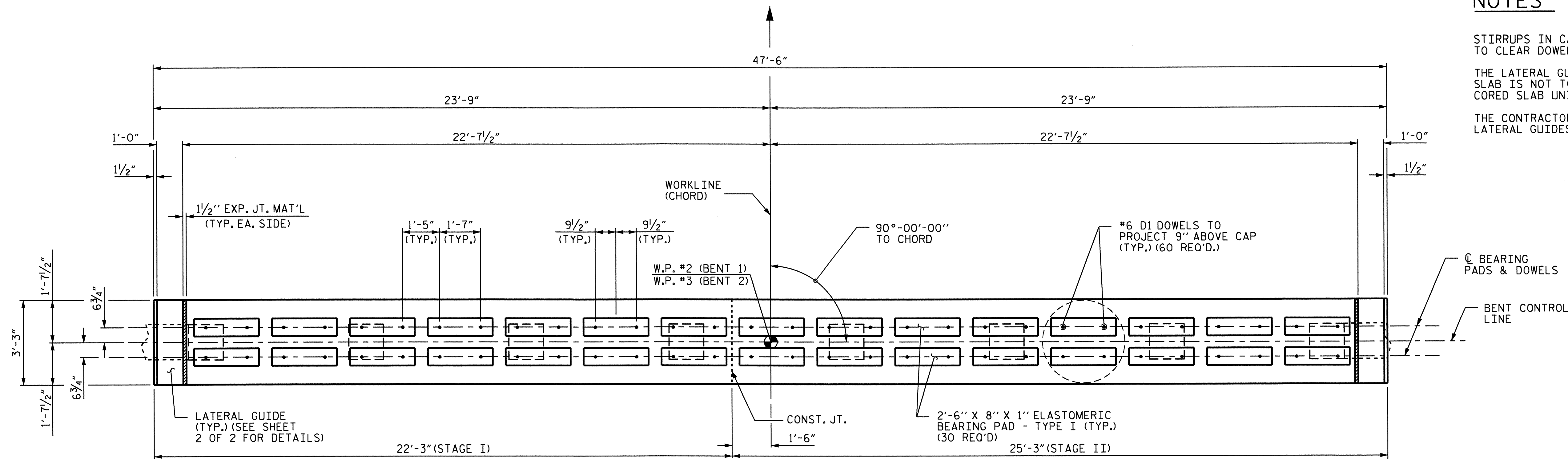
DRAWN BY: M.FOWLER DATE: 2/10/10
 CHECKED BY: J. MYA DATE: 4/15/11

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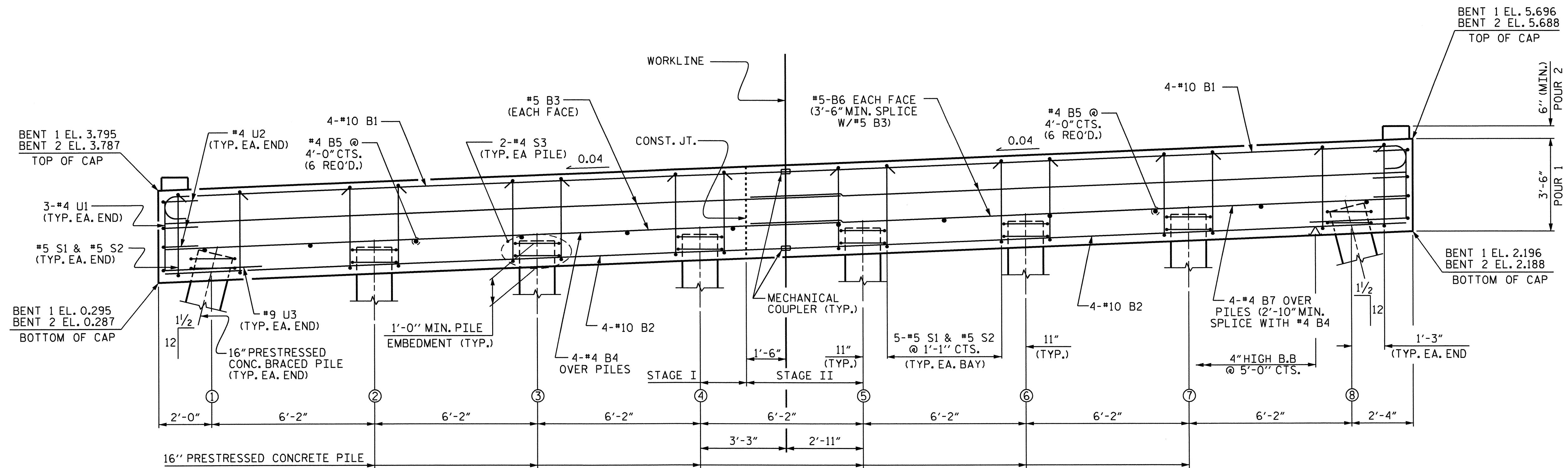
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE LATERAL GUIDE AT EACH END OF THE CORED SLAB IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDES IF APPROVED BY THE ENGINEER.



PLAN



ELEVATION

TOP OF PILE ELEVATIONS		
PILE	ELEVATION BENT 1	ELEVATION BENT 2
1	1.375	1.367
2	1.622	1.614
3	1.869	1.861
4	2.115	2.107
5	2.362	2.354
6	2.609	2.601
7	2.856	2.848
8	3.103	3.095

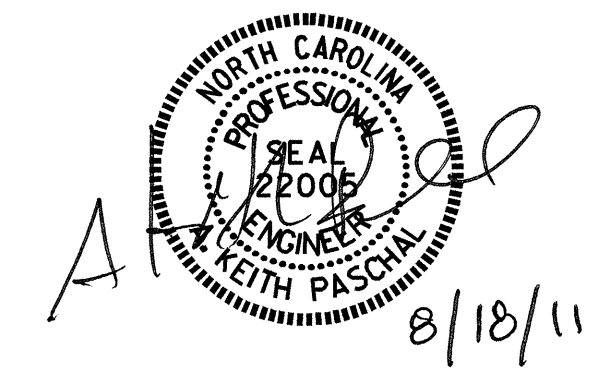
PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

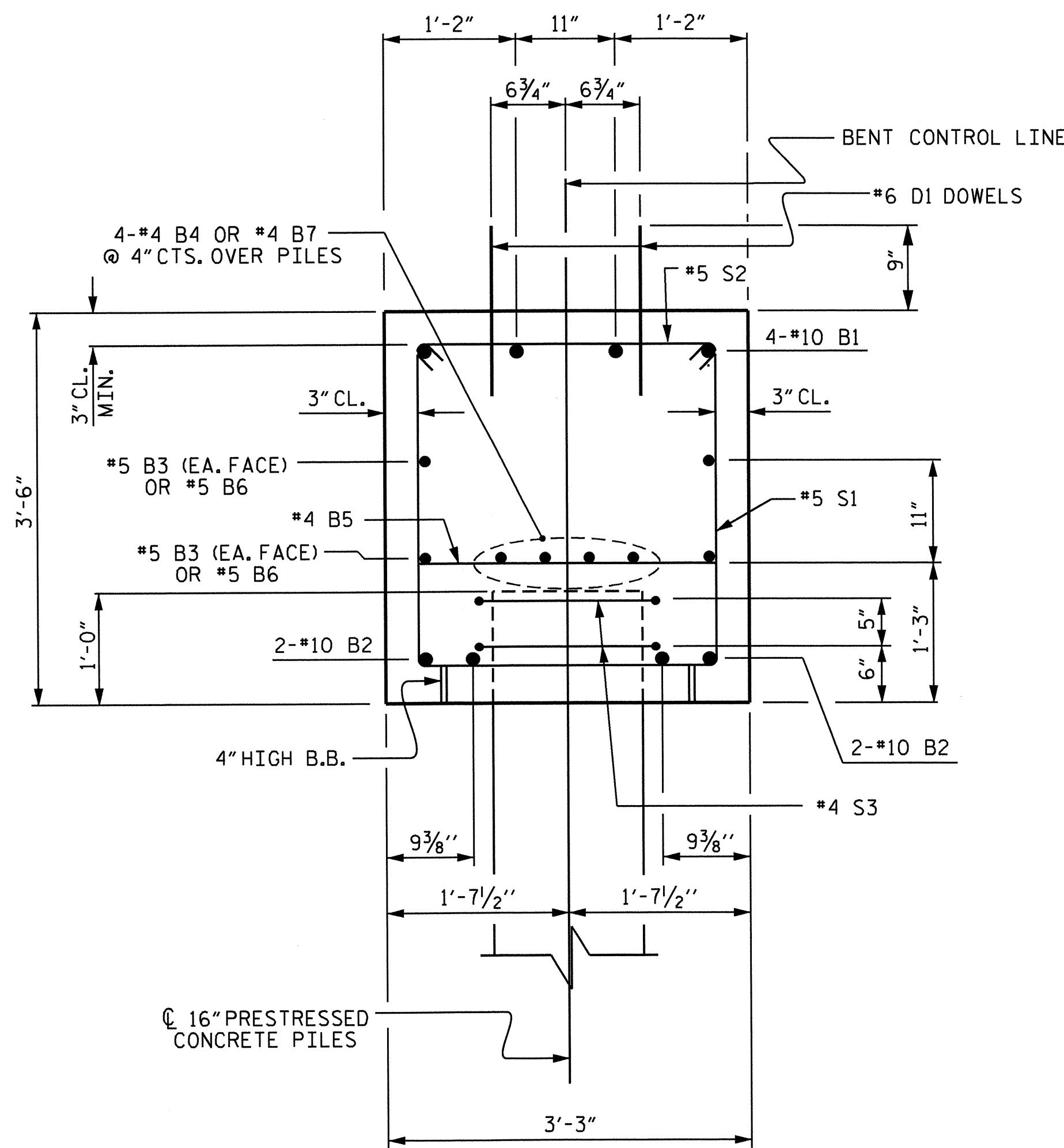
**SUBSTRUCTURE
 BENTS 1 & 2**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
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2			4			30

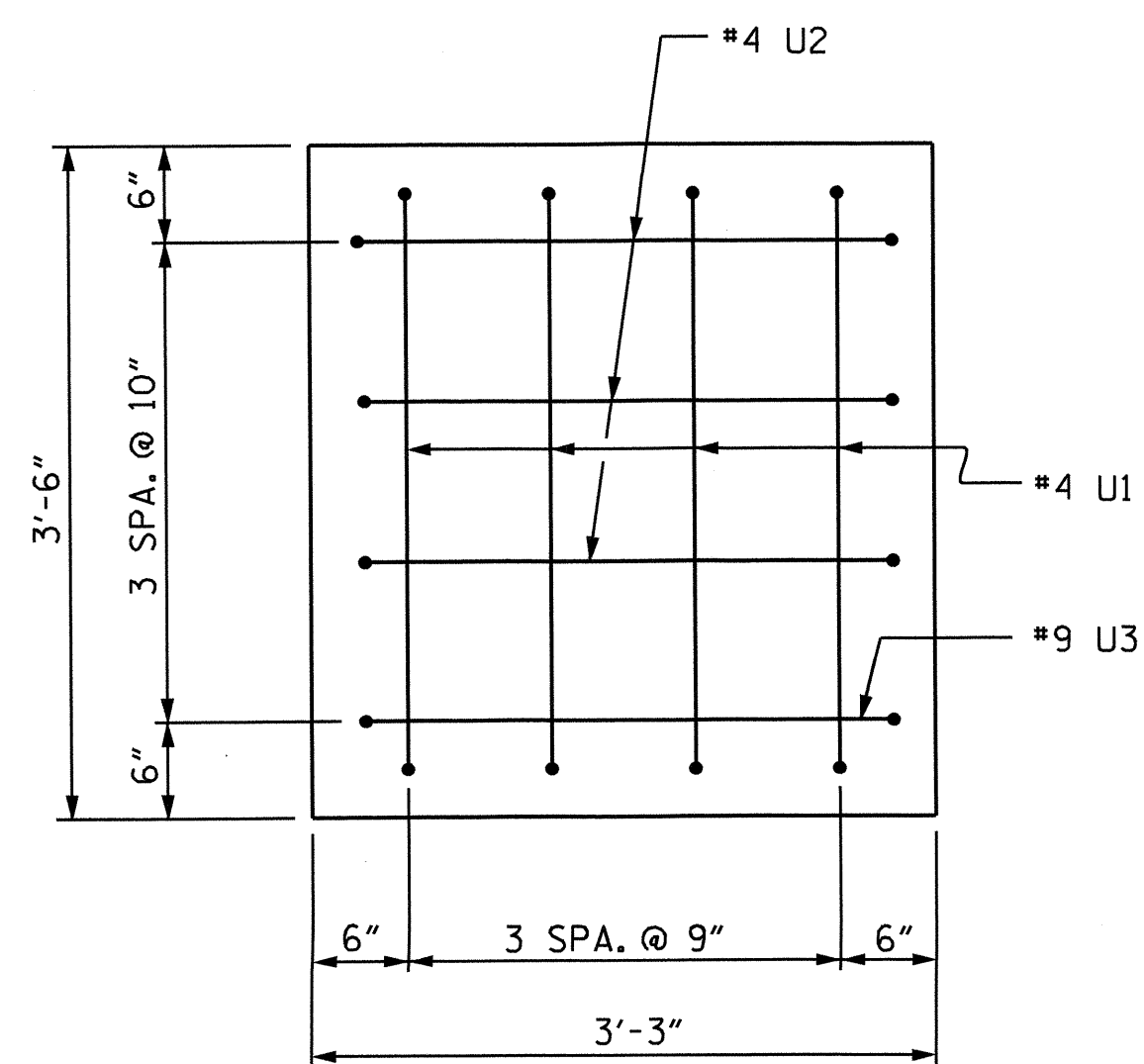


DRAWN BY: M. E. FOWLER DATE: 3/3/10
 CHECKED BY: J. D. HAWK DATE: 3/24/11

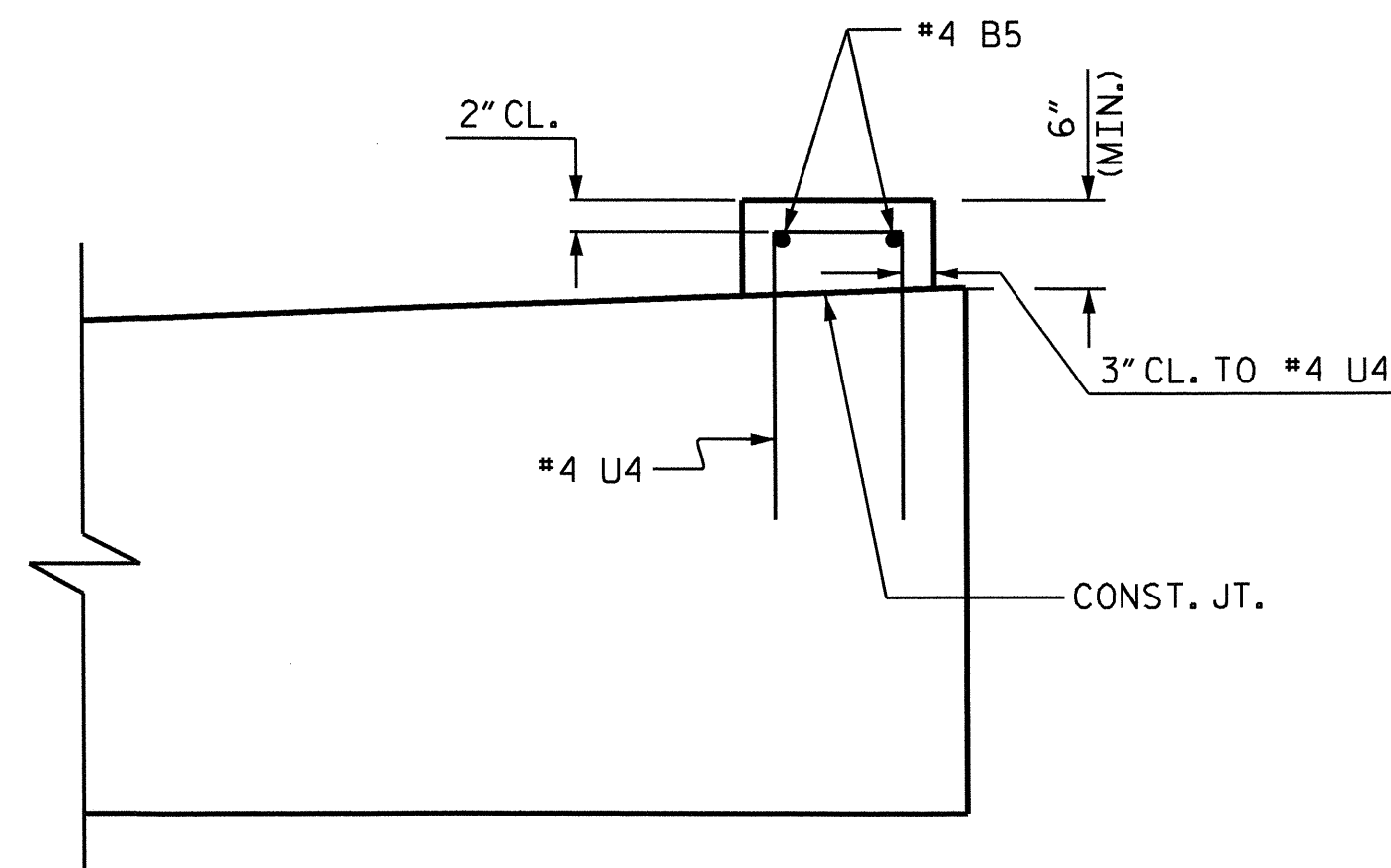
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 kpaschal



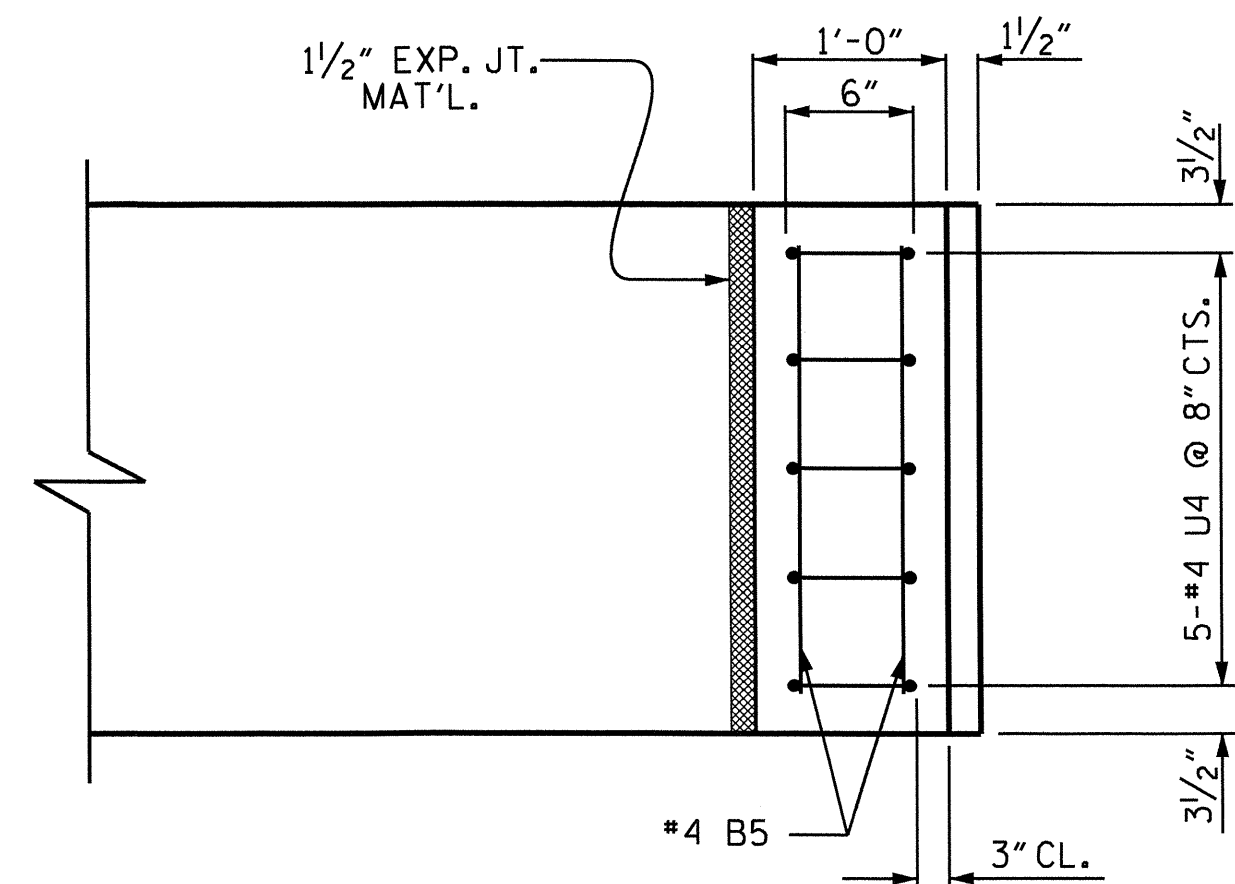
SECTION THRU CAP



END VIEW
(TYP. EA. END)



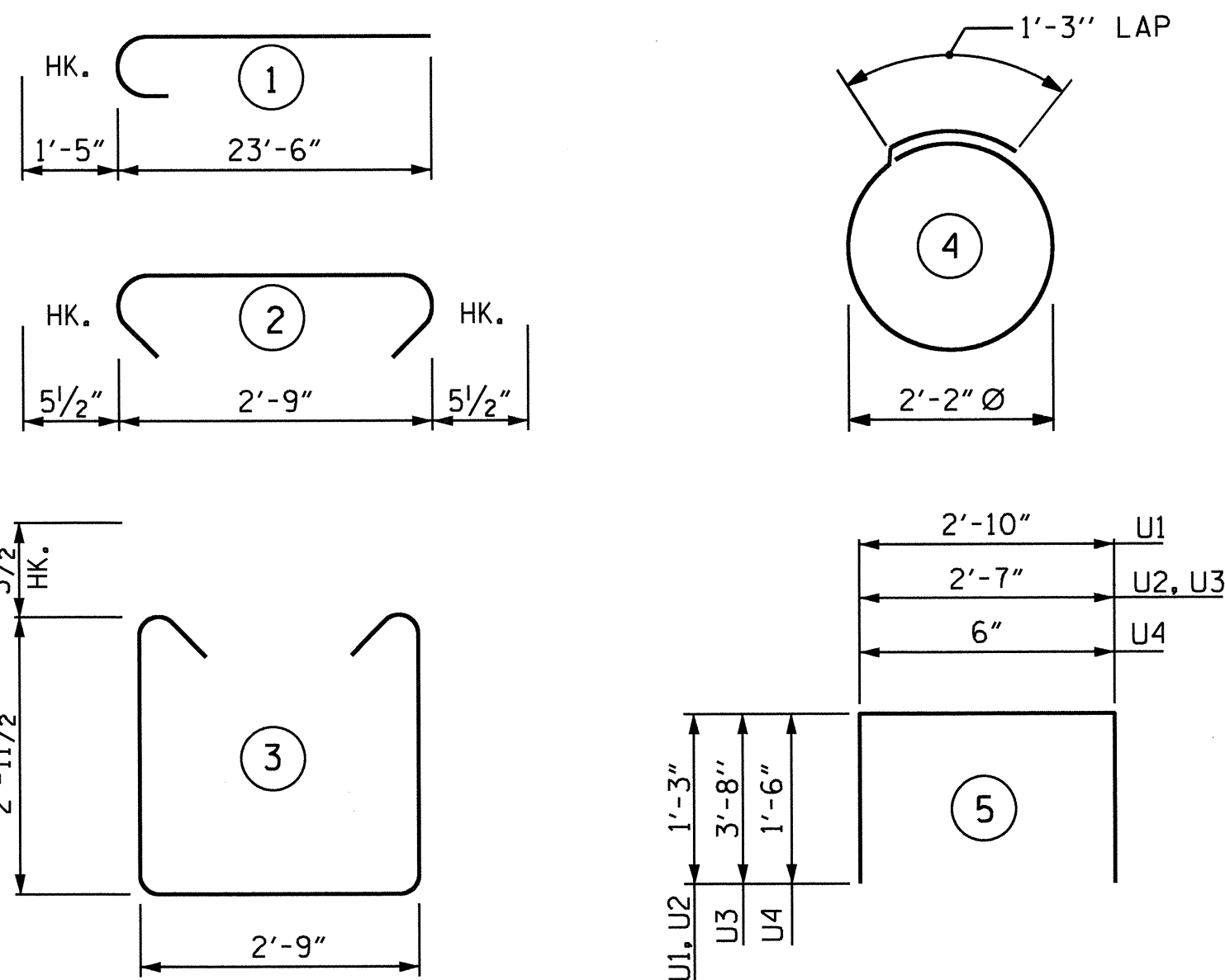
ELEVATION



PLAN

LATERAL GUIDE DETAIL
(EACH END SIMILAR)

BAR TYPES



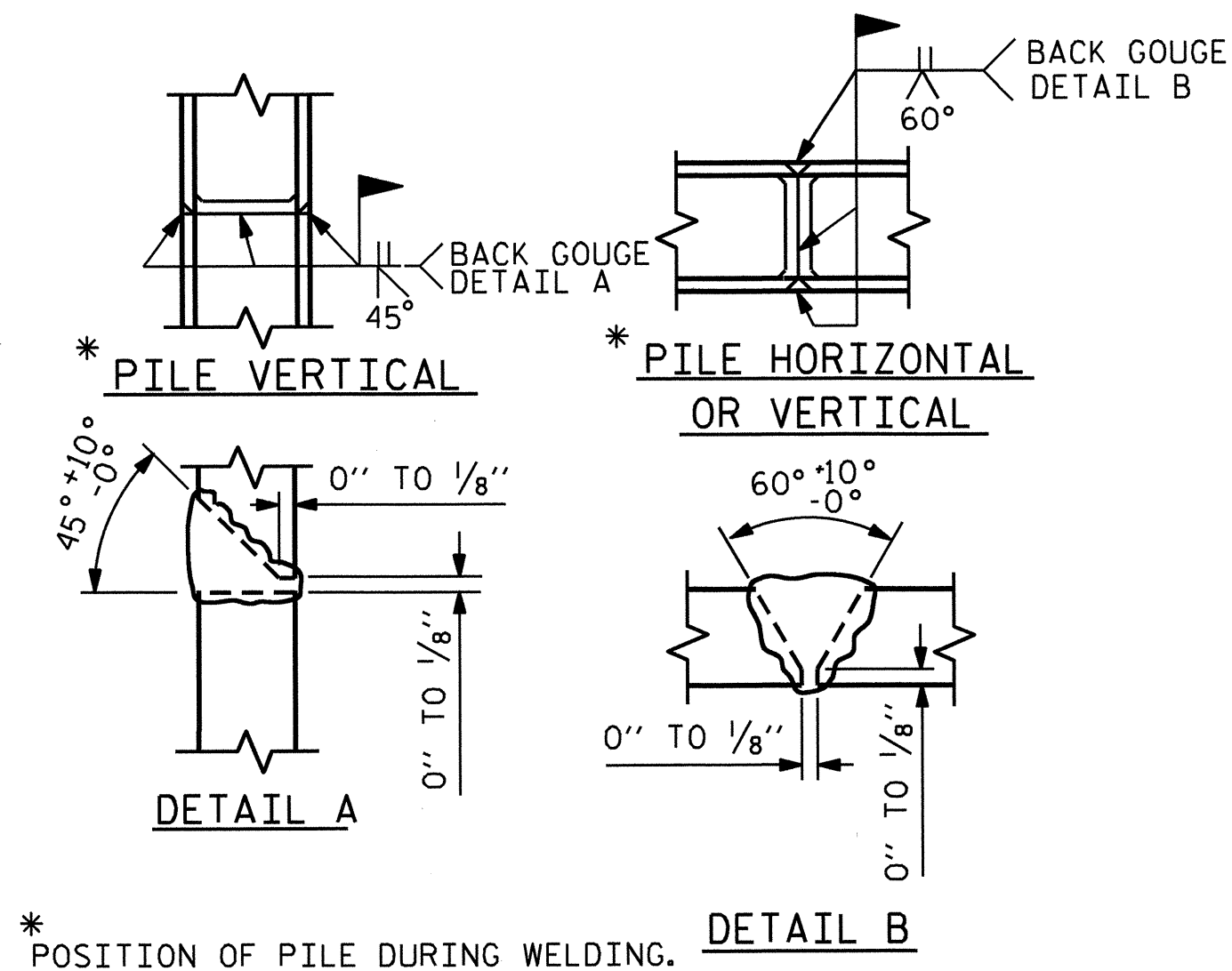
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL STAGE I FOR 1 BENT (2 REQ'D.)						BILL OF MATERIAL STAGE II FOR 1 BENT (2 REQ'D.)						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B1	4	#10		24'-11"	429	*B1	4	#10		24'-11"	429	
*B2	4	#10	STR	23'-6"	404	*B2	4	#10	STR	23'-6"	404	
*B3	4	#5	STR	25'-8"	107	*B5	8	#5	STR	2'-9"	15	
*B4	4	#4	STR	25'-0"	67	*B6	4	#5	STR	24'-10"	104	
*B5	8	#4	STR	2'-9"	15	*B7	4	#4	STR	24'-10"	66	
*D1	28	#6	STR	1'-6"	63	*D1	32	#6	STR	1'-6"	72	
*S1	17	#5		3	9'-7"	170	*S1	20	#5	3	9'-7"	200
*S2	17	#5	2	3'-8"	65	*S2	20	#5	2	3'-8"	76	
*S3	8	#4	4	8'-1"	43	*S3	8	#4	4	8'-1"	43	
*U1	4	#4	5	5'-4"	14	*U1	4	#4	5	5'-4"	14	
*U2	3	#4	5	5'-1"	10	*U2	3	#4	5	5'-1"	10	
*U3	1	#9	5	9'-11"	34	*U3	1	#9	5	9'-11"	34	
*U4	5	#4	5	3'-6"	12	*U4	5	#4	5	3'-6"	12	
*EPOXY COATED REINFORCING STEEL 1433 LBS.						*EPOXY COATED REINFORCING STEEL 1479 LBS.						
CLASS AA CONCRETE POUR 1 (CAP) ▲ C.Y. 8.9						CLASS AA CONCRETE POUR 1 (CAP) ▲ C.Y. 10.1						
POUR 2 (LATERAL GUIDES) C.Y. 0.1						POUR 2 (LATERAL GUIDES) C.Y. 0.1						
TOTAL C.Y. 9.0						TOTAL C.Y. 10.2						
16" PRESTRESSED CONCRETE PILES						16" PRESTRESSED CONCRETE PILES						
NO. : 4 LIN. FT. : 200						NO. : 4 LIN. FT. : 200						
PILE REDRIVES NO. : 2						PILE REDRIVES NO. : 2						

TOTAL BILL OF MATERIAL

*EPOXY COATED REINFORCING STEEL	2912 LBS.
CLASS AA CONCRETE	19.2 C.Y.
16" PRESTRESSED CONCRETE PILES	400 LIN. FT.
PILE REDRIVES	NO. : 4

▲ CONCRETE DISPLACED BY THE 16" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED.



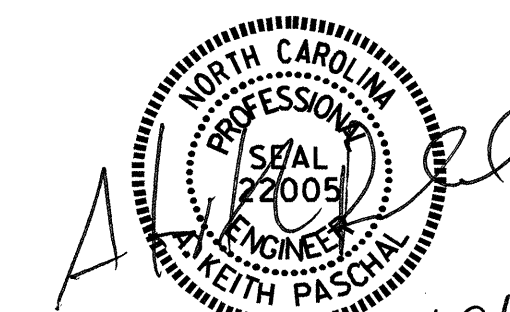
PILE SPLICE DETAILS

PROJECT NO. B-4551
HYDE COUNTY
STATION: 22+60.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENTS 1 & 2



8/18/11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			30

DRAWN BY : M.E. FOWLER DATE : 3/5/10
CHECKED BY : J.D. HAWK DATE : 3/24/11

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Kpaschal

NOTES

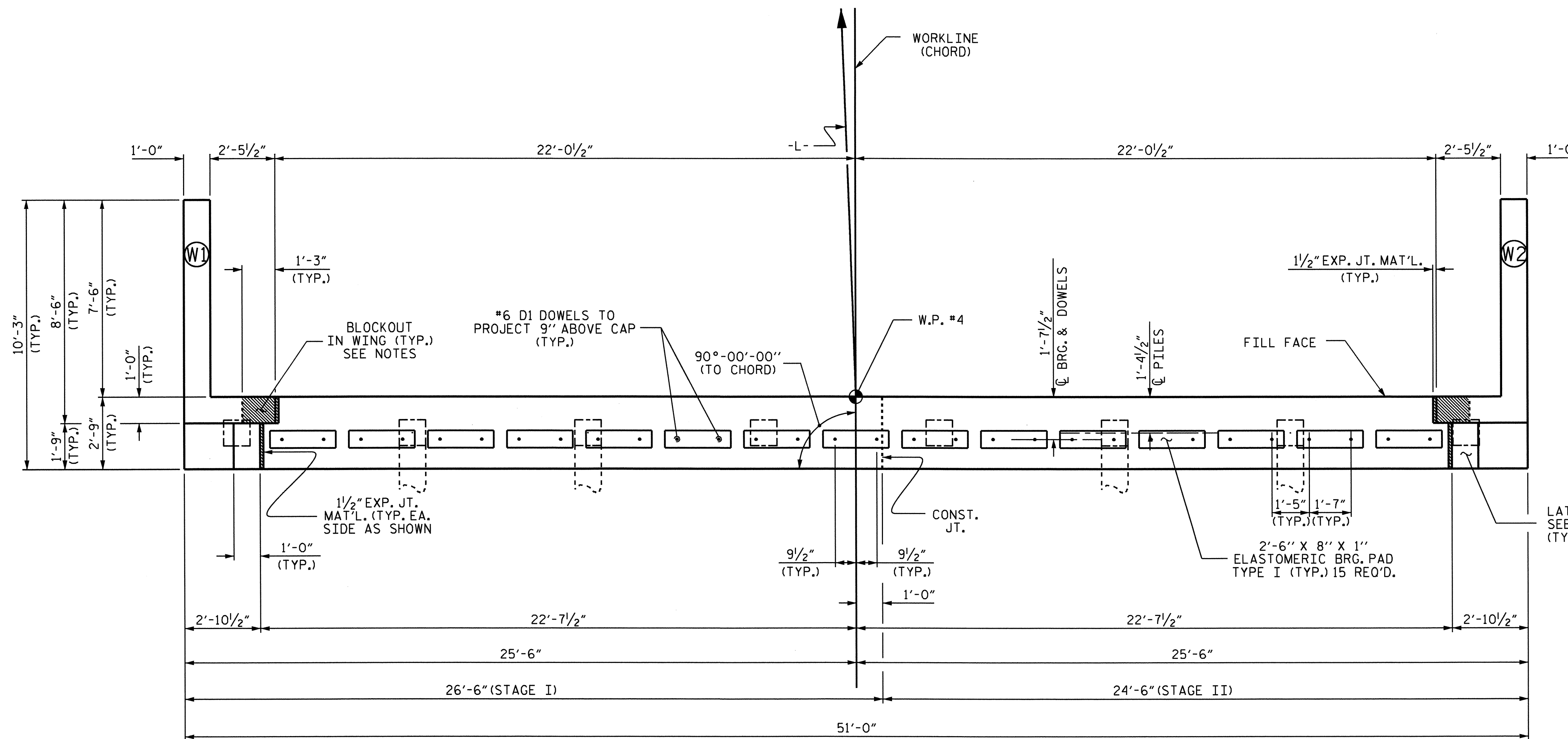
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

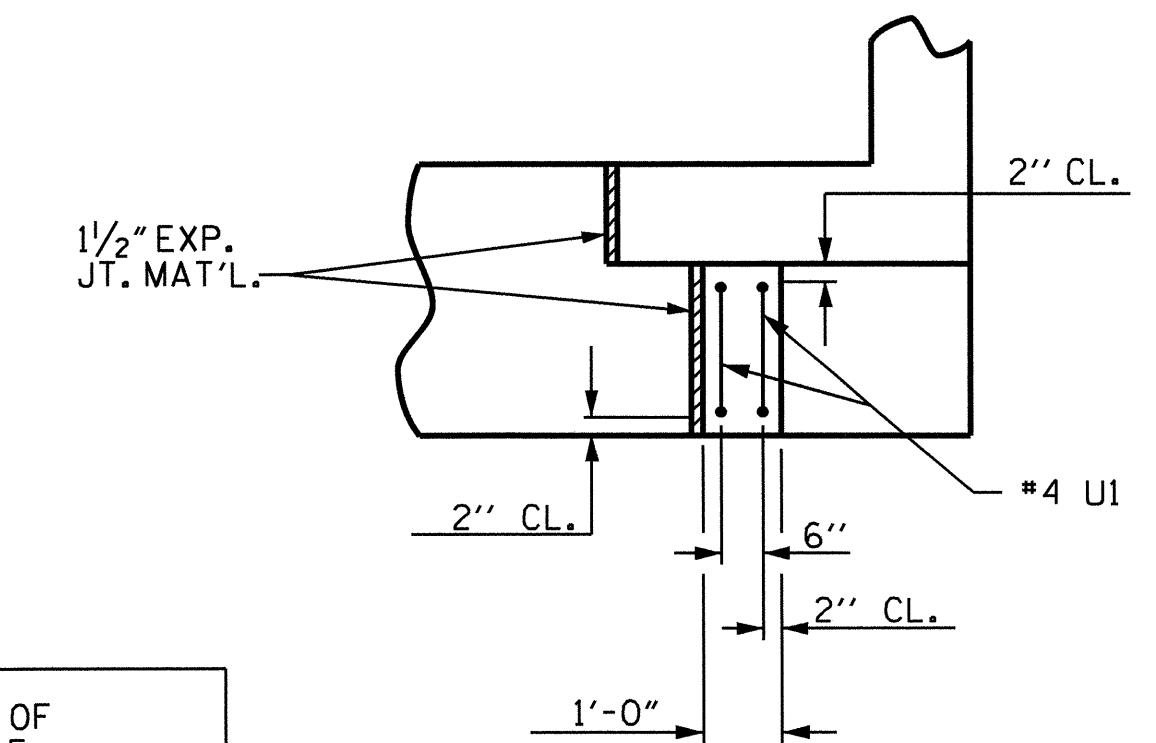
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDES IF APPROVED BY THE ENGINEER.

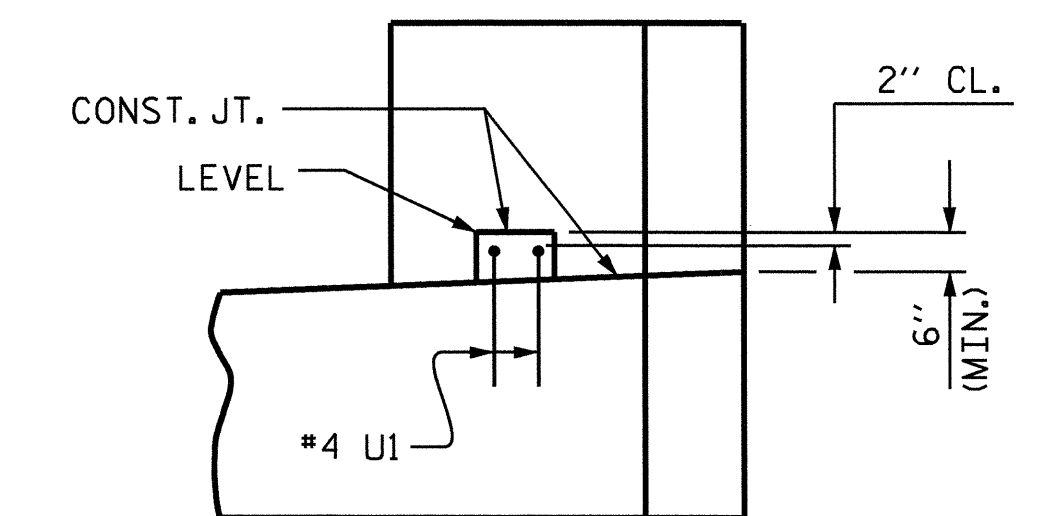


PLAN

TOP OF PILE ELEVATIONS	
PILE NUMBER	ELEVATION
1	2.204
2	2.472
3	2.739
4	3.007
5	3.274
6	3.541
7	3.809
8	4.076



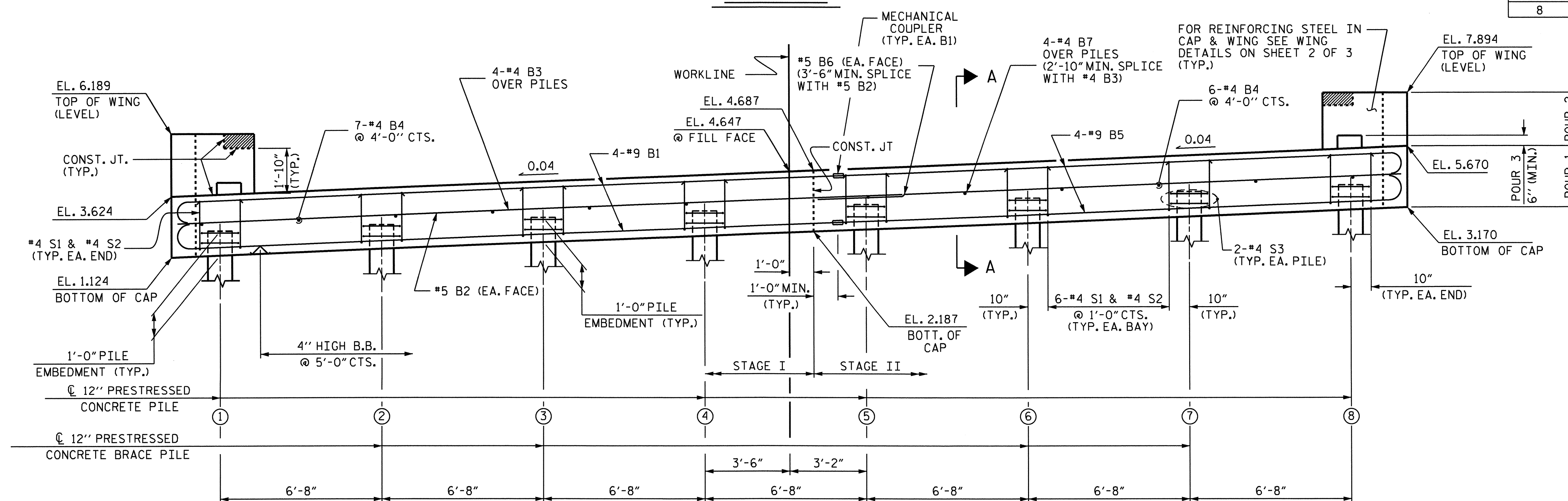
PLAN



ELEVATION

LATERAL GUIDE DETAIL

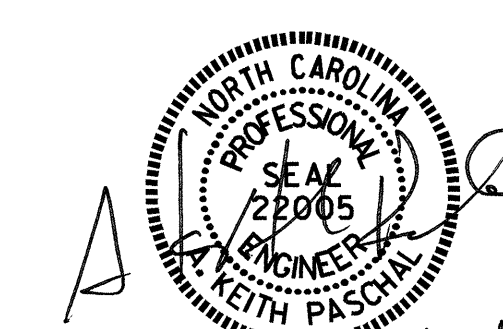
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



ELEVATION

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

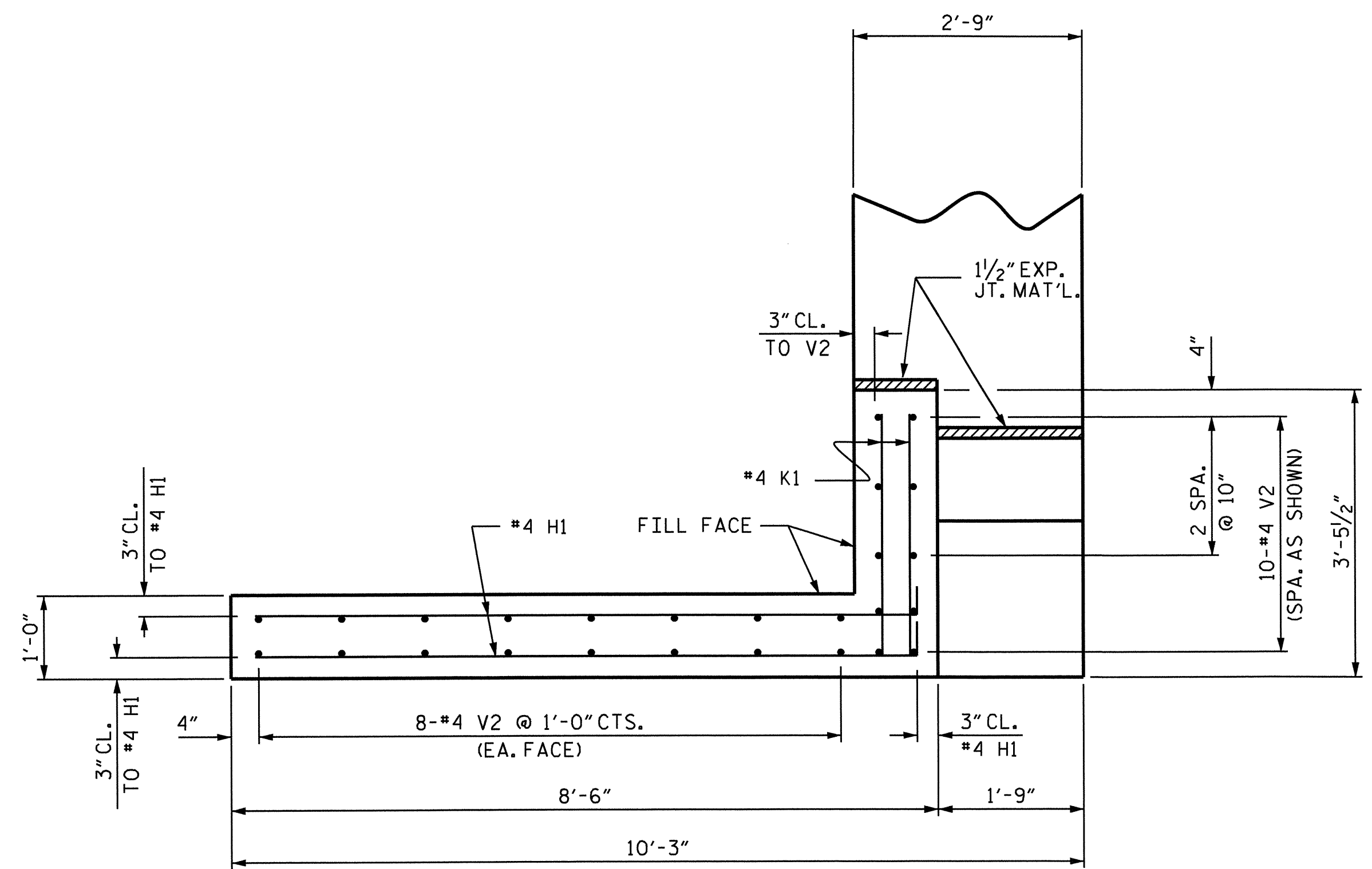
SHEET 1 OF 3



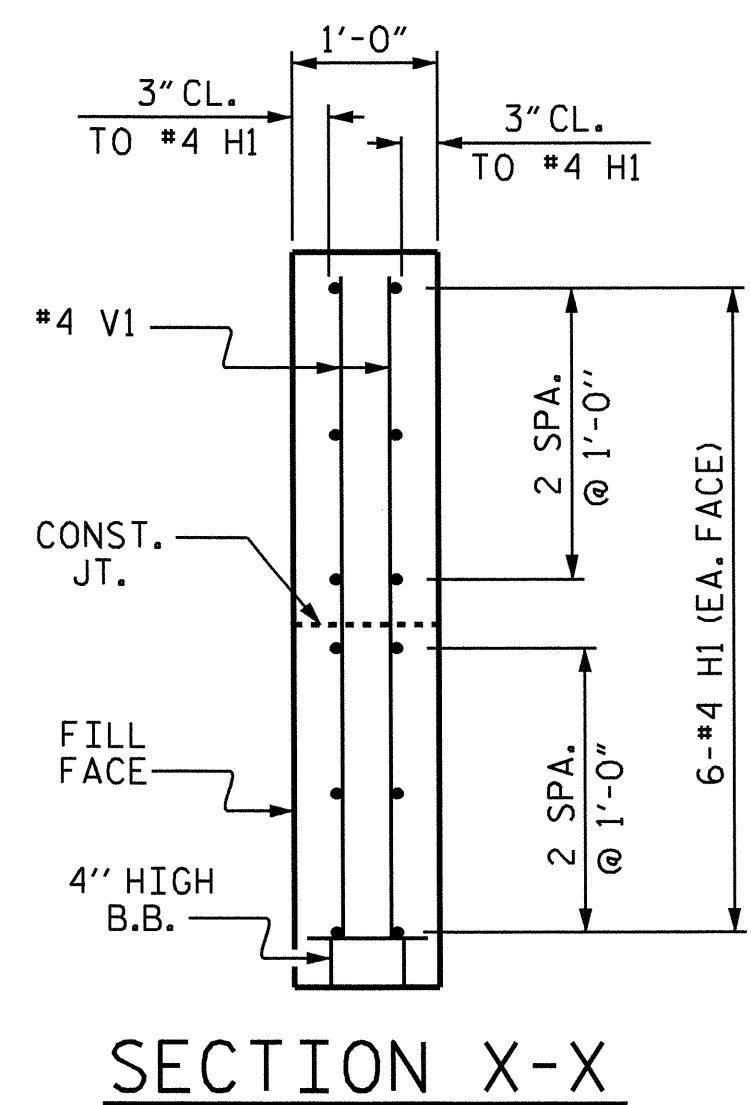
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2 (STAGE I AND II)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-23
TOTAL SHEETS
30

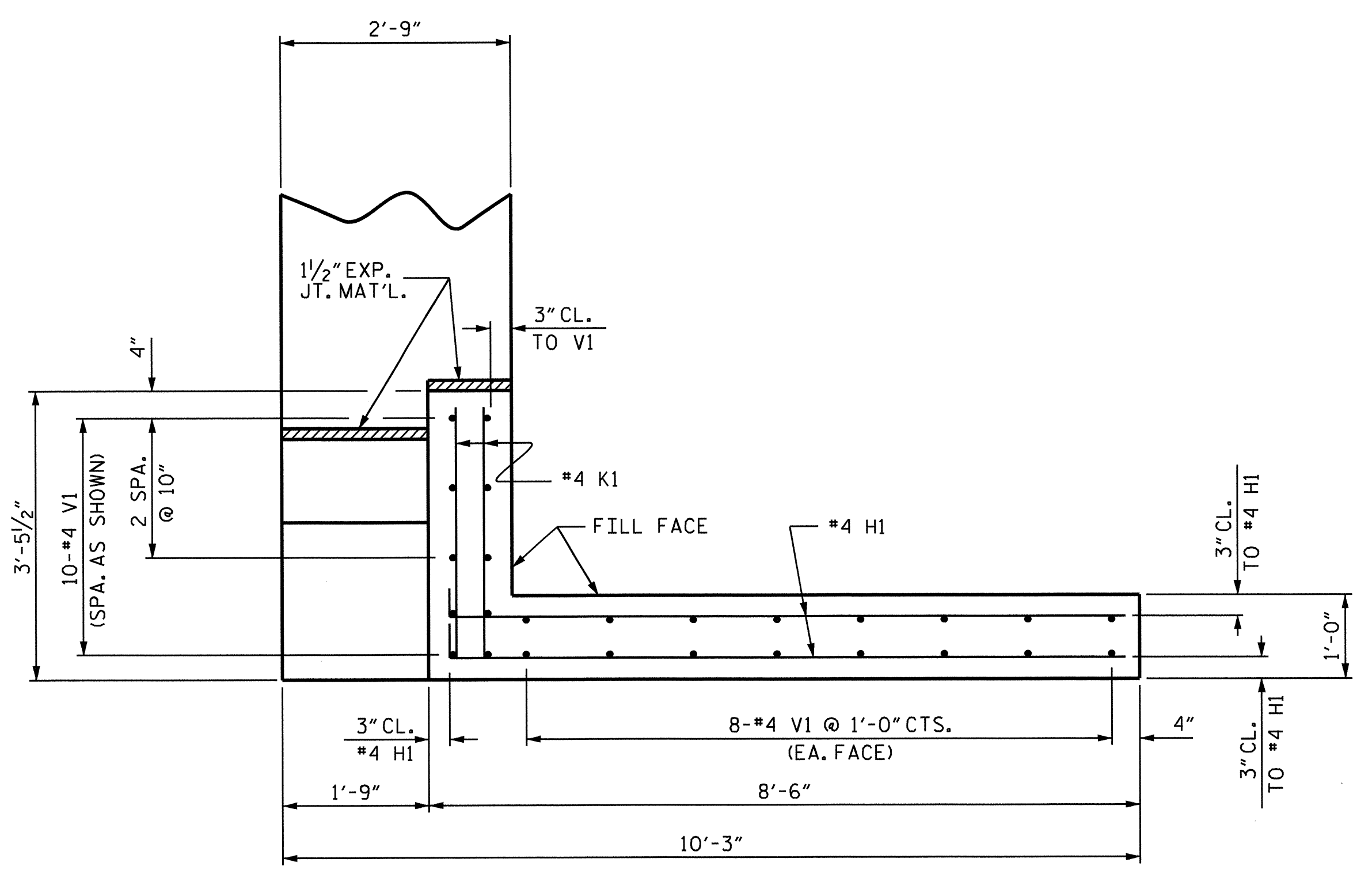
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 CHECKED BY: J. MYA DATE: 4/15/11



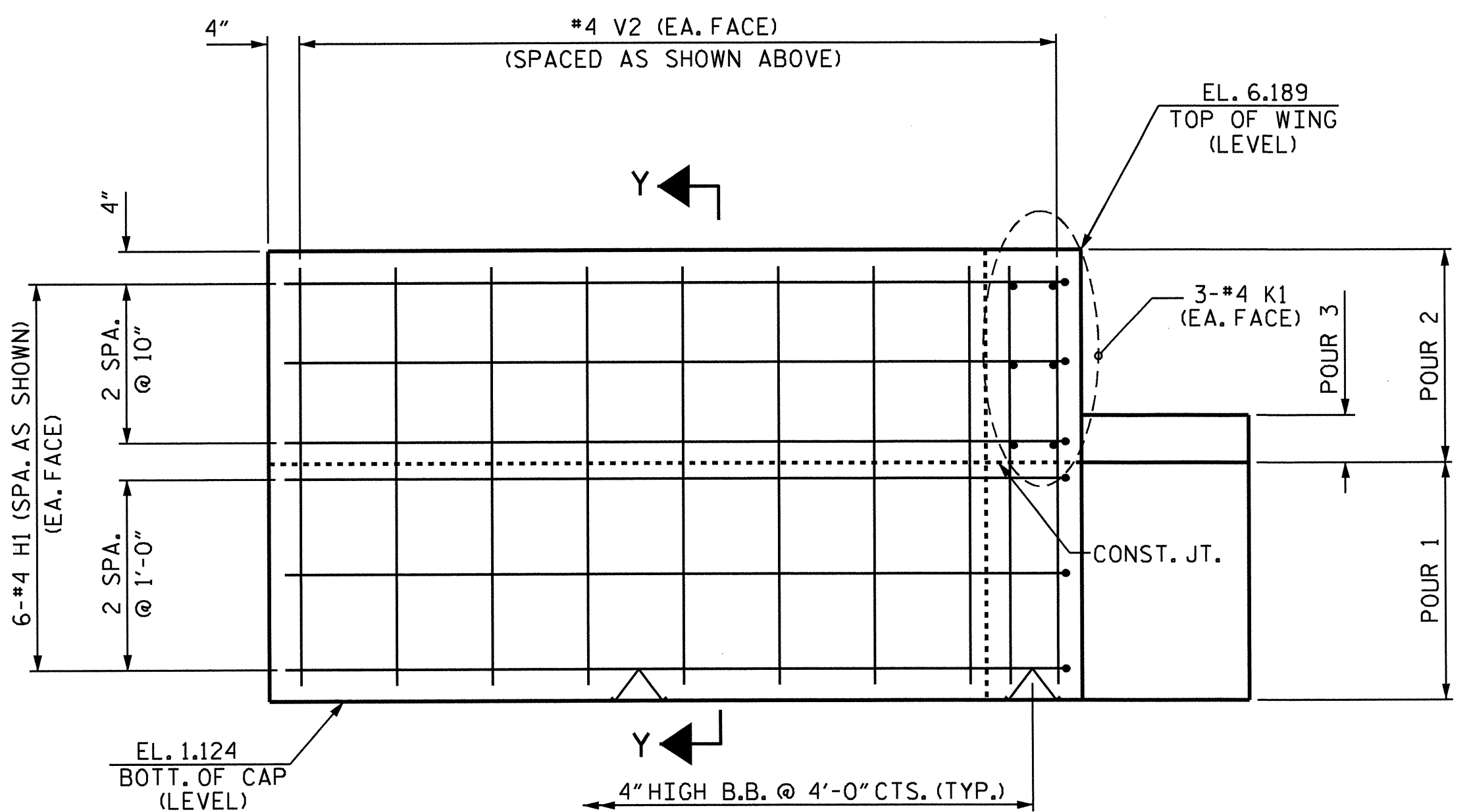
PLAN OF WING - W1
(STAGE I)



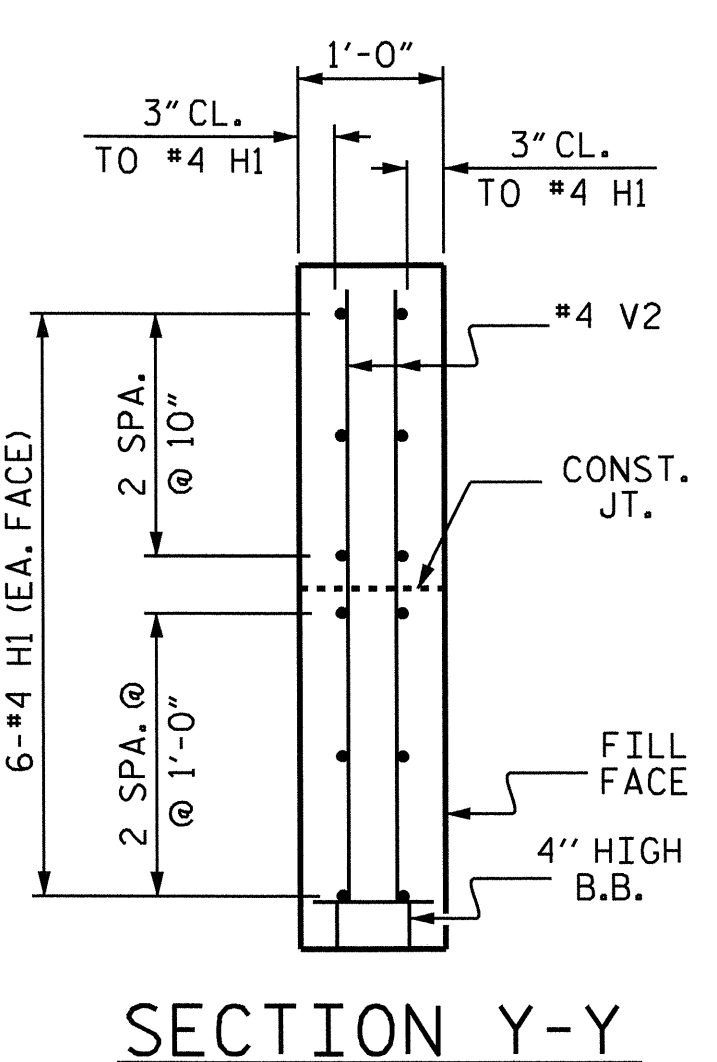
SECTION X-X



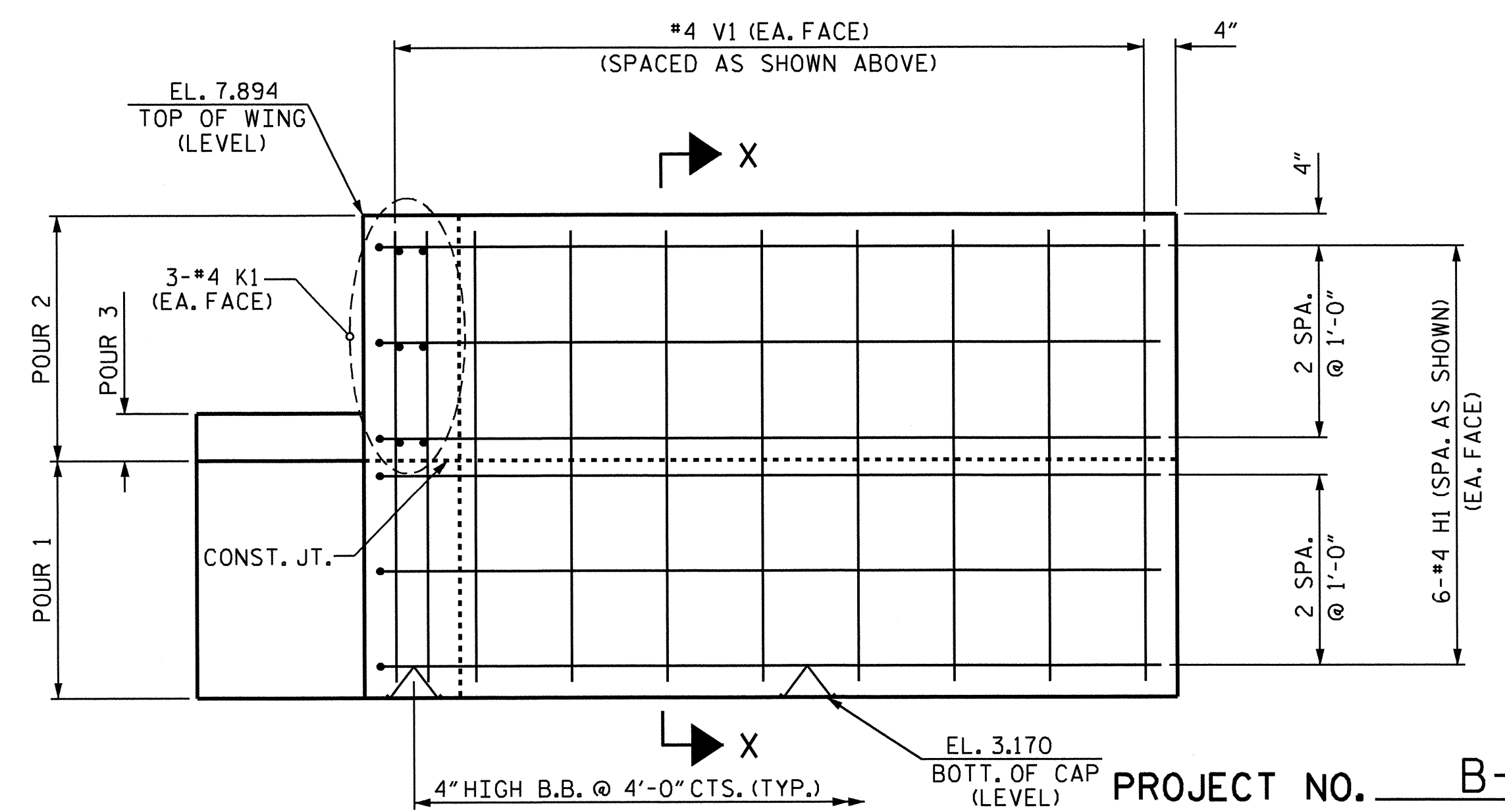
PLAN OF WING - W2
(STAGE II)



ELEVATION OF WING W1
(STAGE I)



SECTION Y-Y



ELEVATION OF WING W2
(STAGE II)

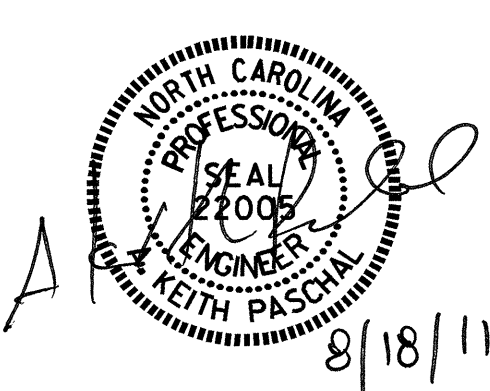
PROJECT NO. **B-4551**
HYDE COUNTY
STATION: **22+60.00 -L-**

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

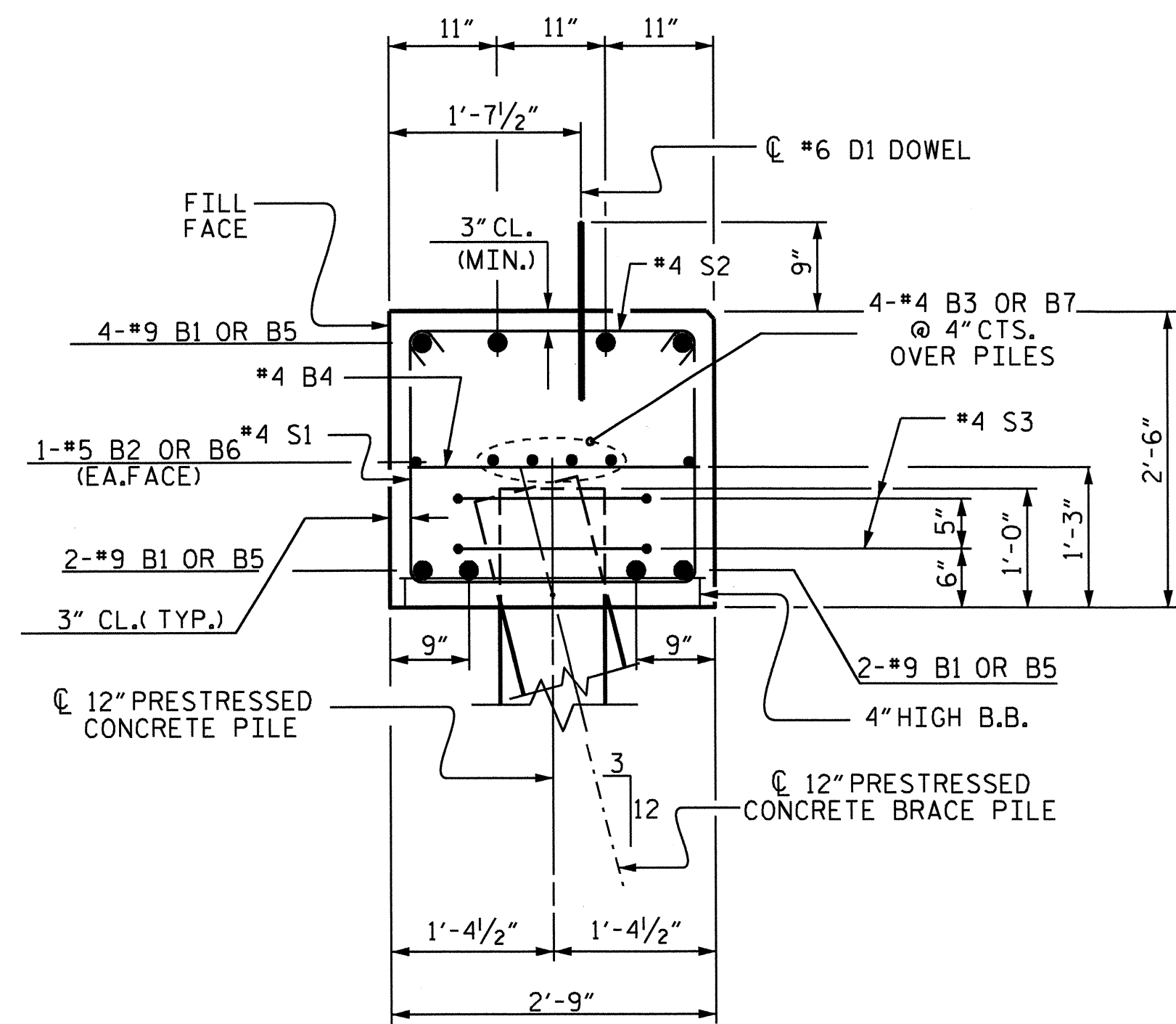
SUBSTRUCTURE
END BENT 2
(STAGE I AND II)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS	30
2			4				

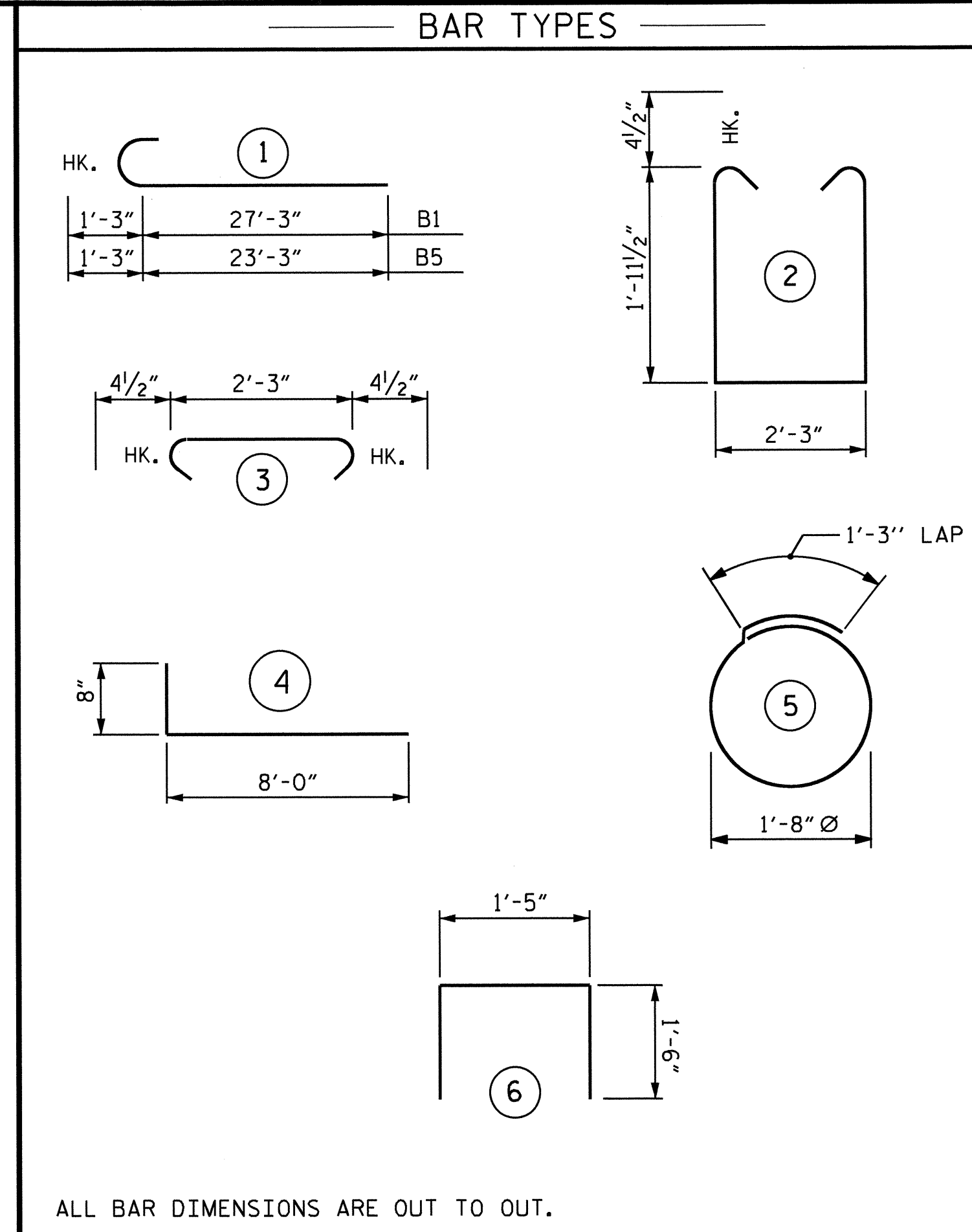


DRAWN BY: **M.FOWLER** DATE: **2/10/10**
CHECKED BY: **J.MYA** DATE: **4/15/11**

17-AUG-2011 14:20
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kpaschal



SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL END BENT 2

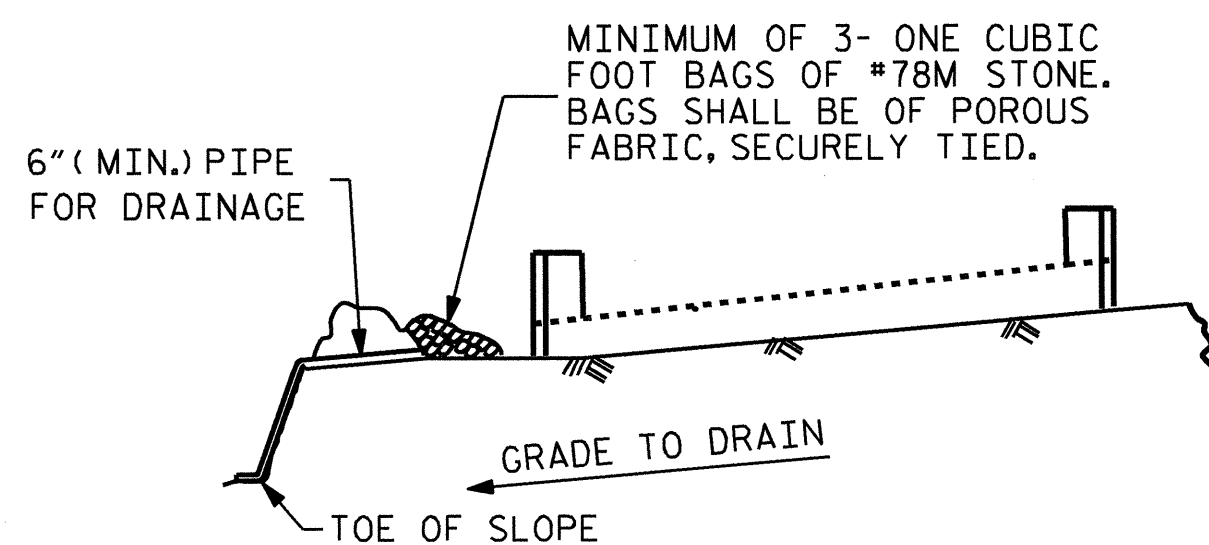
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	8	#9	1	28'-6"	775	*B4	6	#4	STR	2'-3"	9
*B2	2	#5	STR	29'-11"	62	*B5	8	#9	1	24'-5"	664
*B3	4	#4	STR	29'-3"	78	*B6	2	#5	STR	24'-1"	50
*B4	7	#4	STR	2'-3"	11	*B7	4	#4	STR	24'-1"	64
*D1	16	#6	STR	1'-6"	36	*D1	14	#6	STR	1'-6"	32
*H1	12	#4	4	8'-8"	69	*H1	12	#4	4	8'-8"	69
*K1	6	#4	STR	2'-11"	12	*K1	6	#4	STR	2'-11"	12
*S1	23	#4	2	6'-11"	106	*S1	21	#4	2	6'-11"	97
*S2	23	#4	3	3'-0"	46	*S2	21	#4	3	3'-0"	42
*S3	8	#4	5	6'-6"	35	*S3	8	#4	5	6'-6"	35
*U1	2	#4	6	4'-5"	6	*U1	2	#4	6	4'-5"	6
*V2	26	#4	STR	4'-3"	74	*V1	26	#4	STR	4'-6"	78

* EPOXY COATED REINFORCING STEEL			LBS.	1310	* EPOXY COATED REINFORCING STEEL			LBS.	1158
CLASS AA CONCRETE BREAKDOWN					CLASS AA CONCRETE BREAKDOWN				
POUR 1 (CAP, & LOWER PART OF WING)	▲ 7.3	CU. YD.			POUR 1 (CAP, & LOWER PART OF WING)	▲ 6.8	CU. YD.		
POUR 2 UPPER PART OF WING	1.0	CU. YD.			POUR 2 UPPER PART OF WING	0.9	CU. YD.		
POUR 3 LATERAL GUIDE	0.1	CU. YD.			POUR 3 LATERAL GUIDE	0.1	CU. YD.		
TOTAL	8.4	CU. YD.			TOTAL	7.8	CU. YD.		
12" PRESTRESSED CONCRETE PILES No: 4					12" PRESTRESSED CONCRETE PILES No: 4				
			160	LIN.FT.				160	LIN.FT.

TOTAL BILL OF MATERIAL

* EPOXY COATED REINFORCING STEEL	= 2468 LBS.
CLASS AA CONCRETE TOTAL	= 16.2 CY.
12" PRESTRESSED CONCRETE PILES No: 8	= 320 LIN.FT.

▲ CONCRETE DISPLACED BY THE 12" CONCRETE PILES HAS BEEN DEDUCTED.



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

PROJECT NO. B-4551

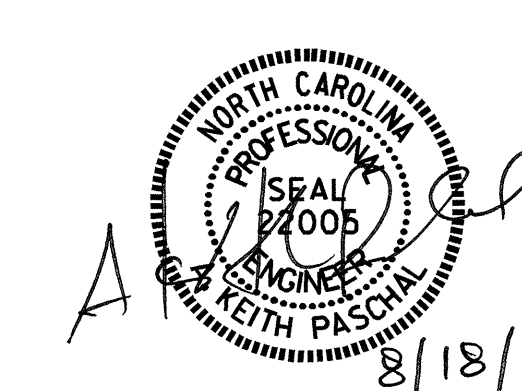
HYDE COUNTY

STATION: 22+60.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
(STAGE I AND II)



DRAWN BY: M.FOWLER DATE: 2/10/10
CHECKED BY: J.MYA DATE: 4/15/11

17-AUG-2011 14:20
R:\Structures\Final Plans\B4551.SD.E*.dgn
kpaschal

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25	
1			3			TOTAL SHEETS	
2			4			30	

NOTES

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

STRAND DATA:

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

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

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

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

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

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

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

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

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

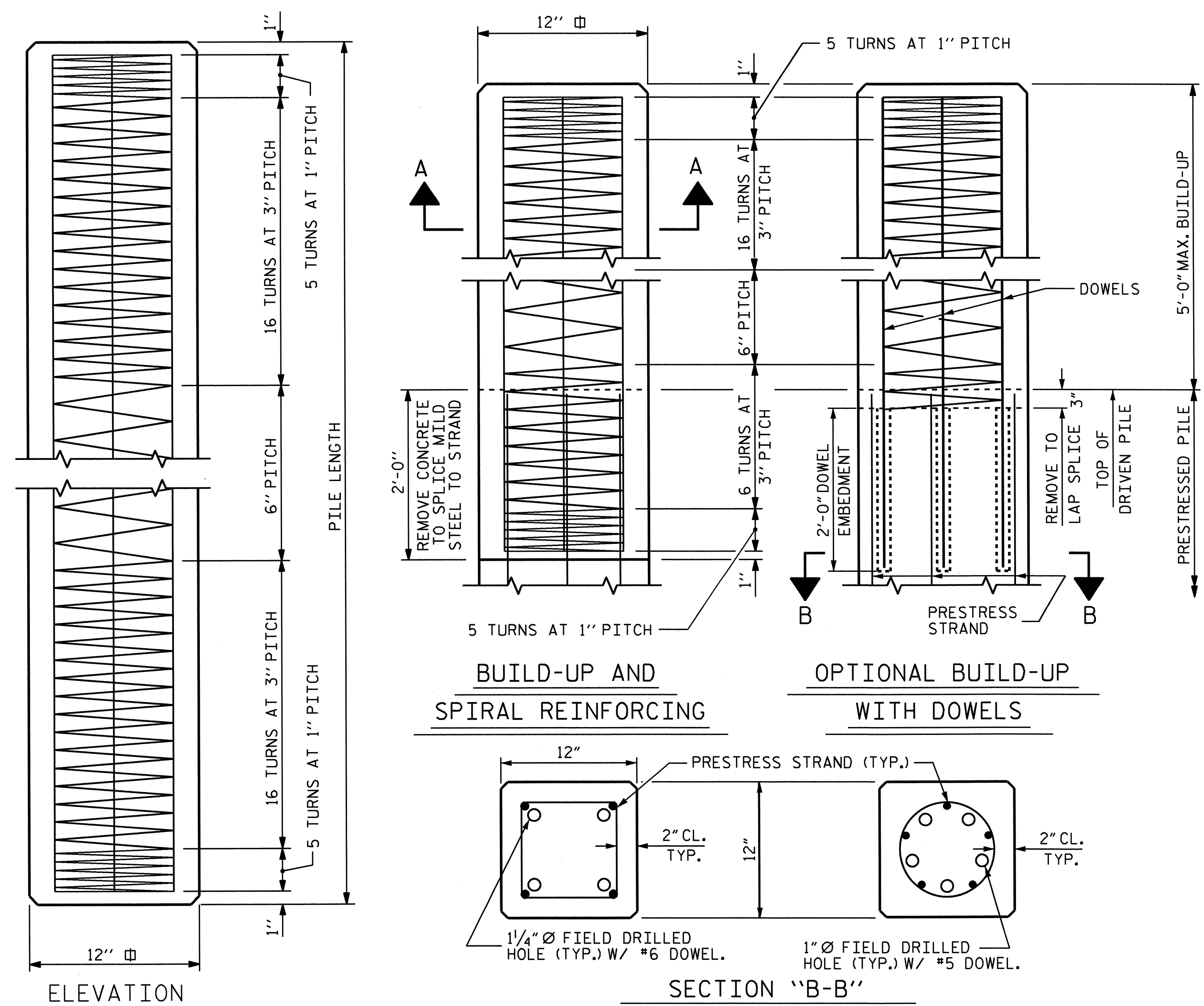
DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE TO THE STANDARD SPECIFICATIONS. NO SEPARATE PAYMENT WILL BE MADE FOR CALCIUM NITRITE CORROSION INHIBITOR.

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

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

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-



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

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

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

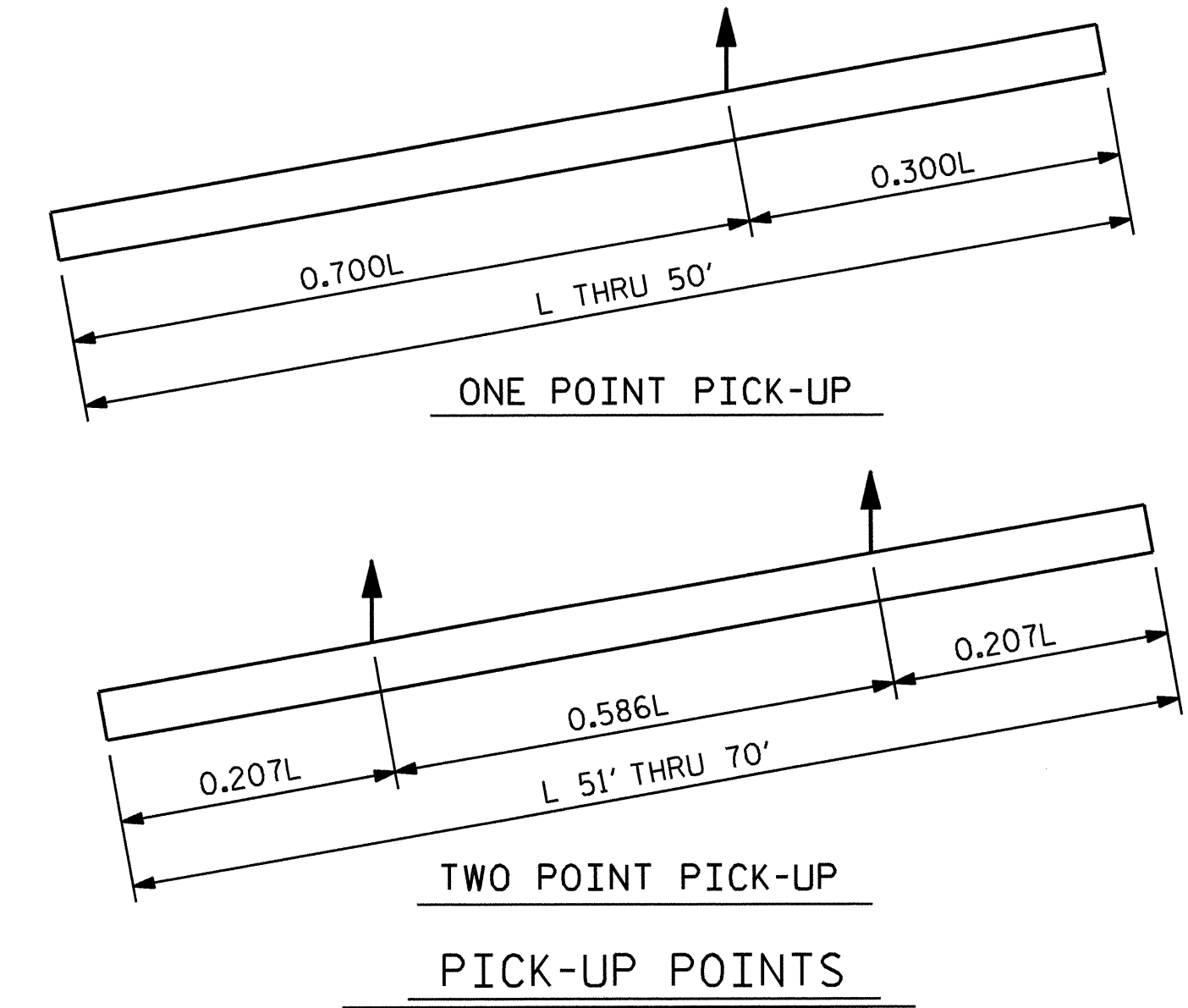
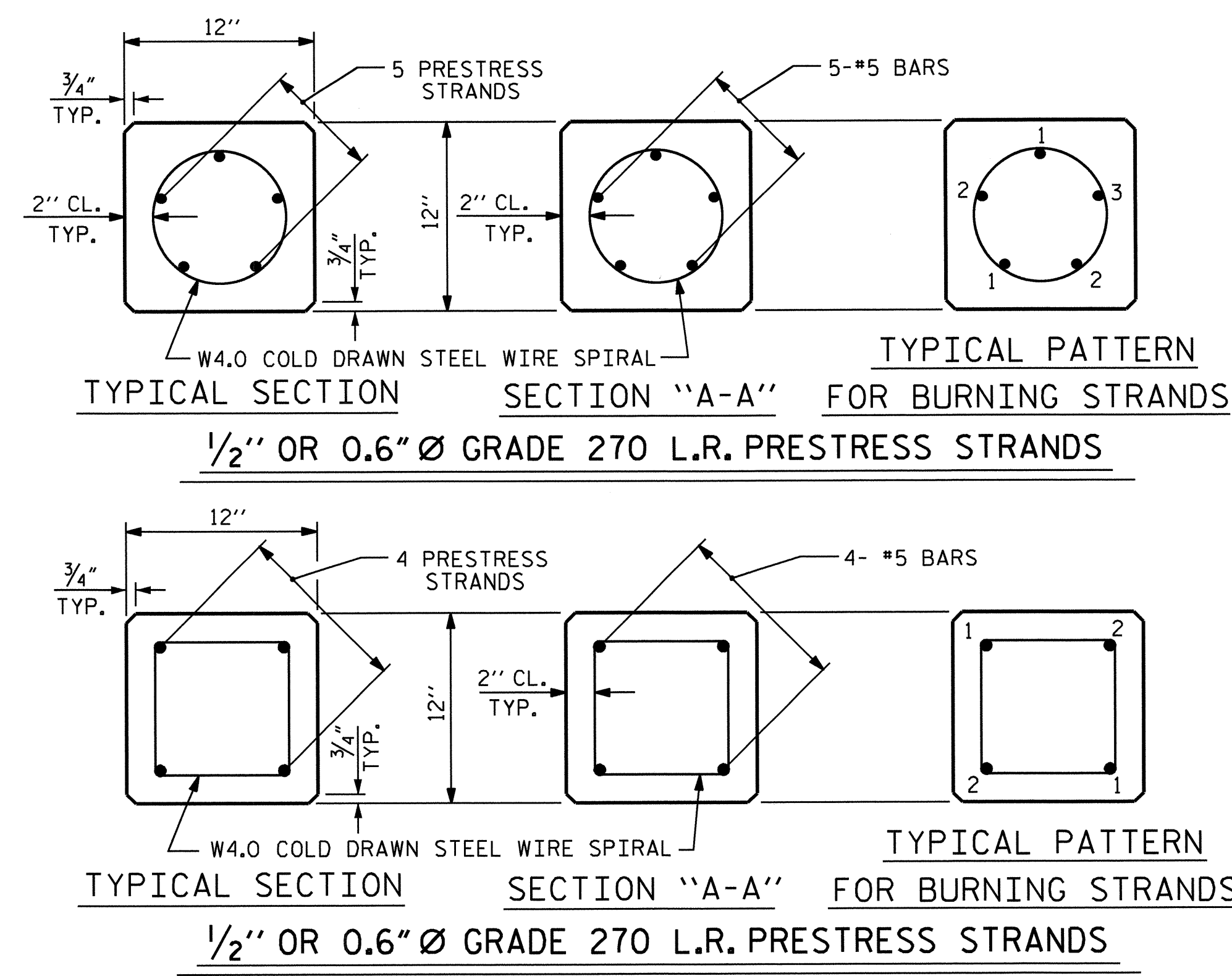
BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

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

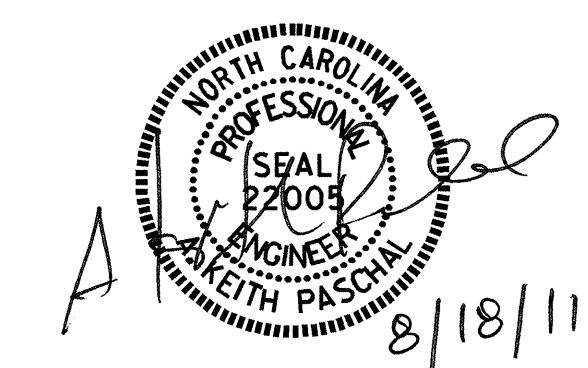
FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

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

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



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

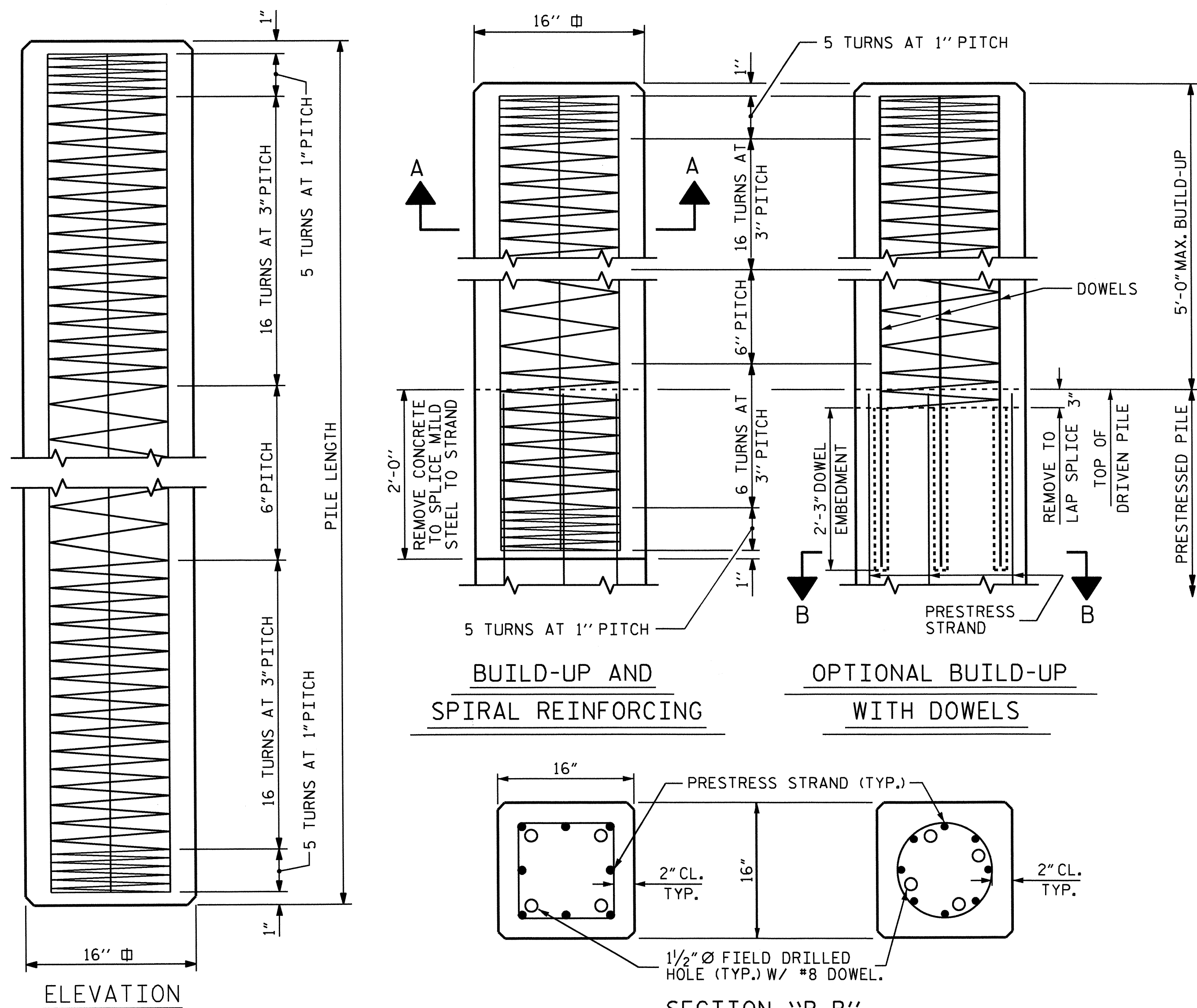


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

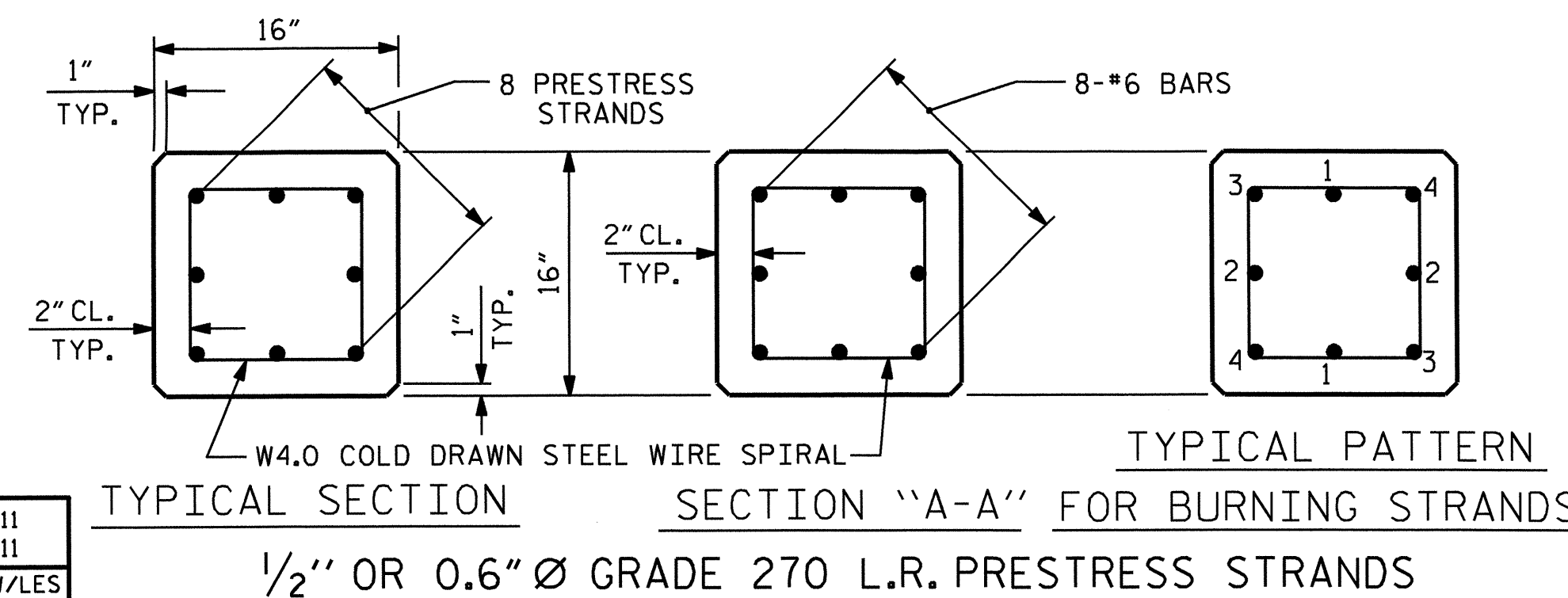
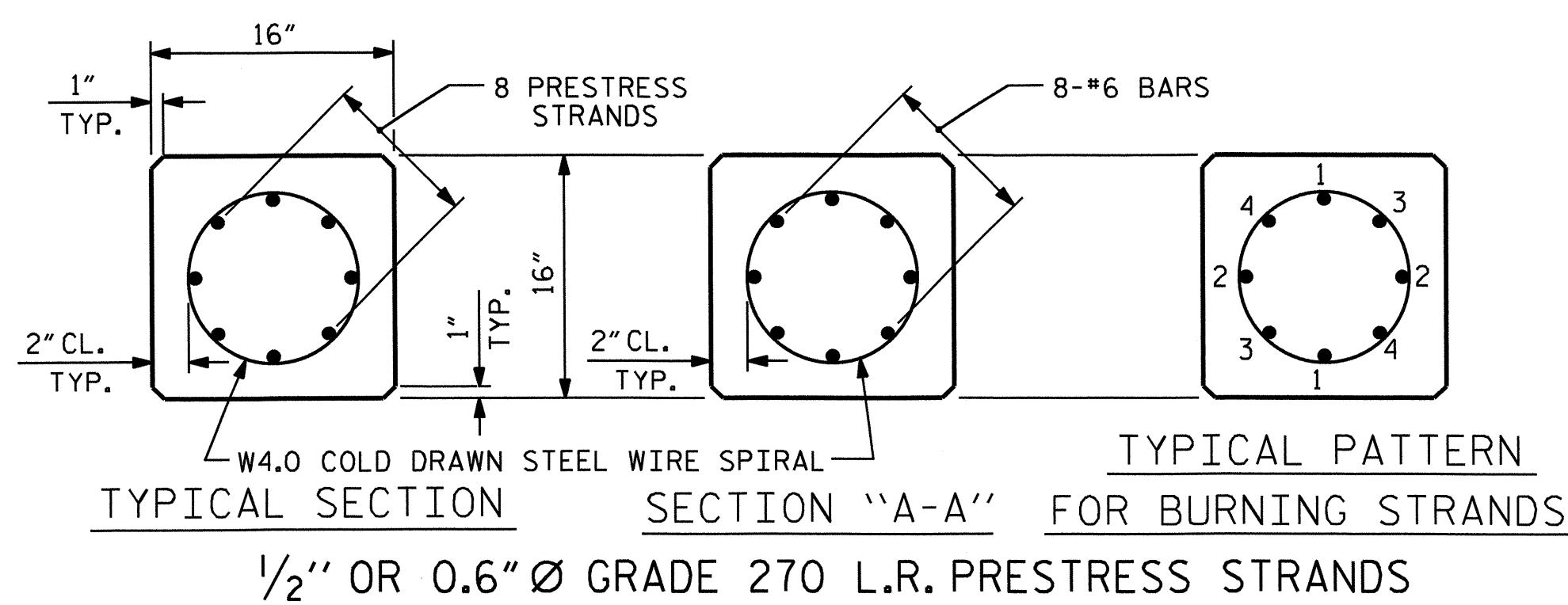
STANDARD
 12" PRESTRESSED
 CONCRETE PILE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS 30
2			4			

ASSEMBLED BY : M. E. FOWLER	DATE : 5/6/11
CHECKED BY : J. MYA	DATE : 5/6/11
DRAWN BY : FCJ 7/88	REV. 8/16/99R RWW/LES
CHECKED BY : CRK 3/89	REV. 5/1/06R TLA/GM
	REV. 11/30/10 WMC/GM



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



QUANTITIES FOR ONE 16" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	1.63	3.31	7'-6"	17'-6"	5'-2"	14'-8"
30'-0"	1.96	3.97	9'-0"	21'-0"	6'-2 1/2"	17'-7"
35'-0"	2.29	4.63	10'-6"	24'-6"	7'-3"	20'-6"
40'-0"	2.61	5.29	12'-0"	28'-0"	8'-3 1/2"	23'-5"
45'-0"	2.94	5.95	13'-6"	31'-6"	9'-4"	26'-4"
50'-0"	3.27	6.61	15'-0"	35'-0"	10'-4"	29'-4"
55'-0"	3.59	7.28	16'-6"	38'-6"	11'-4 1/2"	32'-3"
60'-0"	3.92	7.94			12'-5"	35'-2"
65'-0"	4.25	8.60			13'-5 1/2"	38'-1"
70'-0"	4.57	9.26			14'-6"	41'-0"
75'-0"	4.90	9.92			15'-6 1/2"	43'-11"
80'-0"	5.23	10.58			16'-7"	46'-10"

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

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

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

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

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

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

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

NOTES

PRESTRESSED CONCRETE STRENGTH : $f'c = 7,500$ PSI

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

STRAND DATA:

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

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

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

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

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

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN, FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 3-3 AND 4-4, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

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

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

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

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

PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE TO THE STANDARD SPECIFICATIONS. NO SEPARATE PAYMENT WILL BE MADE FOR CALCIUM NITRITE CORROSION INHIBITOR.

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

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

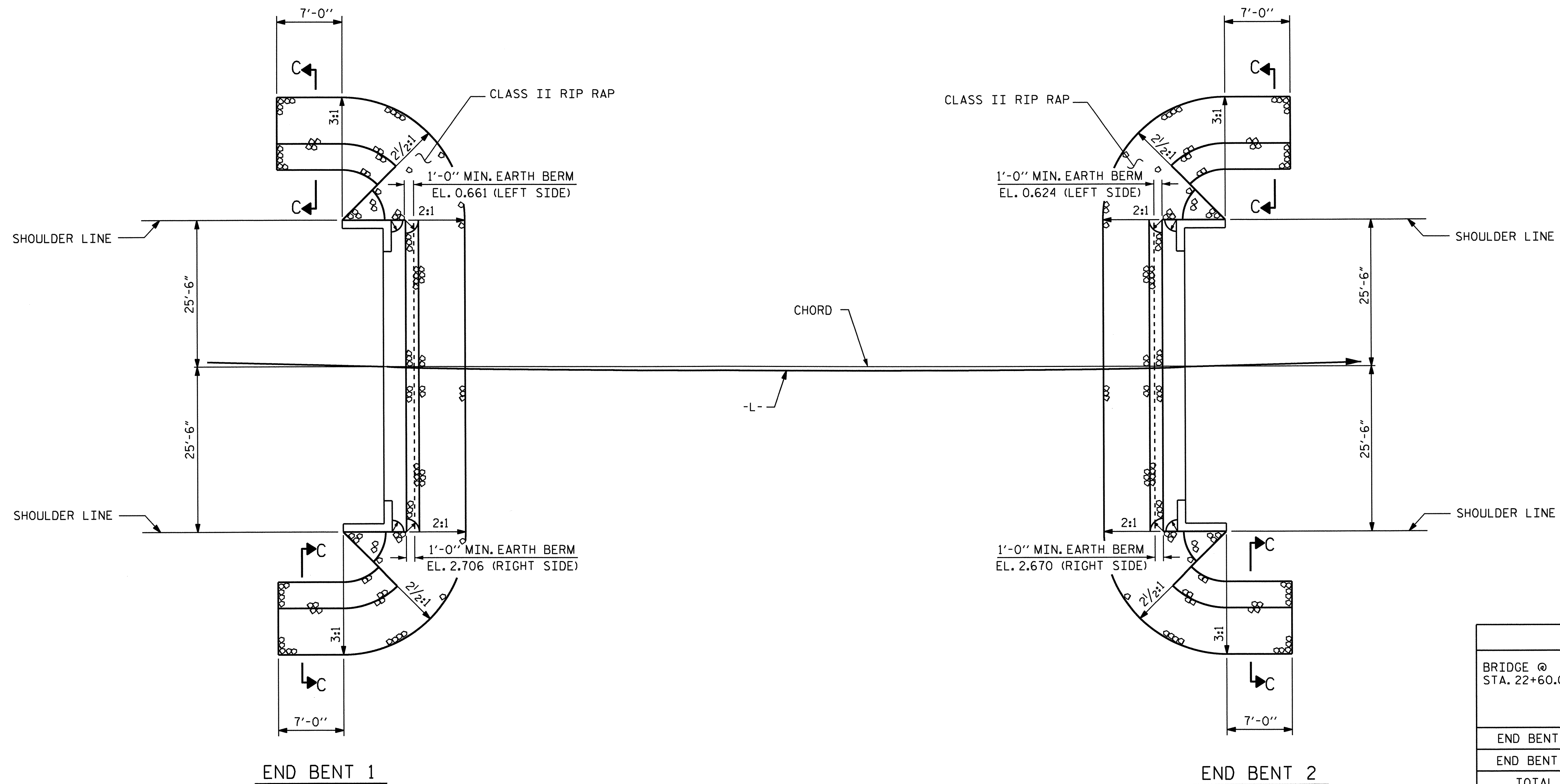
PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
16" PRESTRESSED CONCRETE PILE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

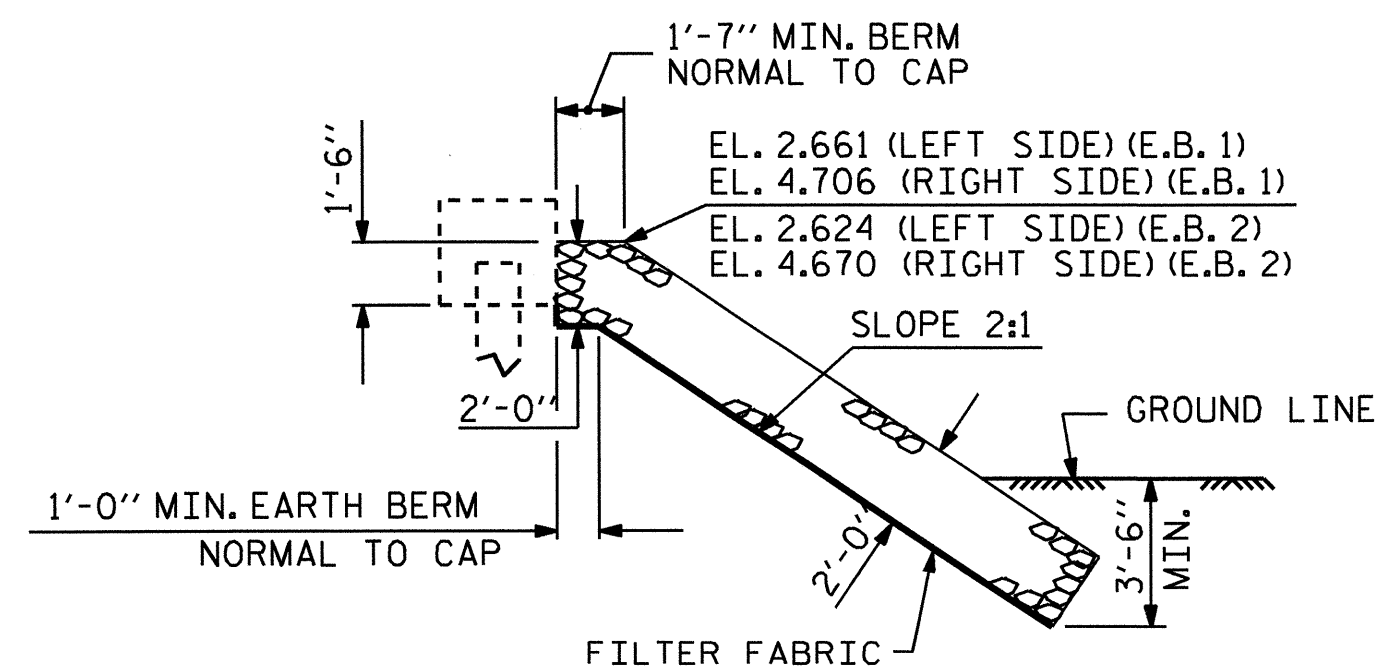
SHEET NO. **S-27**
TOTAL SHEETS **30**

ASSEMBLED BY : M. E. FOWLER DATE : 5/23/11
 CHECKED BY : J. D. HAWK DATE : 5/23/11
 DRAWN BY : RH 9/98 REV. 8/16/99RR RWW/LES
 CHECKED BY : LES 10/98 REV. 5/1/06R TLA/GM
 REV. 11/30/10 WMC/GM

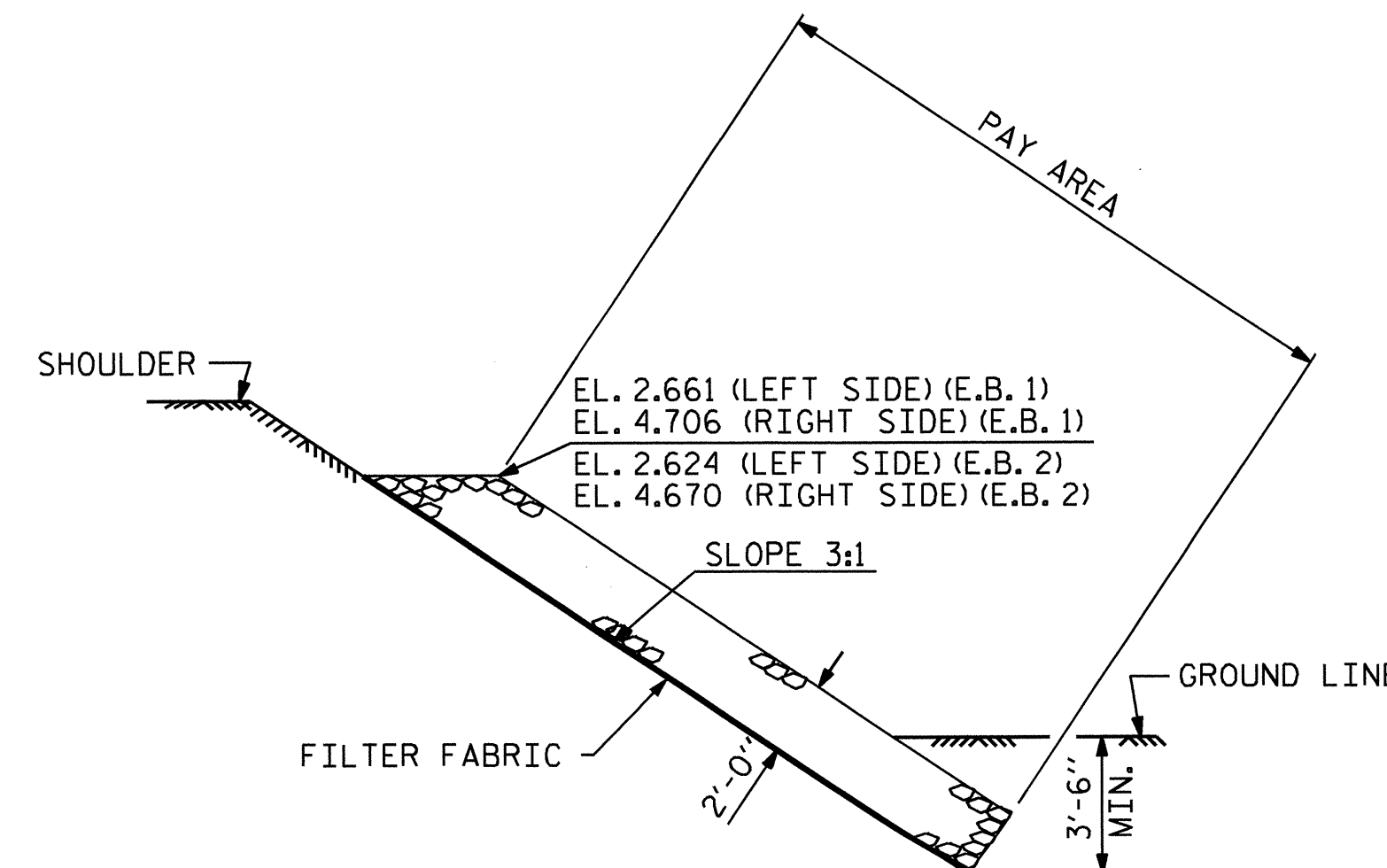


ESTIMATED QUANTITIES		
BRIDGE @ STA. 22+60.00 -L-	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	115	128
END BENT 2	110	123
TOTAL	225	251

PLAN



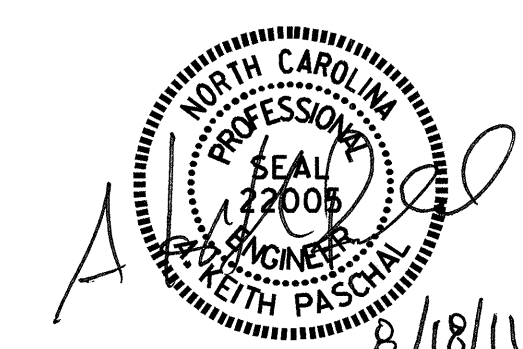
SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

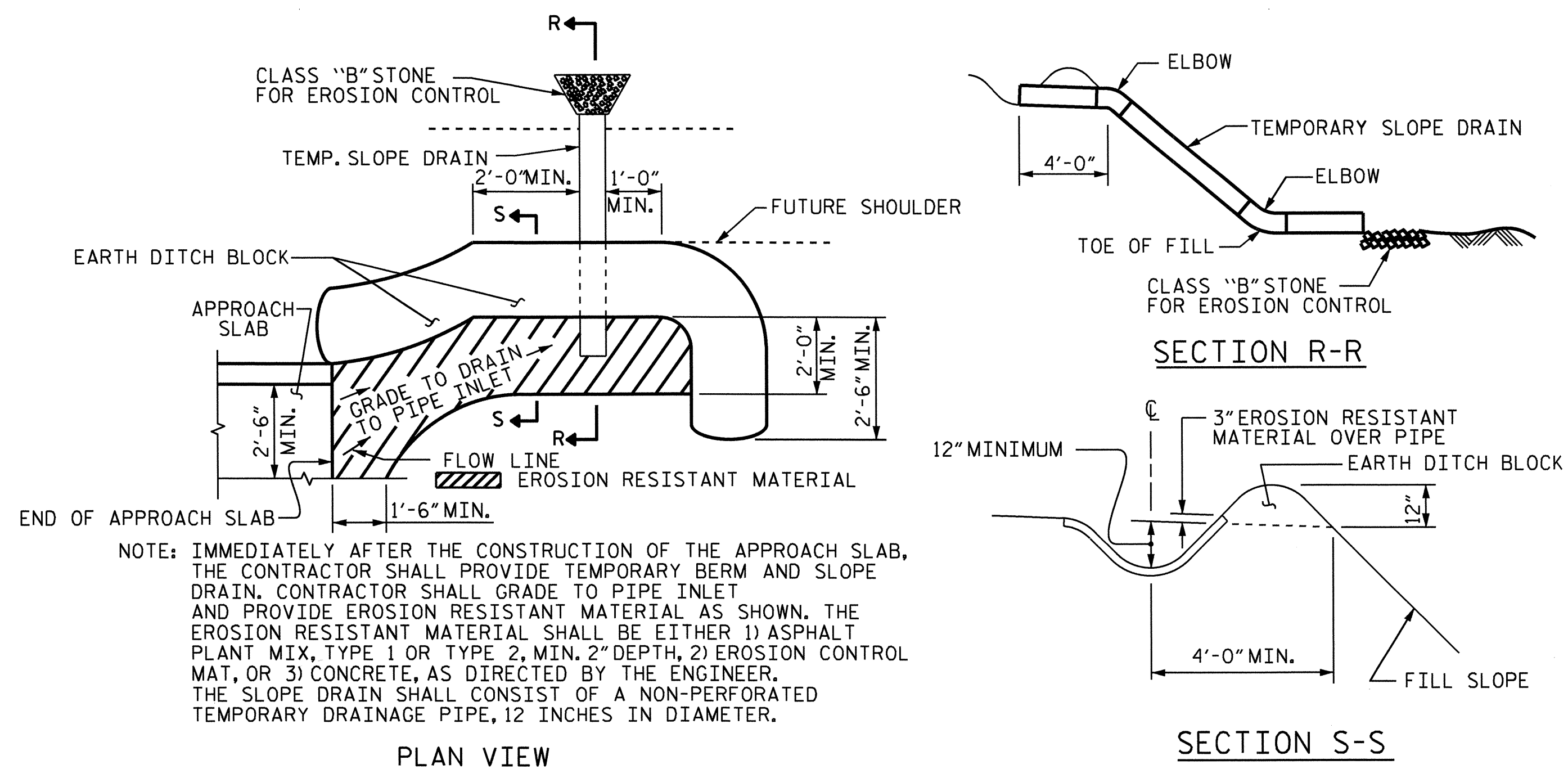
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD = RIP RAP DETAILS =					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 30



ASSEMBLED BY : M. E. FOWLER	DATE : 3/16/10
CHECKED BY : J. MYA	DATE : 5/12/11
DRAWN BY : FCJ 2/88	REV. 8/16/99 RWW/LES
CHECKED BY : ARB 8/88	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

17-AUG-2011 13:39
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 jdhawk

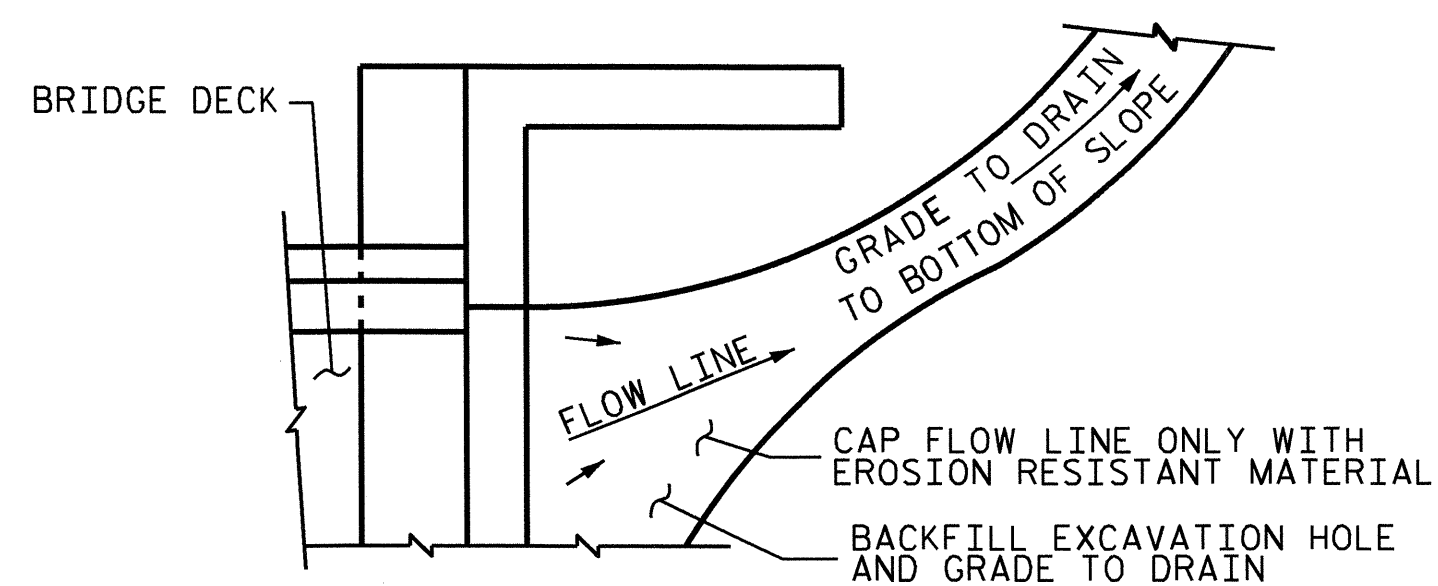
SKEW 90° STD. NO. RR2



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.

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

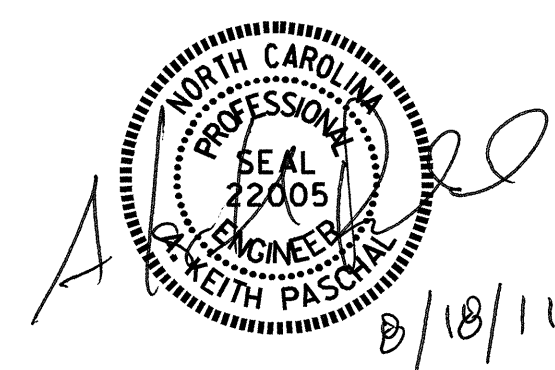


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-4551
HYDE COUNTY
 STATION: 22+60.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
1988					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					30
SHEET NO.					S-30

ASSEMBLED BY : M. E. FOWLER	DATE : 2/23/10
CHECKED BY : J. G. KHARVA	DATE : 4/5/11
DRAWN BY : FCJ 11/88	REV. 8/16/99 MAB/LES
CHECKED BY : ARB 11/88	REV. 10/17/00 RWW/LES
	REV. 5/7/03 RWW/JTE

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. FINS 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.

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