

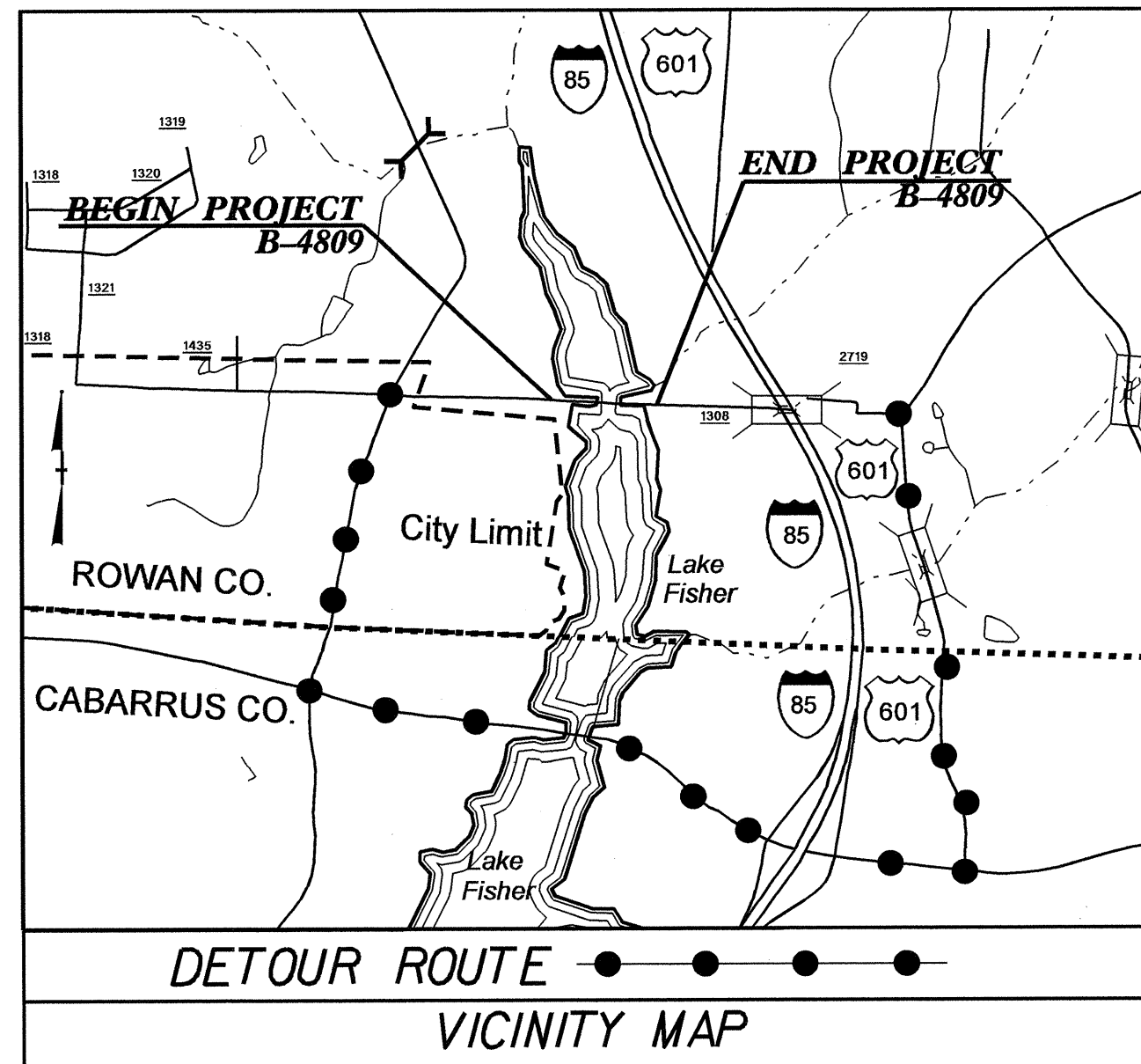
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4809		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38579.1.1	BRZ-1308 (9)	P.E.	
38579.2.1	BRZ-1308 (9)	RW & UTL	
38579.3.1	BRZ-1308 (9)	CONST	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROWAN COUNTY

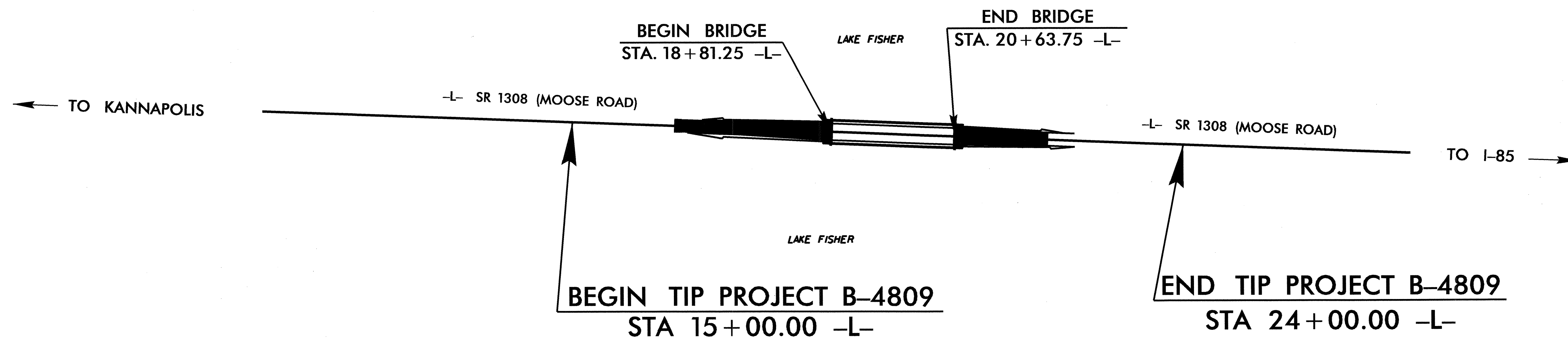
LOCATION: BRIDGE 221 OVER LAKE FISHER ON SR 1308

TYPE OF WORK: GRADING, DRAINAGE, PAVING,
AND STRUCTURE

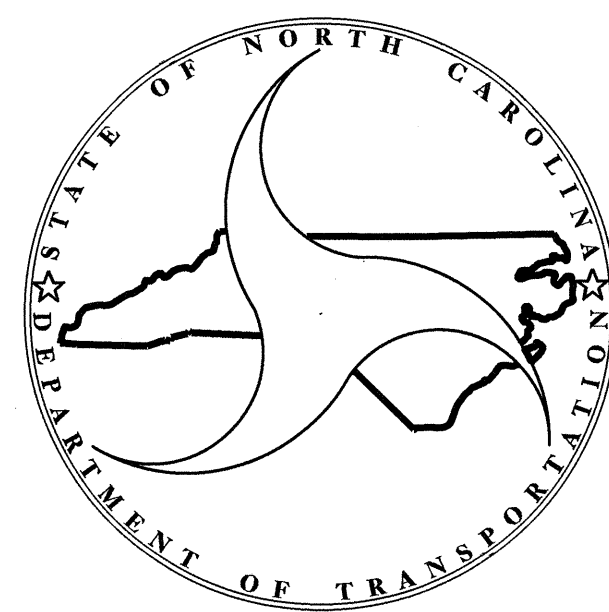


TIP PROJECT: B-4809

CONTRACT: C203031



STRUCTURE



DESIGN DATA	
ADT 2013	= 1907
ADT 2035	= 3400
DHV	= 10 %
D	= 60 %
T	= 15 % *
V	= 60 MPH
FUNC CLASS	= LOCAL
* TTST 12	DUAL 3%
SUB REGIONAL TIER	

PROJECT LENGTH
LENGTH ROADWAY TIP PROJECT B-4809 = 0.135 MILE
LENGTH STRUCTURE TIP PROJECT B-4809 = 0.035 MILE
TOTAL LENGTH TIP PROJECT B-4809 = 0.170 MILE

Prepared In the Office of: DIVISION OF HIGHWAYS 1000 BIRCH RIDGE DR., RALEIGH, NC 27610	
2012 STANDARD SPECIFICATIONS	B. C. Hunt, PE PROJECT ENGINEER
LETTING DATE: JAN 15, 2013	V. A. Patel, PE PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT

20-NOV-2012 14:38
\$\$\$\$\$\$\$\$\$DGN\$\$\$\$\$\$\$\$\$

18+50

19+00

19+50

20+00

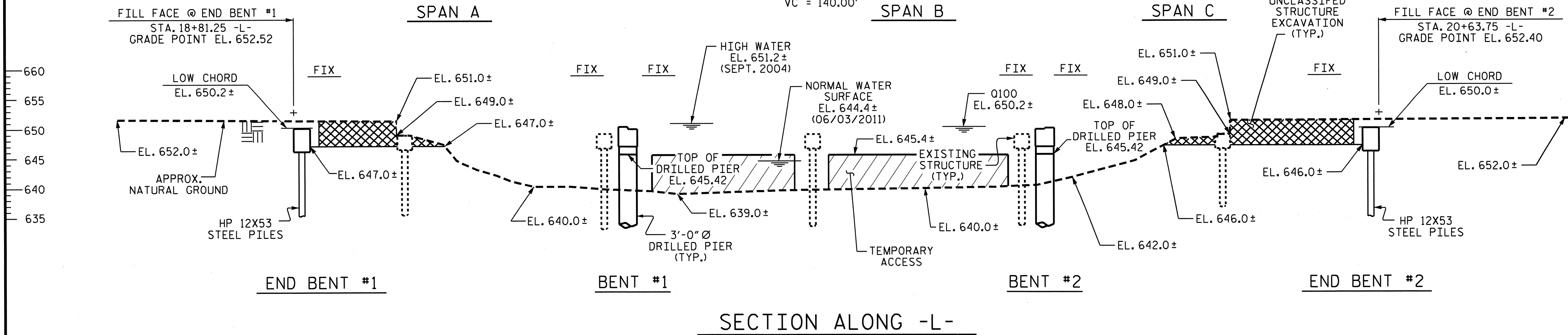
20+50

21+00

GRADE DATA

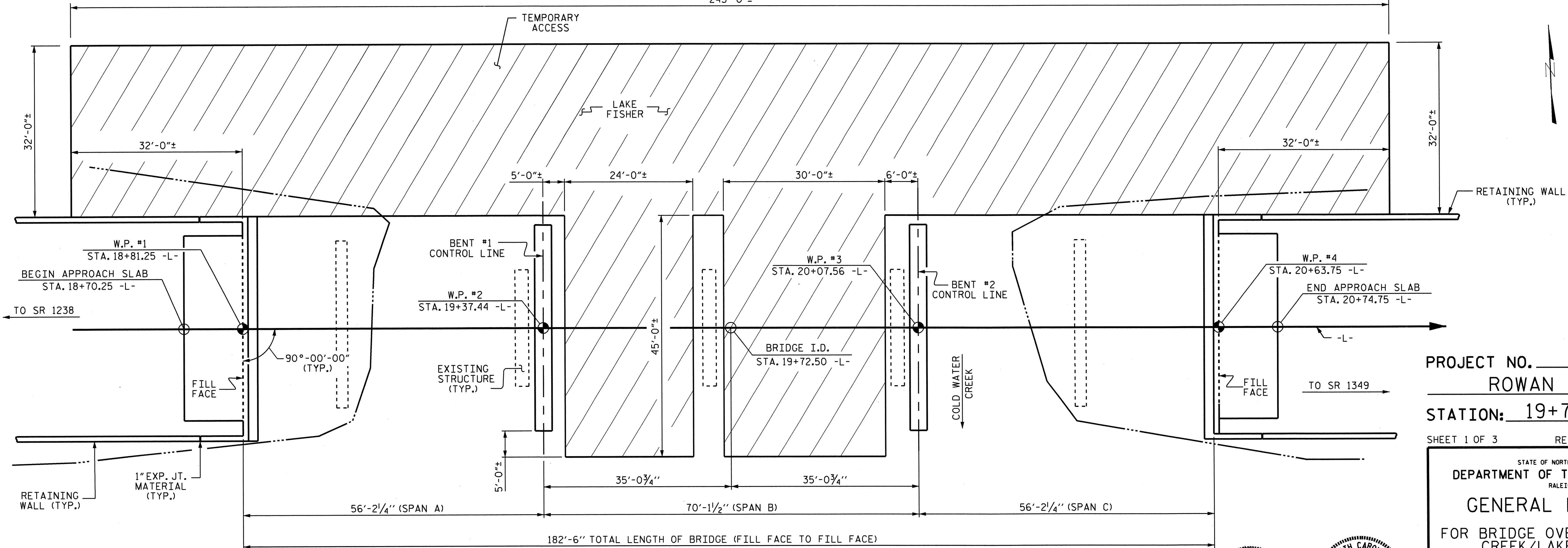
(+)0.3500% (-)0.4556%

PI = 19+70.00
EL = 652.83
VC = 140.00'



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

245'-0"±



PLAN

(PILES NOT SHOWN FOR CLARITY)

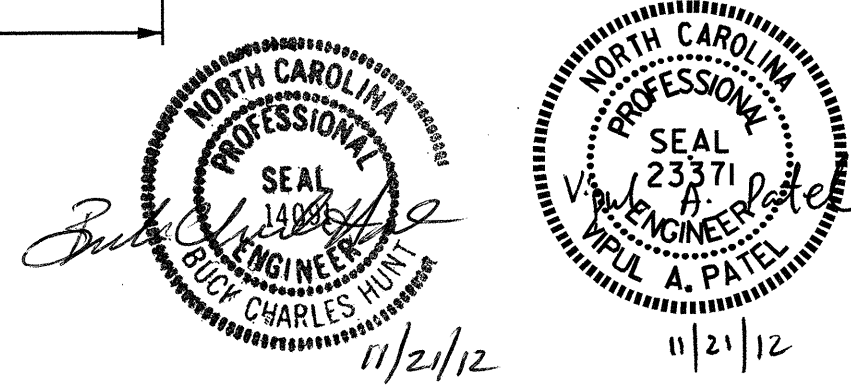
PROJECT NO. B-4809
ROWAN COUNTY
STATION: 19+72.50 -L-

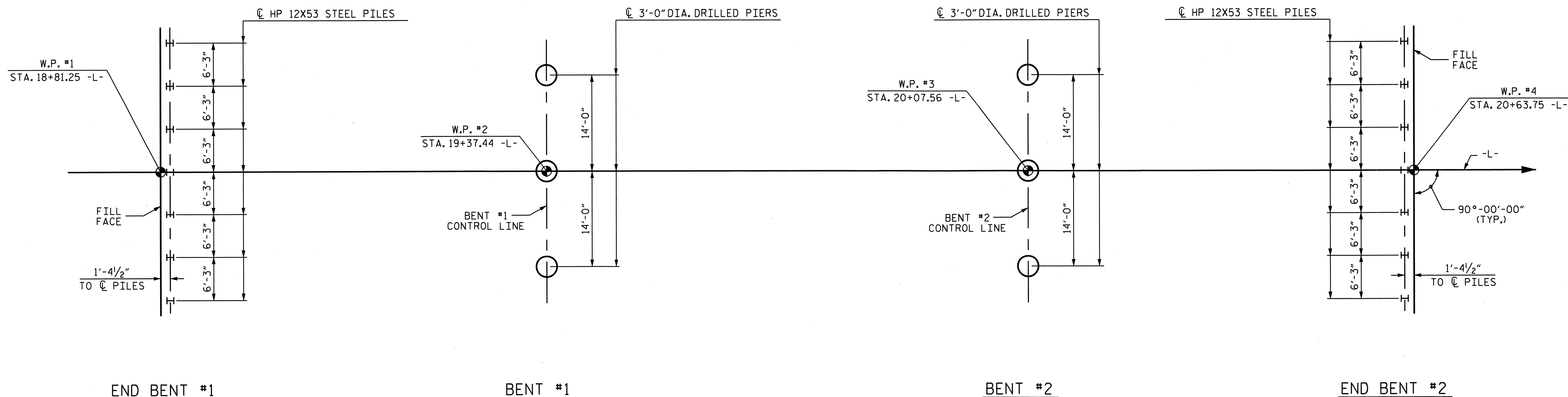
SHEET 1 OF 3 REPLACES BRIDGE NO. 221

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE OVER COLD WATER CREEK/LAKE FISHER ON SR 1308 (MOOSE ROAD) BETWEEN SR 1238 AND SR 1349

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

DRAWN BY: H.T. DIEU DATE: 4/12/12
CHECKED BY: V.A. PATEL DATE: 9/4/12





FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO CENTERLINE OF PILES & DRILLED PIERS

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT #1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT #1 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT #1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 470.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80.0 TSF.

PERMANENT STEEL CASINGS IS REQUIRED FOR DRILLED PIERS AT BENT #1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 626.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL DRILLED PIER AT BENT #1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 618.0, SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 6 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT #1 IS ELEVATION 624.0, THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 470.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF.

PERMANENT STEEL CASINGS IS REQUIRED FOR DRILLED PIERS AT BENT #2. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 626.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL DRILLED PIERS AT BENT #2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 613.0, SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 6 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATIONS FOR BENT #2 IS ELEVATION 622.0 THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTIONS 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

SPT MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

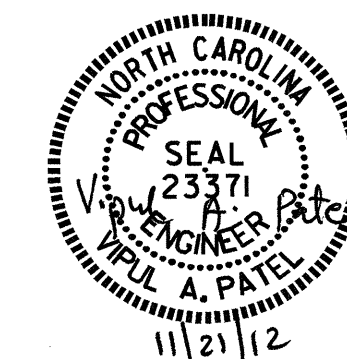
PILES AT END BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT #2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 2 OF 3

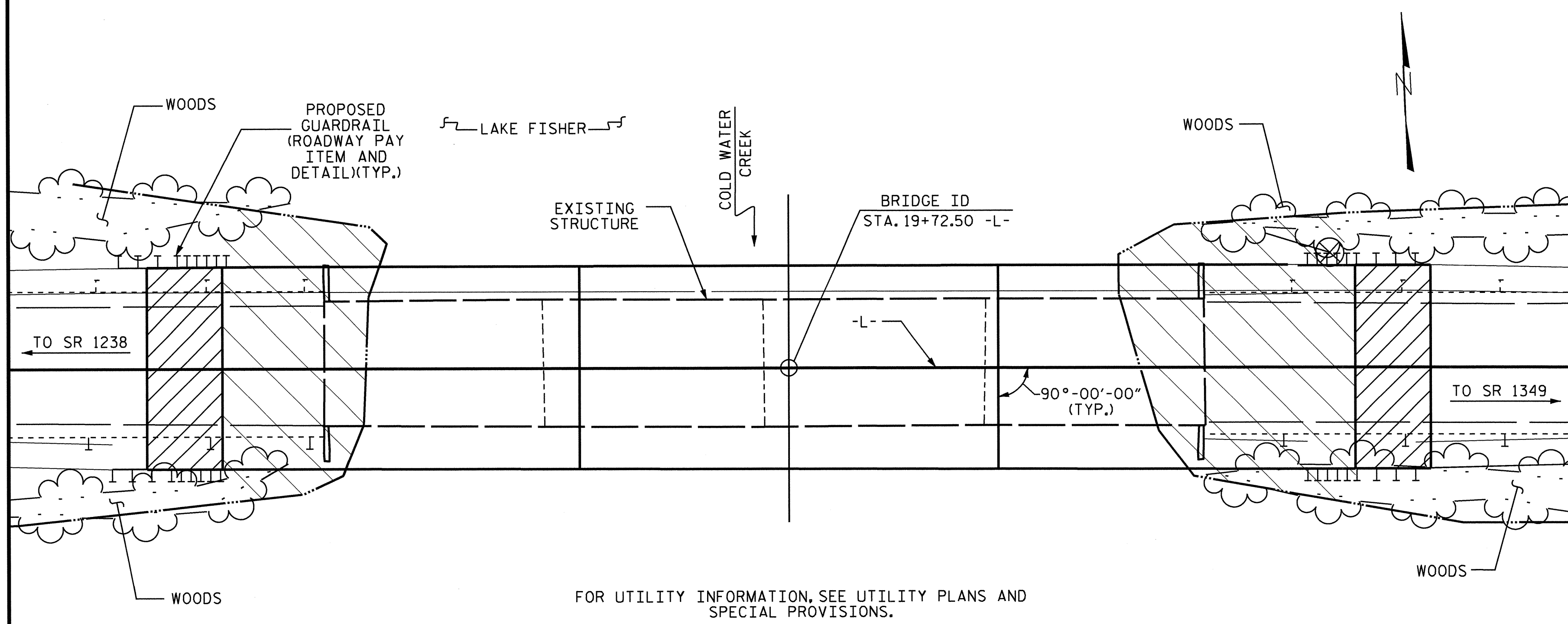
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER COLD WATER
 CREEK/LAKE FISHER
 ON SR 1308 (MOOSE ROAD)
 BETWEEN SR 1238 AND SR 1349



DRAWN BY : H.T. DIEU DATE : 4/12/12
 CHECKED BY : V.A. PATEL DATE : 9/3/12

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

BM #2: 18.57' LEFT OF STA. 14+65.72 -BL-, ELEV. 651.15



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 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.
 THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 35'-2", 2 @ 35'-0", 1 @ 35'-2") WITH A REINFORCED CONCRETE DECK ON I-BEAMS WITH A CLEAR ROADWAY OF 20 FT. ON REINFORCED CONCRETE CAPS ON TIMBER PILES AT END BENTS, BENT 1 & BENT 3 & REINFORCED CONCRETE POST & BEAM AT BENT 2 LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. FOR REMOVAL OF EXISTING STRUCTURE, 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 19+72.50 -L-.

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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 THE BRIDGE IS LOCATED IN SEISMIC ZONE 1.
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 19+72.50 -L-, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-0" DIA. DRILLED PIERS IN SOIL	3'-0" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP12X53 STEEL PILES	2 BAR METAL RAIL	1'-2" X 2'-11" CONCRETE PARAPET	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS			
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS	LBS	NO.	LIN. FT.	LIN. FT.	LIN. FT.	LUMP SUM	NO.	LIN. FT.	NO.	LIN. FT.
SUPERSTRUCTURE											LUMP SUM				345.50	360.50	LUMP SUM	24	1320.00	12	840.00	
END BENT #1										22.1		2,688		7	140							
BENT #1			58.3	24	58.3	3				15.7		8,542	1,479									
BENT #2			59.3	38	58.3	3				15.7		9,339	1,729									
END BENT #2										22.1		2,688		7	140							
TOTAL	LUMP SUM	LUMP SUM	117.6	62	116.6	6	1	1	LUMP SUM	75.6	LUMP SUM	23,257	3,208	14	280	345.50	360.50	LUMP SUM	24	1320.00	12	840.00

HYDRAULIC DATA

DESIGN DISCHARGE = 3300 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YRS.
 DESIGN HIGH WATER ELEVATION = 650.10
 DRAINAGE AREA = 14.4 SQ. MI.
 BASE DISCHARGE (0100) = 4015 C.F.S.
 BASE HIGH WATER ELEVATION = 650.2

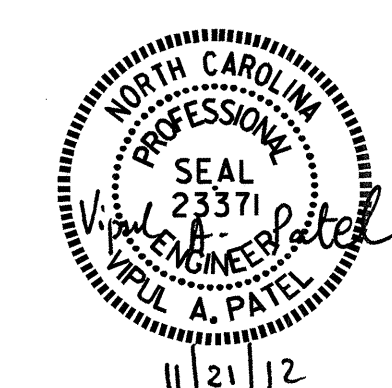
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 5800+ C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS.
 OVERTOPPING FLOOD ELEVATION = 651.90

PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER COLD WATER CREEK/LAKE FISHER
 ON SR 1308 (MOOSE ROAD)
 BETWEEN SR 1238 AND SR 1349



DRAWN BY: H.T. DIEU DATE: 4/12/12
 CHECKED BY: V.A. PATEL DATE: 9/3/12

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.055	--	1.75	0.275	1.23	55'	EL	27	0.523	1.23	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27		
	HL-93(0pr)	N/A	--	1.591	--	1.35	0.275	1.59	55'	EL	27	0.523	1.59	55'	EL	5.4	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.322	47.585	1.75	0.275	1.54	55'	EL	27	0.523	1.47	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27		
	HS-20(0pr)	36.000	--	1.9	68.396	1.35	0.275	1.99	55'	EL	27	0.523	1.9	55'	EL	5.4	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.776	37.476	1.4	0.275	4.04	55'	EL	27	0.523	4.17	55'	EL	5.4	0.80	0.275	2.78	55'	EL	27	
		SNGARBS2	20.000	--	2.155	43.095	1.4	0.275	3.14	55'	EL	27	0.523	3.02	55'	EL	5.4	0.80	0.275	2.15	55'	EL	27	
		SNAGRIS2	22.000	--	2.079	45.734	1.4	0.275	3.03	55'	EL	27	0.523	2.83	55'	EL	5.4	0.80	0.275	2.08	55'	EL	27	
		SNCOTTS3	27.250	--	1.384	37.708	1.4	0.275	2.01	55'	EL	27	0.523	2.09	55'	EL	5.4	0.80	0.275	1.38	55'	EL	27	
		SNAGGRS4	34.925	--	1.189	41.527	1.4	0.275	1.73	55'	EL	27	0.523	1.77	55'	EL	5.4	0.80	0.275	1.19	55'	EL	27	
		SNS5A	35.550	--	1.16	41.255	1.4	0.275	1.69	55'	EL	27	0.523	1.82	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
	TTST	SNS6A	39.950	--	1.079	43.102	1.4	0.275	1.57	55'	EL	27	0.523	1.68	55'	EL	5.4	0.80	0.275	1.08	55'	EL	27	
		SNS7B	42.000	--	1.028	43.175	1.4	0.275	1.5	55'	EL	27	0.523	1.67	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27	
		TNAGRIT3	33.000	--	1.32	43.556	1.4	0.275	1.92	55'	EL	27	0.523	1.98	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		TNT4A	33.075	--	1.33	43.979	1.4	0.275	1.94	55'	EL	27	0.523	1.91	55'	EL	5.4	0.80	0.275	1.33	55'	EL	27	
		TNT6A	41.600	--	1.101	45.811	1.4	0.275	1.6	55'	EL	27	0.523	1.83	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNT7A	42.000	--	1.114	46.804	1.4	0.275	1.62	55'	EL	27	0.523	1.71	55'	EL	5.4	0.80	0.275	1.11	55'	EL	27	
		TNT7B	42.000	--	1.163	48.848	1.4	0.275	1.69	55'	EL	27	0.523	1.62	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
TNAGRIT4	43.000	--	1.101	47.33	1.4	0.275	1.6	55'	EL	27	0.523	1.56	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27			
TNAGT5A	45.000	--	1.031	46.405	1.4	0.275	1.5	55'	EL	27	0.523	1.58	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27			
TNAGT5B	45.000	3	1.013	45.582	1.4	0.275	1.47	55'	EL	27	0.523	1.48	55'	EL	5.4	0.80	0.275	1.01	55'	EL	27			

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

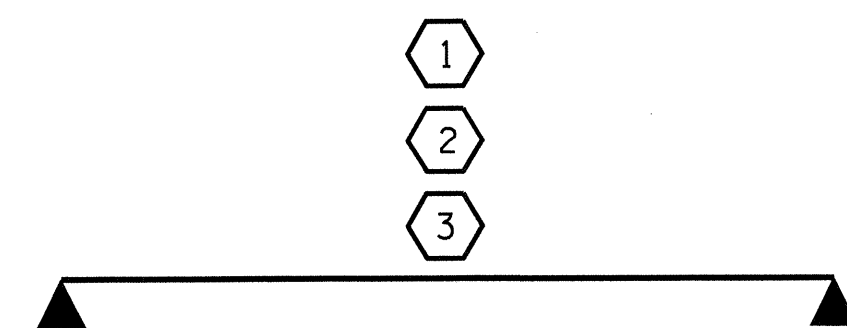
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

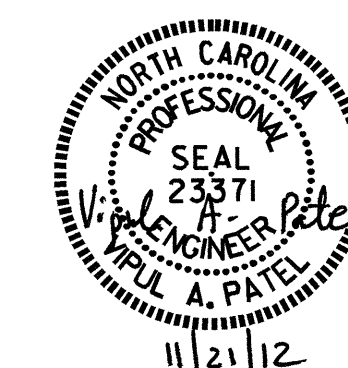
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN A & SPAN C

PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 55' CORED SLAB UNIT
 90° SKEW
 (NON-INTERSTATE TRAFFIC)
 SPAN A & SPAN C

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

ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 4 /17/12
 DRAWN BY : CVC 6/10
 CHECKED BY : DNS 6/10

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(InV)	N/A	1	1.006	--	1.75	0.273	1.03	70'	EL	34.5	0.507	1.32	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5		
	HL-93(OPr)	N/A	--	1.341	--	1.35	0.273	1.34	70'	EL	34.5	0.507	1.72	70'	EL	6.9	N/A	--	--	--	--	--		
	HS-20(InV)	36.000	2	1.306	47.02	1.75	0.273	1.34	70'	EL	34.5	0.507	1.65	70'	EL	6.9	0.80	0.273	1.31	70'	EL	34.5		
	HS-20(OPr)	36.000	--	1.74	62.64	1.35	0.273	1.74	70'	EL	34.5	0.507	2.14	70'	EL	6.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.917	39.379	1.4	0.273	3.75	70'	EL	34.5	0.507	4.87	70'	EL	6.9	0.80	0.273	2.92	70'	EL	34.5	
		SNGARBS2	20.000	--	2.187	43.741	1.4	0.273	2.81	70'	EL	34.5	0.507	3.47	70'	EL	6.9	0.80	0.273	2.19	70'	EL	34.5	
		SNAGRIS2	22.000	--	2.077	45.69	1.4	0.273	2.67	70'	EL	34.5	0.507	3.23	70'	EL	6.9	0.80	0.273	2.08	70'	EL	34.5	
		SNCOTTS3	27.250	--	1.452	39.565	1.4	0.273	1.87	70'	EL	34.5	0.507	2.43	70'	EL	6.9	0.80	0.273	1.45	70'	EL	34.5	
		SNAGGRS4	34.925	--	1.218	42.554	1.4	0.273	1.57	70'	EL	34.5	0.507	2.03	70'	EL	6.9	0.80	0.273	1.22	70'	EL	34.5	
		SNS5A	35.550	--	1.191	42.346	1.4	0.273	1.53	70'	EL	34.5	0.507	2.06	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	
		SNS6A	39.950	--	1.095	43.747	1.4	0.273	1.41	70'	EL	34.5	0.507	1.88	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
	SNS7B	42.000	--	1.043	43.801	1.4	0.273	1.34	70'	EL	34.5	0.507	1.85	70'	EL	6.9	0.80	0.273	1.04	70'	EL	34.5		
	TTST	TNAGRIT3	33.000	--	1.336	44.087	1.4	0.273	1.72	70'	EL	34.5	0.507	2.23	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT4A	33.075	--	1.342	44.401	1.4	0.273	1.72	70'	EL	34.5	0.507	2.17	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT6A	41.600	--	1.1	45.746	1.4	0.273	1.41	70'	EL	34.5	0.507	1.98	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		TNT7A	42.000	--	1.106	46.462	1.4	0.273	1.42	70'	EL	34.5	0.507	1.94	70'	EL	6.9	0.80	0.273	1.11	70'	EL	34.5	
		TNT7B	42.000	--	1.147	48.18	1.4	0.273	1.47	70'	EL	34.5	0.507	1.8	70'	EL	6.9	0.80	0.273	1.15	70'	EL	34.5	
		TNAGRIT4	43.000	--	1.089	46.838	1.4	0.273	1.4	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.09	70'	EL	34.5	
TNACT5A		45.000	--	1.026	46.175	1.4	0.273	1.32	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.03	70'	EL	34.5		
TNACT5B	45.000	3	1.013	45.579	1.4	0.273	1.3	70'	EL	34.5	0.507	1.66	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5			

LOAD FACTORS:

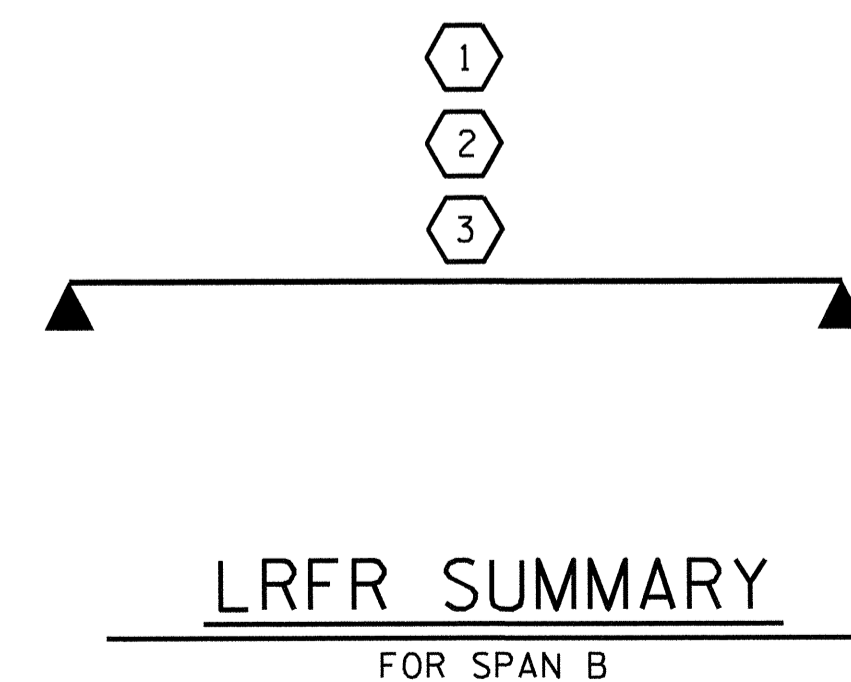
DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

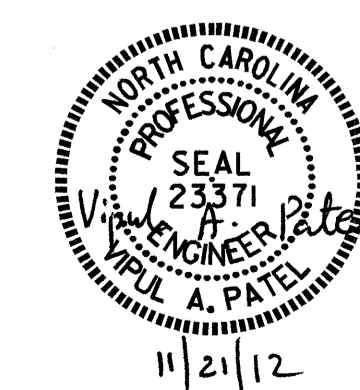
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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



PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

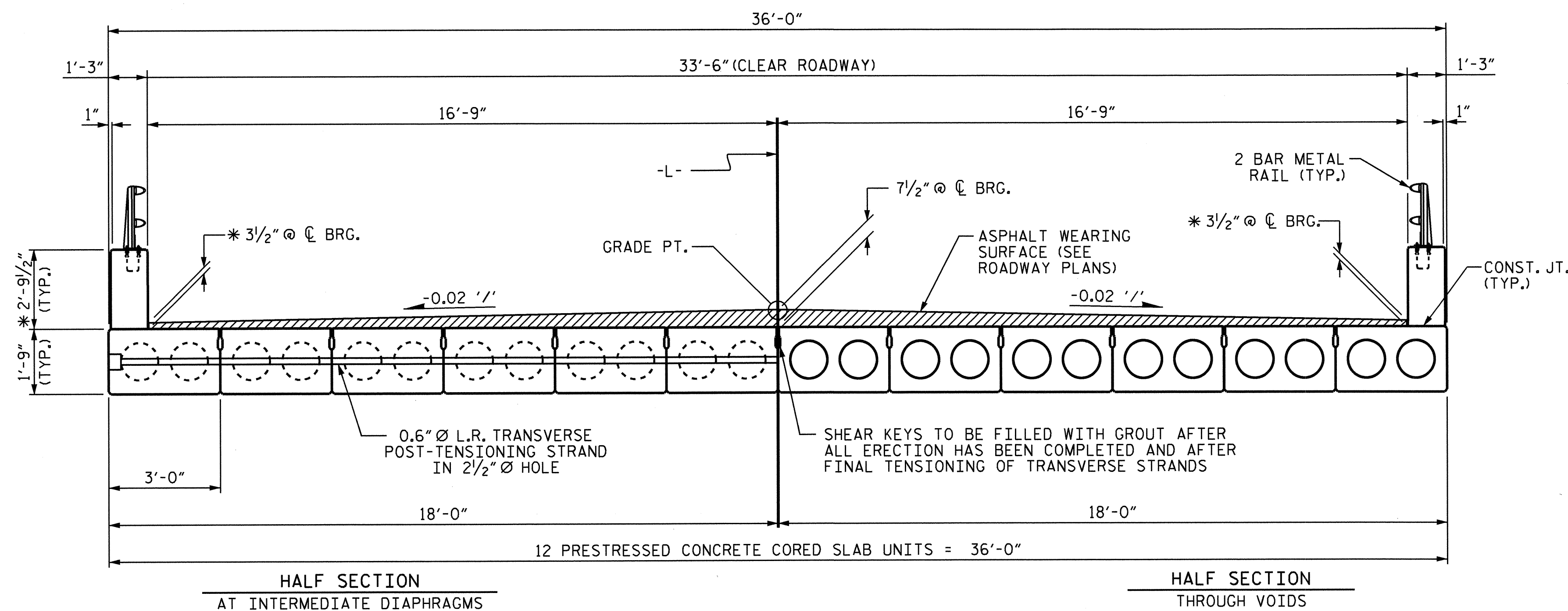
SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 70' CORED SLAB UNIT
 90° SKEW
 (NON-INTERSTATE TRAFFIC)
 SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			25

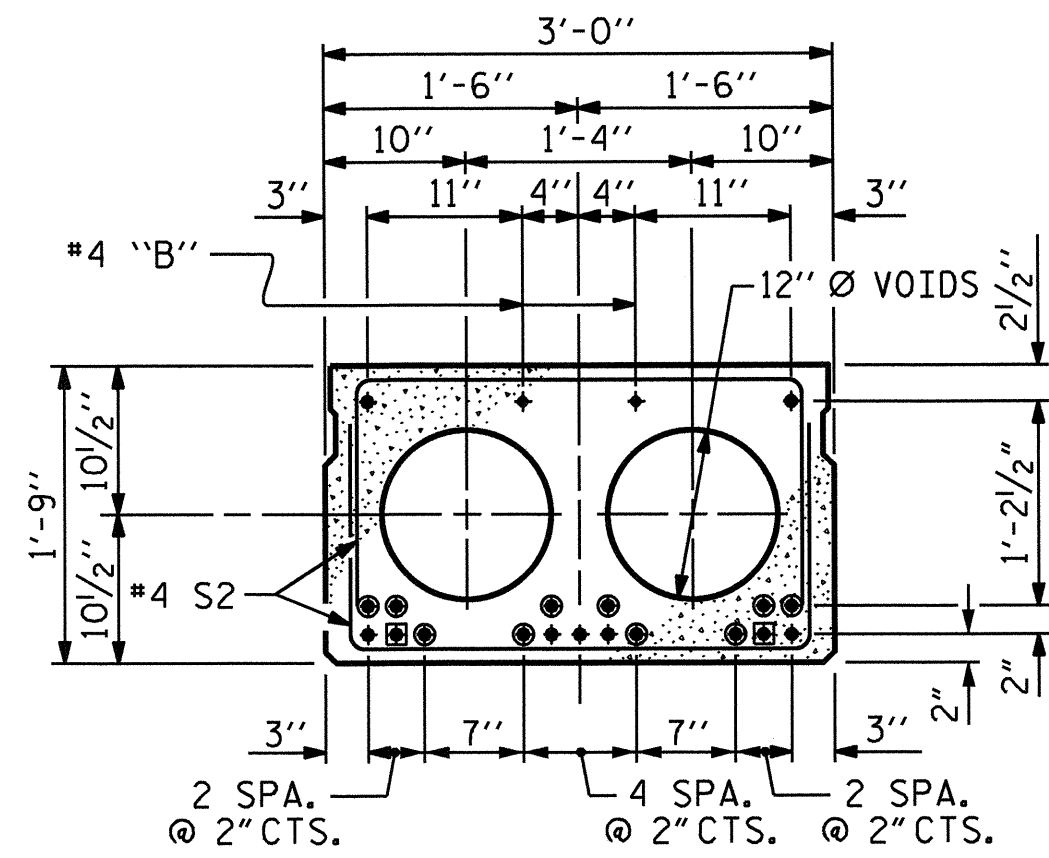
ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 4/ 17/12
 DRAWN BY : CVC 6/10
 CHECKED BY : DNS 6/10



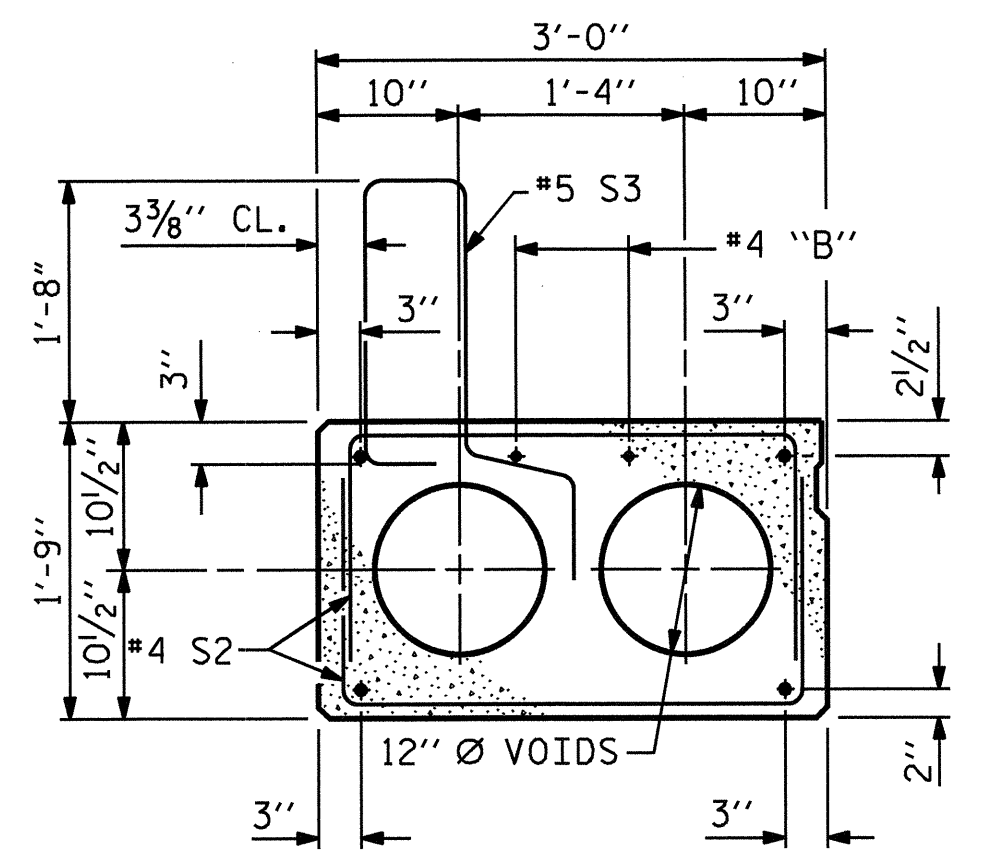
HALF SECTION AT INTERMEDIATE DIAPHRAGMS HALF SECTION THROUGH VOIDS

TYPICAL SECTION

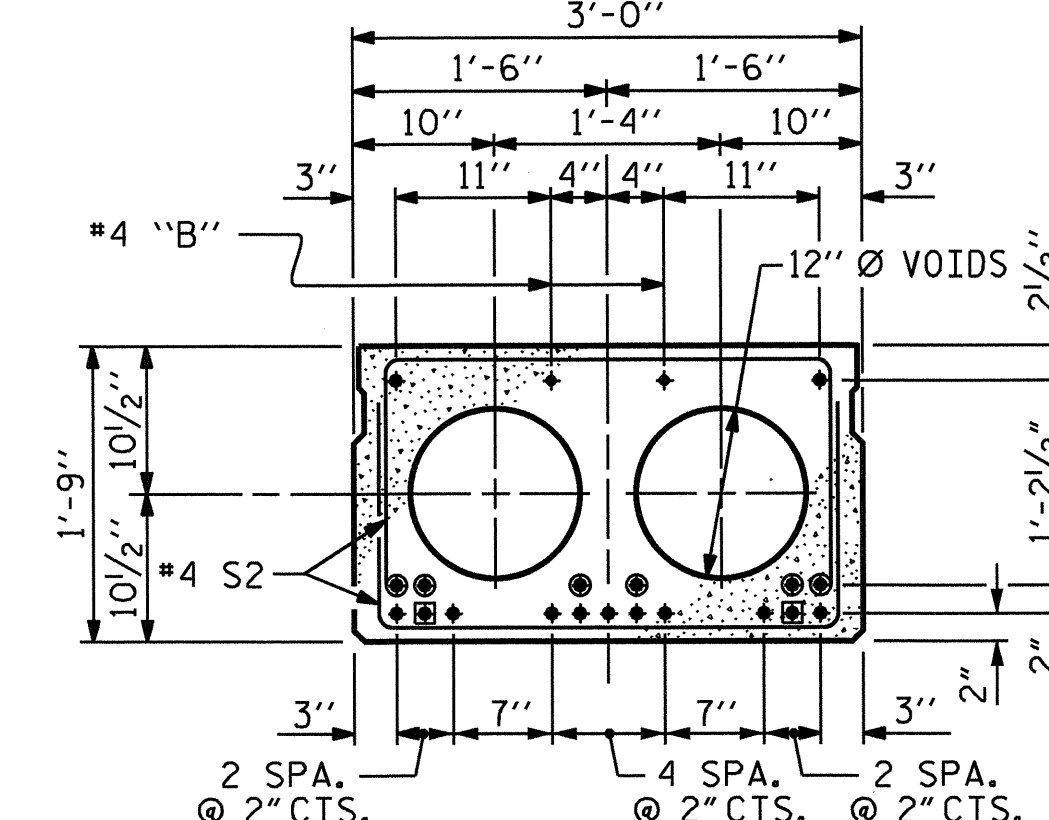
* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "SECTION THRU PARAPET" DETAIL ON "END POSTS & PARAPET DETAILS" SHEET.



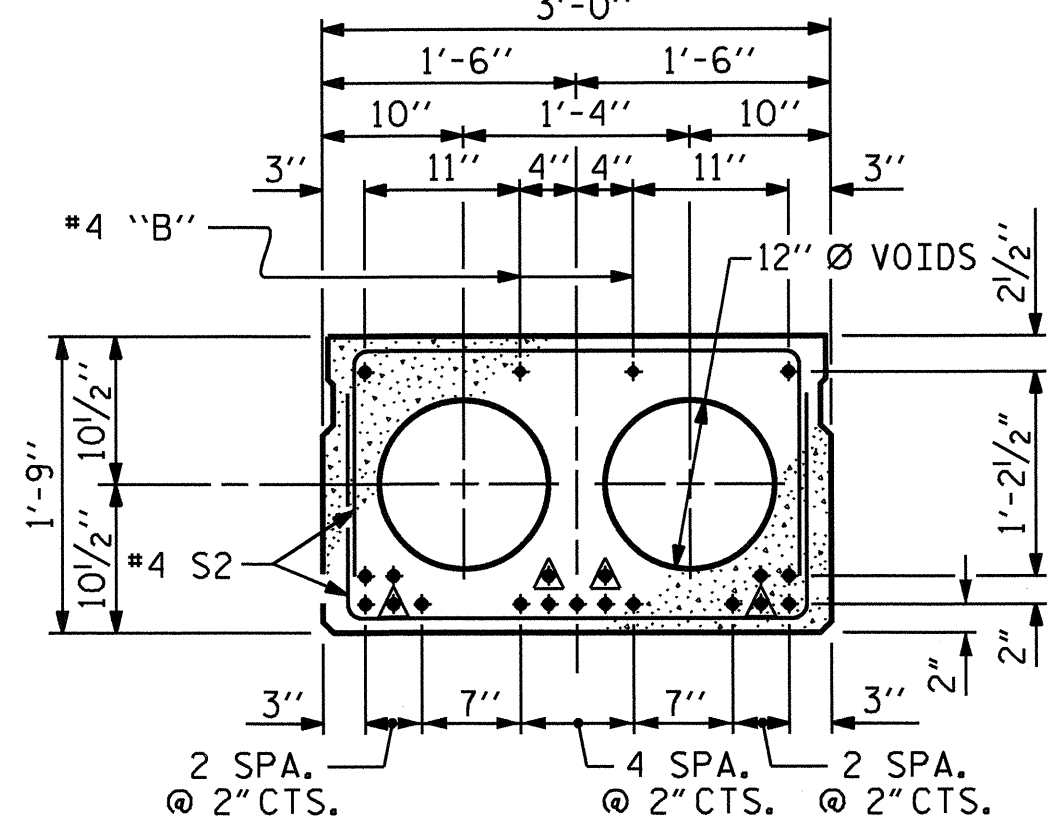
INTERIOR SLAB SECTION (25', 30' & 35' UNIT)
(9 STRANDS REQUIRED)



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

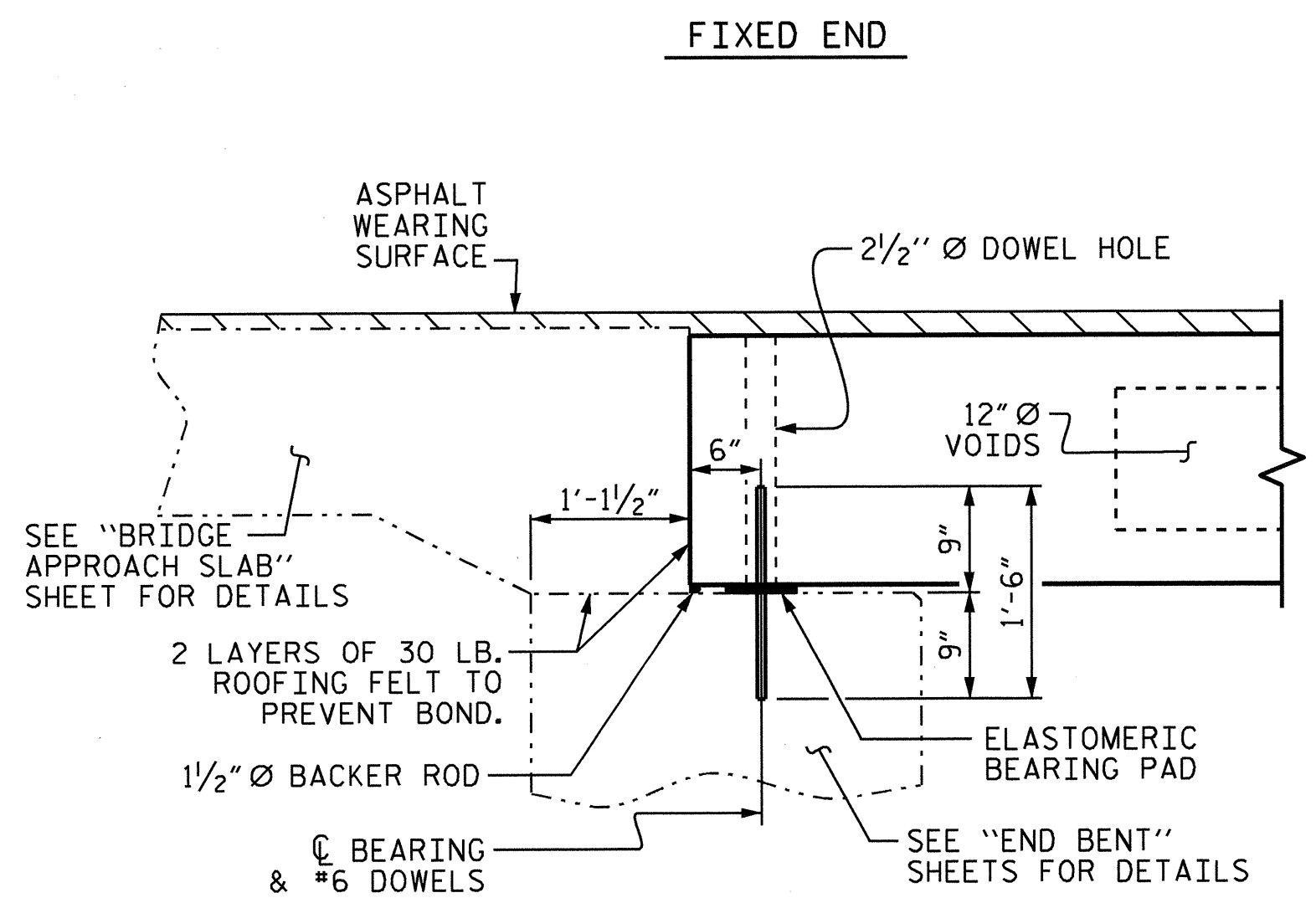


INTERIOR SLAB SECTION (40' & 45' UNIT)
(13 STRANDS REQUIRED)

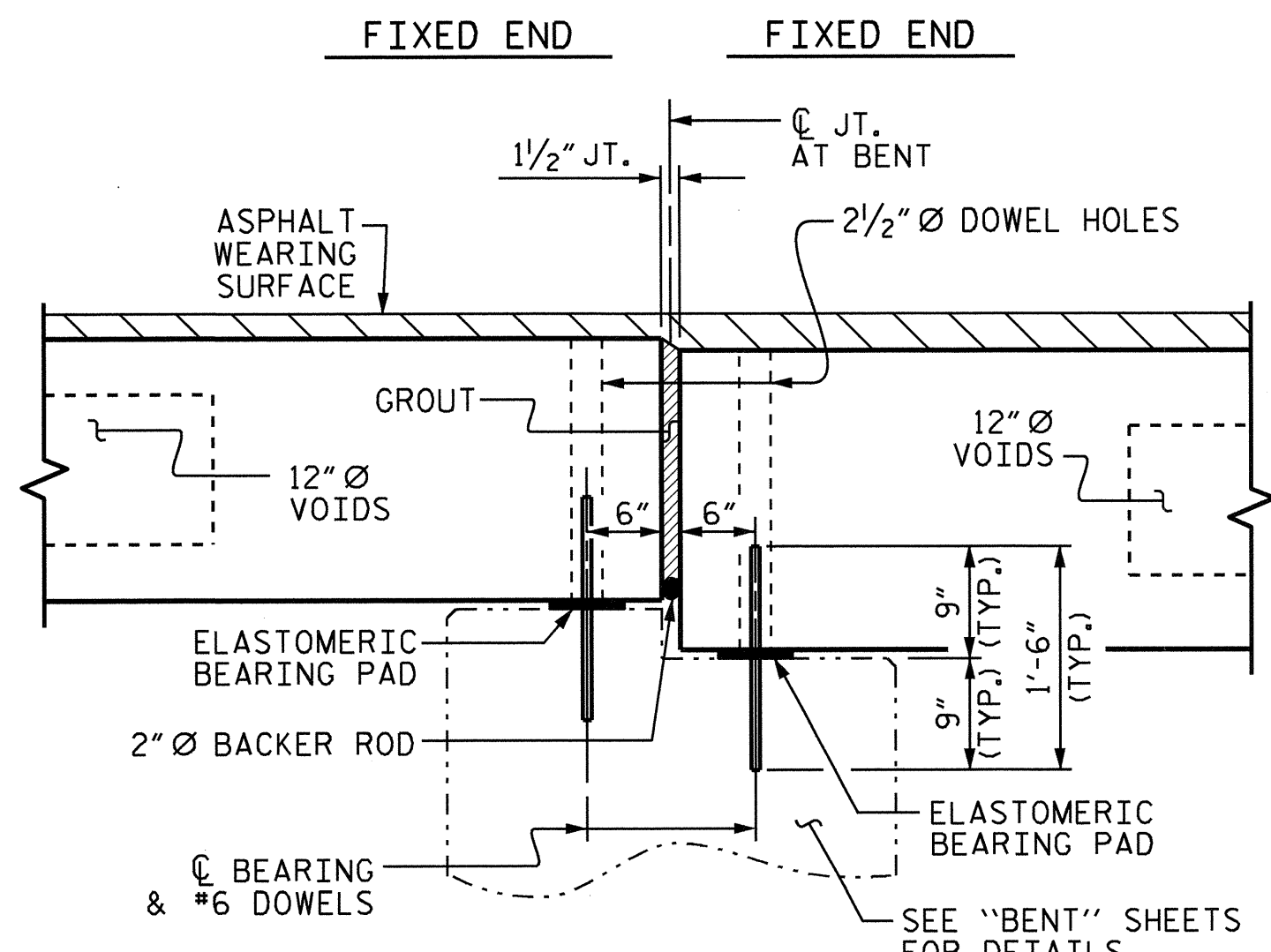


INTERIOR SLAB SECTION (50' & 55' UNIT)
(19 STRANDS REQUIRED)

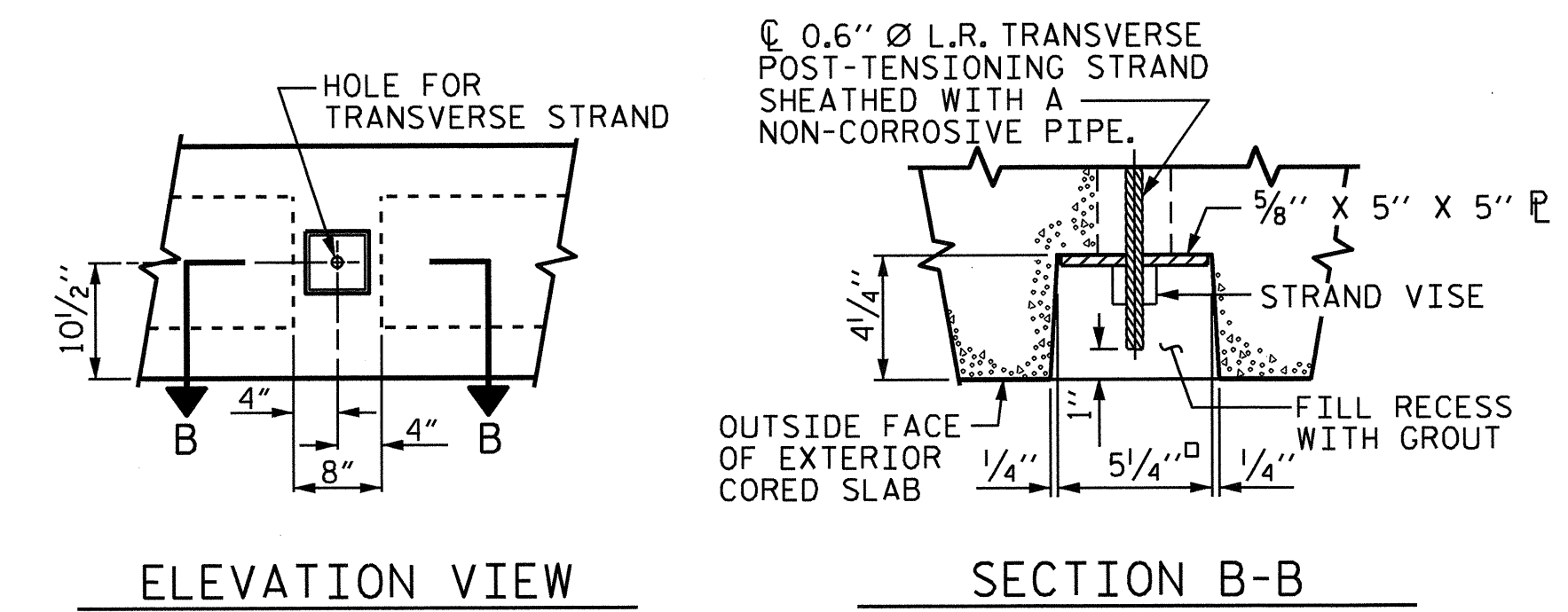
- DEBONDING LEGEND**
- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
 - BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
 - OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.



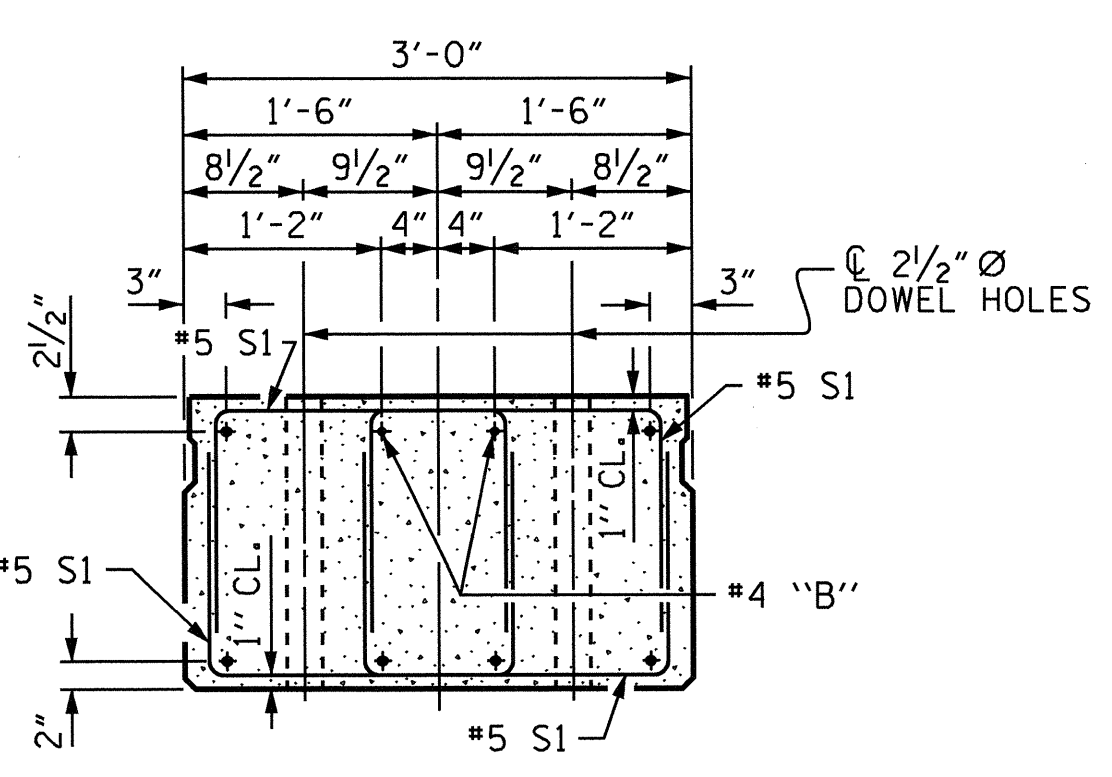
SECTION AT END BENT



SECTION AT BENT #1

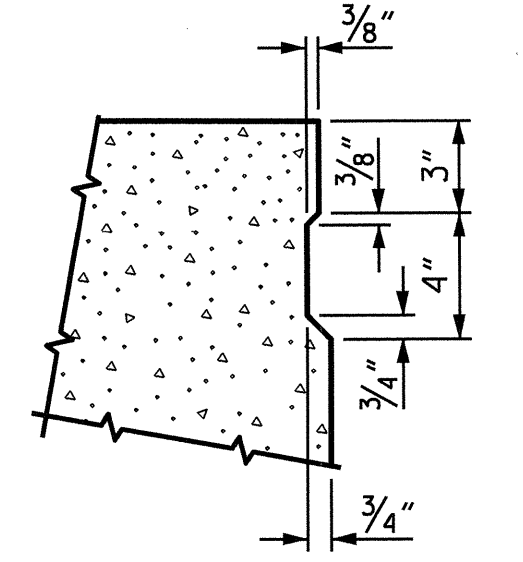


GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



END ELEVATION

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



SHEAR KEY DETAIL

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

0.6" Ø LOW RELAXATION STRAND LAYOUT

ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 08/2012
 DRAWN BY : DGE 5/09 REV. 12/11 MAA/AAC
 CHECKED BY : BCH 6/09

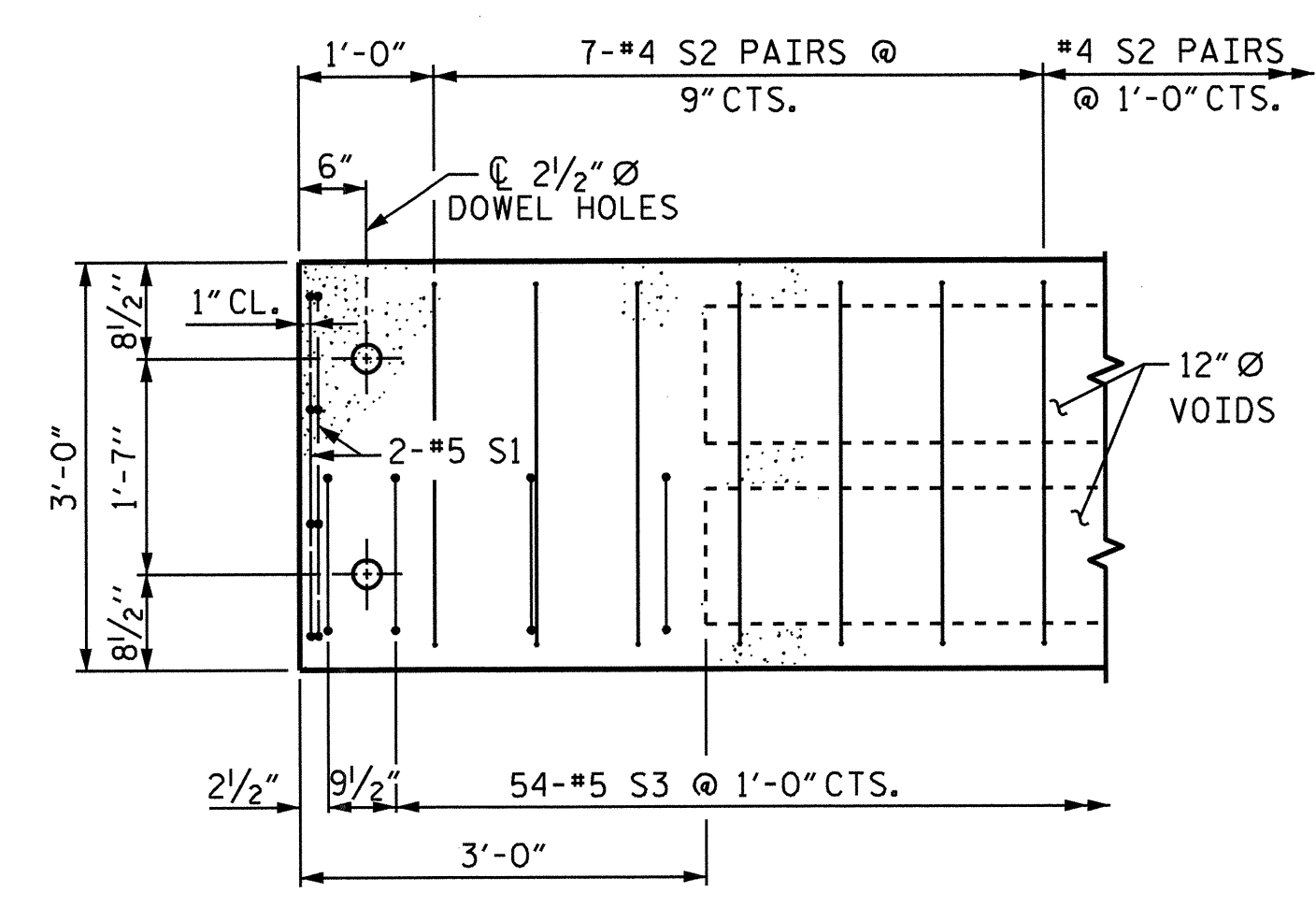
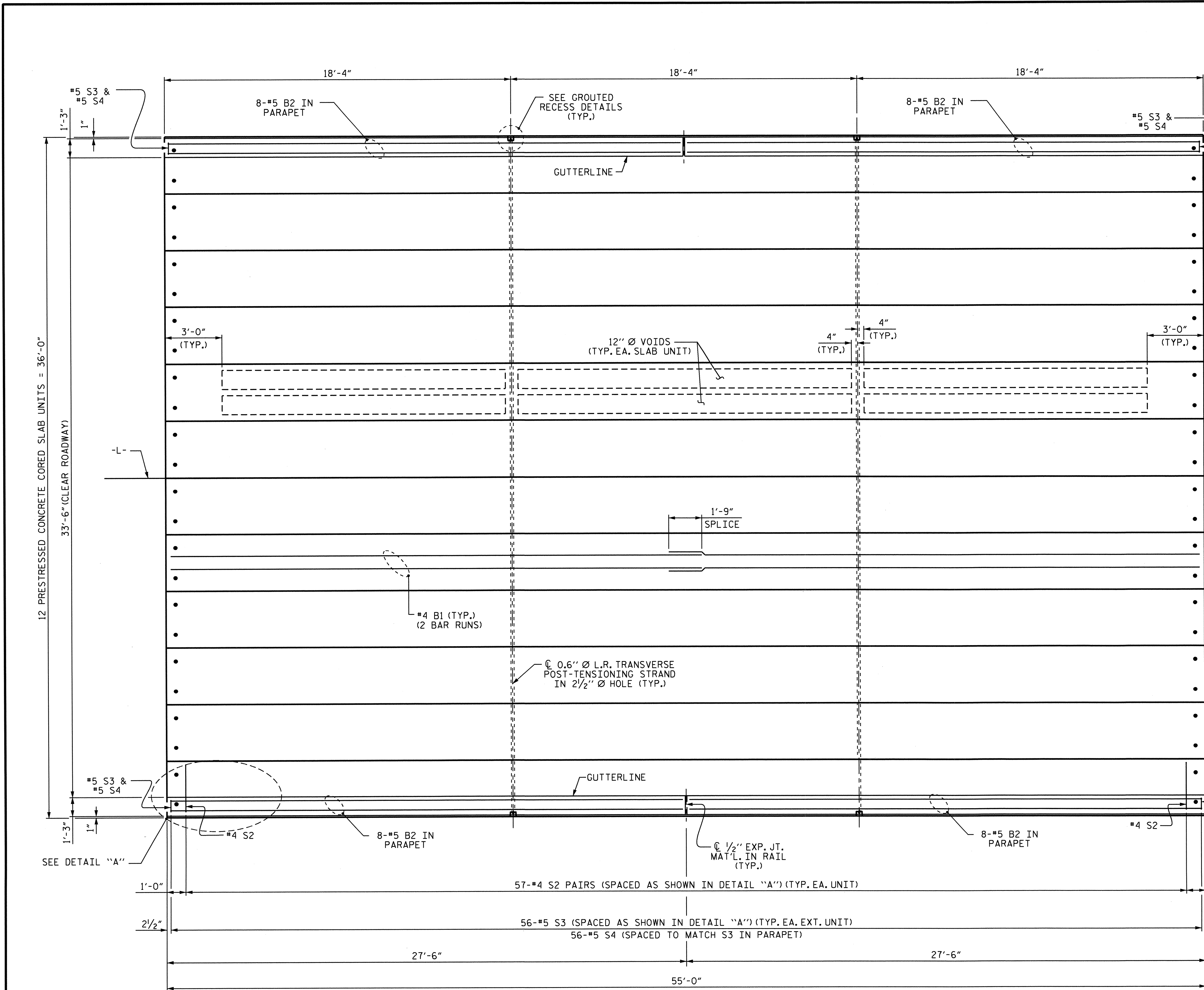
25-SEP-2012 14:24
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 jpdoms



PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD						S-6
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT						TOTAL SHEETS
90° SKEW						25
SPAN A & SPAN C						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

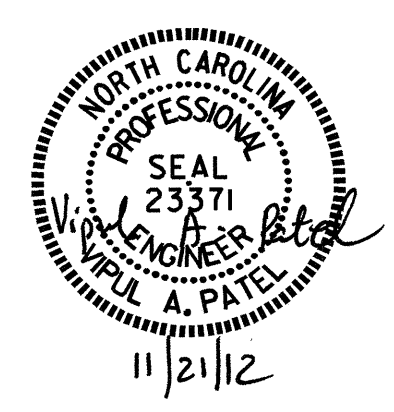


DETAIL "A"
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT

PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

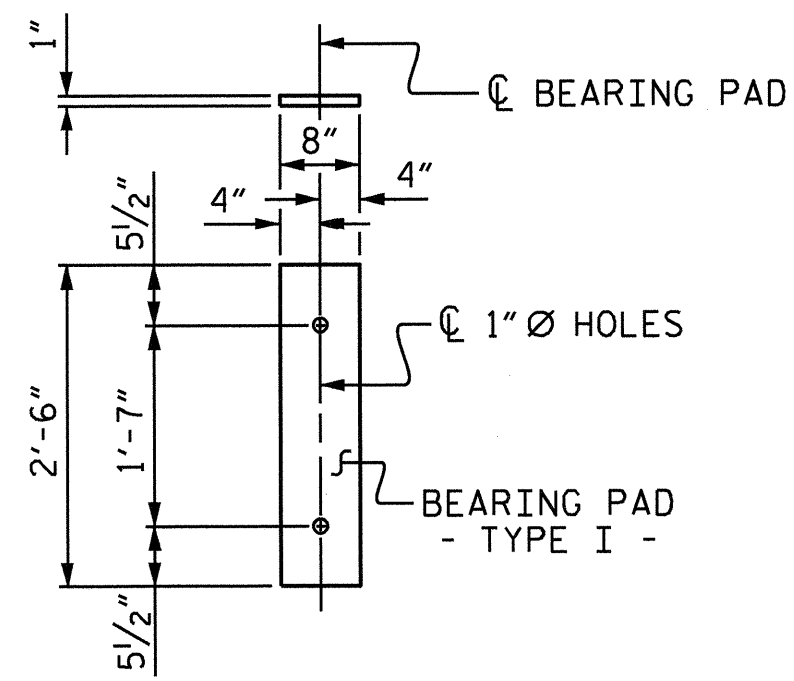
SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 55' UNIT
 33'-6" CLEAR ROADWAY
 90° SKEW
 SPAN A & SPAN C



ASSEMBLED BY: R. L. CHESSON	DATE: 02/2012
CHECKED BY: H. T. DIEU	DATE: 4/12/12
DRAWN BY: DGE 5/09	REV. 12/5/11 MAA/AAC
CHECKED BY: BCH 6/09	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			25

25-SEP-2012 14:24
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 jpadams



FIXED END
(TYPE I - 48 REQ'D)

ELASTOMERIC BEARING DETAILS

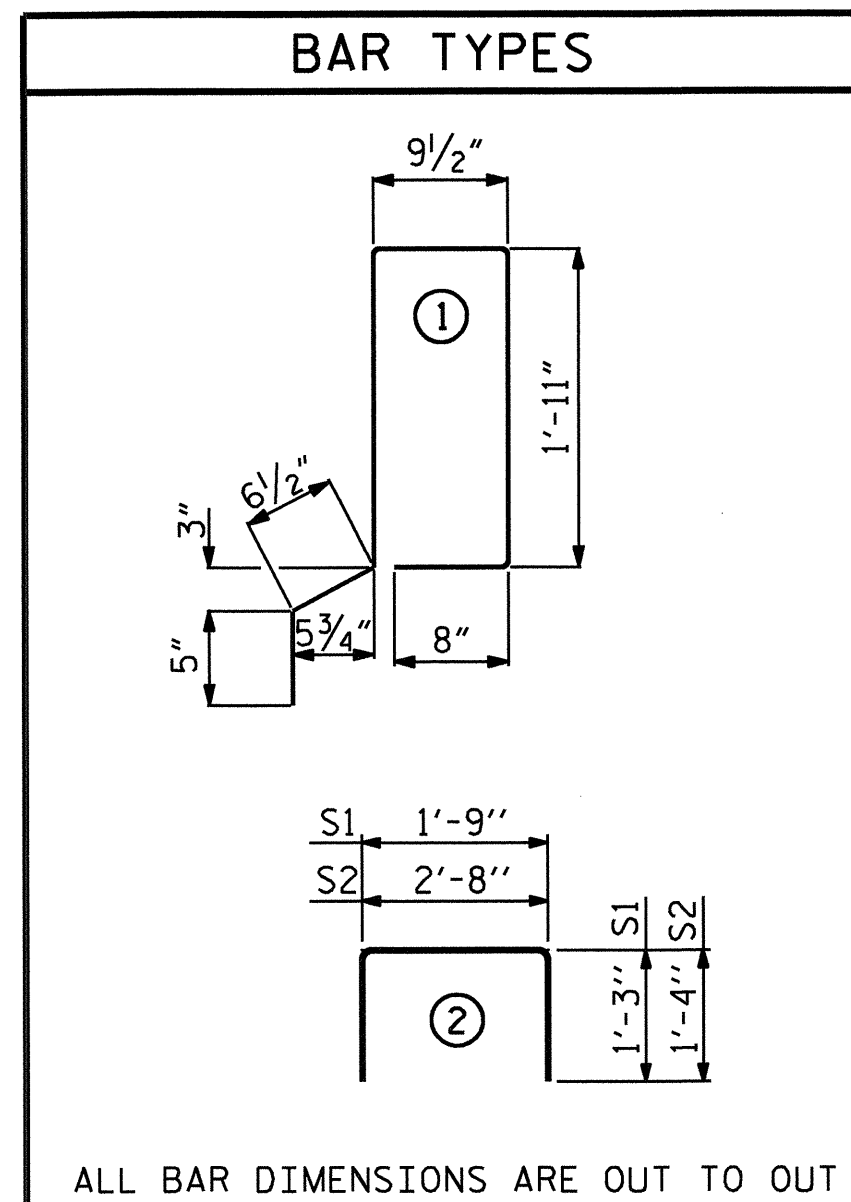
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

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

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	4	55'-0"	220'-0"
INTERIOR C.S.	20	55'-0"	1100'-0"
TOTAL	24		1320'-0"

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
50' & 55' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/4" ↓
FINAL CAMBER	2 1/4" ↑

** INCLUDES FUTURE WEARING SURFACE



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT							
BAR NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT		
			LENGTH	WEIGHT	LENGTH	WEIGHT	
B1	#4	STR	28'-3"	75	28'-3"	75	
S1	#5	2	4'-3"	35	4'-3"	35	
S2	#4	2	5'-4"	406	5'-4"	406	
* S3	#5	1	6'-0"	350			
REINFORCING STEEL				LBS.	516		516
* EPOXY COATED REINFORCING STEEL				LBS.	350		
6500 P.S.I. CONCRETE				CU. YDS.	7.8		7.8
0.6" Ø L.R. STRANDS				No.	19		19

CONCRETE RELEASE STRENGTH	
UNIT	PSI
25', 30' & 35' UNITS	4000
40' & 45' UNITS	4000
50' & 55' UNITS	4900

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
33'-6" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	PARAPET HEIGHT
	@ MID-SPAN	@ MID-SPAN
	NORMAL CROWN SECTION	
50' & 55' UNITS	1 1/4"	2'-7 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

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

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

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

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

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

ALL REINFORCING STEEL IN THE PARAPET SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

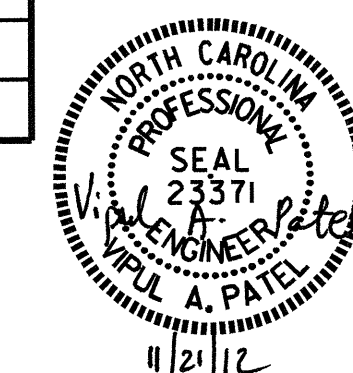
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

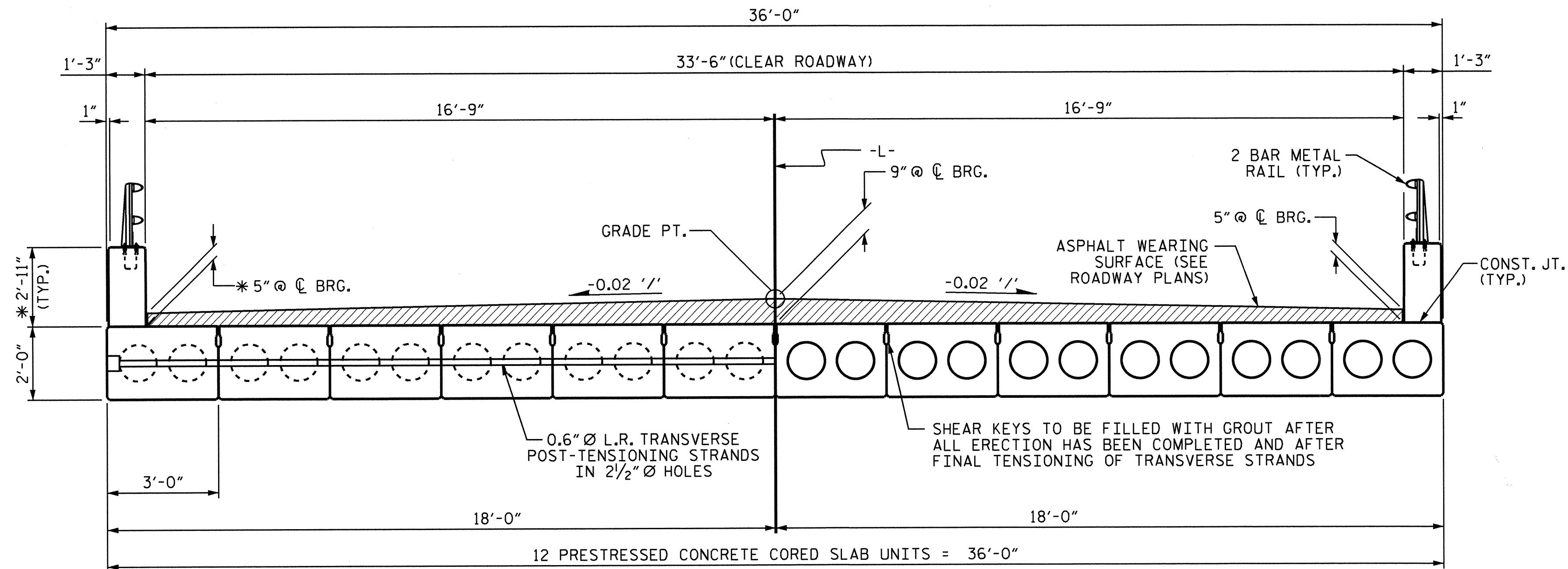
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW
 SPAN A & SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS 25
2			4			



ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 08/2012
 DRAWN BY : DCE 5/09 REV. 12/11 MAA/AAC
 CHECKED BY : BCH 6/09

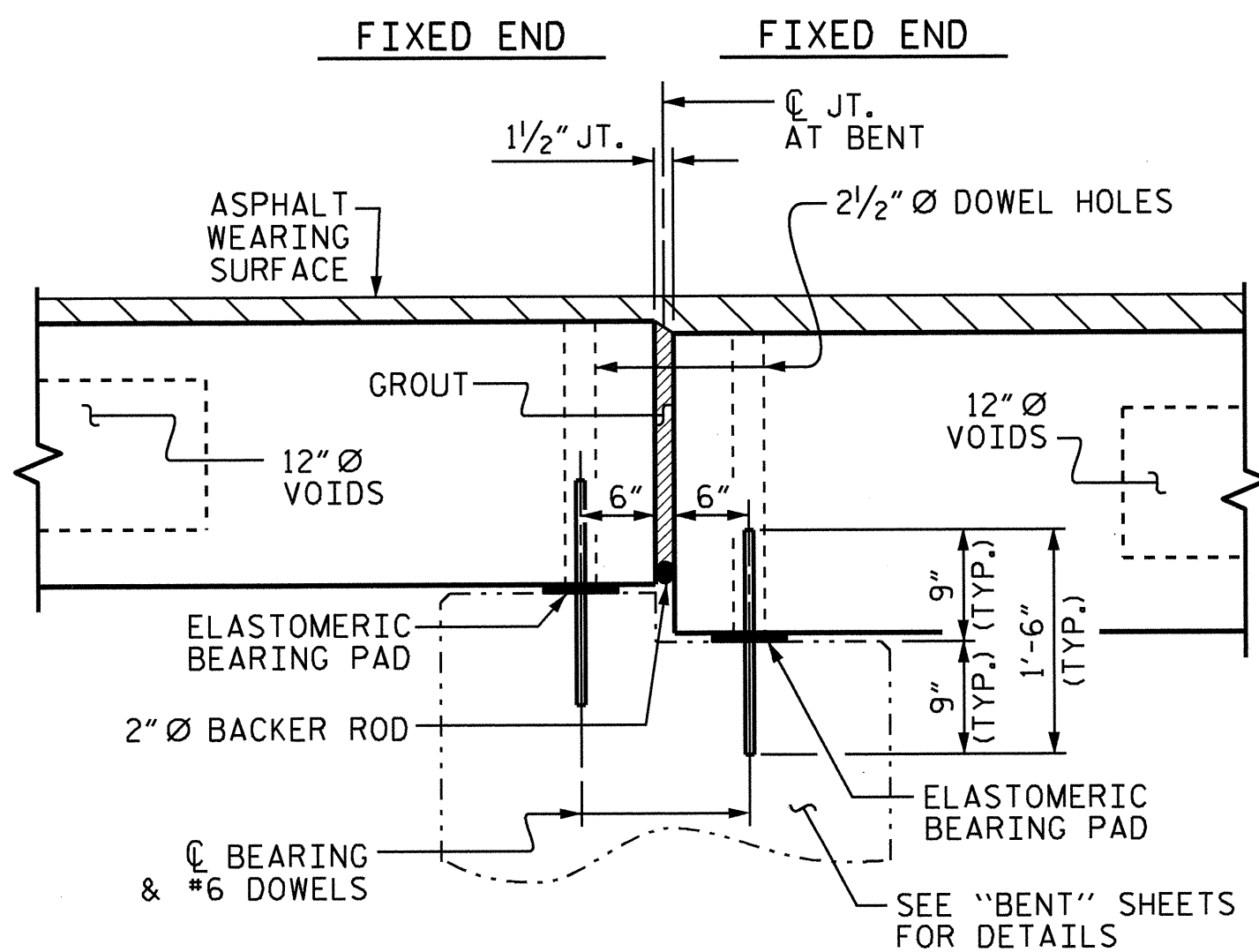


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

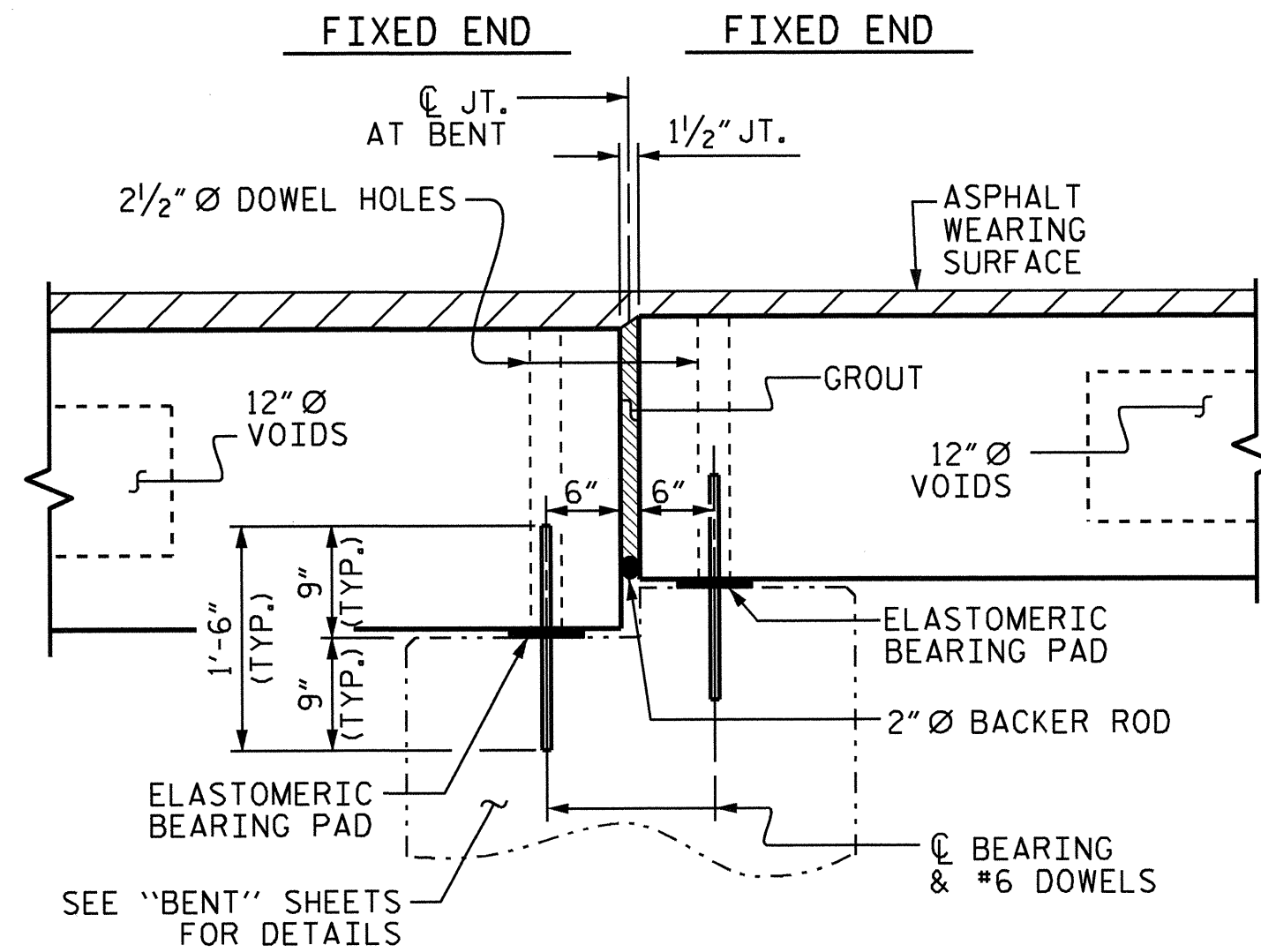
HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

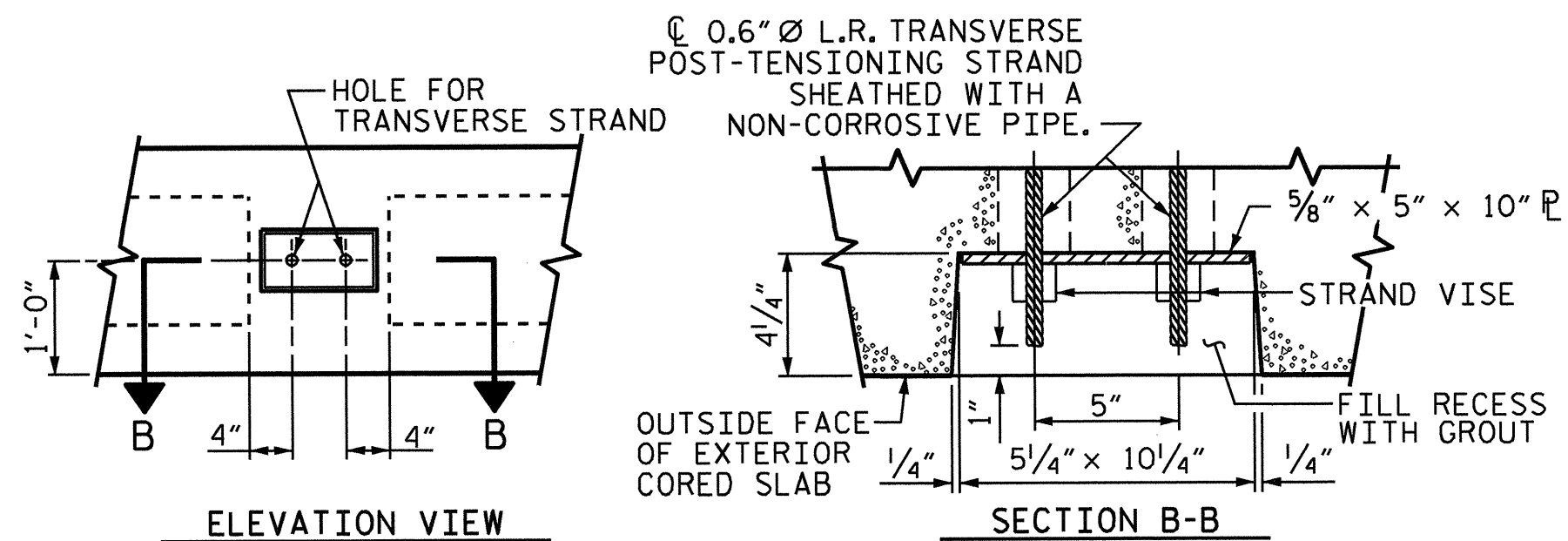
* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "SECTION THRU PARAPET" DETAIL ON "END POSTS & PARAPET DETAILS" SHEET.



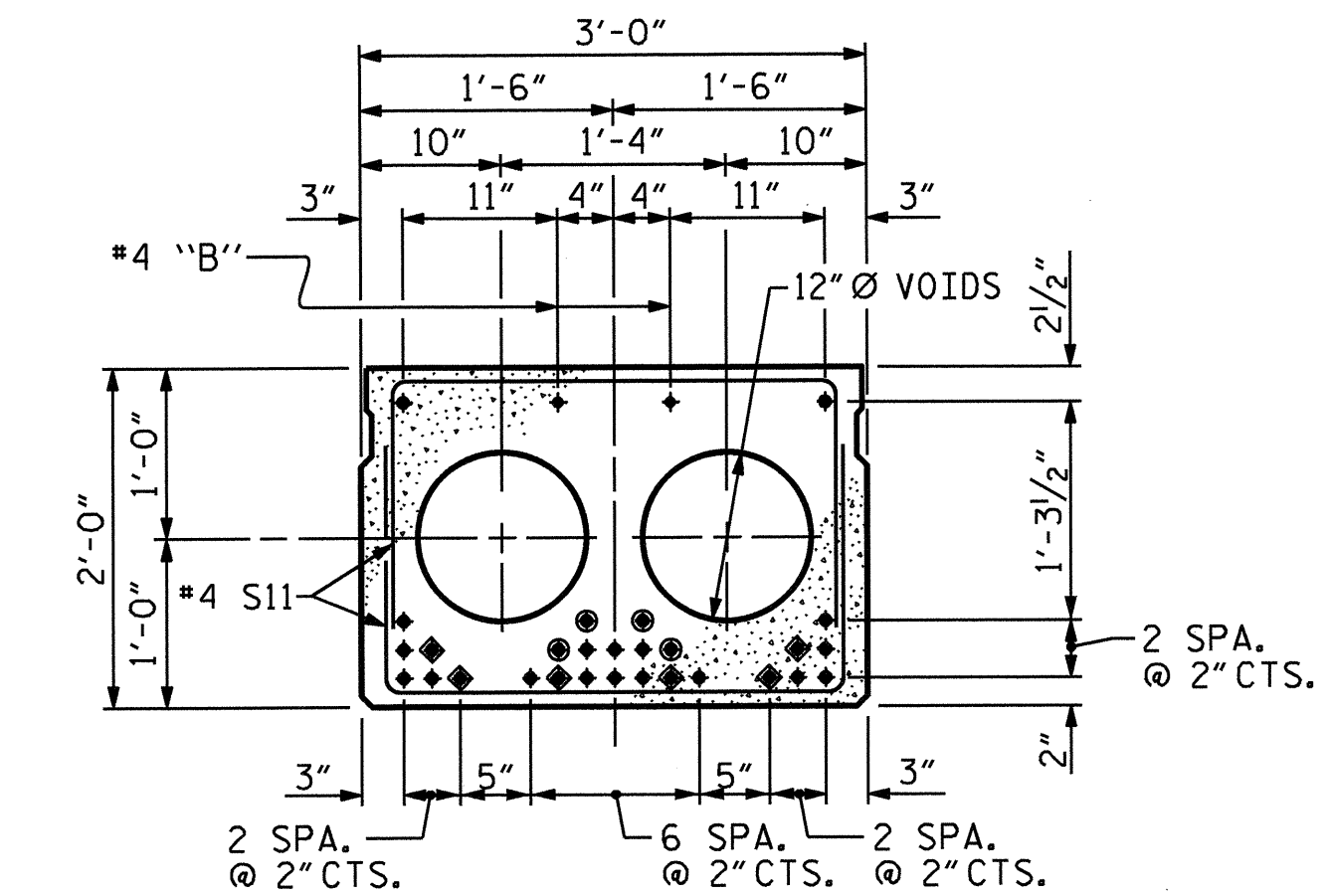
SECTION AT BENT No. 1



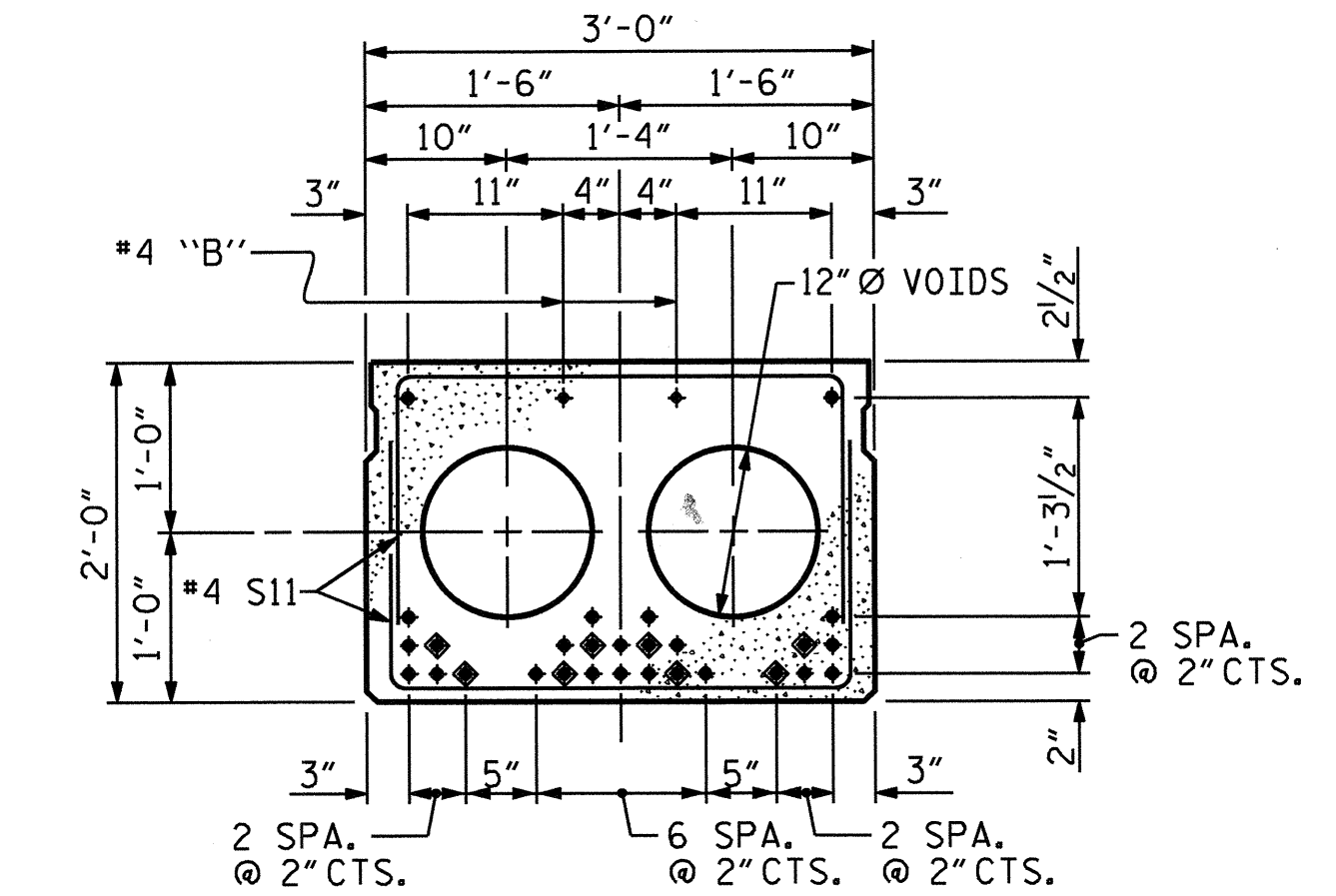
SECTION AT BENT No. 2



GROUTED RECESS AT END OF
POST-TENSIONED STRAND CORED SLABS



INTERIOR SLAB SECTION (60' & 65' UNIT)
(24 STRANDS REQUIRED)

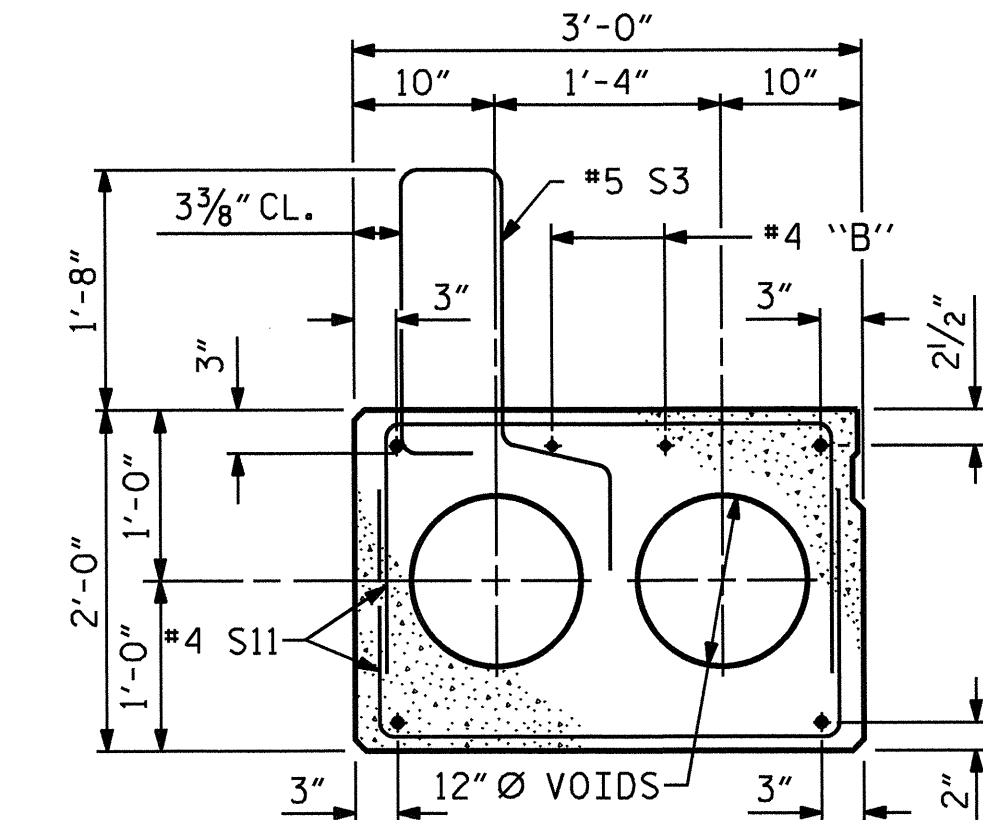


INTERIOR SLAB SECTION (70' UNIT)
(28 STRANDS REQUIRED)

0.6" Ø LOW
RELAXATION STRAND LAYOUT

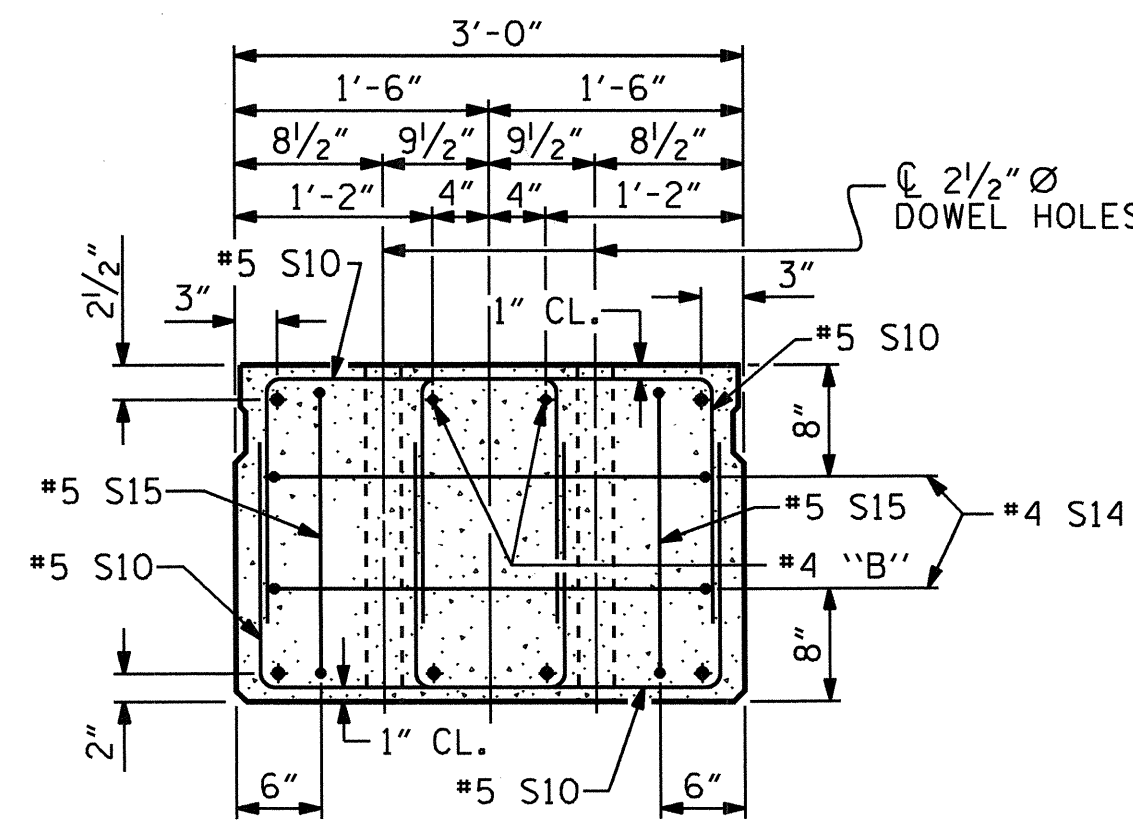
- ◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED, IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



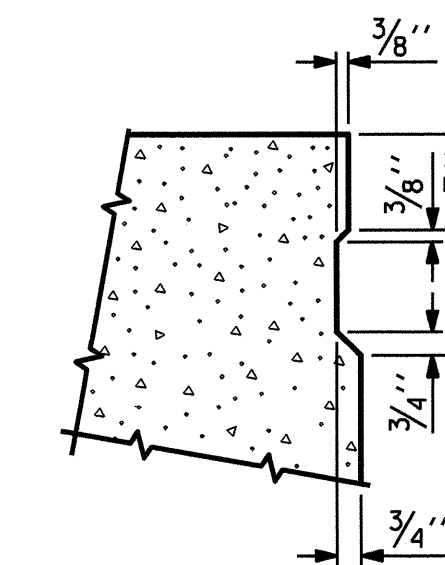
EXTERIOR SLAB SECTION

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



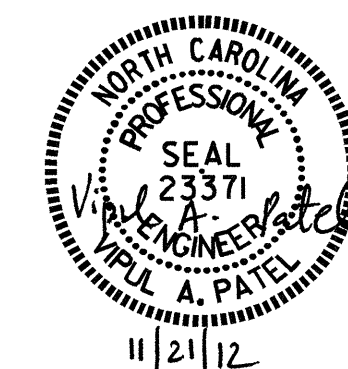
END ELEVATION

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



SHEAR KEY DETAIL

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



PROJECT NO. B-4809
ROWAN COUNTY
STATION: 19+72.50 -L-

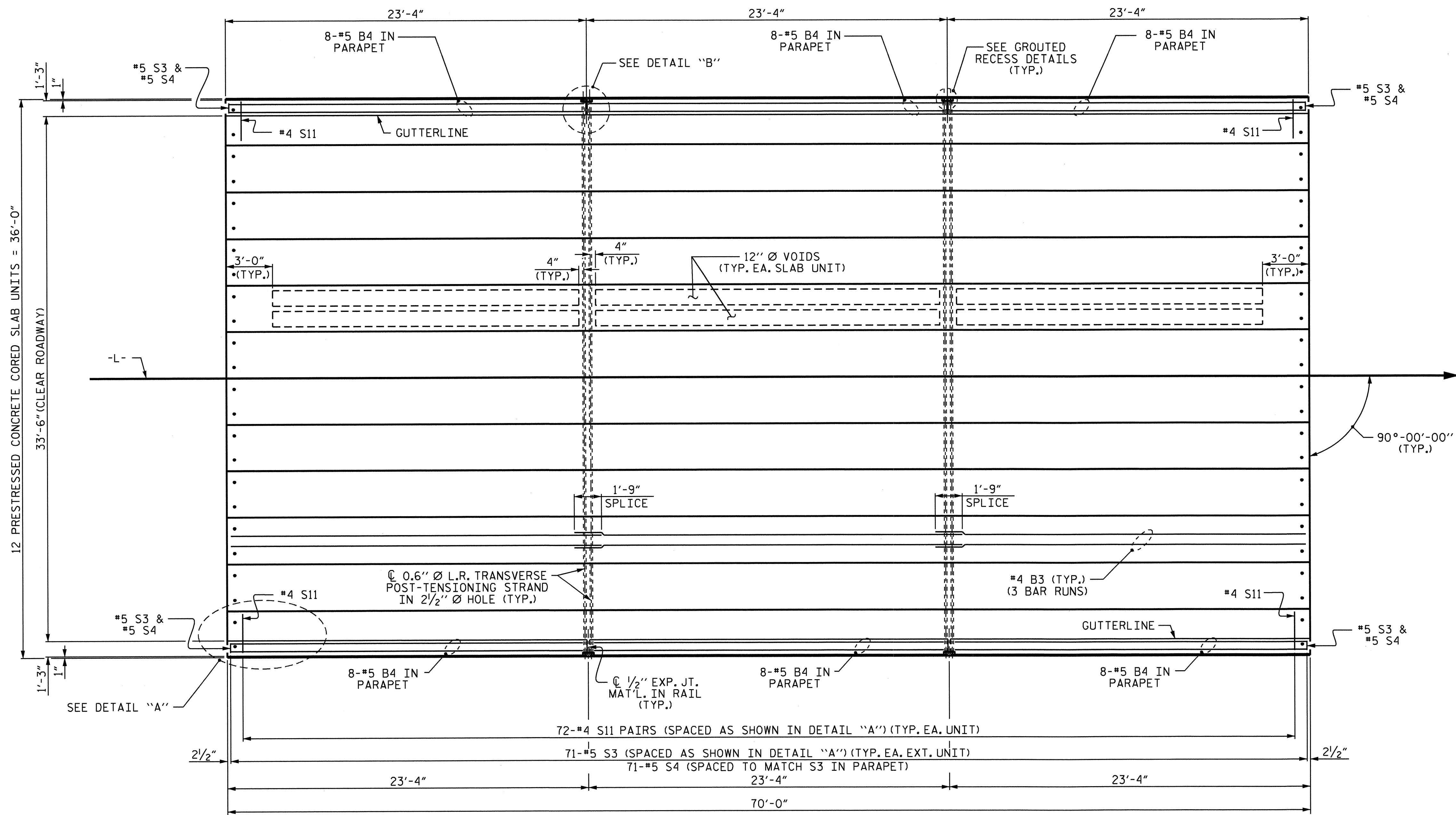
SHEET 1 OF 3

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

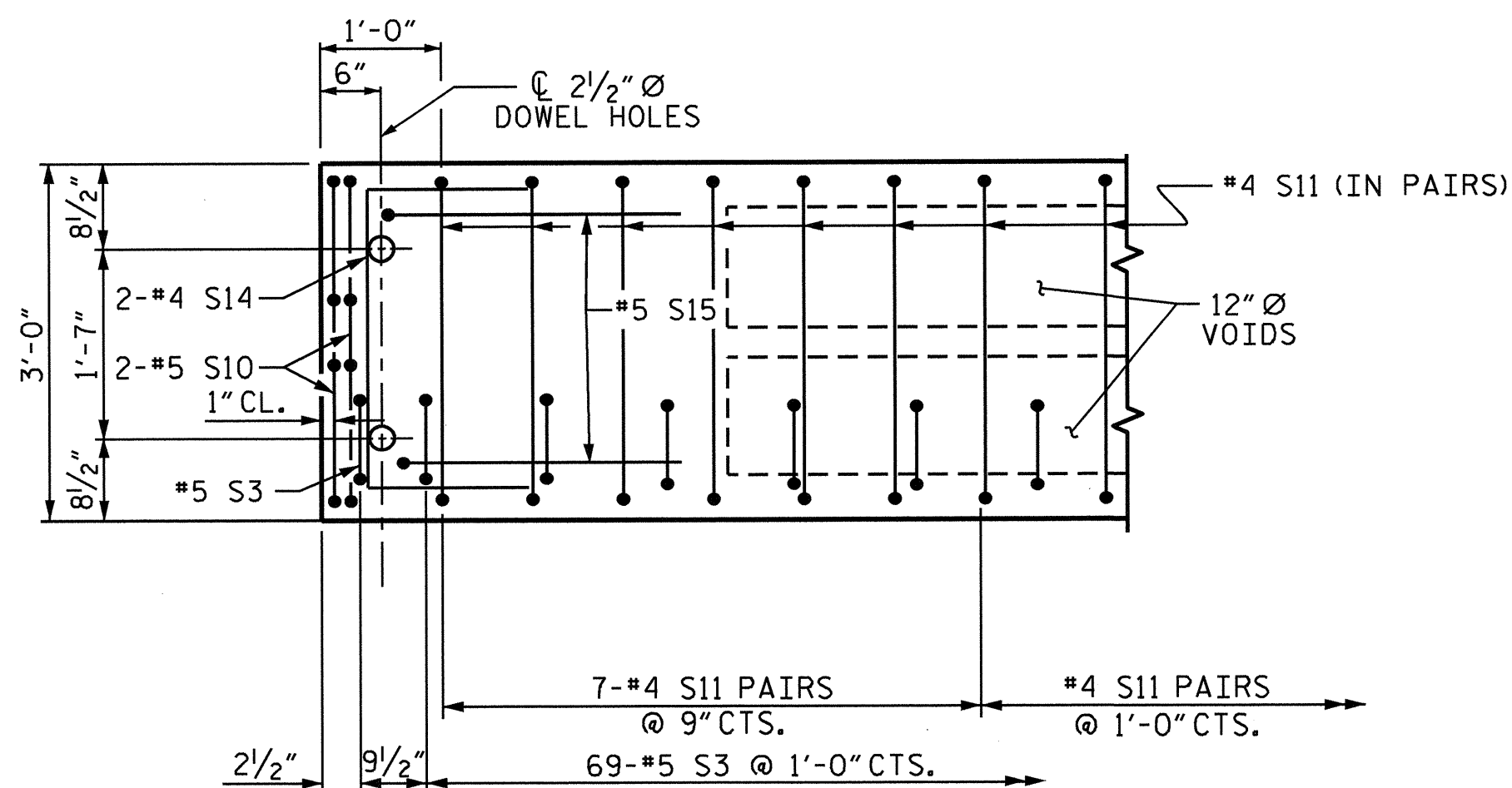
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

5-9
TOTAL SHEETS
25

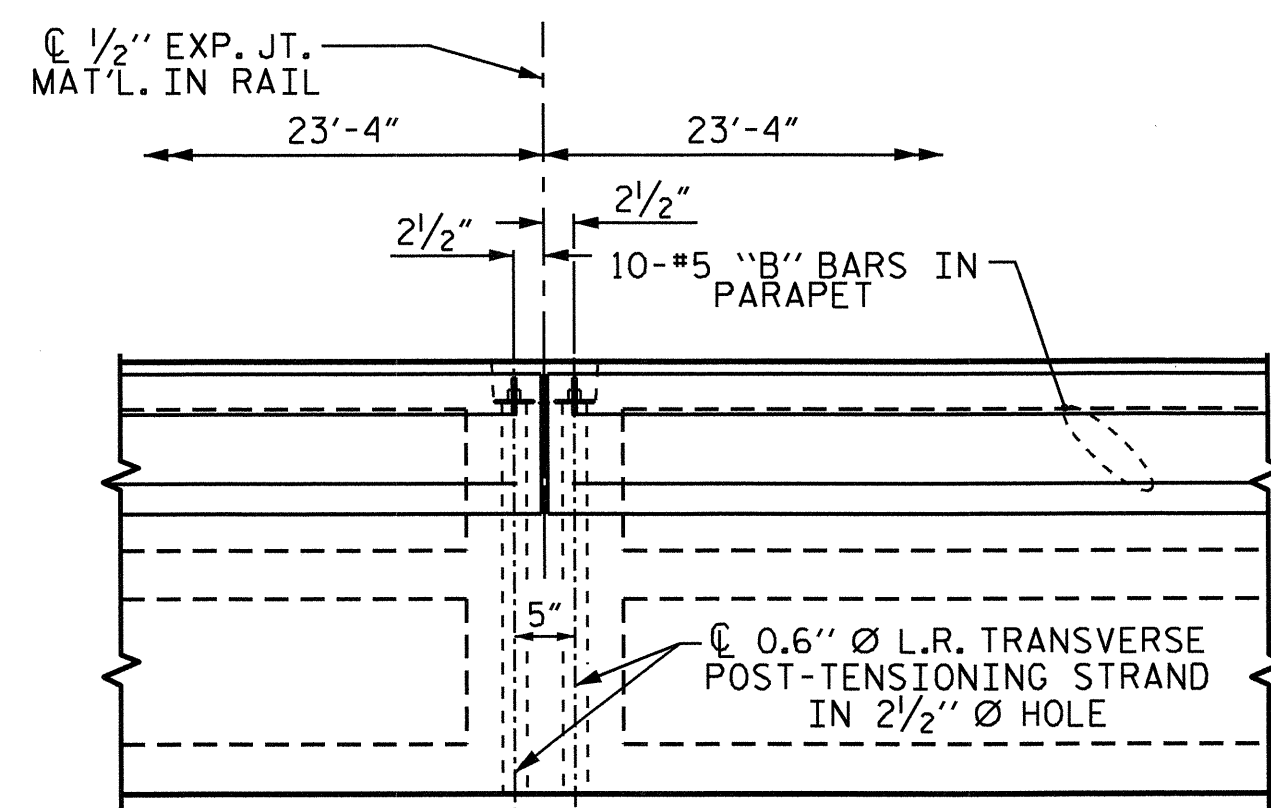
ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
CHECKED BY : H. T. DIEU DATE : 08/2012
DRAWN BY : MAA 6/10 REV. 12/11 MAA/AAC
CHECKED BY : MKT 7/10



PLAN OF UNIT



DETAIL "A"



DETAIL "B"

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

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 08/2012
 DRAWN BY : MAA 6/10 REV. 12/5/11 MAA/AAC
 CHECKED BY : MKT 7/10

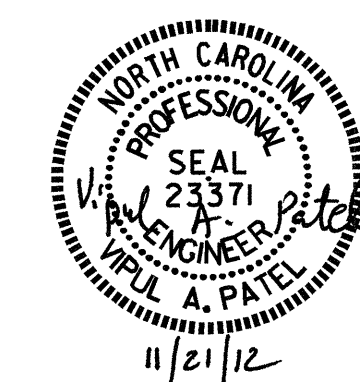
25-SEP-2012 14:23
 M:\Structures\Plans\B-4809.SD_CS.dgn
 jpadams

PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 2 OF 3

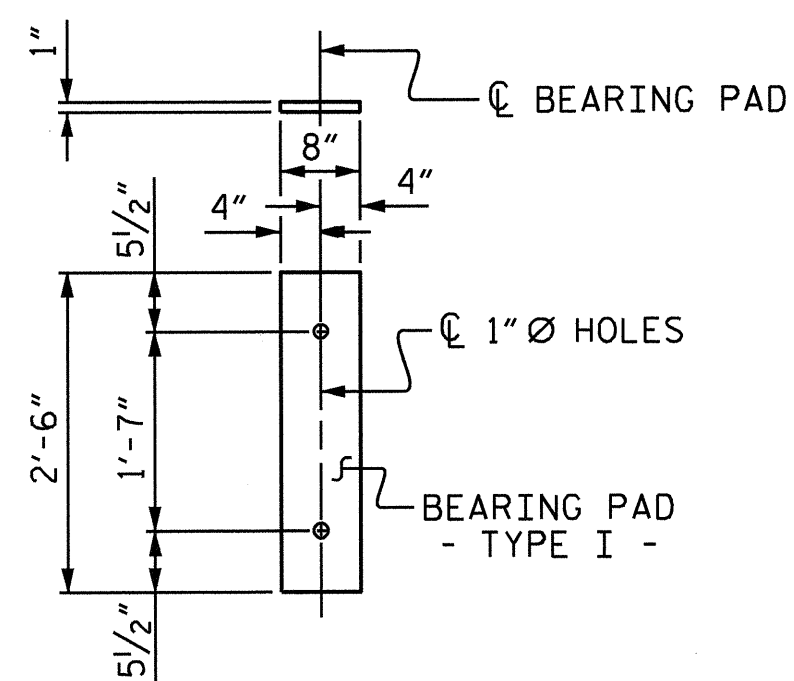
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 70' UNIT
 33'-6" CLEAR ROADWAY
 90° SKEW
 SPAN B



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			25

STD. NO. 24PCS_36_90S_70L



FIXED END
(TYPE I - 24 REQ'D)

ELASTOMERIC BEARING DETAILS

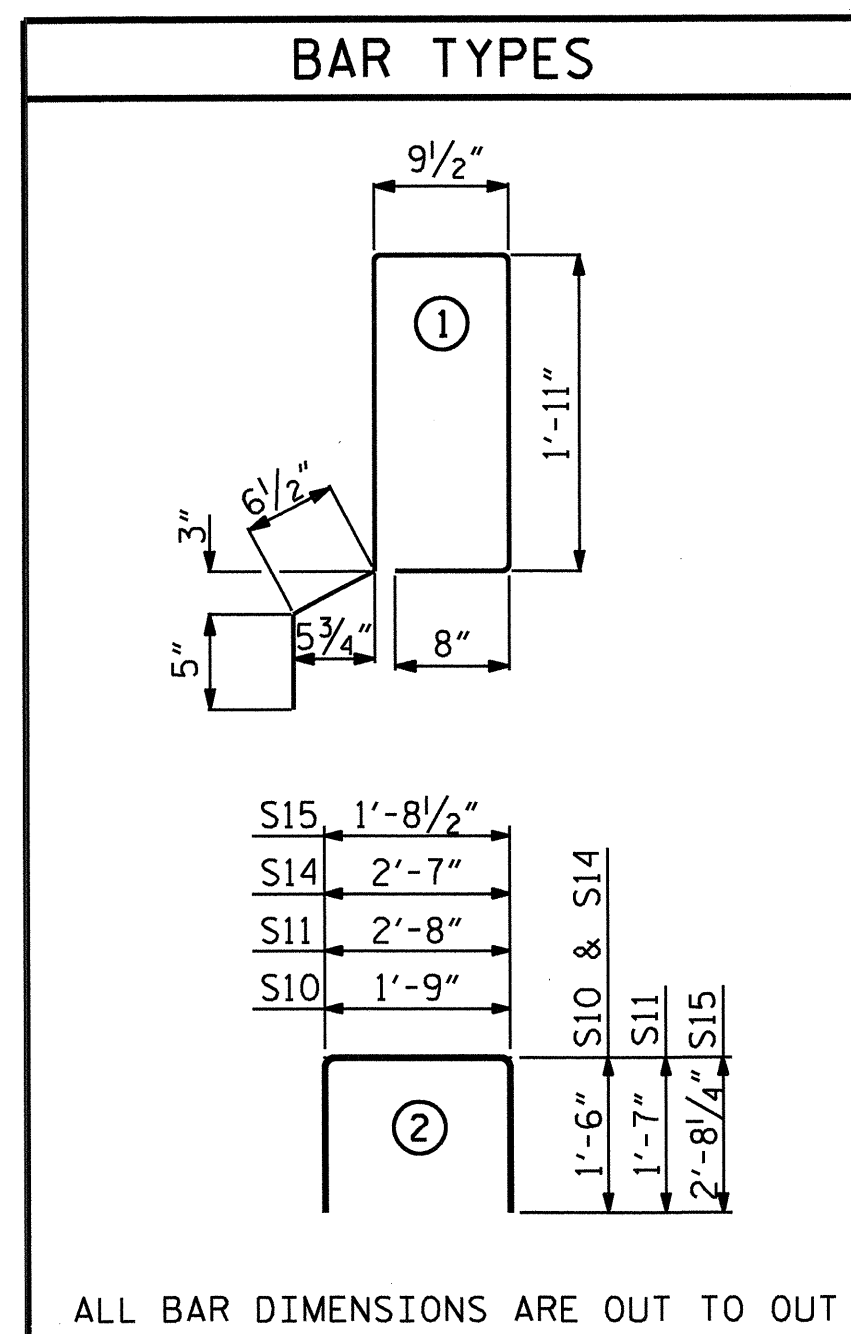
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

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

CORED SLABS REQUIRED			
70' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	10	70'-0"	700'-0"
TOTAL	12		840'-0"

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

** INCLUDES FUTURE WEARING SURFACE



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	2	4'-9"	40	4'-9"	40
S11	144	#4	2	5'-10"	561	5'-10"	561
* S3	71	#5	1	6'-3"	463		
S14	4	#4	2	5'-7"	15	5'-7"	15
S15	4	#5	2	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	744		744
* EPOXY COATED REINFORCING STEEL				LBS.	463		
7000 P.S.I. CONCRETE				CU. YDS.	11.8		11.8
0.6" Ø L.R. STRANDS				No.	28		28

CONCRETE RELEASE STRENGTH	
UNIT	PSI
60' & 65' UNITS	4800
70' UNITS	5500

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
36' NORMAL CROWN	ASPHALT OVERLAY THICKNESS @ MID-SPAN	PARAPET HEIGHT @ MID-SPAN
70' UNITS	1 1/2"	2'-7 1/2"

NOTES

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

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

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

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

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

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

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

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

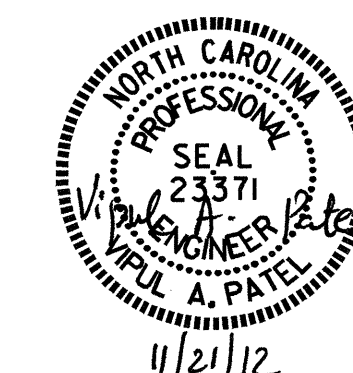
THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

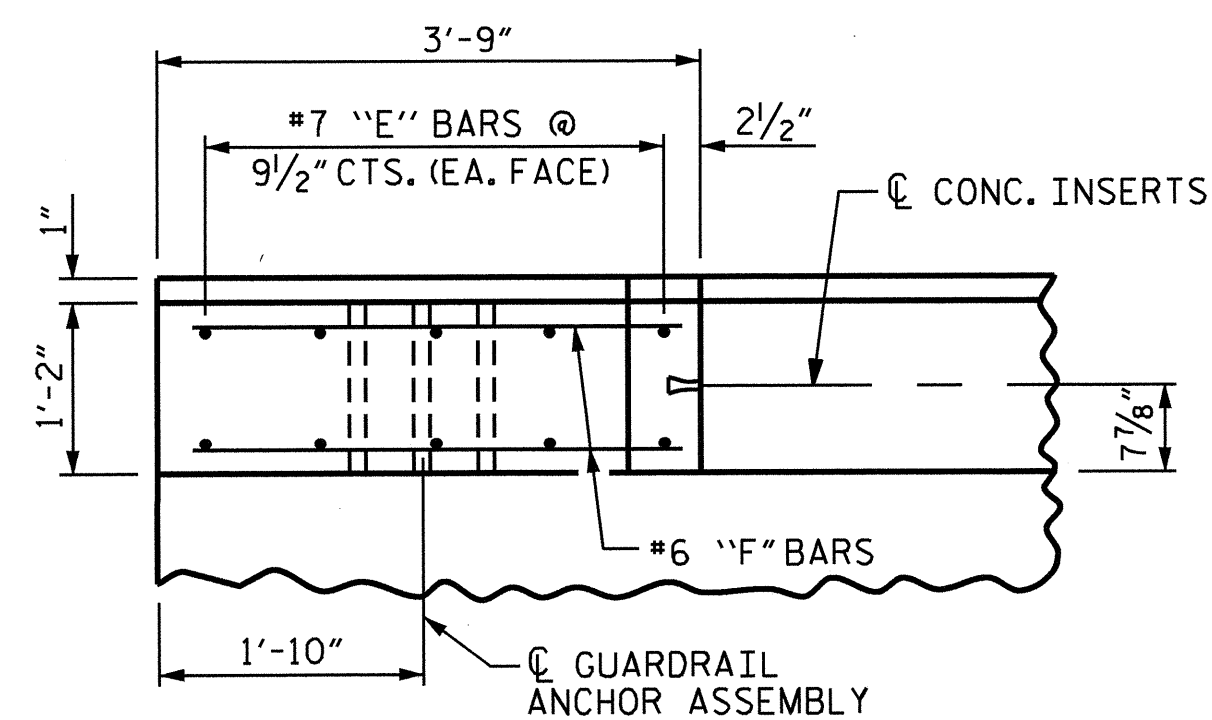
PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 3 OF 3

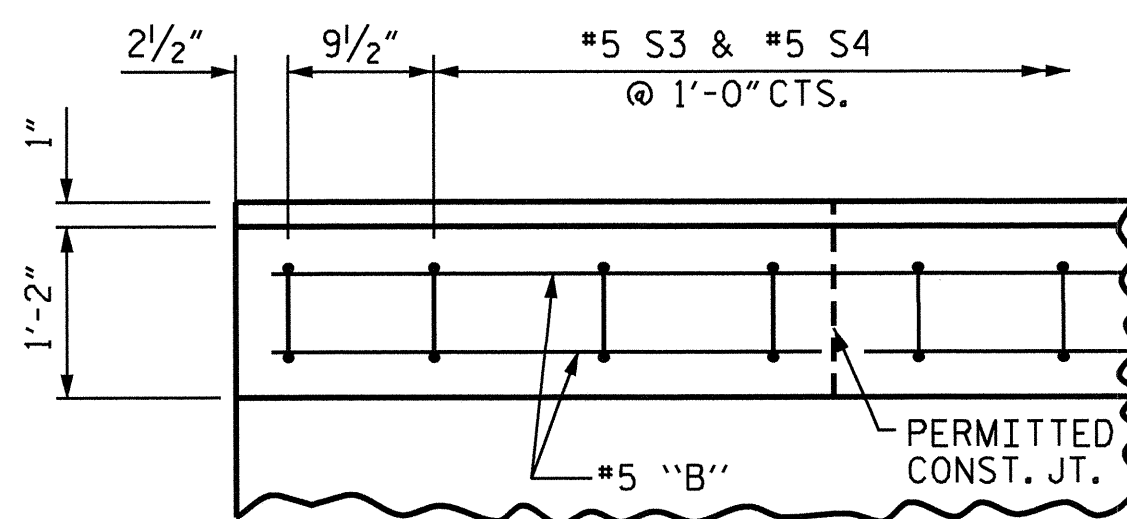
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT SPAN B					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 25



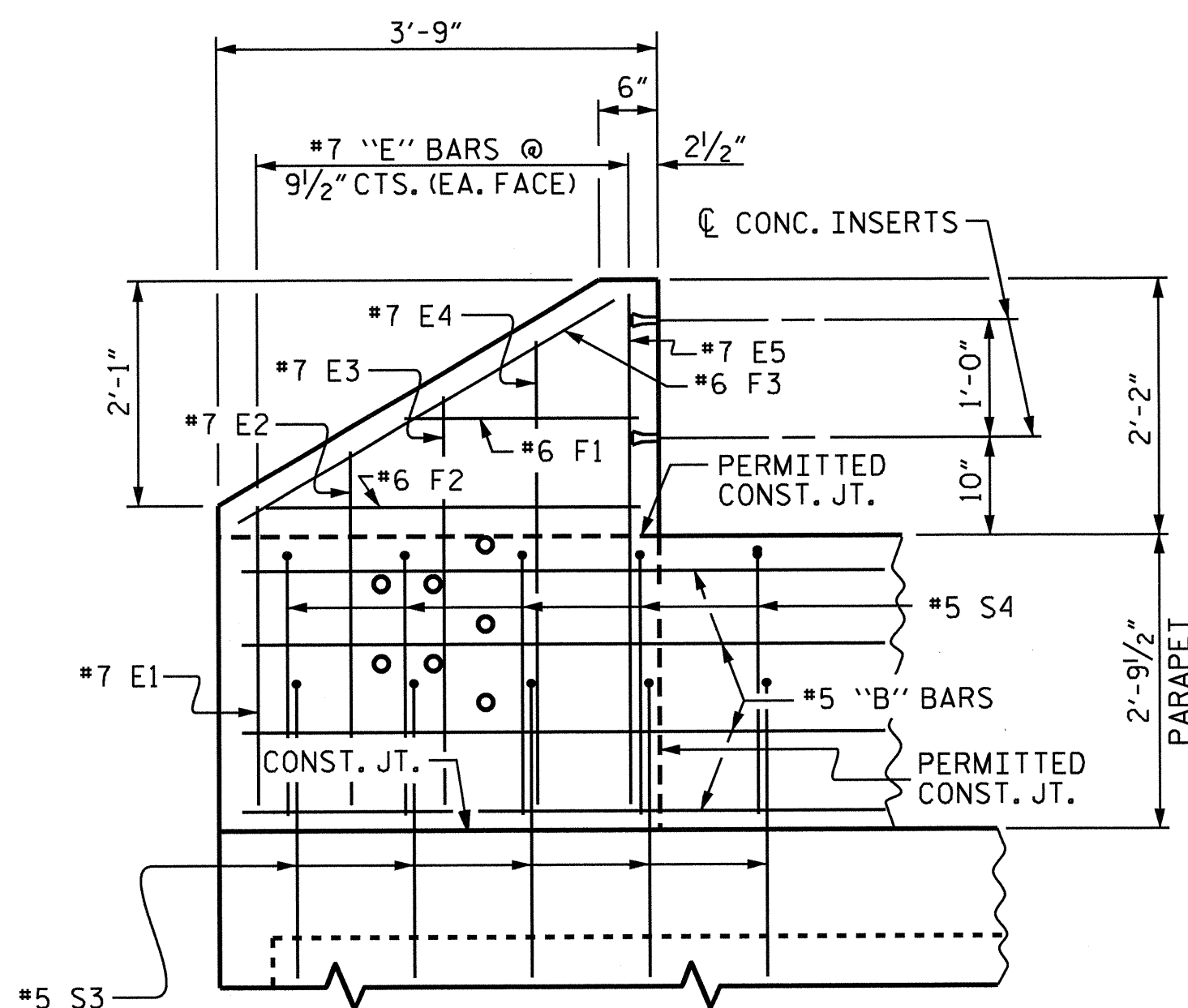
ASSEMBLED BY : R. L. CHESSON	DATE : 02/2012
CHECKED BY : H. T. DIEU	DATE : 08/2012
DRAWN BY : MAA	6/10
CHECKED BY : MKT	7/10
REV. 12/11	MAA/AAC



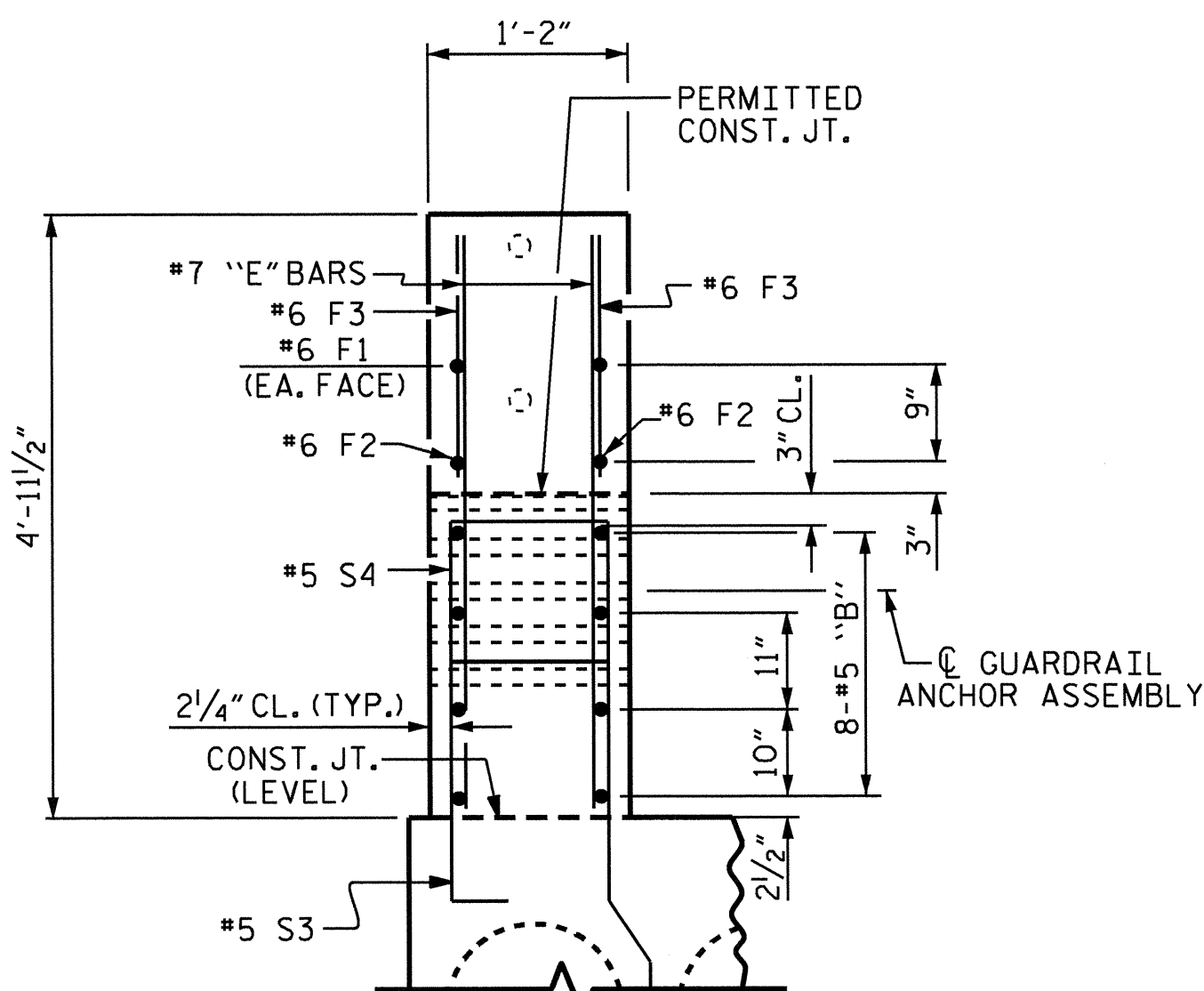
PLAN OF END POST



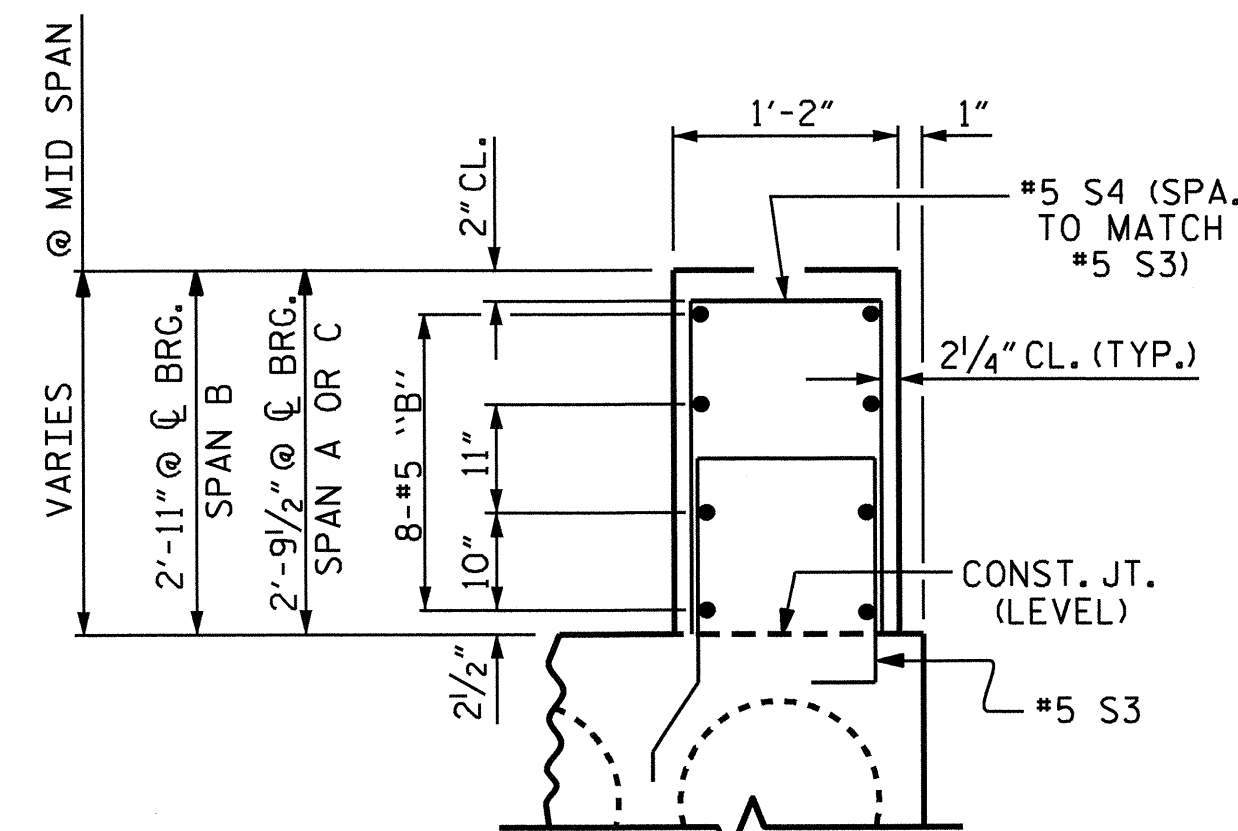
PLAN OF PARAPET



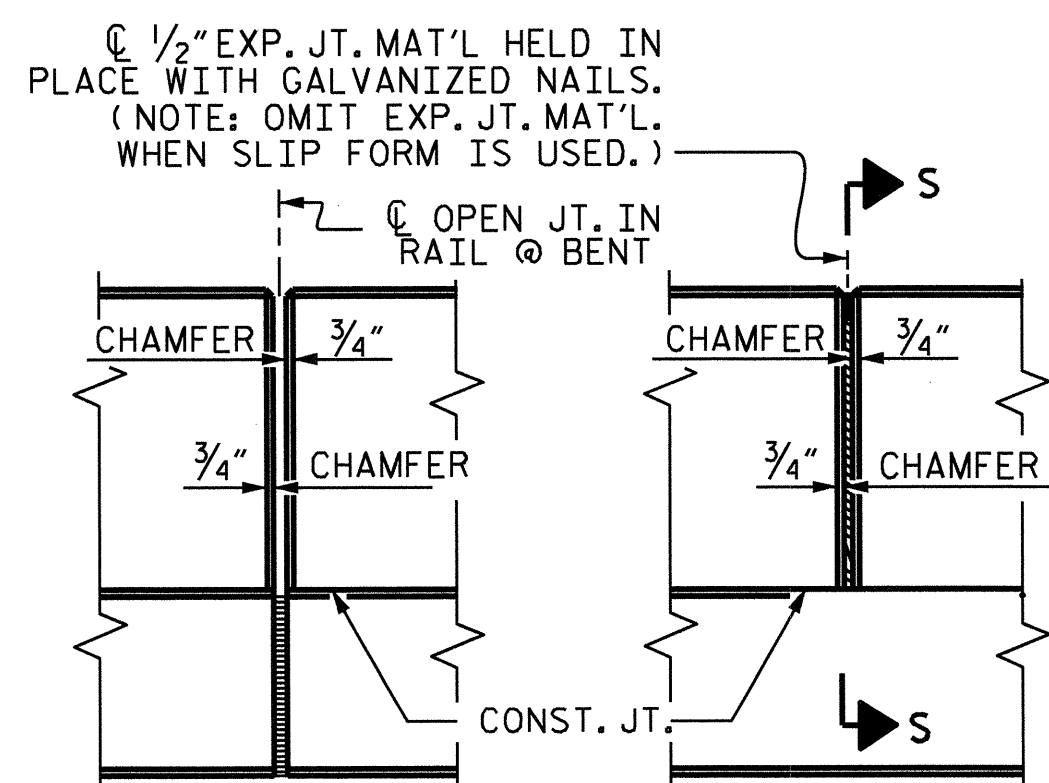
ELEVATION



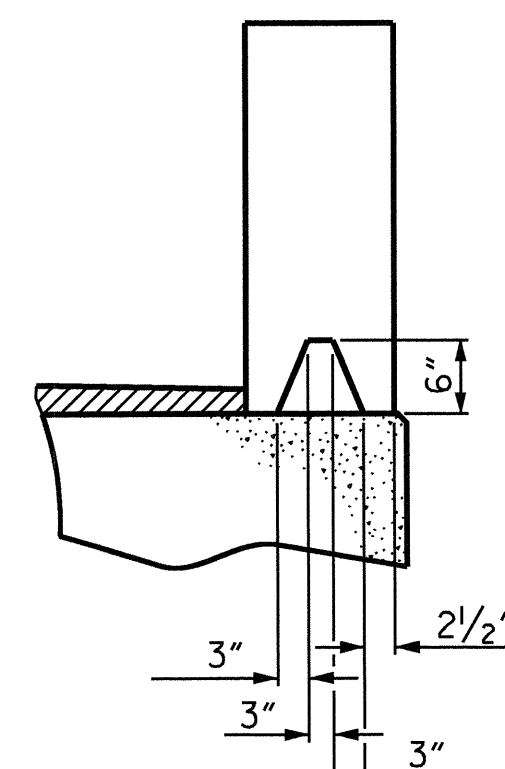
END VIEW



SECTION THRU PARAPET



ELEVATION AT EXPANSION JOINTS



SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

PARAPET RAIL SECTION

NOTES

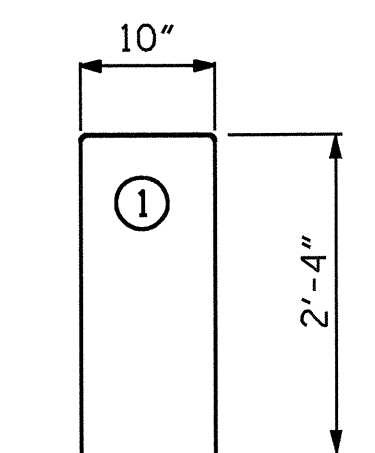
ALL REINFORCING STEEL IN THE PARAPETS AND END POSTS SHALL BE EPOXY COATED.

#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 1/2" EXPANSION JOINT IN THE PARAPET MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE #5 S3, AND #5 S4 BARS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR PARAPET & END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B2	64	#5	STR	27'-1"	1808
* B4	48	#5	STR	22'-11"	1147
* E1	8	#7	STR	2'-8"	44
* E2	8	#7	STR	3'-2"	52
* E3	8	#7	STR	3'-8"	60
* E4	8	#7	STR	4'-2"	68
* E5	8	#7	STR	4'-6"	74
* F1	8	#6	STR	2'-0"	24
* F2	8	#6	STR	3'-3"	39
* F3	8	#6	STR	3'-10"	46
* S4	366	#5	1	5'-6"	2100

* EPOXY COATED REINFORCING STEEL LBS. 5462

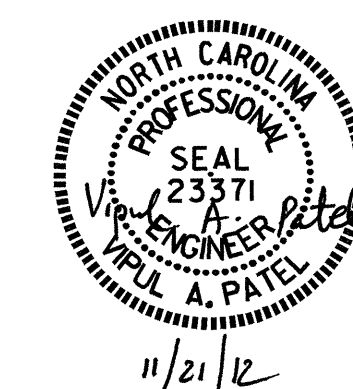
CLASS AA CONCRETE C.Y. 45.0

1'-2" X 2'-11" CONCRETE PARAPET L.F. 360.50

PROJECT NO. B-4809
ROWAN COUNTY
STATION: 19+72.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

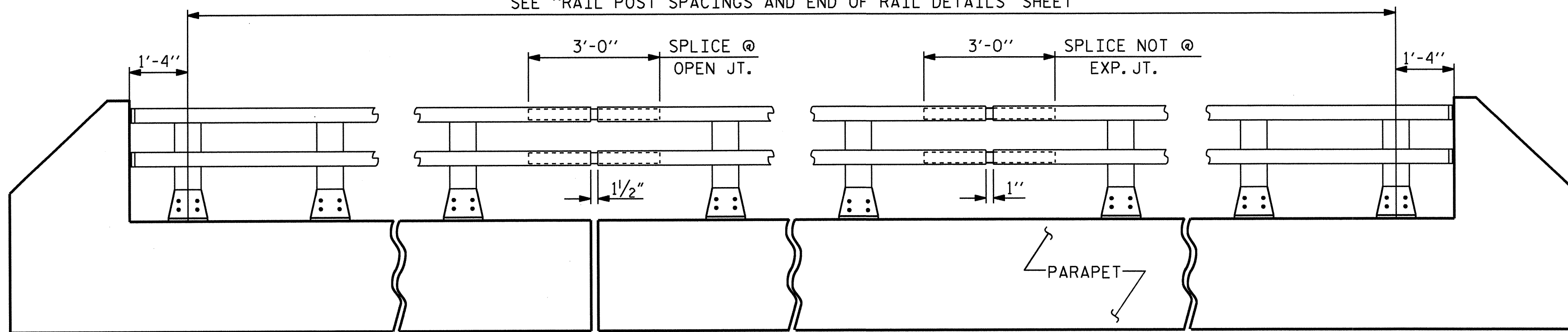
SUPERSTRUCTURE
END POSTS
&
PARAPET DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS 25
2			4			

DRAWN BY: R.L. CHESSON DATE: 02/2012
CHECKED BY: H.T. DIEU DATE: 08/2012

SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET



ELEVATION

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

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 B-221 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.

GALVANIZED STEEL RAILS

MATERIAL 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.

RAIL CAPS: RAIL CAPS 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.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 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.

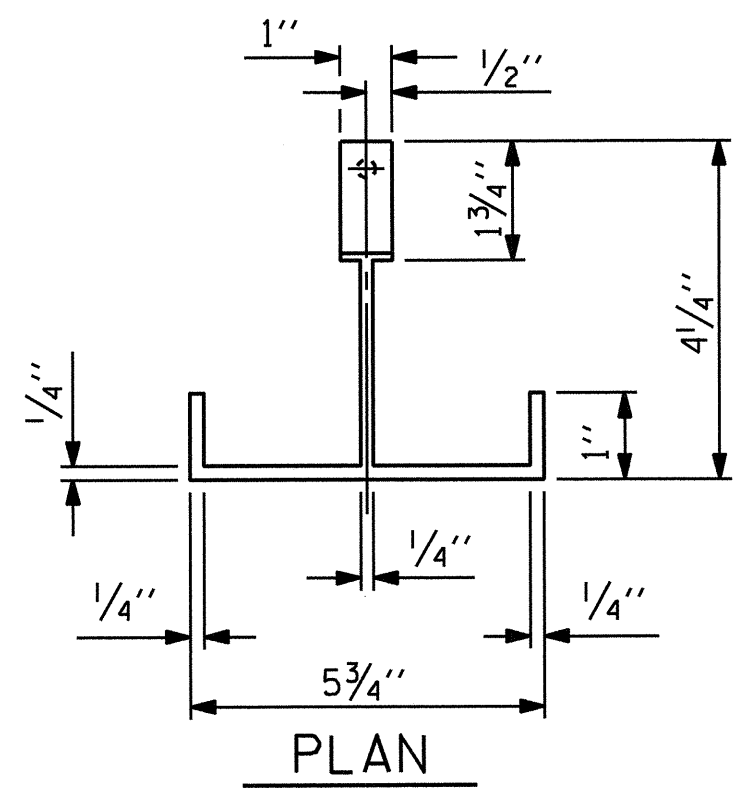
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

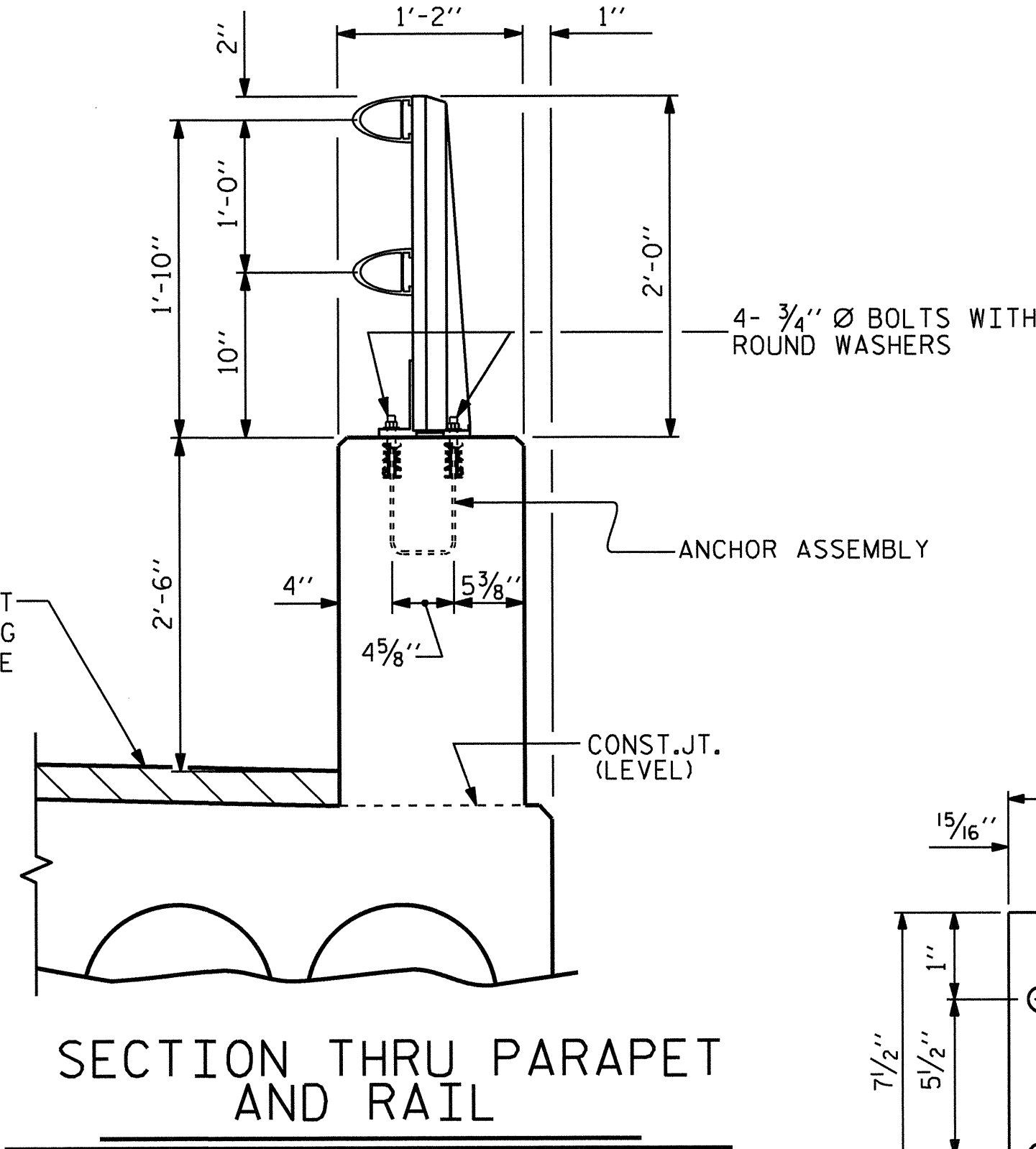
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

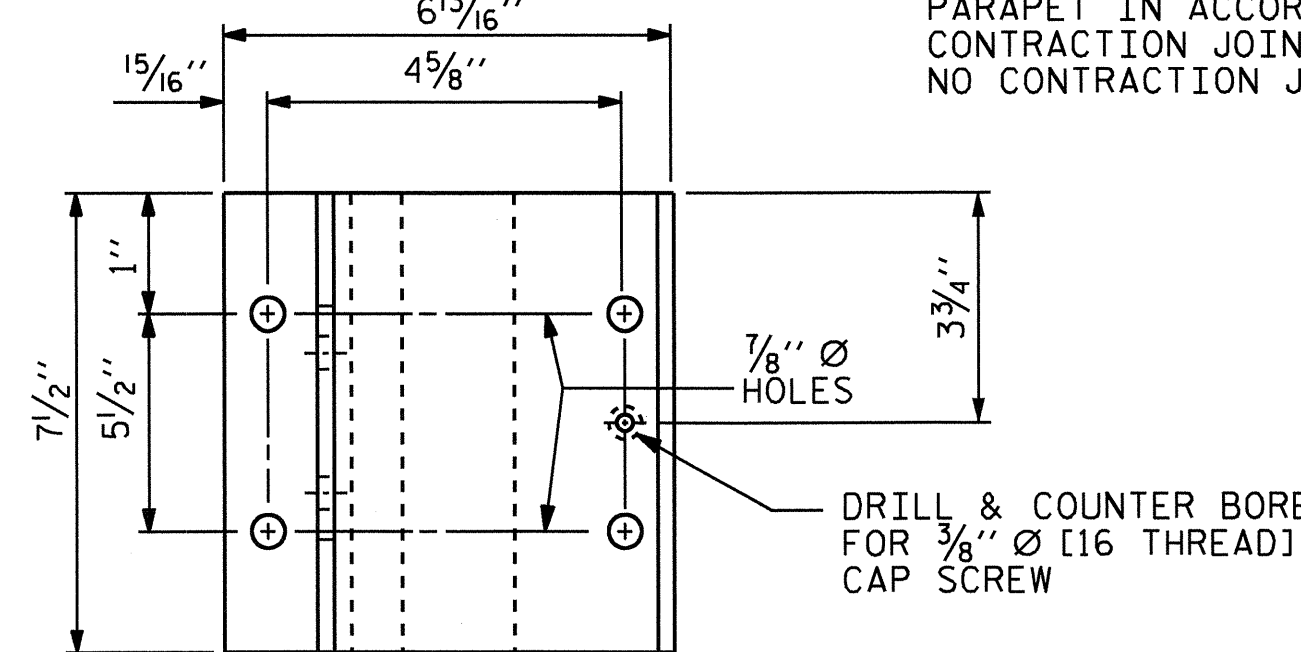
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.



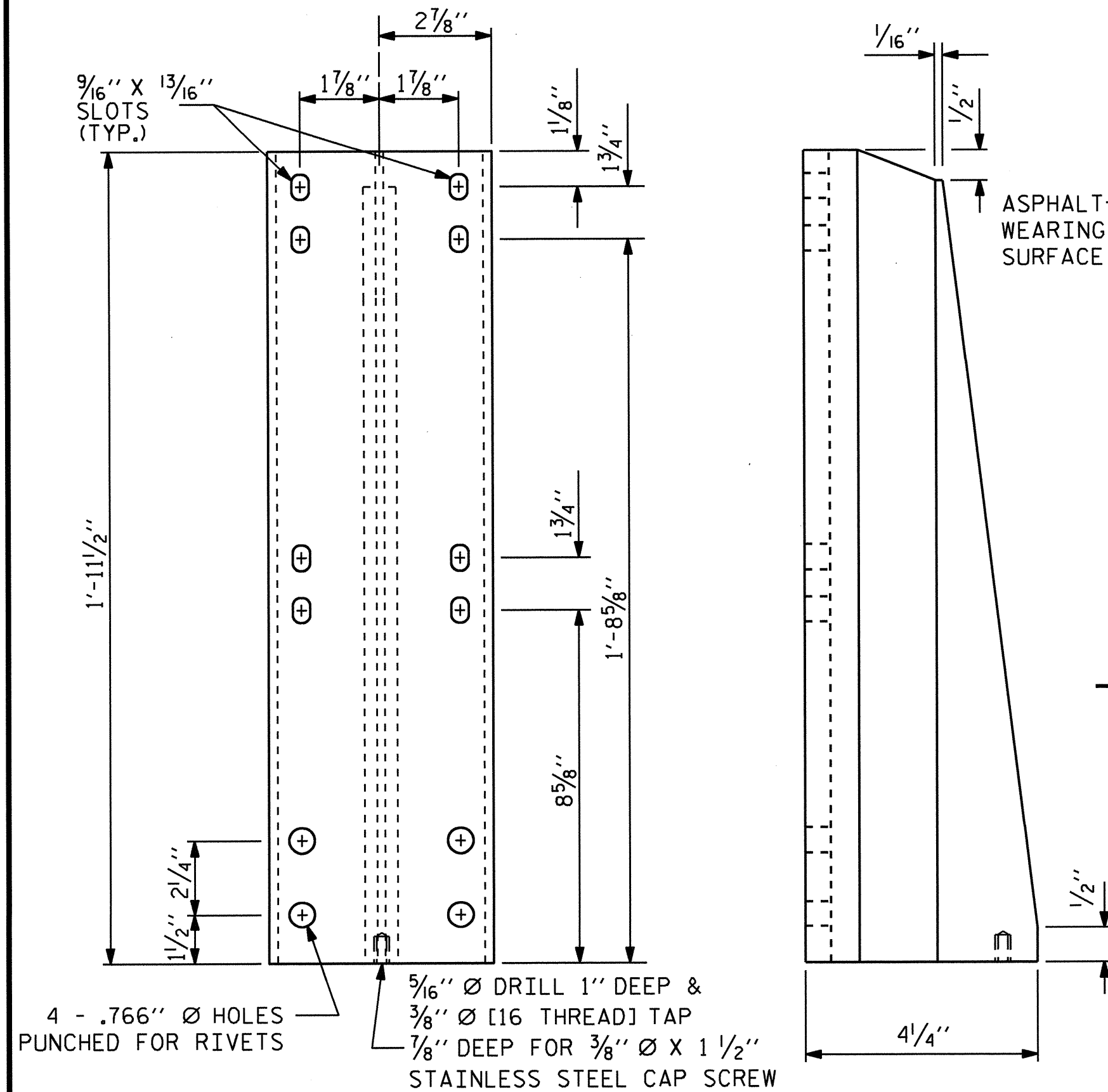
PLAN



SECTION THRU PARAPET AND RAIL



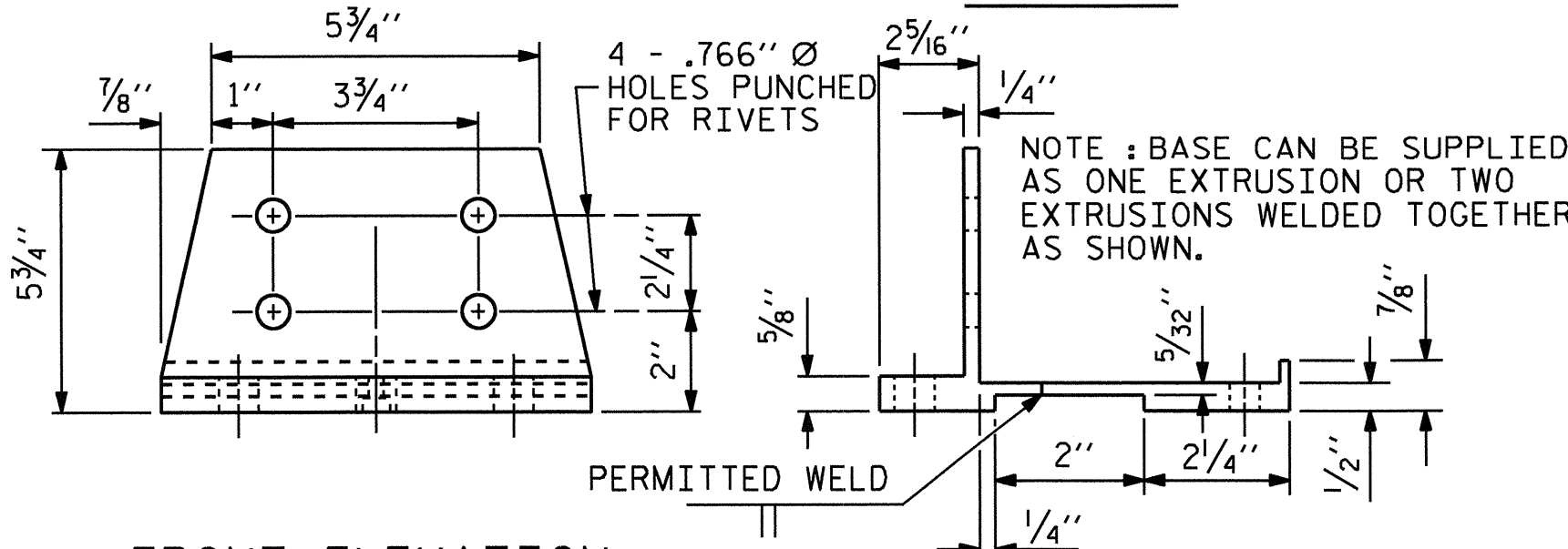
PLAN



FRONT ELEVATION

SIDE ELEVATION

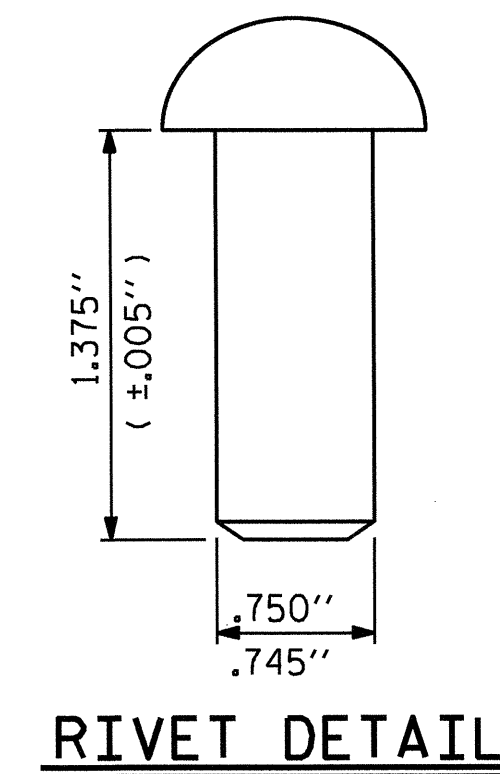
DETAILS OF POST



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

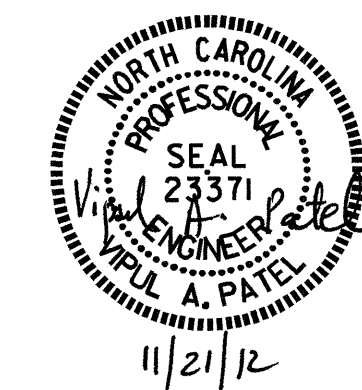
PAY LENGTH = 345.50 LIN. FT.

PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 2 BAR METAL RAIL



ASSEMBLED BY : R. L. CHESSON	DATE : 02/2012
CHECKED BY : H. T. DIEU	DATE : 08/2012
DRAWN BY : EEM 6/94	REV. 5/7/03R RWW/JTE
CHECKED BY : RCW 6/94	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

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

NOTES

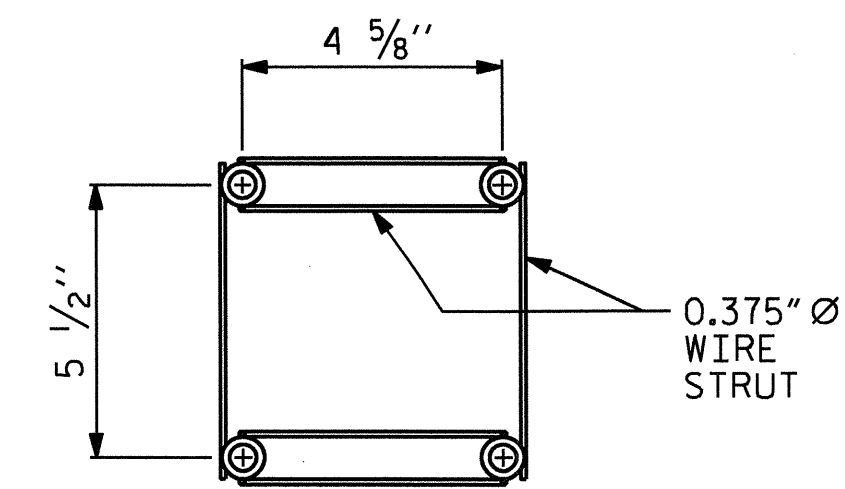
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

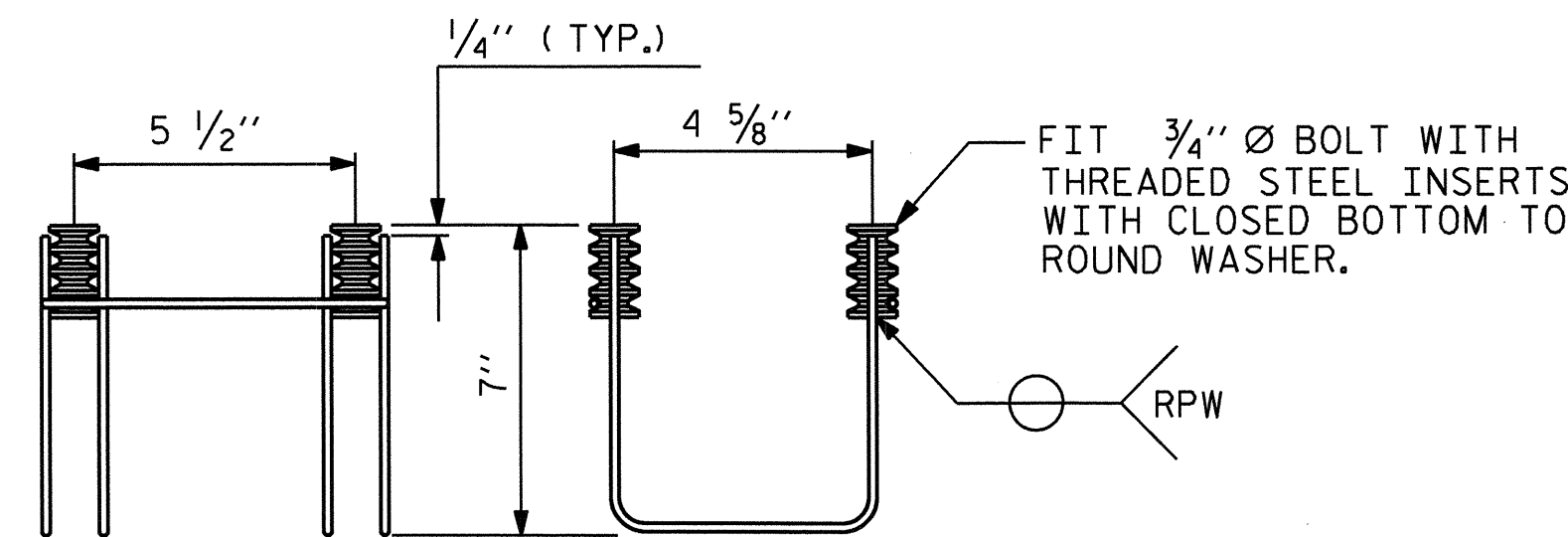
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. 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 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLY TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



PLAN

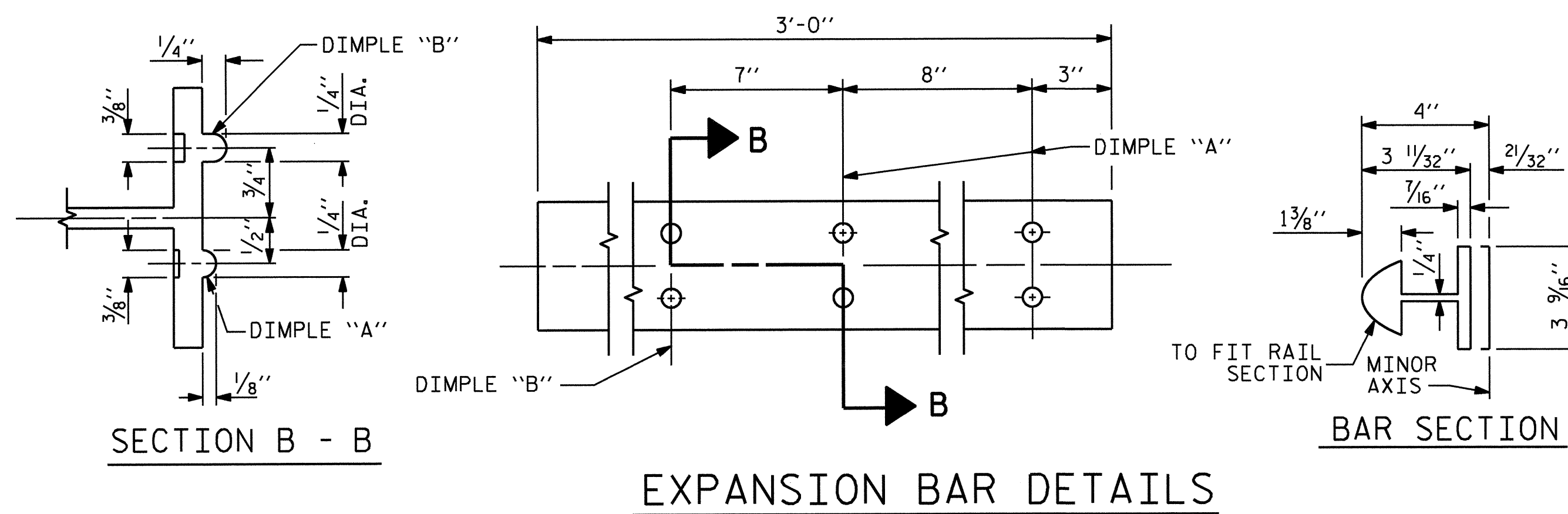


SIDE VIEW

ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

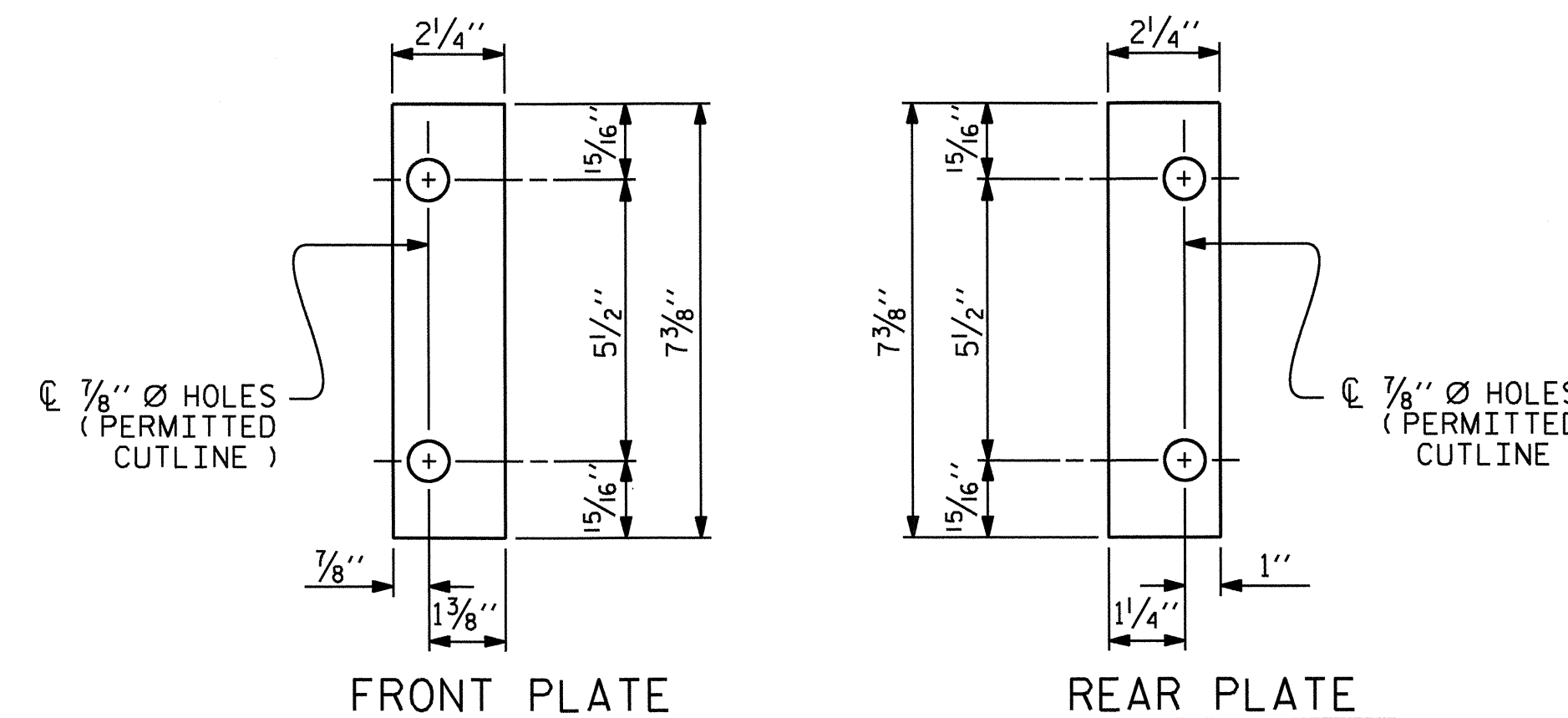
(64 ASSEMBLIES REQUIRED)



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

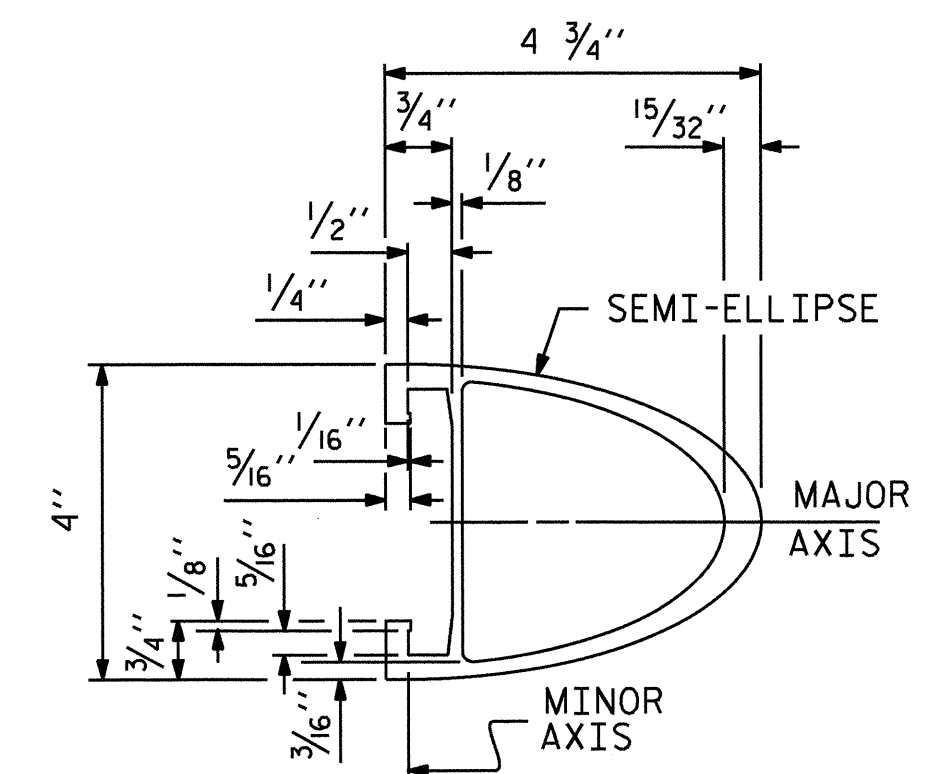


FRONT PLATE

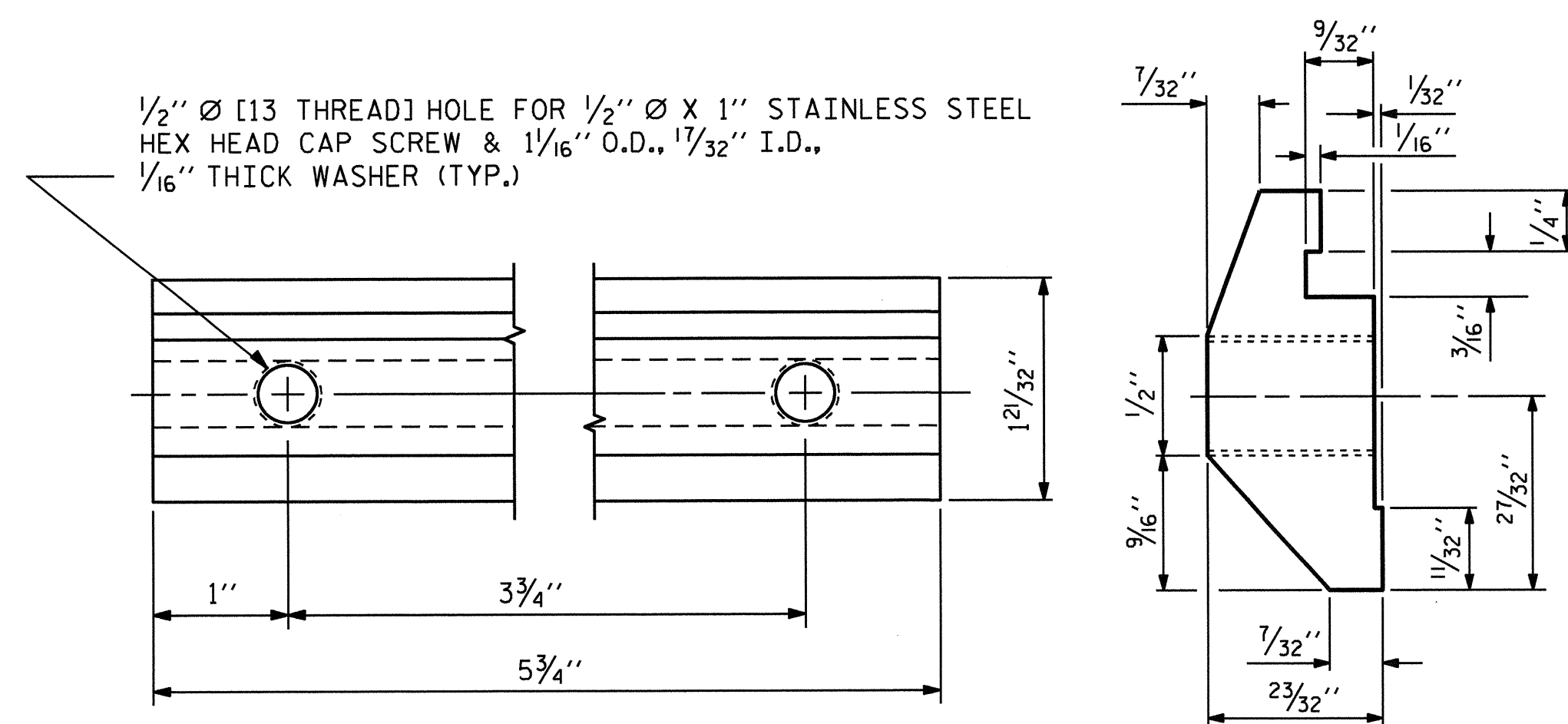
REAR PLATE

SHIM DETAILS

NOTE : SHIMS MAY BE CUT ALONG PERMITTED OUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

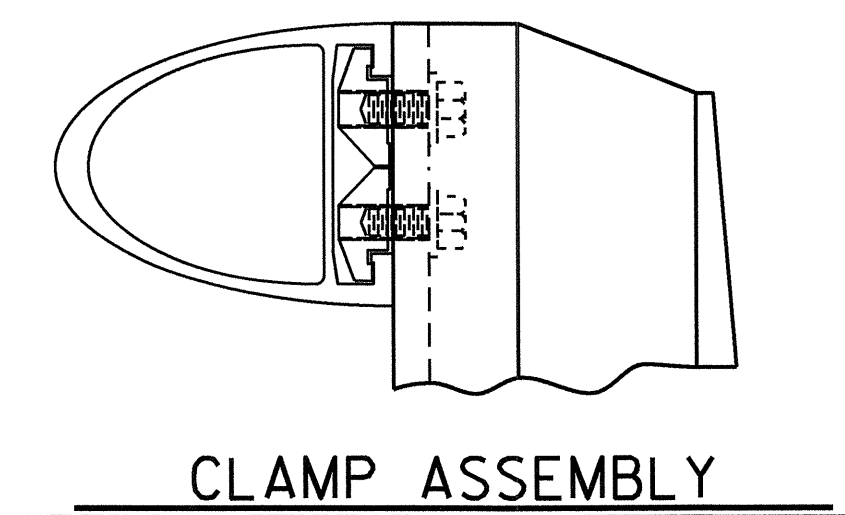


RAIL SECTION

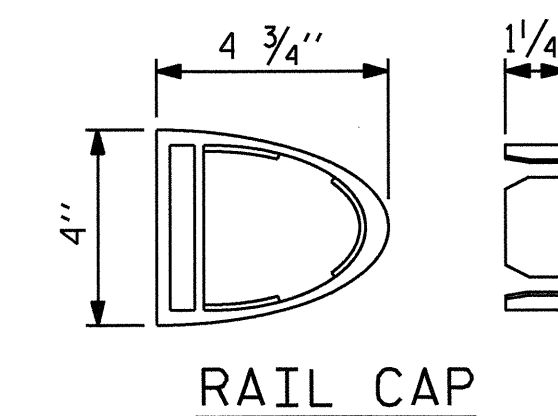


CLAMP BAR DETAIL

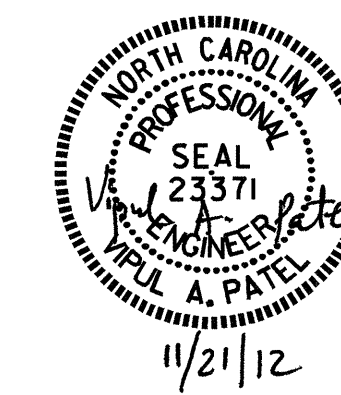
(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP



PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 2 OF 2

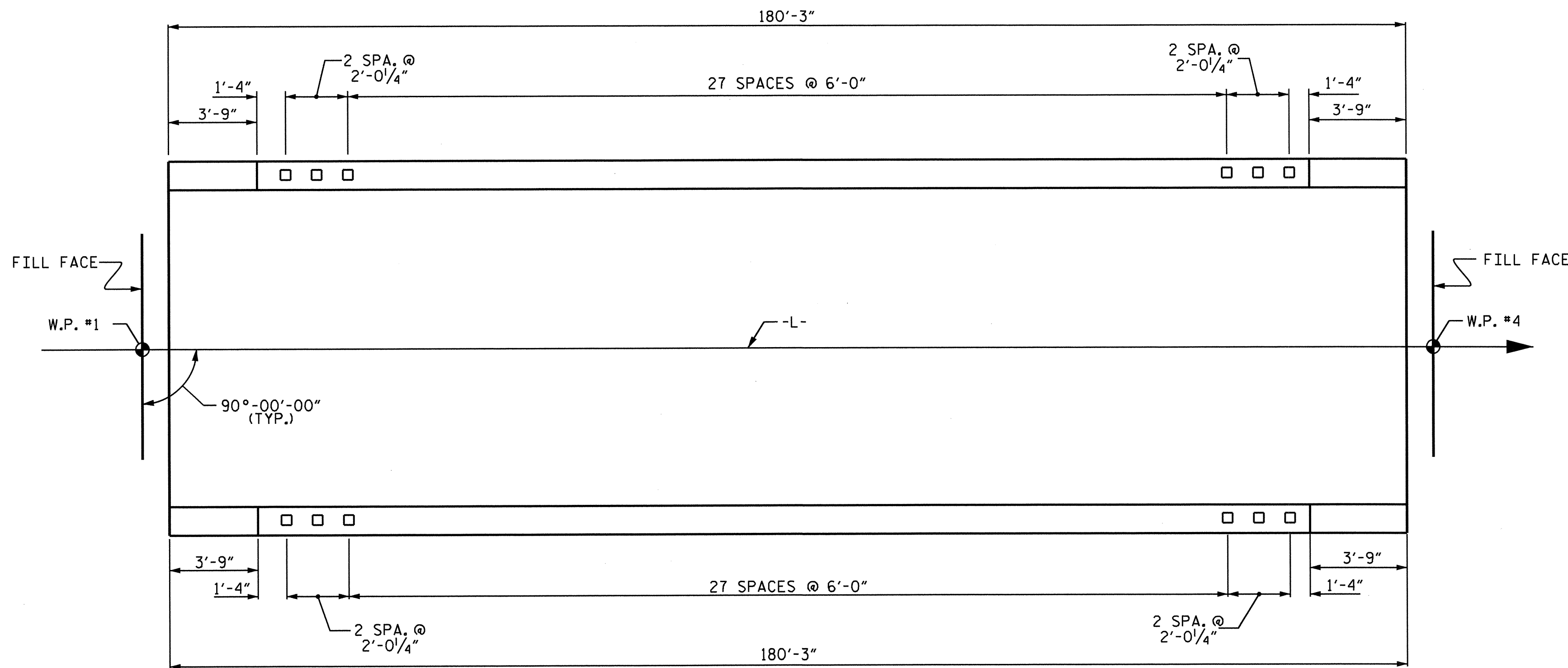
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 2 BAR METAL RAIL

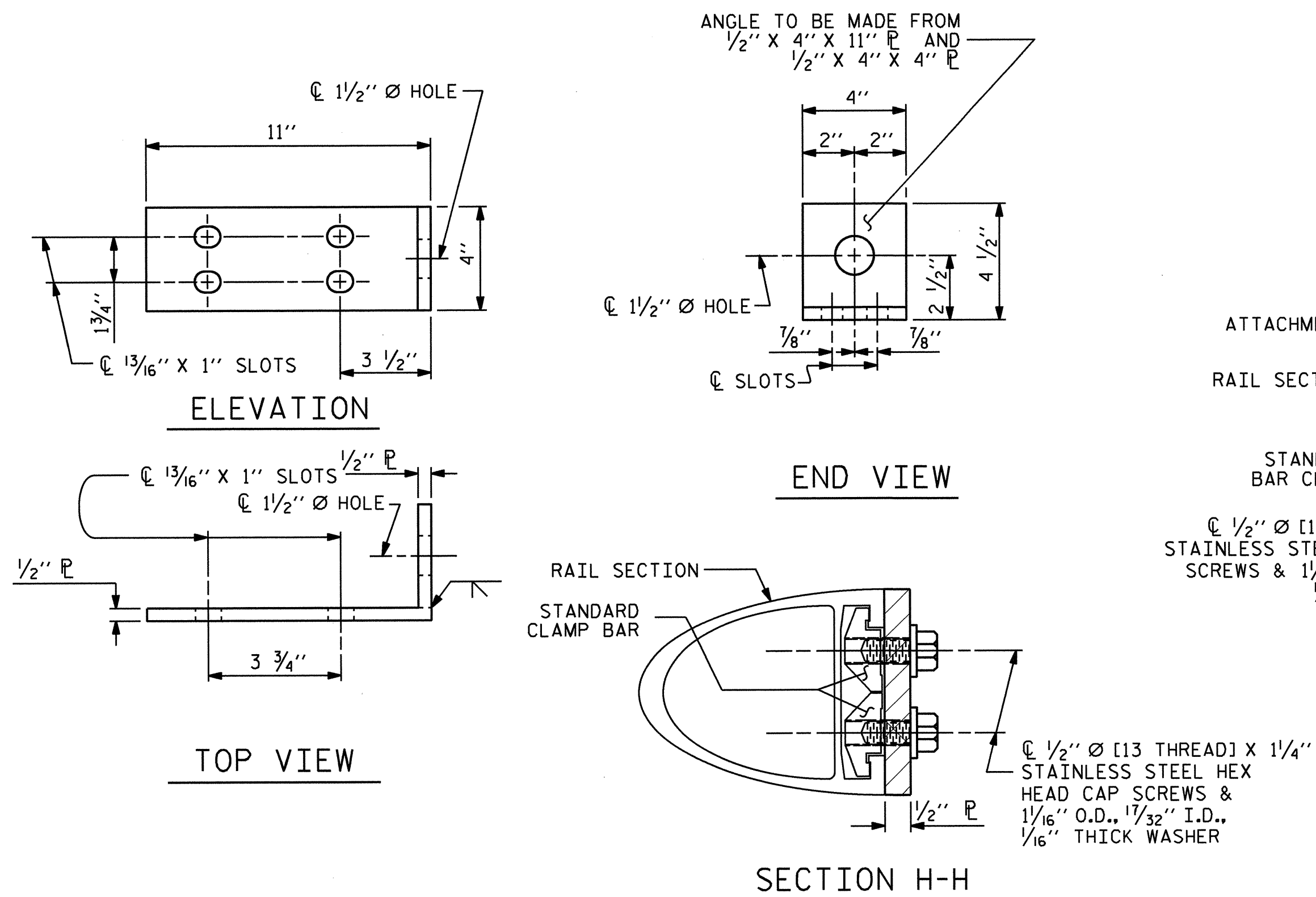
ASSEMBLED BY : R. L. CHESSON	DATE : 02/2012
CHECKED BY : H. T. DIEU	DATE : 08/2012
DRAWN BY : EEM 6/94	REV. 8/16/99 MAB/LES
CHECKED BY : RCW 6/94	REV. 5/1/06R KMM/GM
	REV. 10/1/11 MAA/GM

25-SEP-2012 14:23
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 jpadams

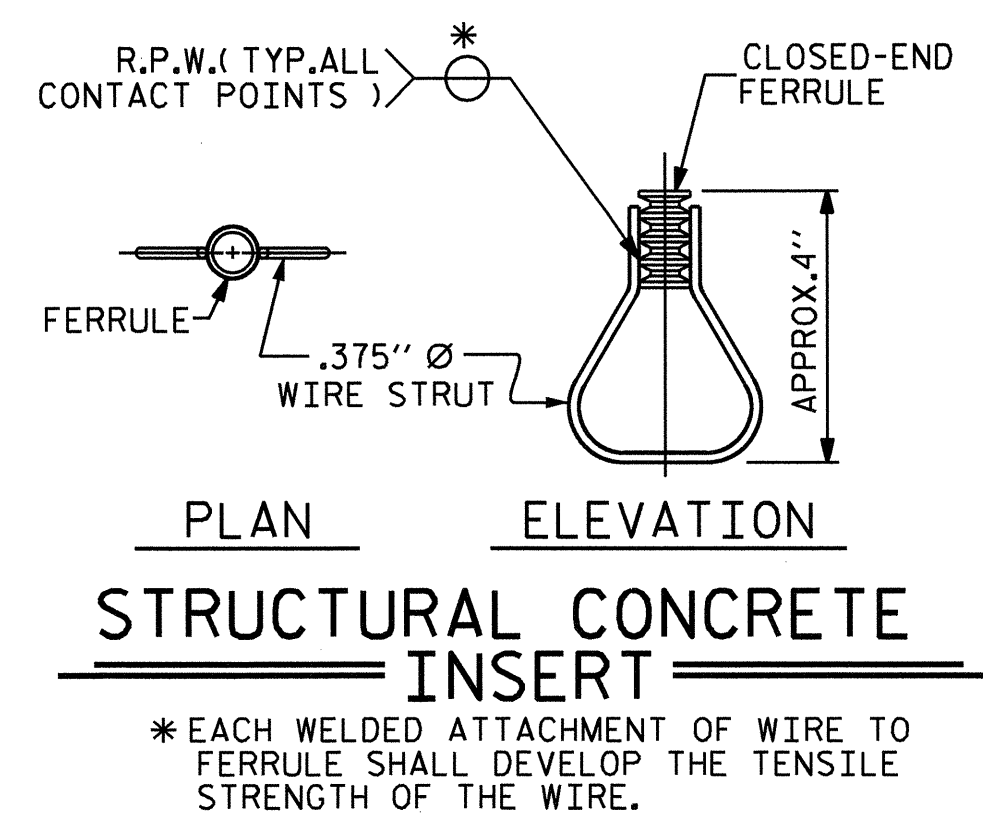
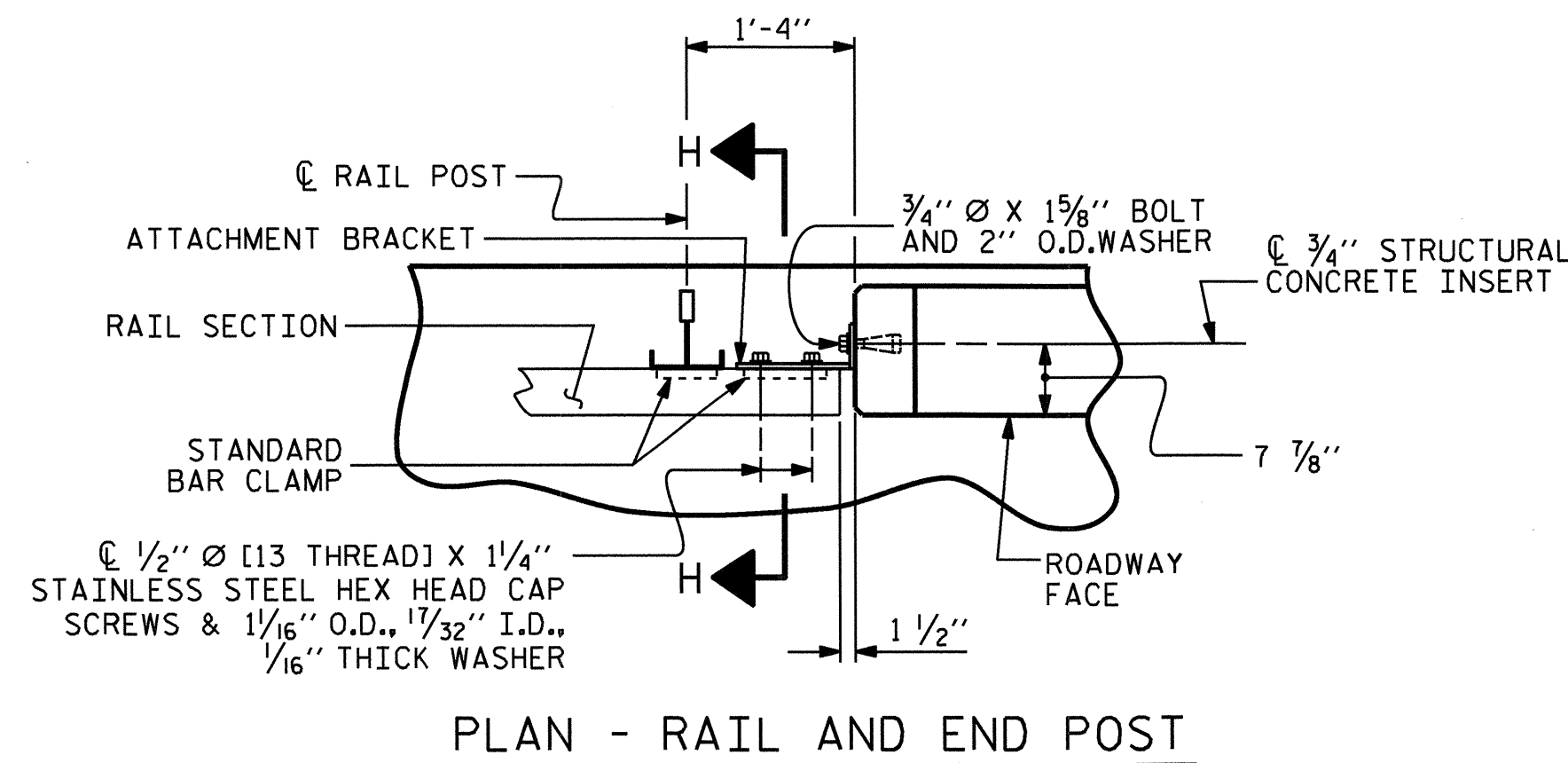
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14	
1			3			TOTAL SHEETS	25
2			4				



PLAN OF RAIL POST SPACINGS

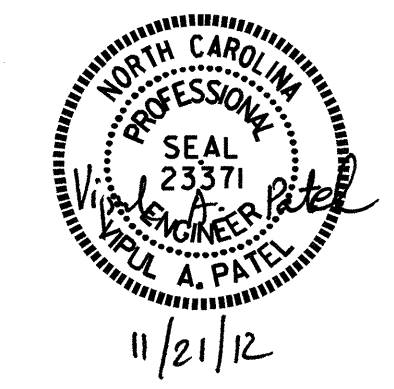


DETAILS FOR ATTACHING METAL RAIL TO END POST



PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
RAIL POST SPACINGS AND END OF RAIL DETAILS FOR TWO BAR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-15
					TOTAL SHEETS 25



NOTES

STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT 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 1 1/2".
 - B. 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.)
 - C. 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:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULE 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.
 - C. 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.
 - D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - E. 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.

ASSEMBLED BY : R. L. CHESSON	DATE : 02/2012
CHECKED BY : H. T. DIEU	DATE : 08/2012
DRAWN BY : FCJ 1/88	REV. 5/7/03 RWW/JTE
CHECKED BY : CRK 3/89	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/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.

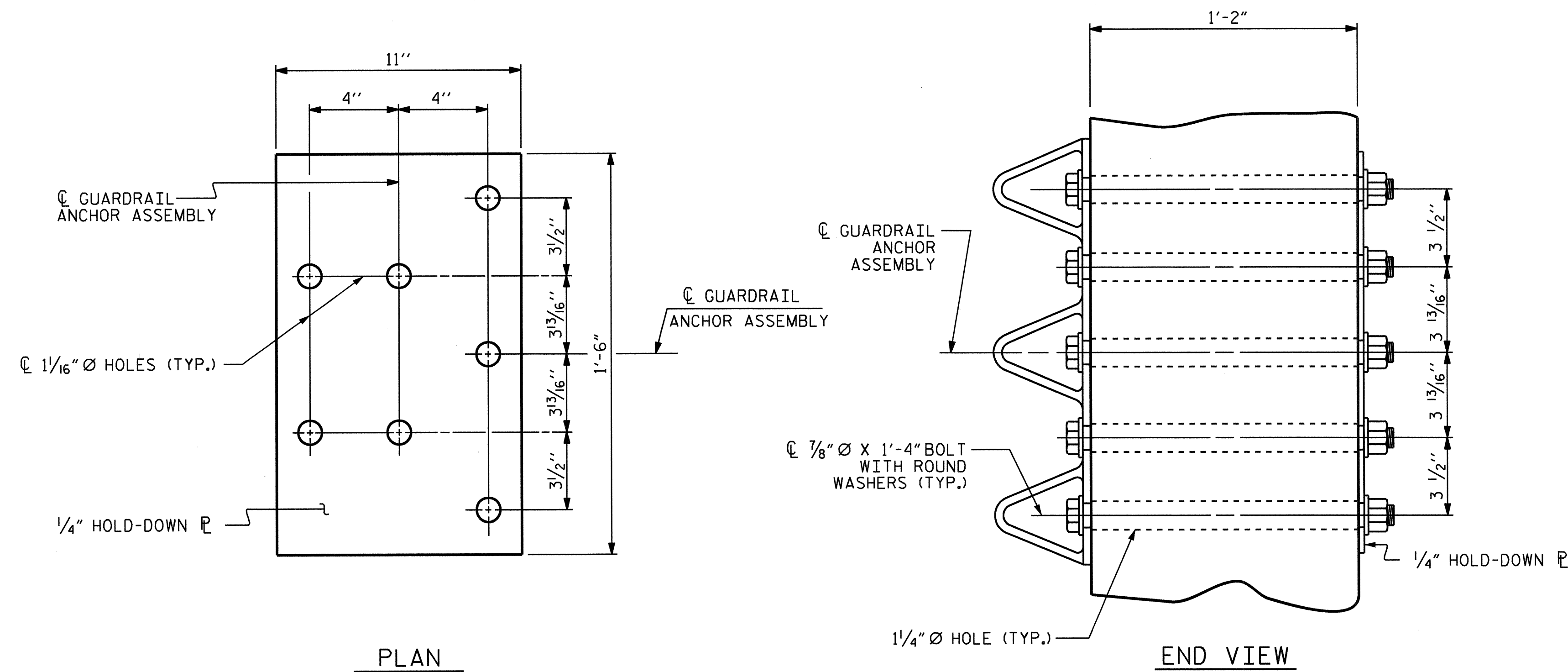
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

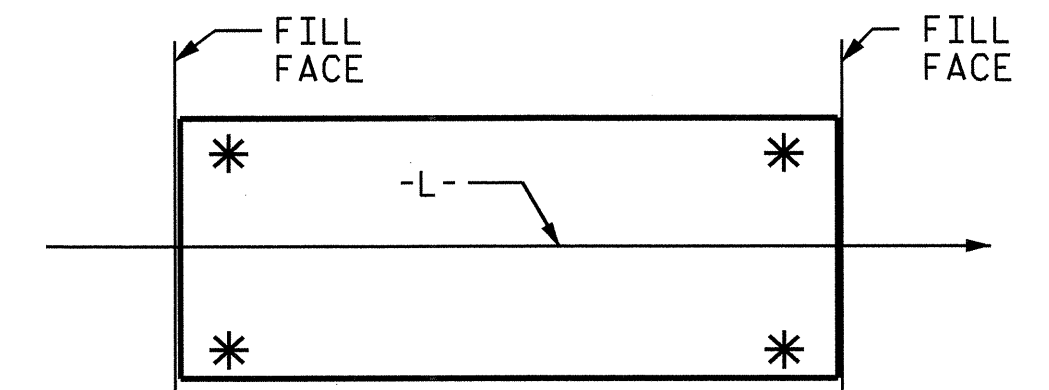
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

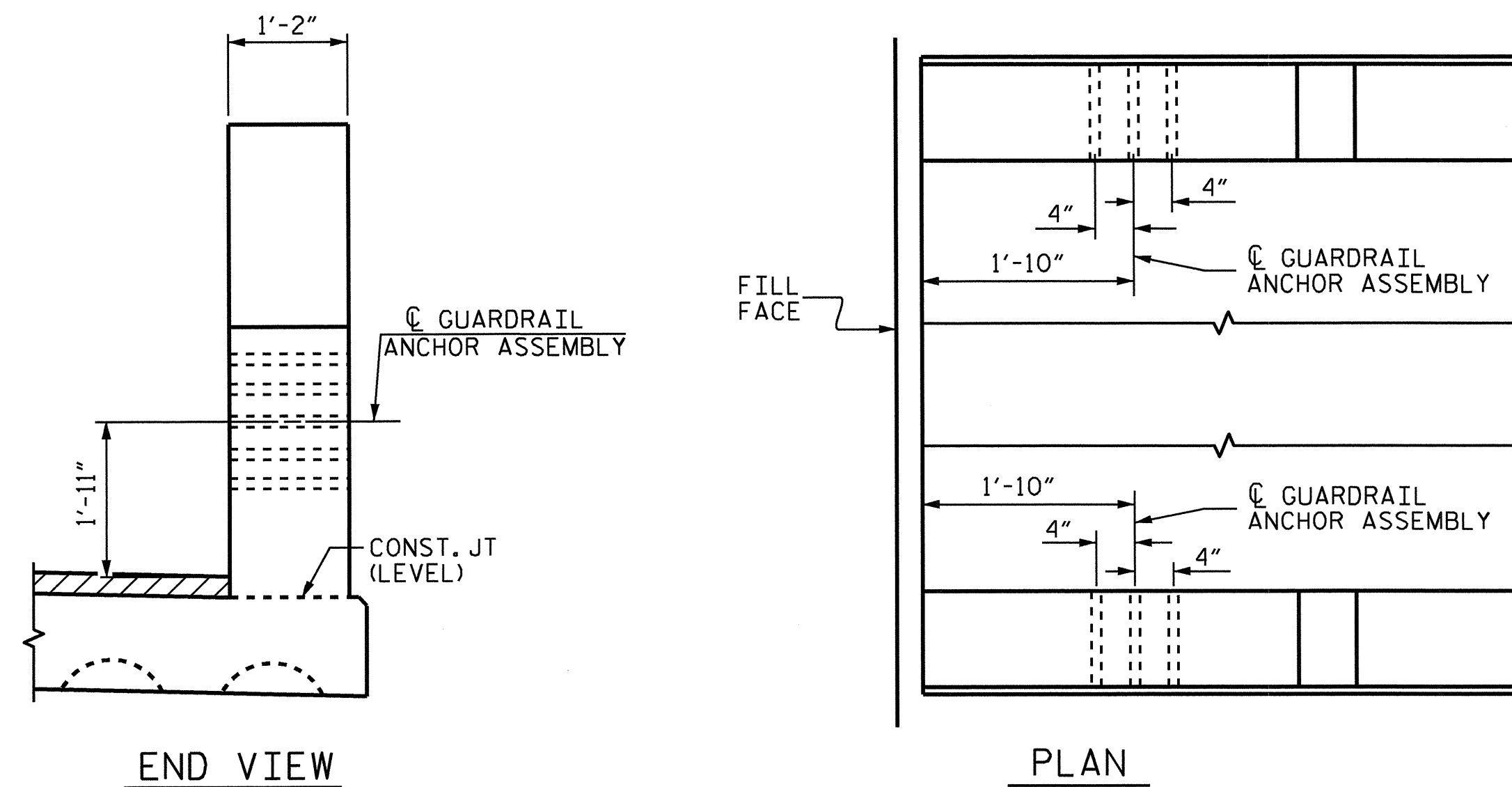
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW

PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

ASSEMBLED BY : R. L. CHESSON	DATE : 02/2012
CHECKED BY : H. T. DIEU	DATE : 08/2012
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	REV. 10/17/11
	REV. 12/5/11

MAA/GM
 MAA/GM

25-SEP-2012 14:23
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-16
2			4			25

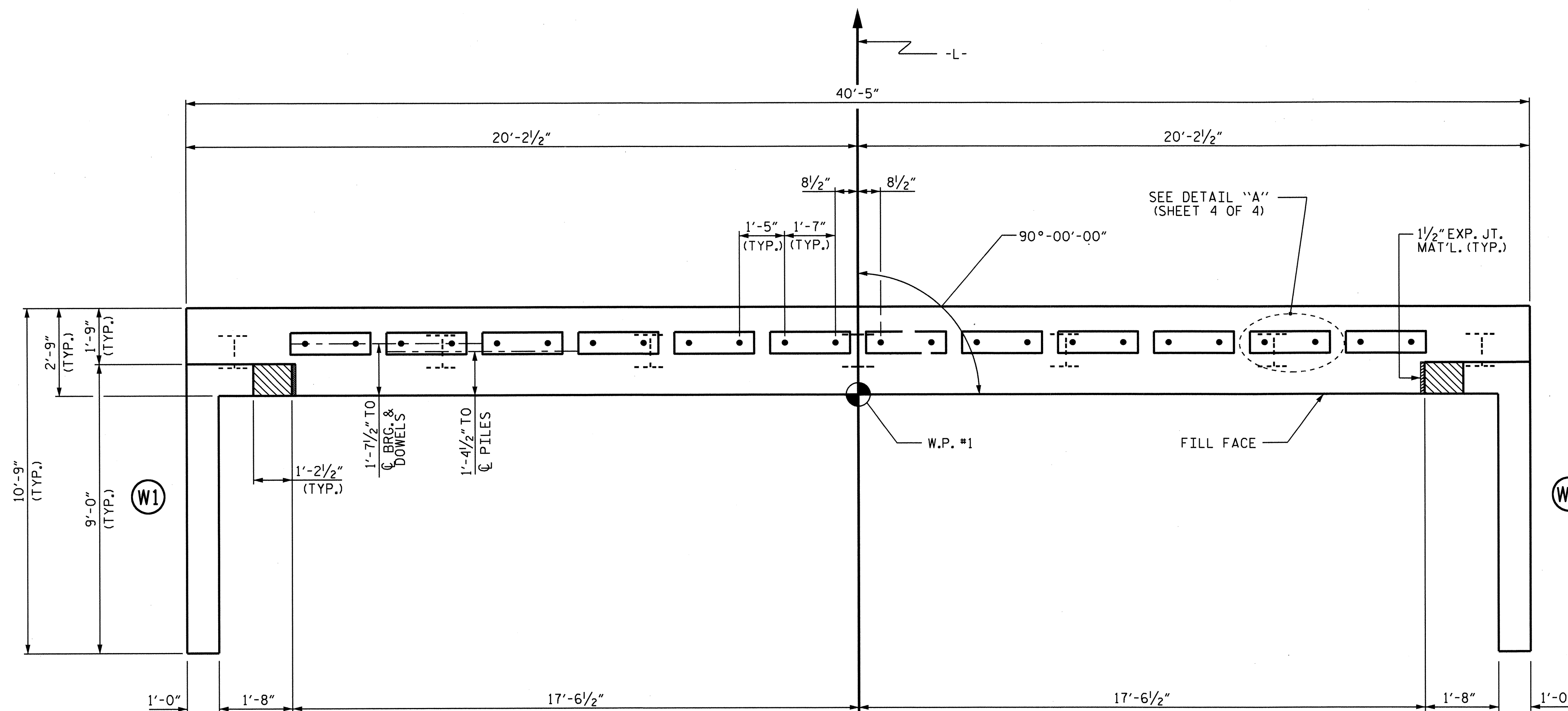
NOTES

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

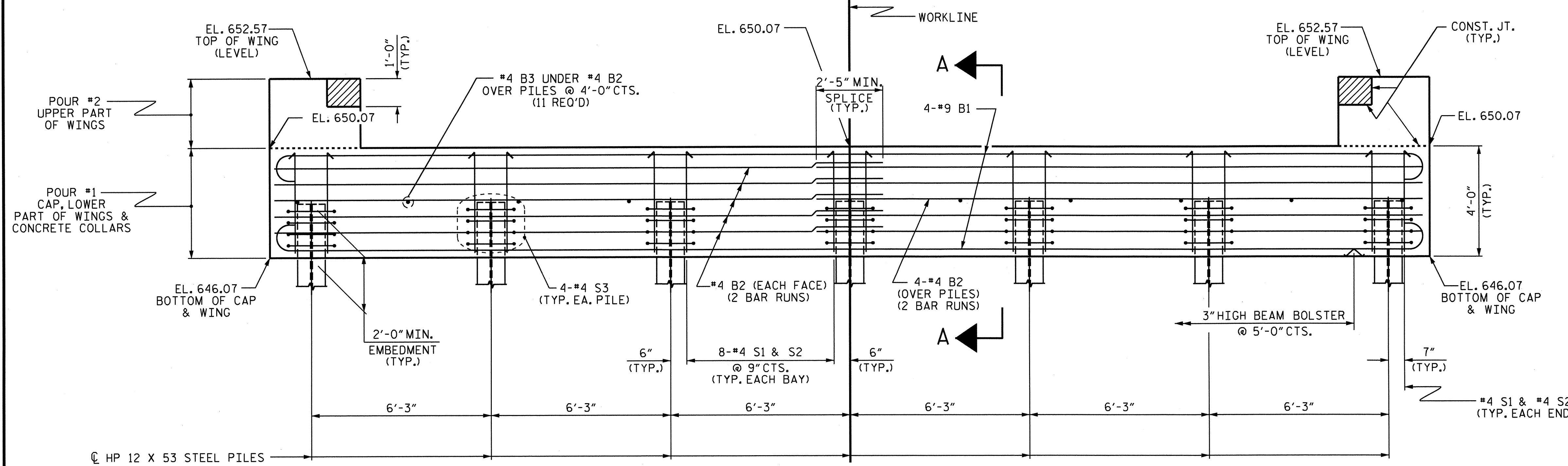
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

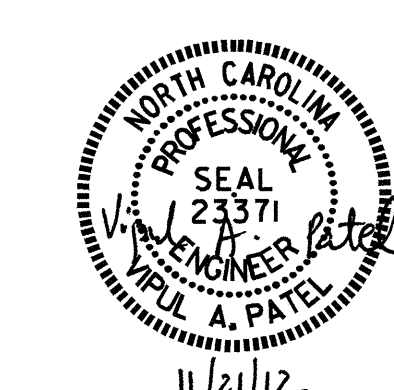
WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. B-4809
ROWAN COUNTY
STATION: 19+72.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1



ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
CHECKED BY : H. T. DIEU DATE : 08/2012
DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			25

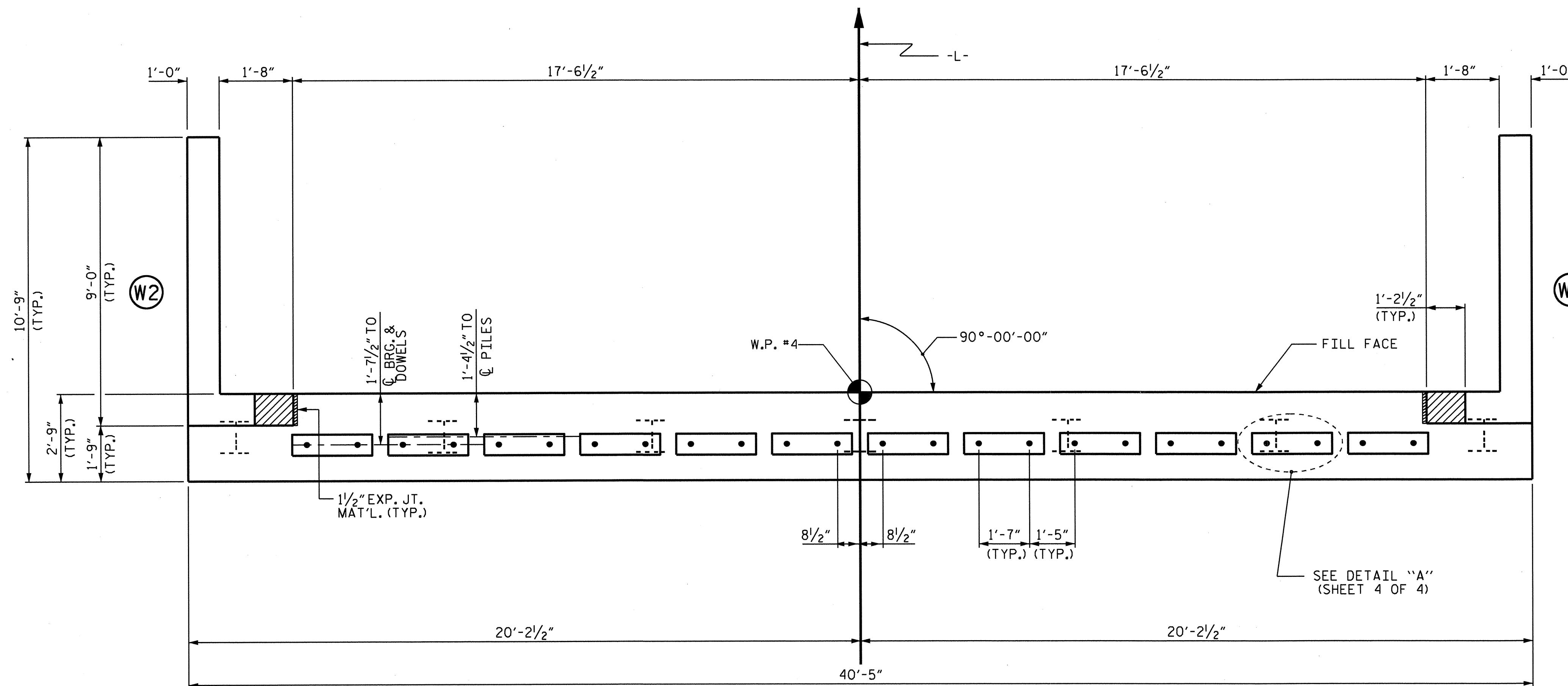
NOTES

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

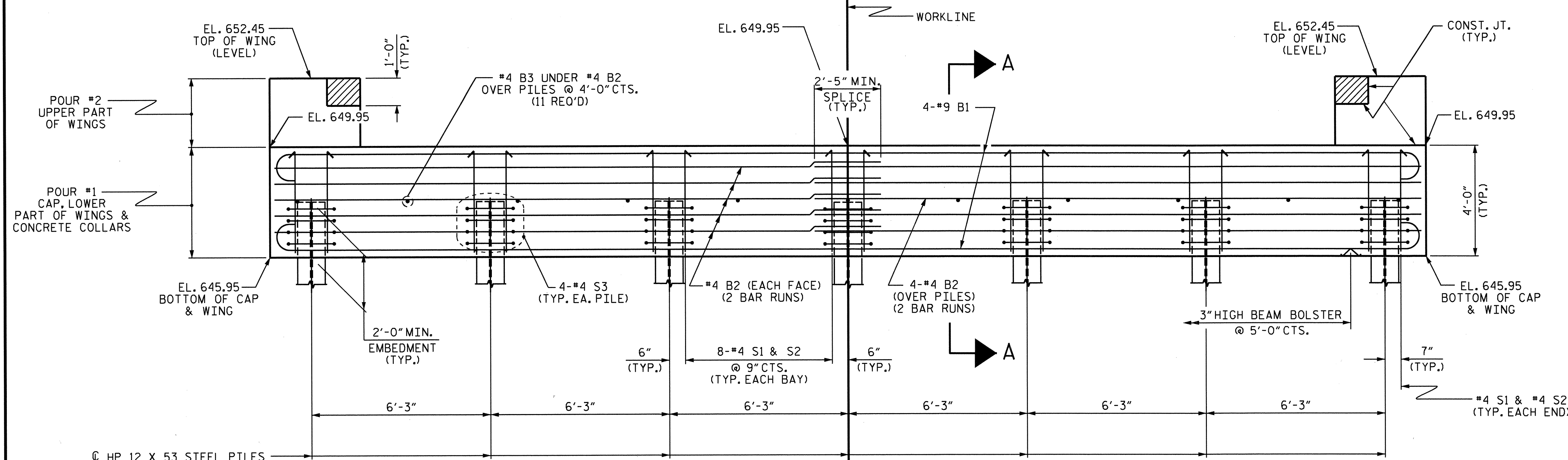
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

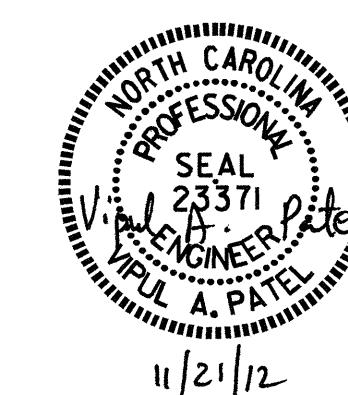
WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. B-4809
ROWAN COUNTY
STATION: 19+72.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

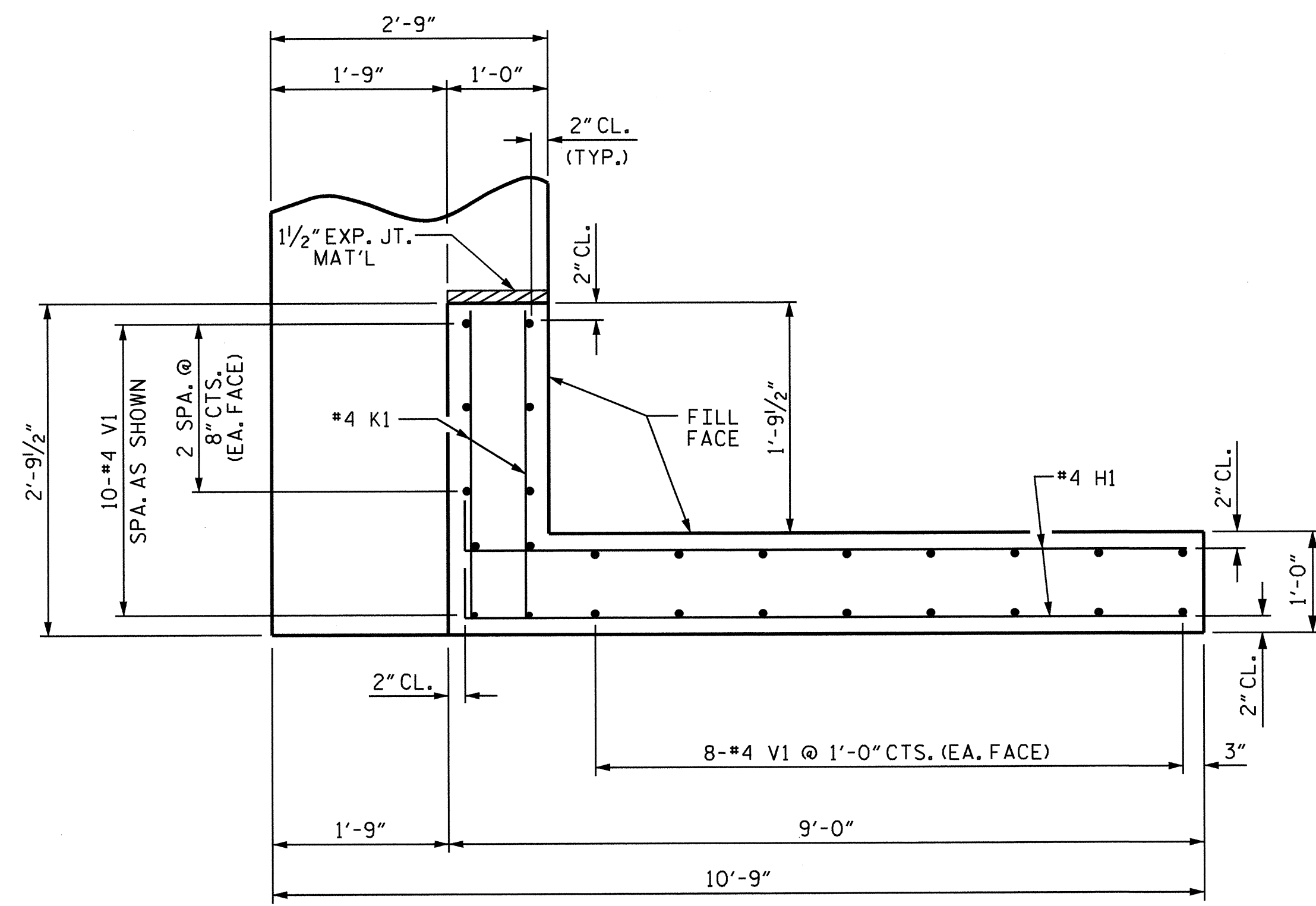


ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
CHECKED BY : H. T. DIEU DATE : 08/2012
DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11

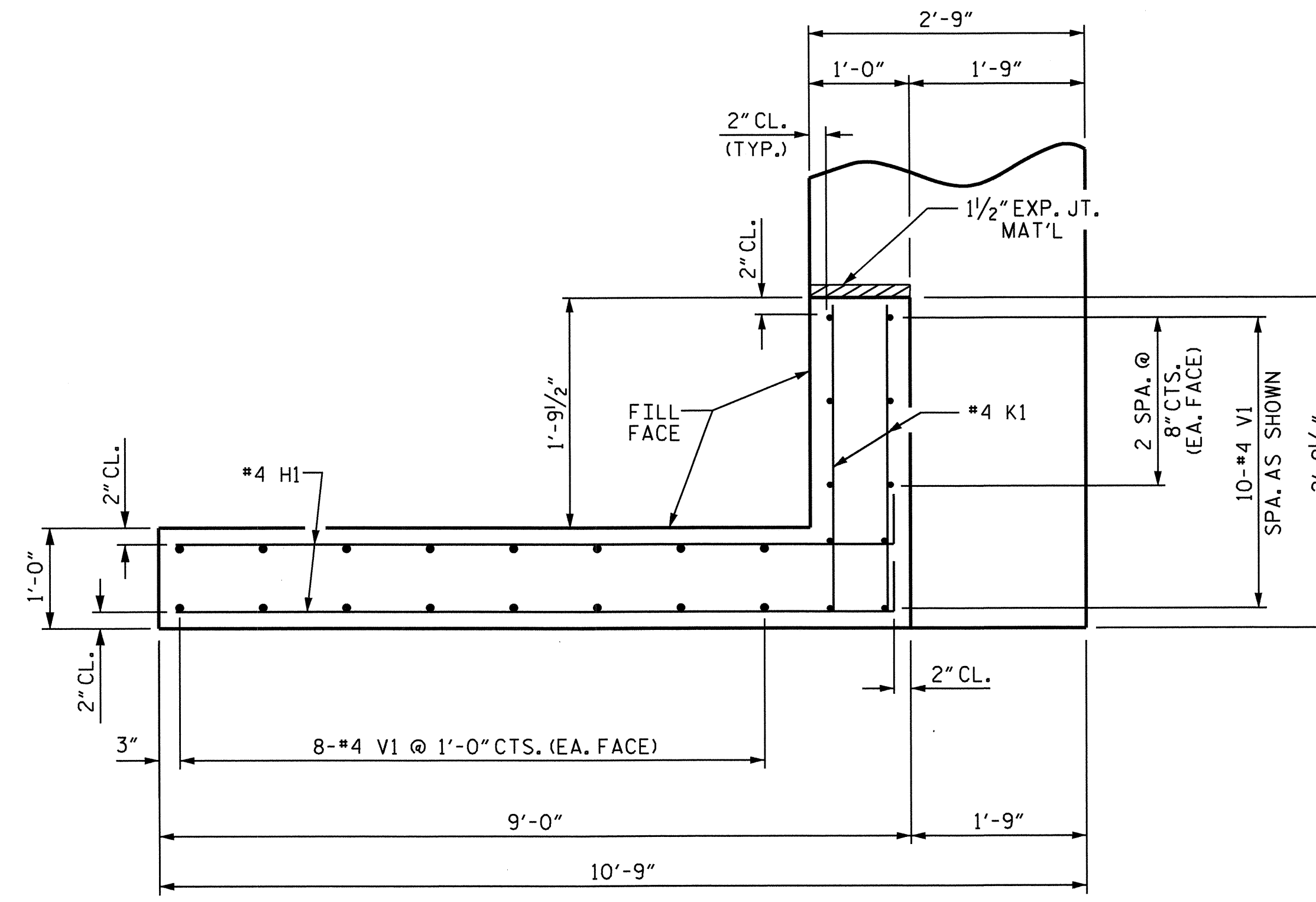
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REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

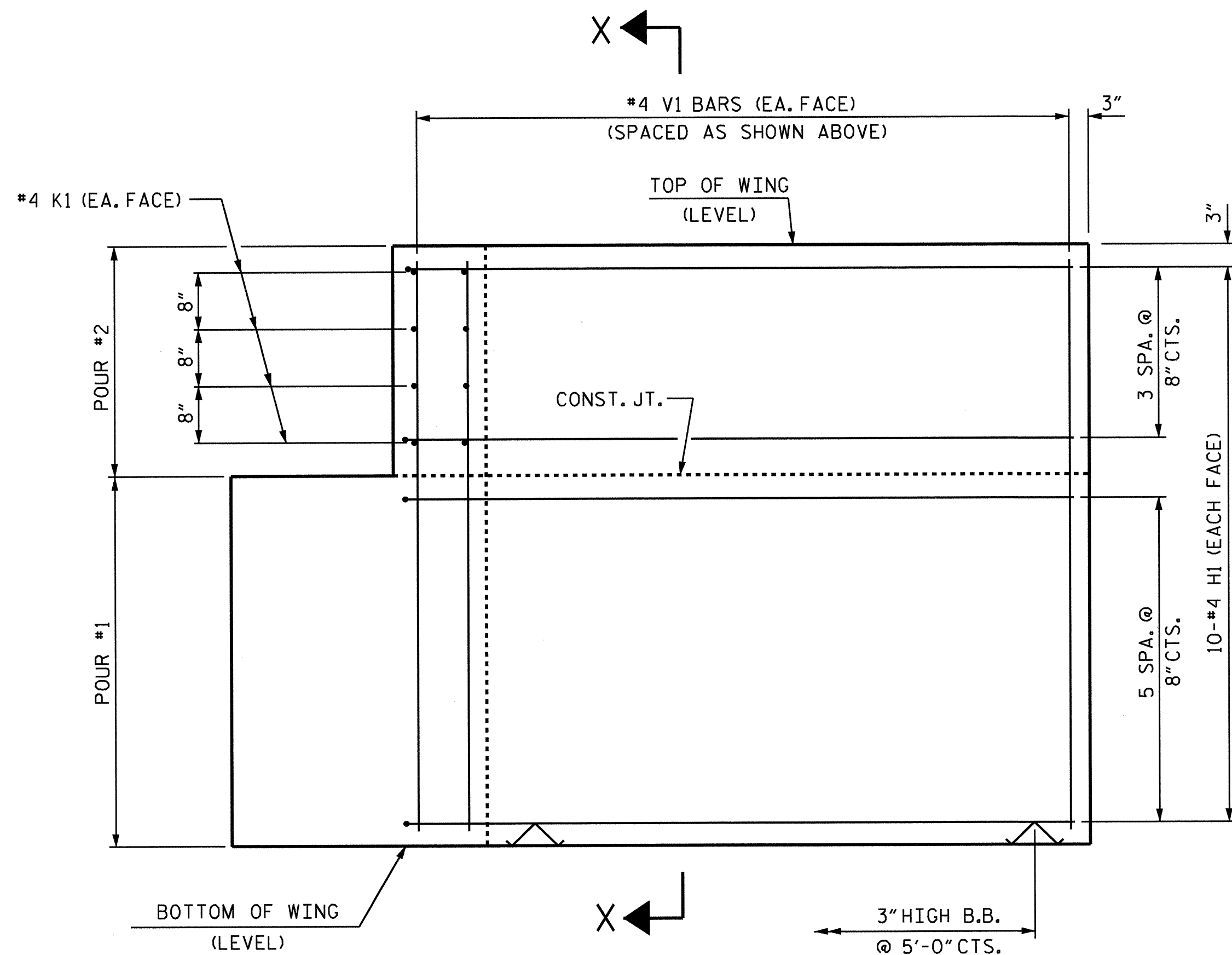
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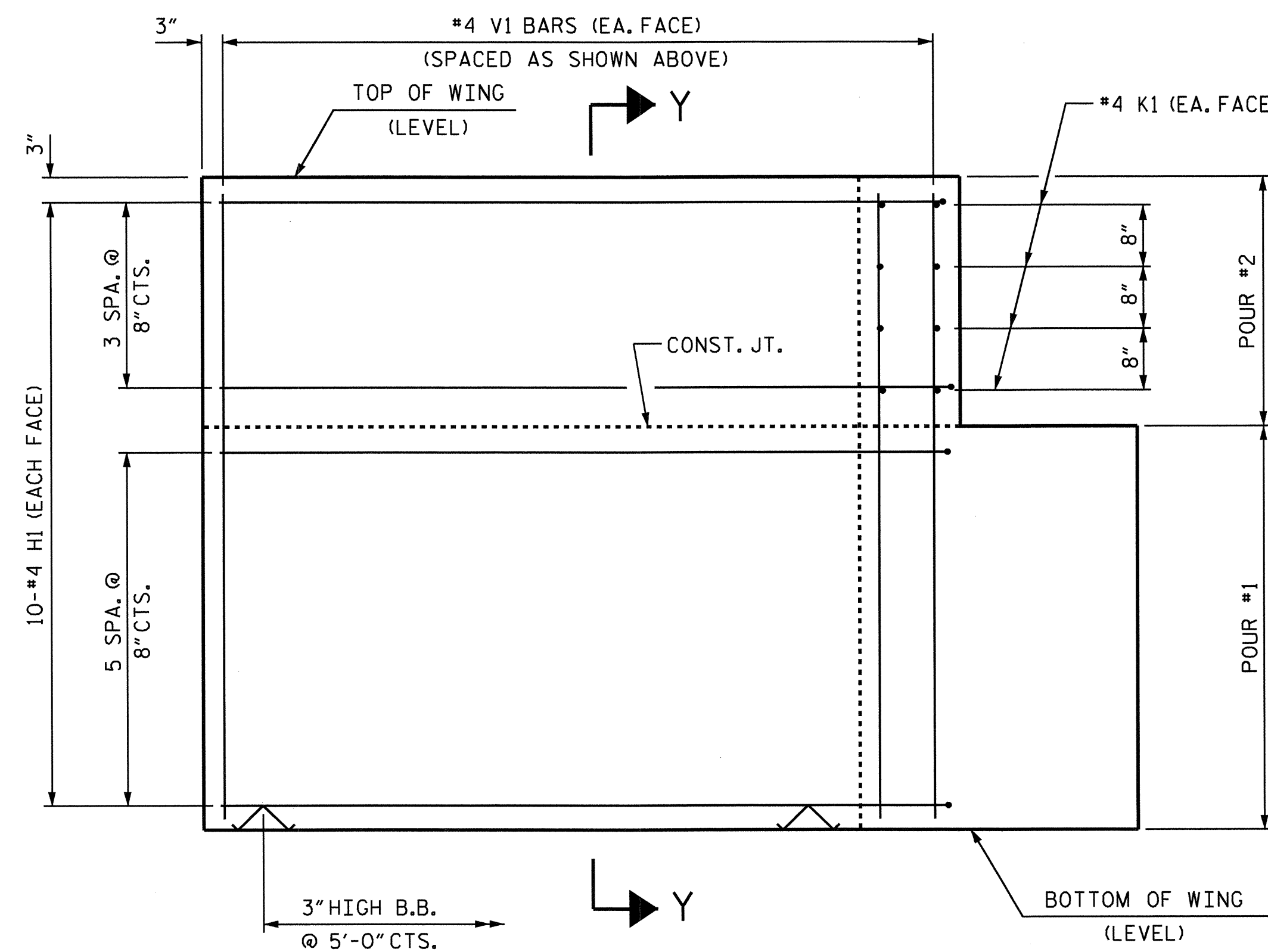
PLAN OF WING (W1)



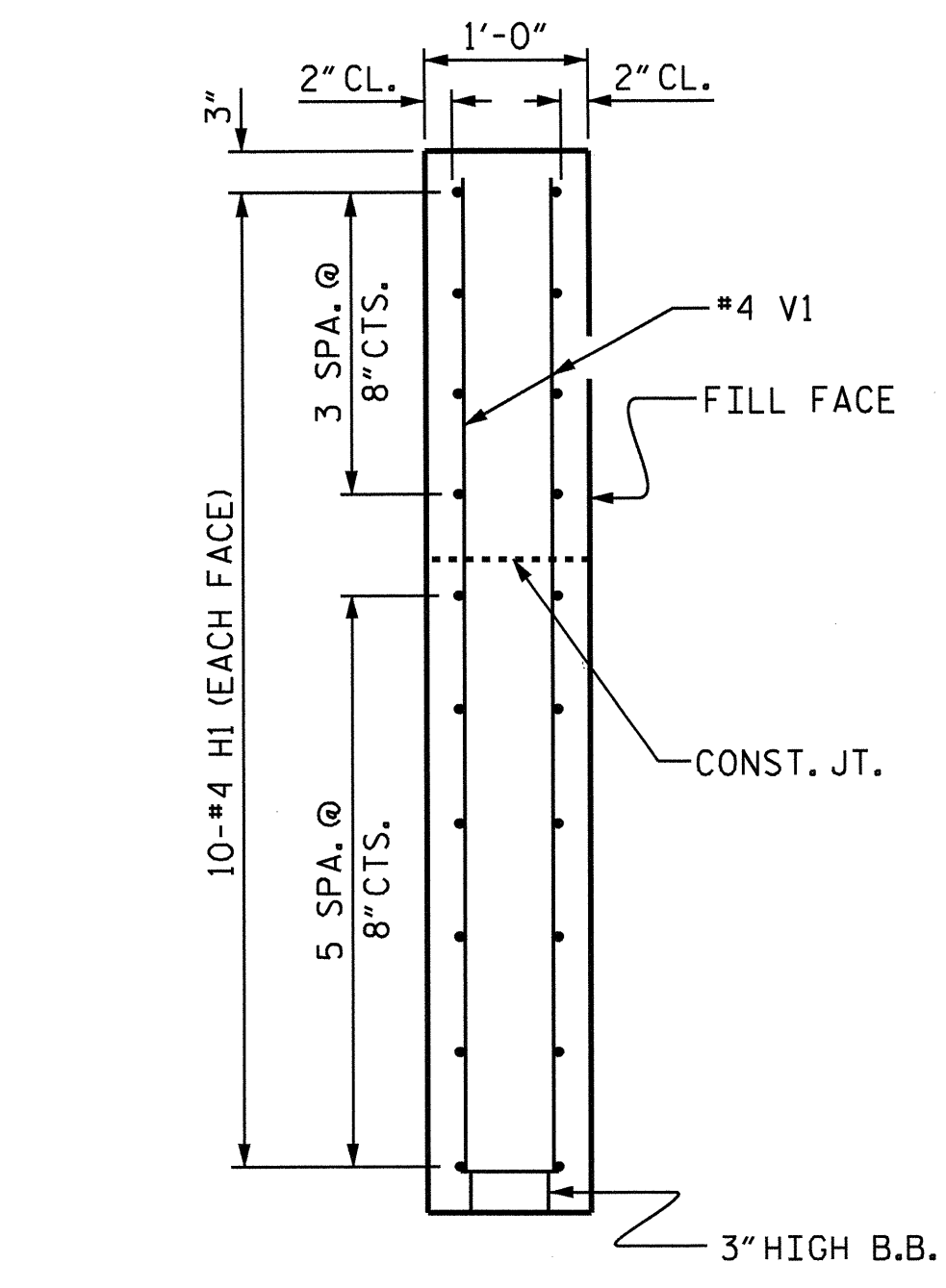
PLAN OF WING (W2)



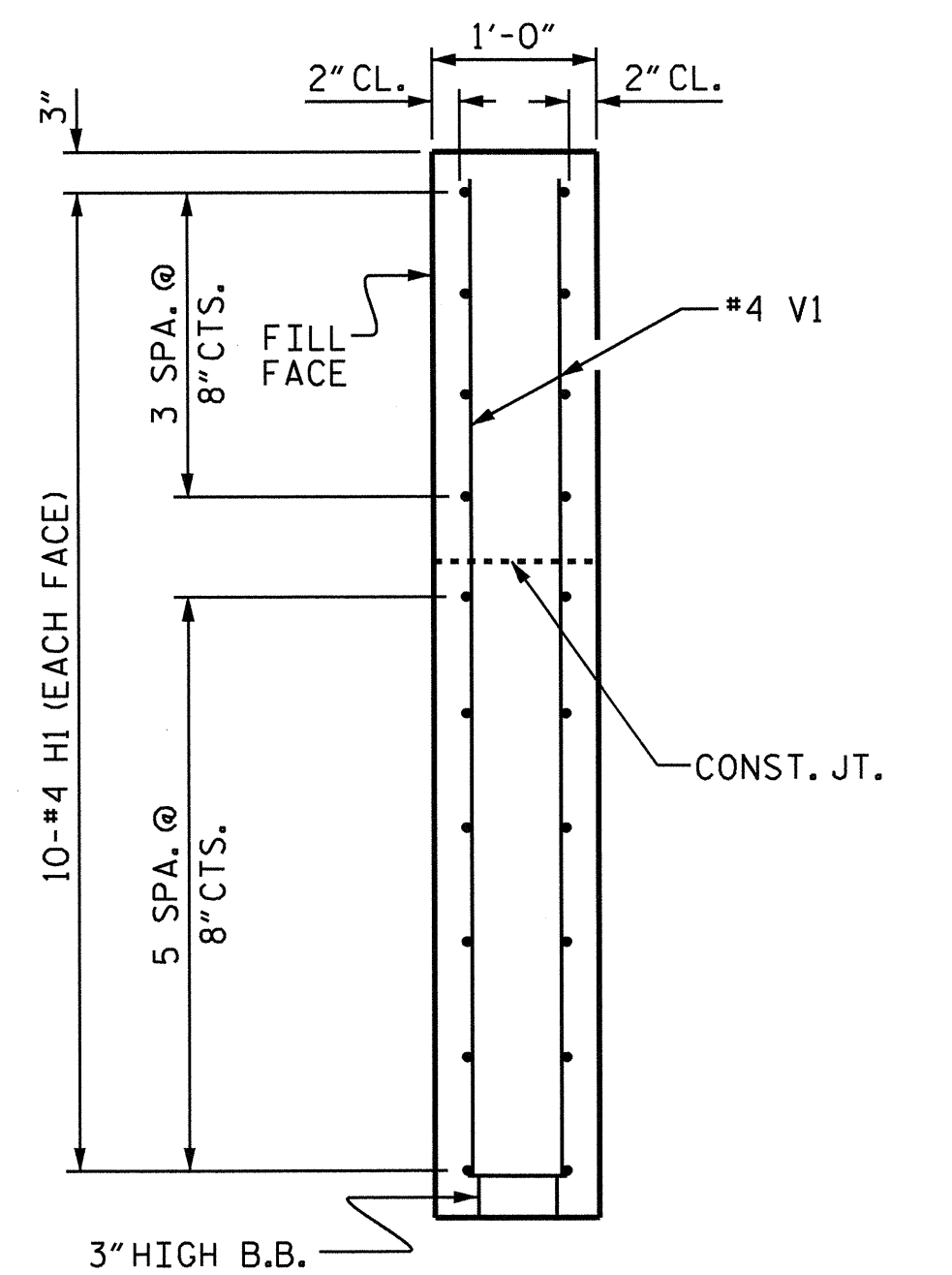
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X

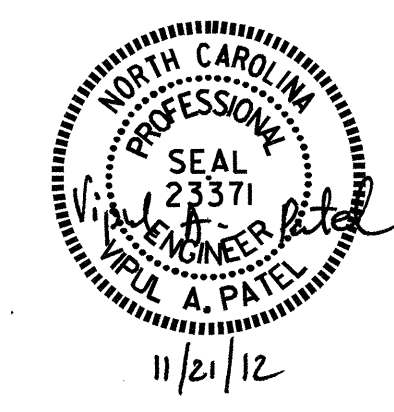


SECTION Y-Y

PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

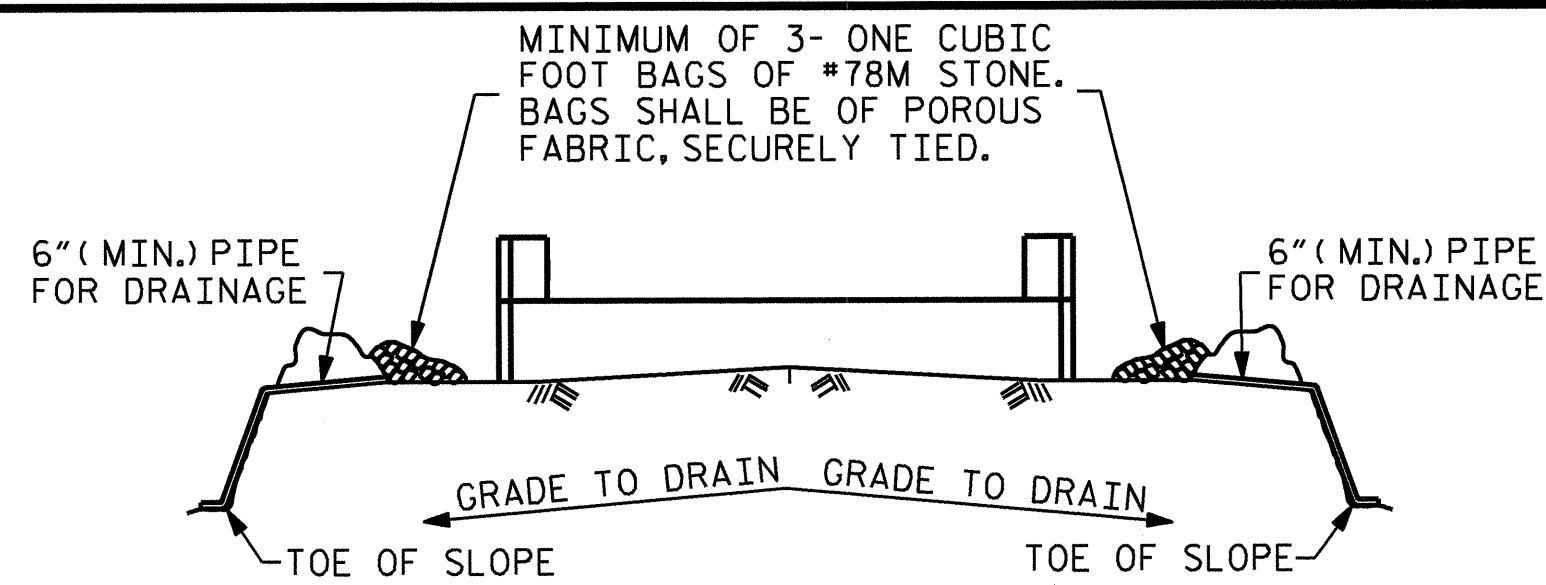
SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-19					TOTAL SHEETS 25



ASSEMBLED BY: R. L. CHESSON DATE: 02/2012
 CHECKED BY: H. T. DIEU DATE: 4/12/12
 DRAWN BY: WJH 12/11
 CHECKED BY: AAC 12/11

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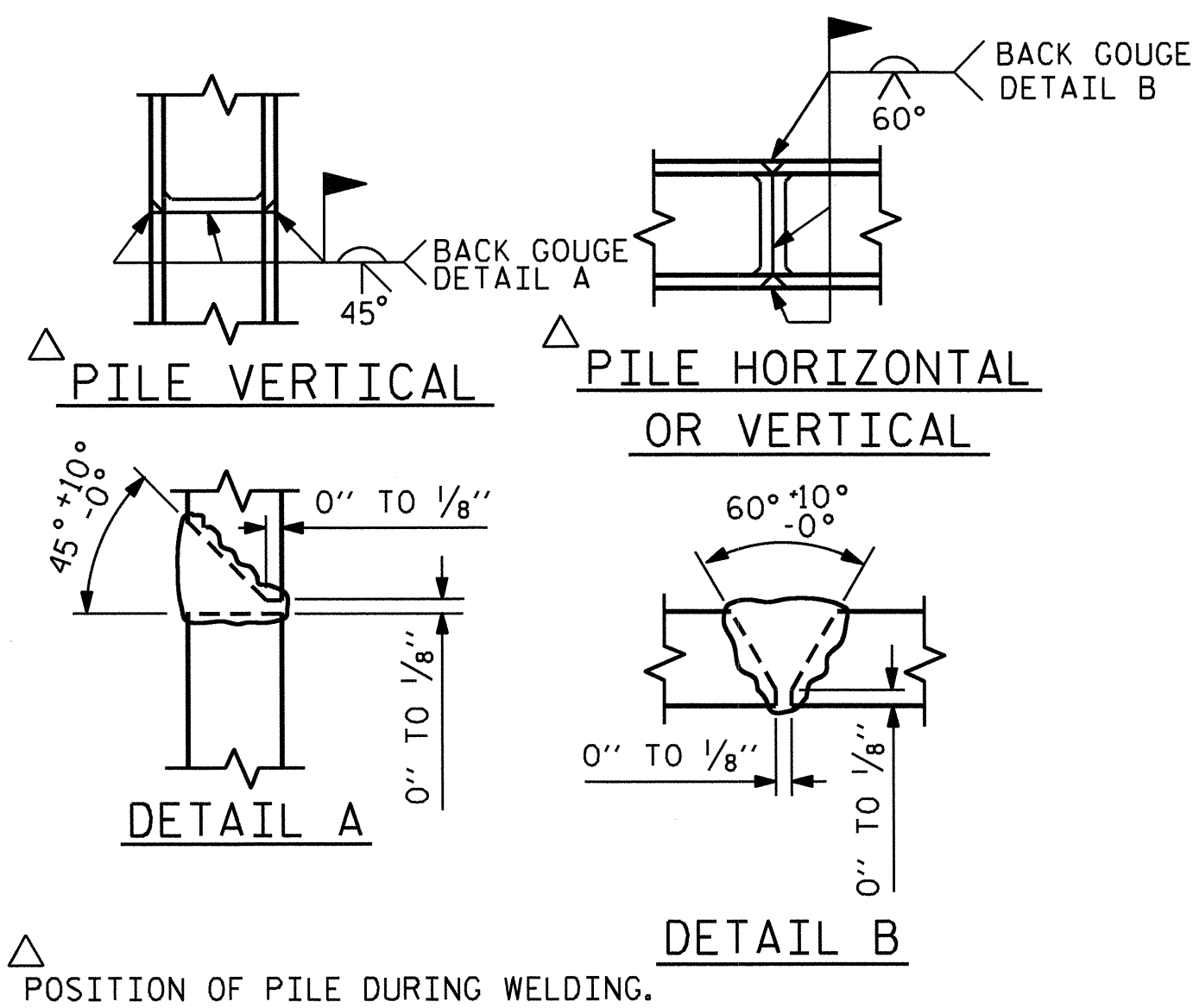


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



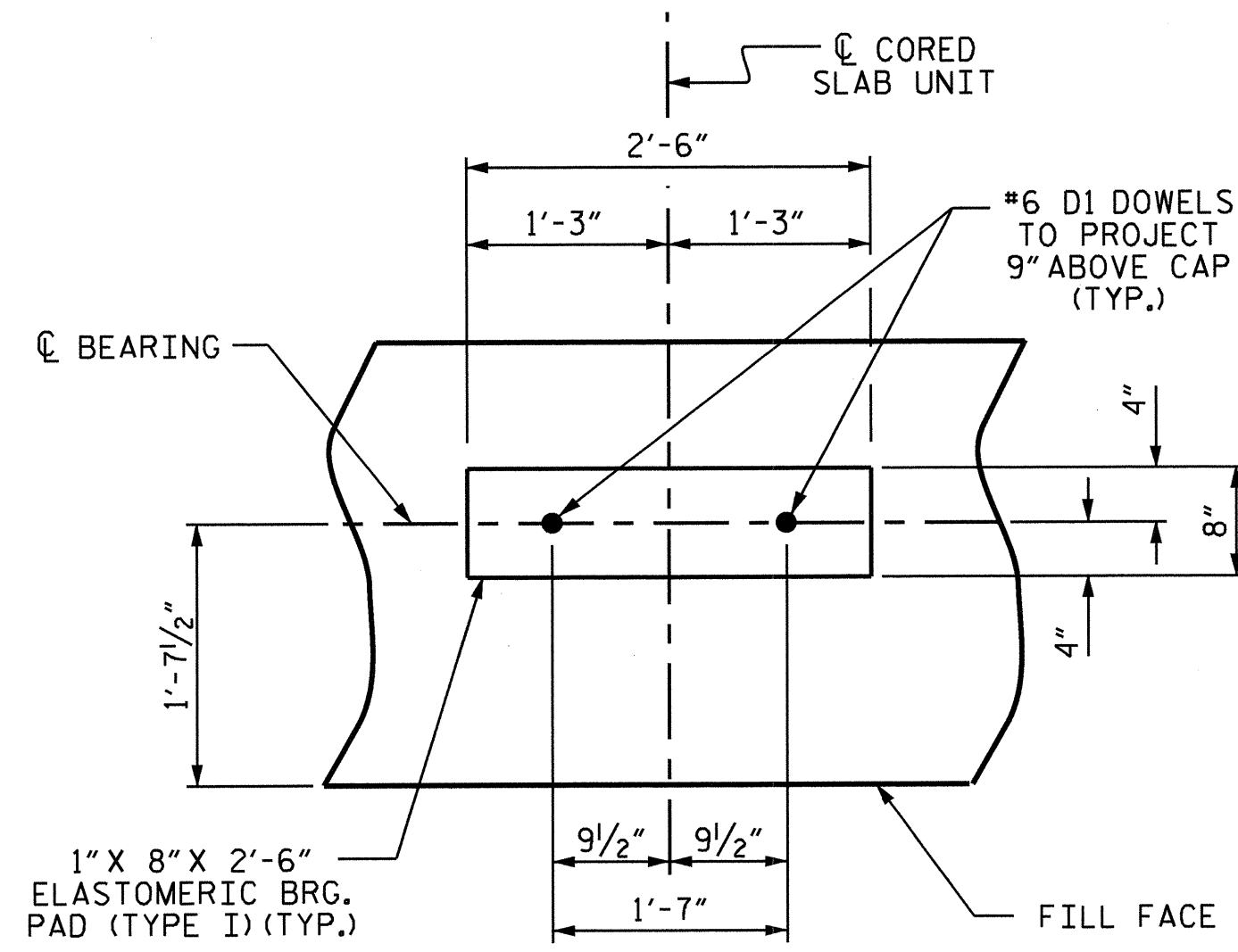
PILE SPLICE DETAILS

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#9	1	42'-5"	1154	
B2	#4	STR	21'-3"	397	
B3	#4	STR	2'-5"	18	
D1	#6	STR	1'-6"	54	
H1	#4	2	9'-4"	249	
K1	#4	STR	2'-5"	26	
S1	#4	3	10'-5"	348	
S2	#4	4	3'-2"	106	
S3	#4	5	6'-6"	122	
V1	#4	STR	6'-2"	214	
REINFORCING STEEL (FOR ONE END BENT)				2688	LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS			20.0	C.Y.
POUR #2	UPPER PART OF WINGS			2.1	C.Y.
TOTAL CLASS A CONCRETE				22.1	C.Y.

BAR TYPES	

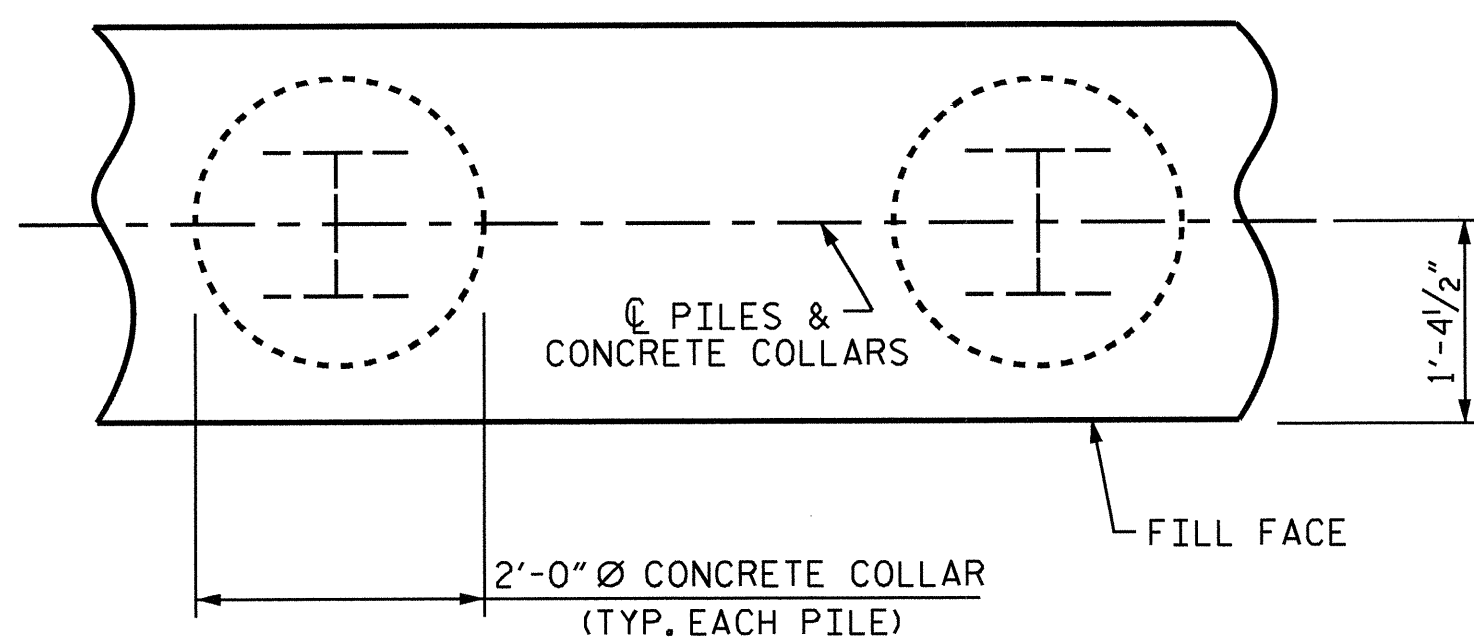
ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 7	NO: 7
LIN. FT.= 140.0	LIN. FT.= 140.0



DETAIL "A"

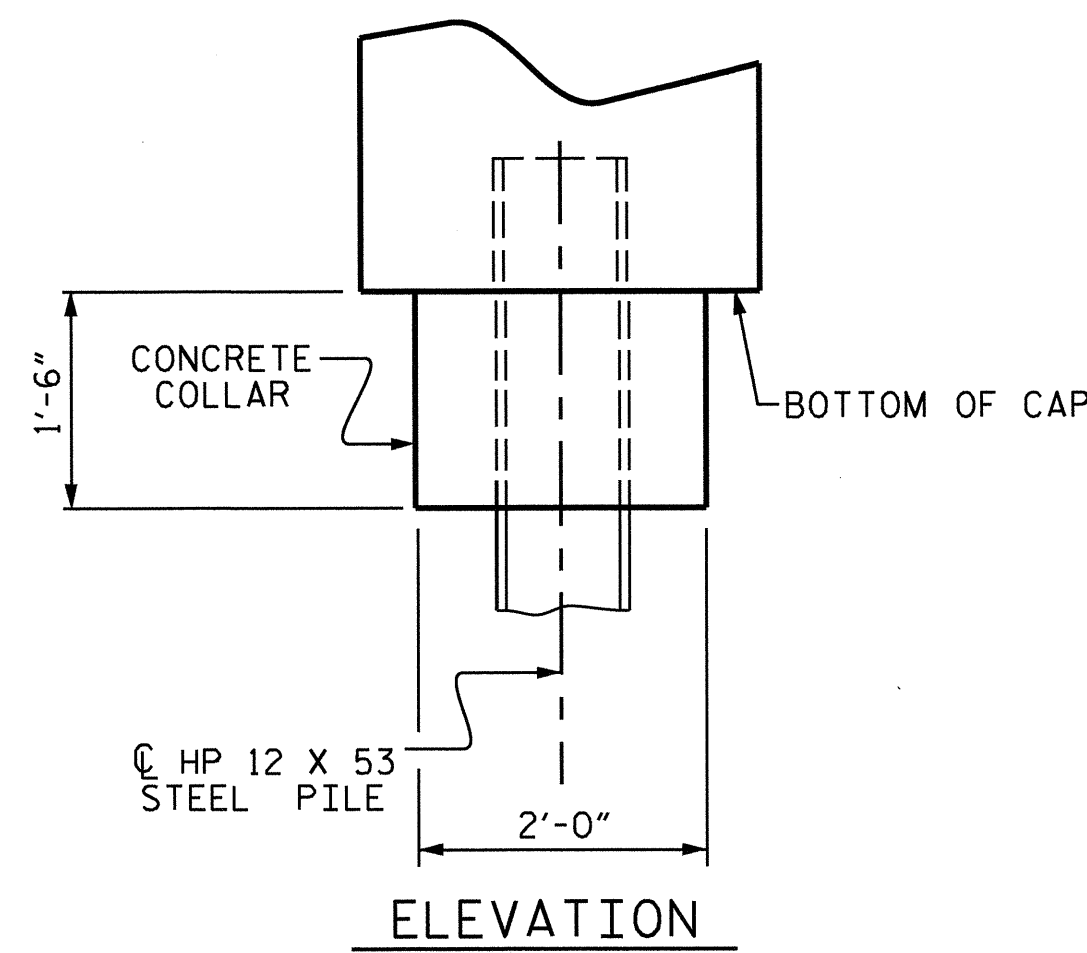
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



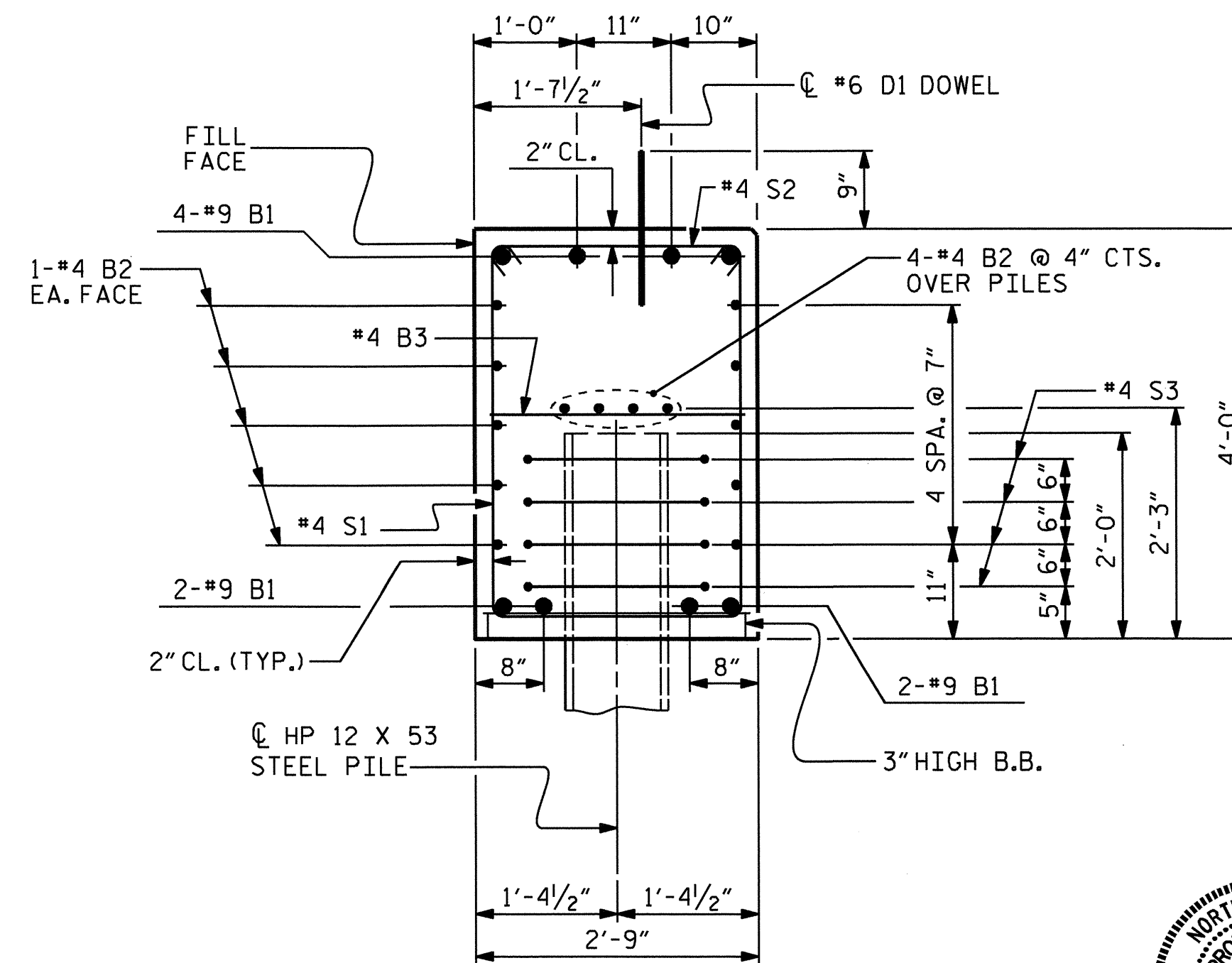
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

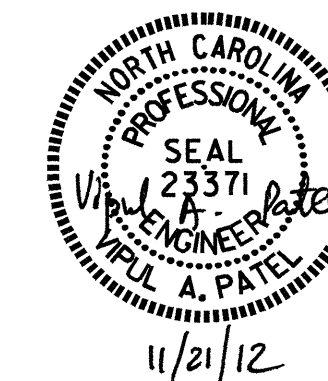


ELEVATION



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT #1 & #2
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS 25
2			4			

ASSEMBLED BY : R. L. CHESSON	DATE : 02/2012
CHECKED BY : H. T. DIEU	DATE : 4/ 12/12
DRAWN BY : WJH 12/11	
CHECKED BY : AAC 12/11	

NOTES

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

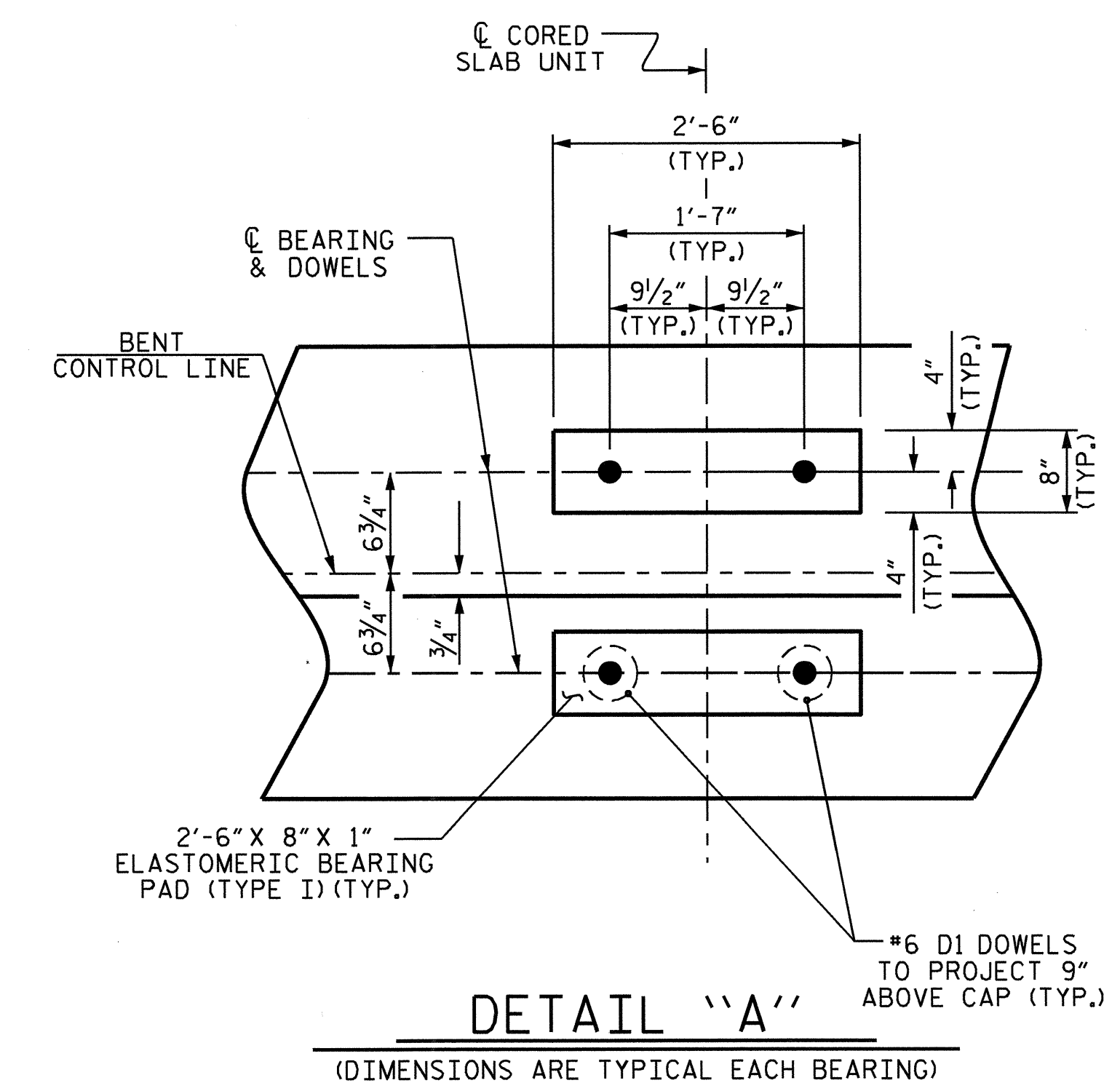
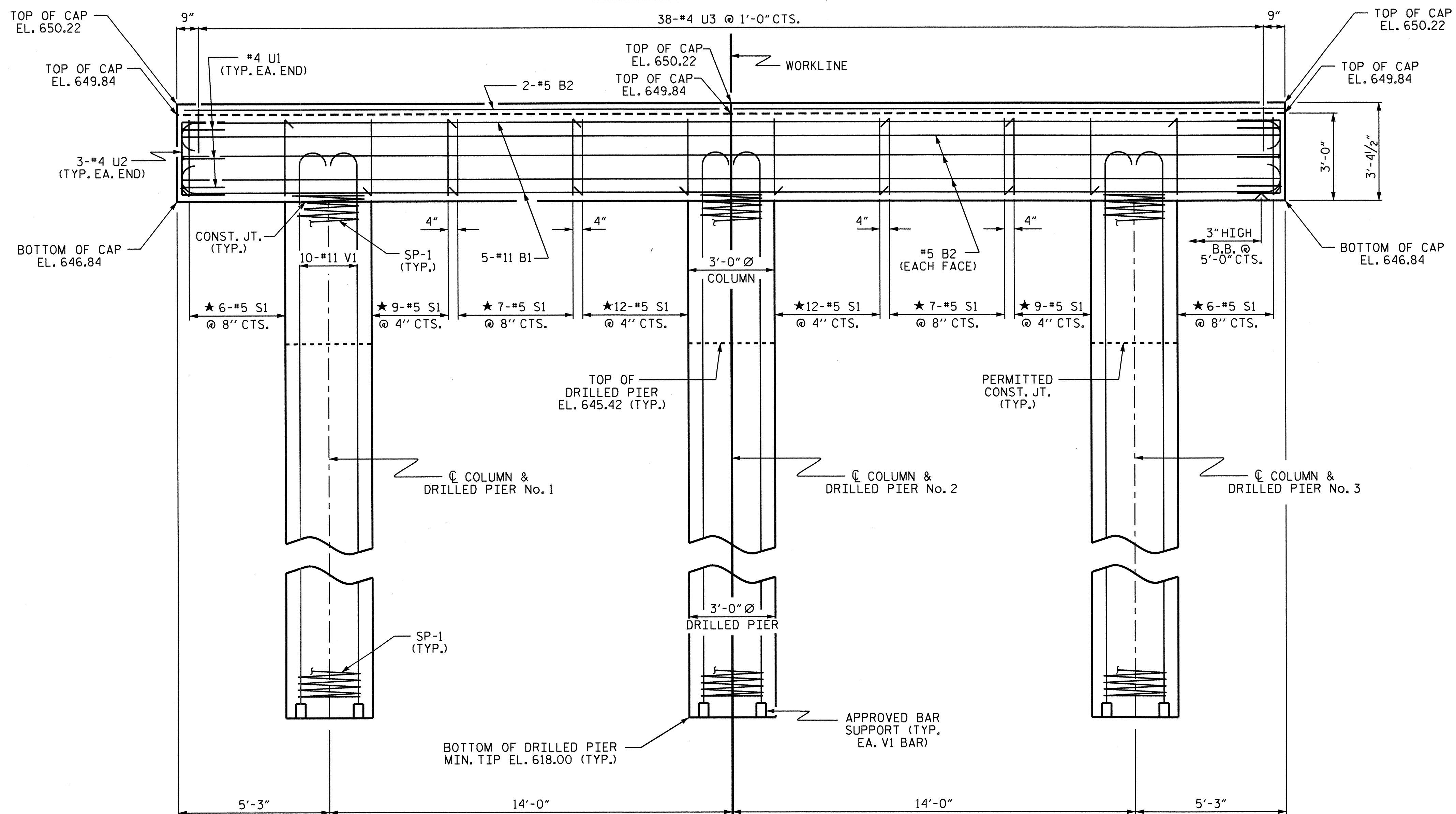
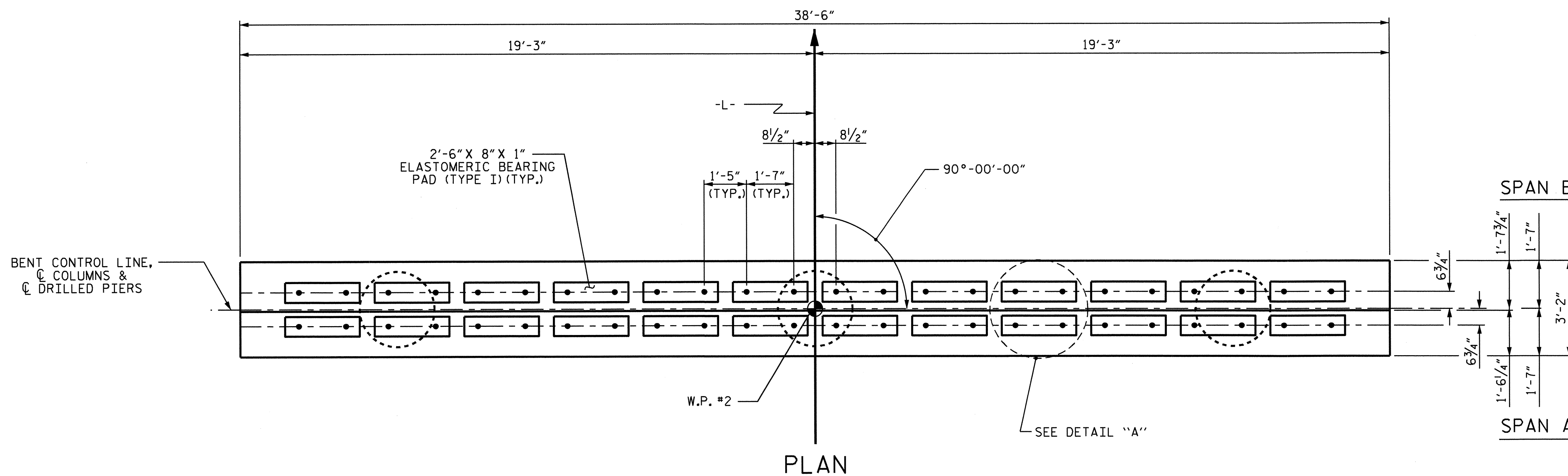
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.



ELEVATION

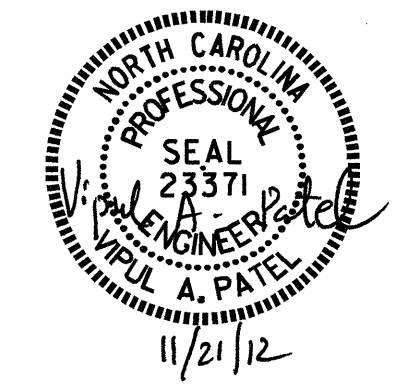
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 1 OF 2

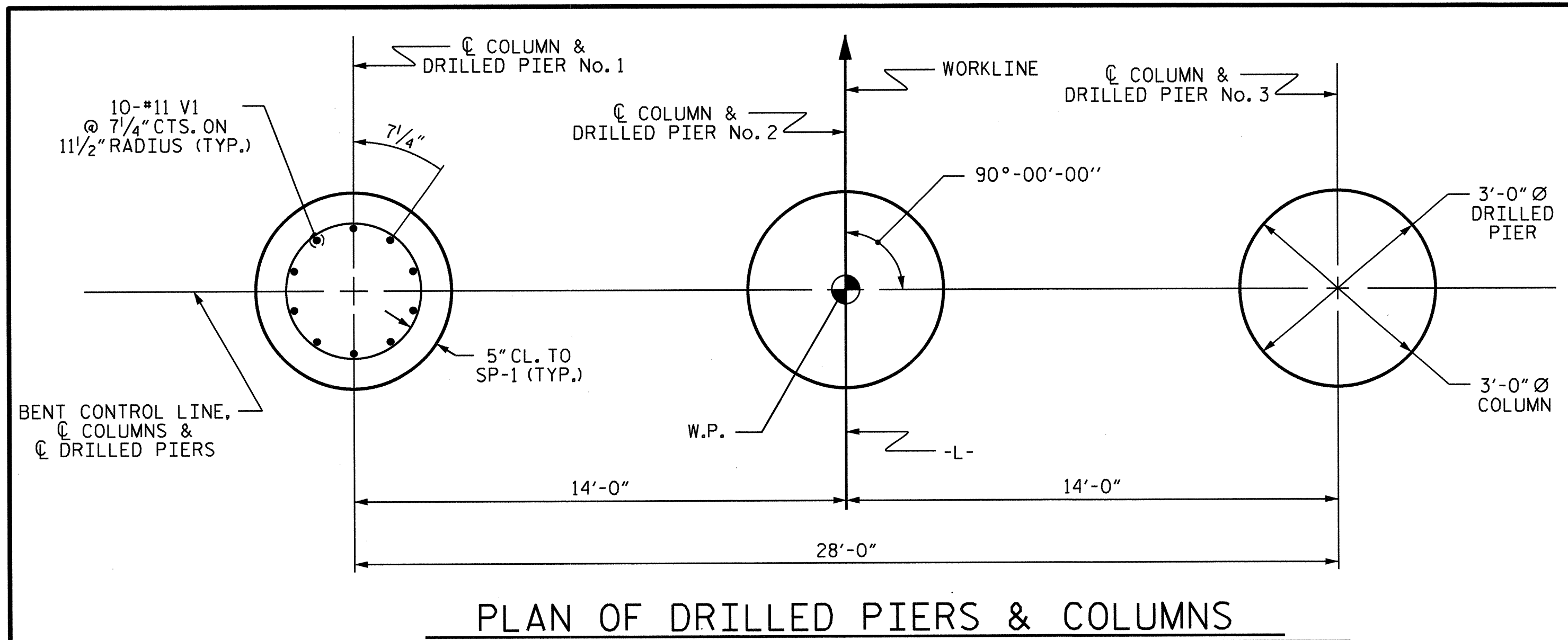
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #1

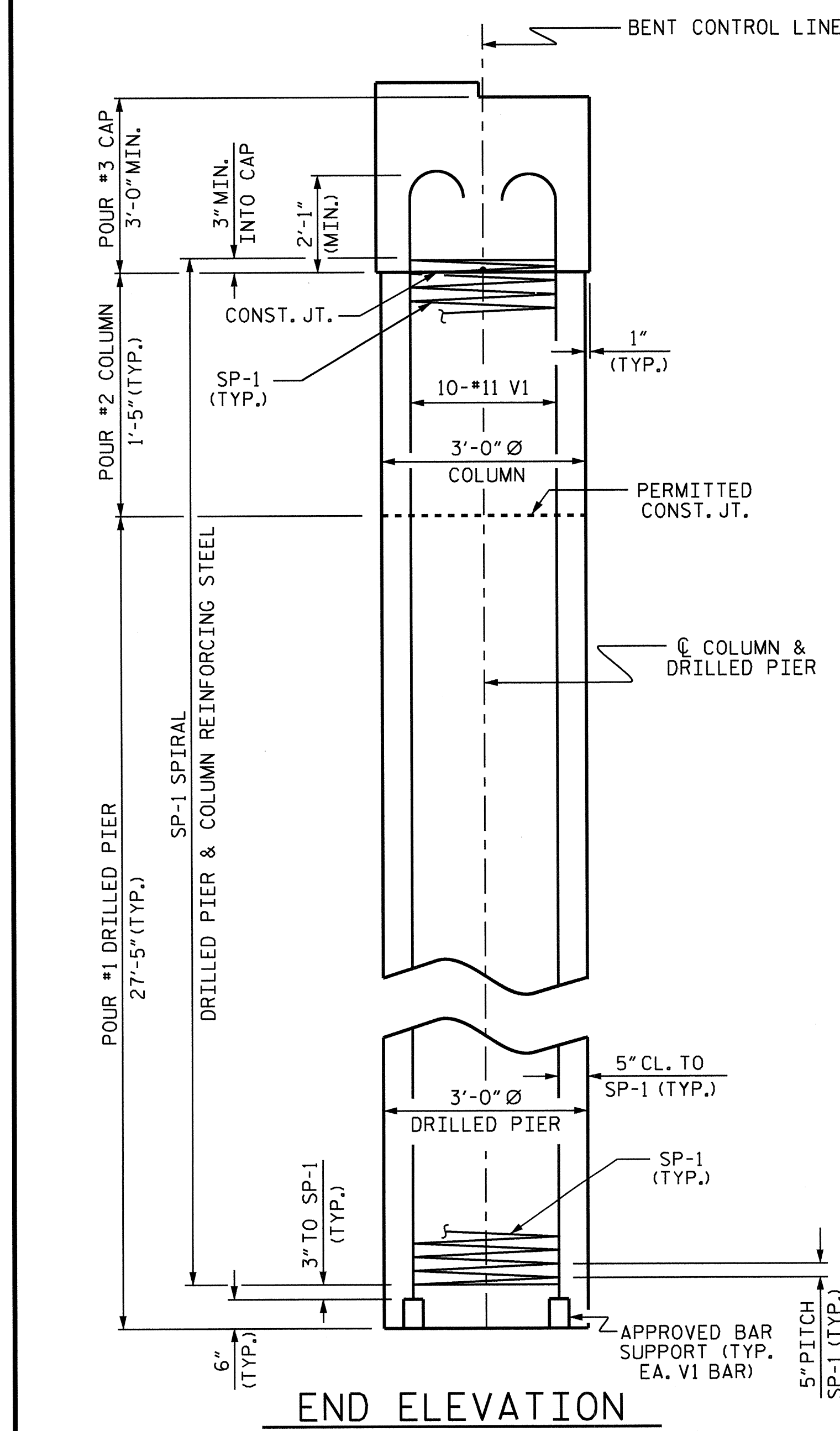


ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 08/2012
 DRAWN BY : DGE 03/10
 CHECKED BY : MKT 03/10

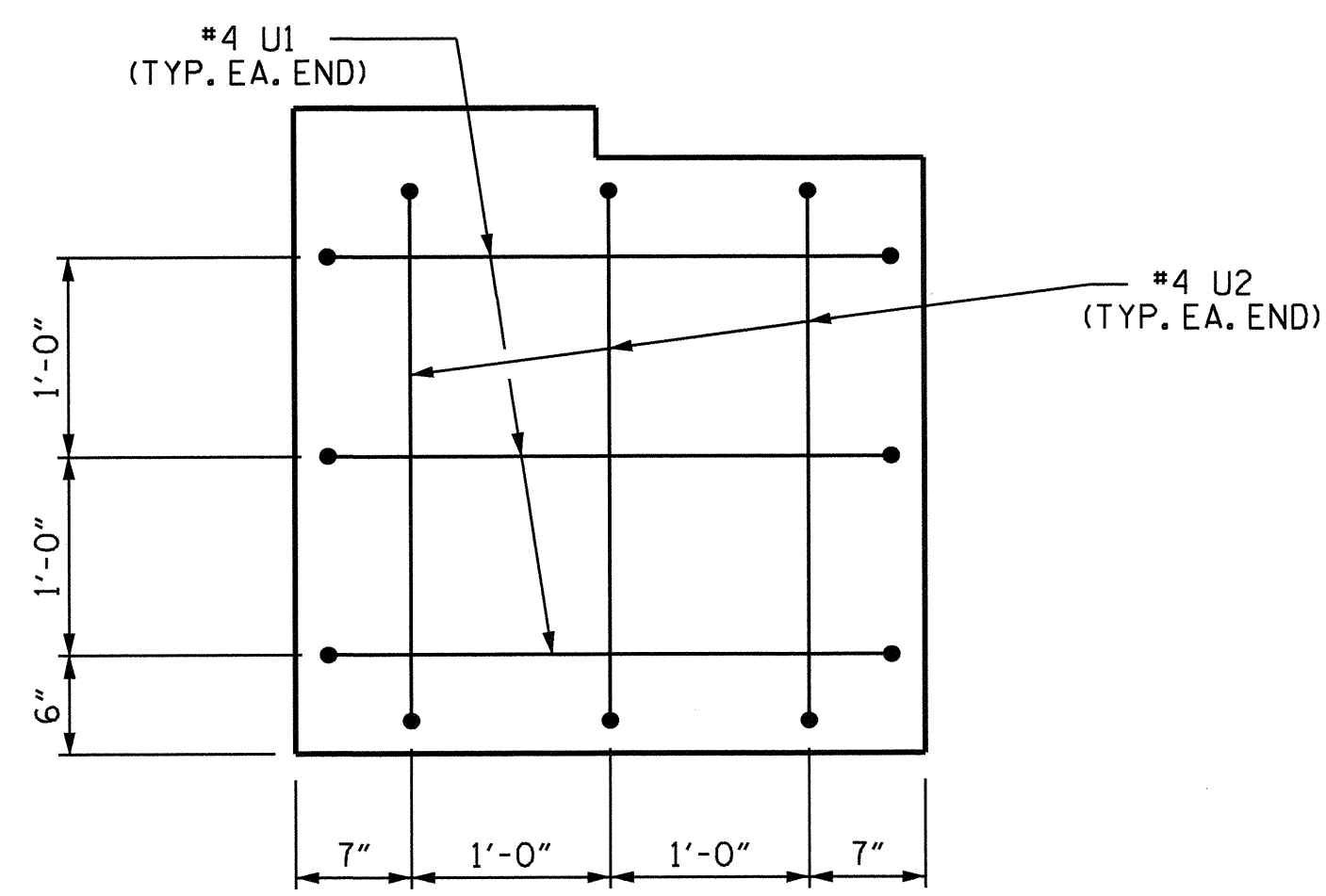
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 25
2			4			



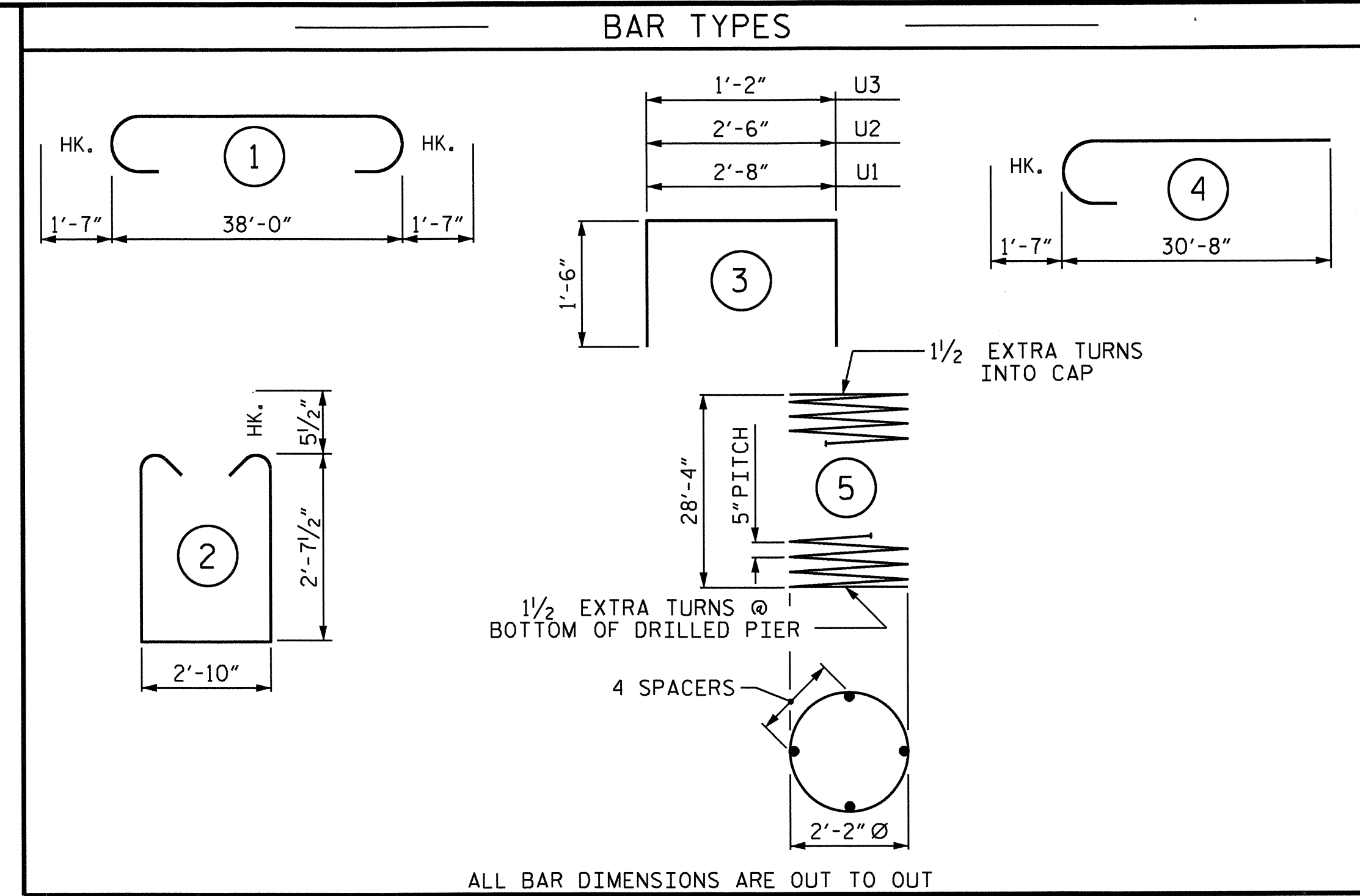
PLAN OF DRILLED PIERS & COLUMNS



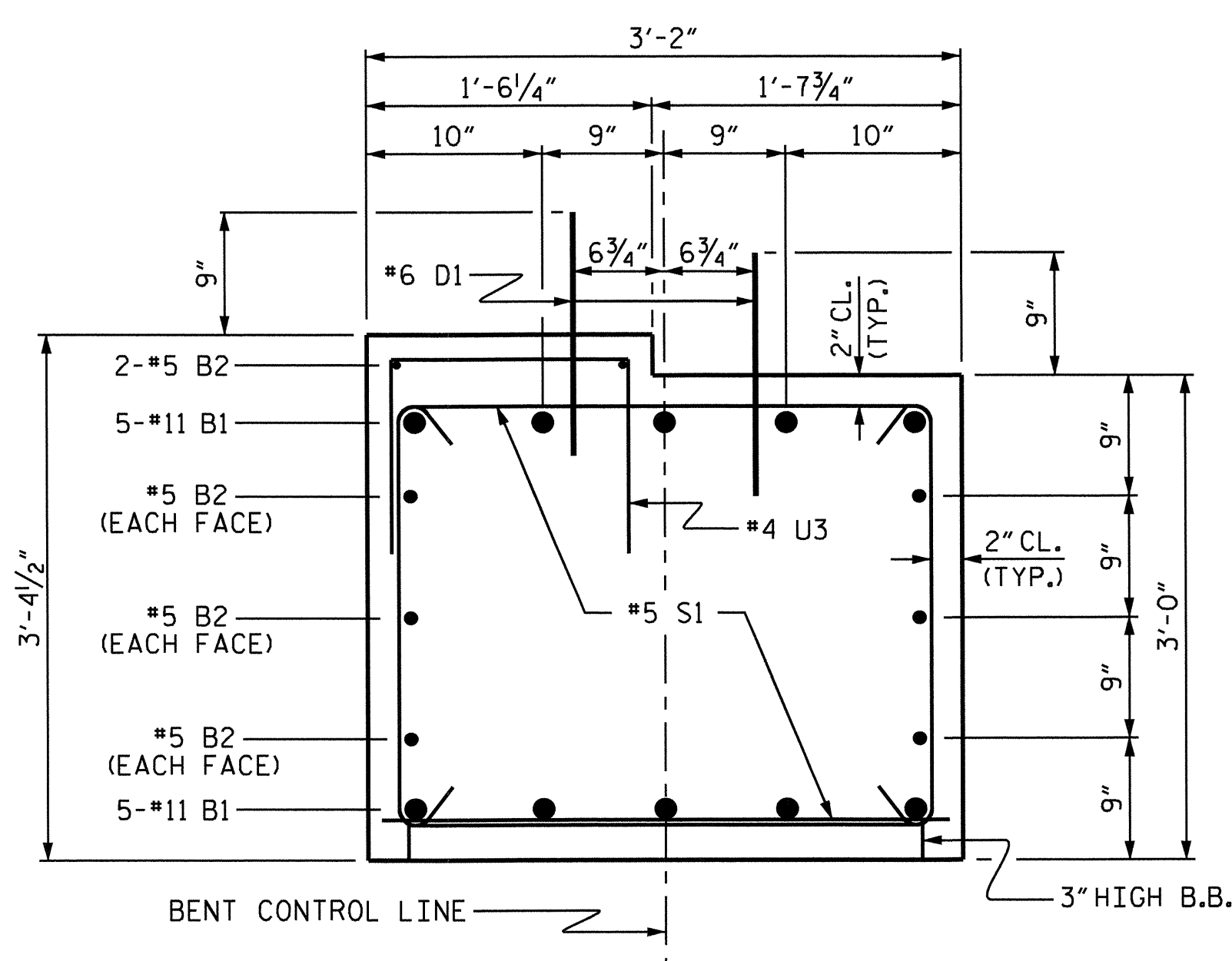
END ELEVATION



END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

BILL OF MATERIAL					
BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	41'-2"	2187
B2	8	#5	STR	38'-2"	318
D1	48	#6	STR	1'-6"	108
S1	68	#5	2	9'-0"	638
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	38	#4	3	4'-2"	106
V1	30	#11	4	32'-3"	5140
REINFORCING STEEL (FOR ONE BENT)					8542 LBS.
SP-1					1479
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					1479 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					

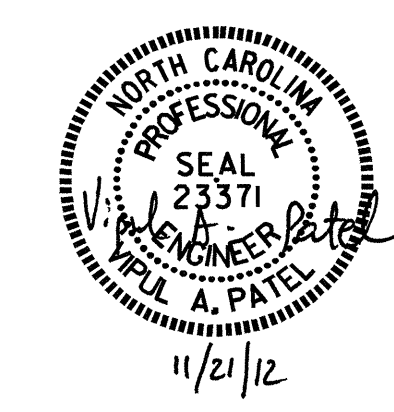
CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS)	1.1 C.Y.
POUR #3 (CAP)	14.6 C.Y.
TOTAL CLASS A CONCRETE	15.7 C.Y.

DRILLED PIERS:	
DRILLED PIER CONCRETE	21.5 C.Y.
POUR #1 (DRILLED PIERS)	21.5 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL	24 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL	58.3 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	58.3 LIN. FT.
CSL TUBES	347 LIN. FT.
SID INSPECTIONS	3 EACH

PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 2 OF 2

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



ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 08/2012
 DRAWN BY : DGE 03/10
 CHECKED BY : MKT 03/10

NOTES

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

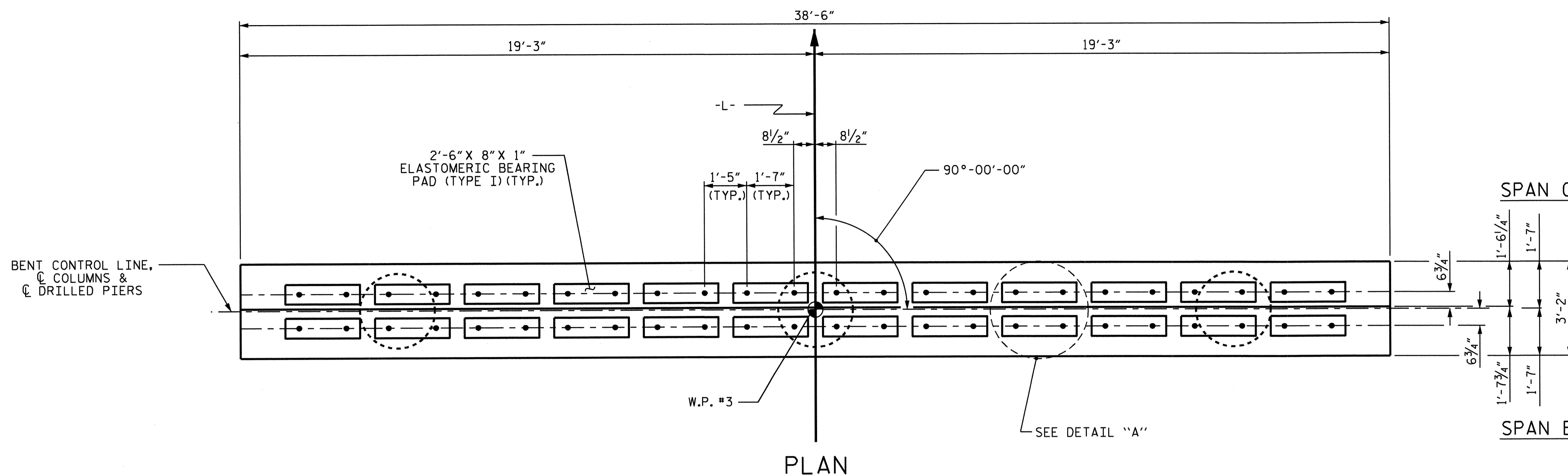
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

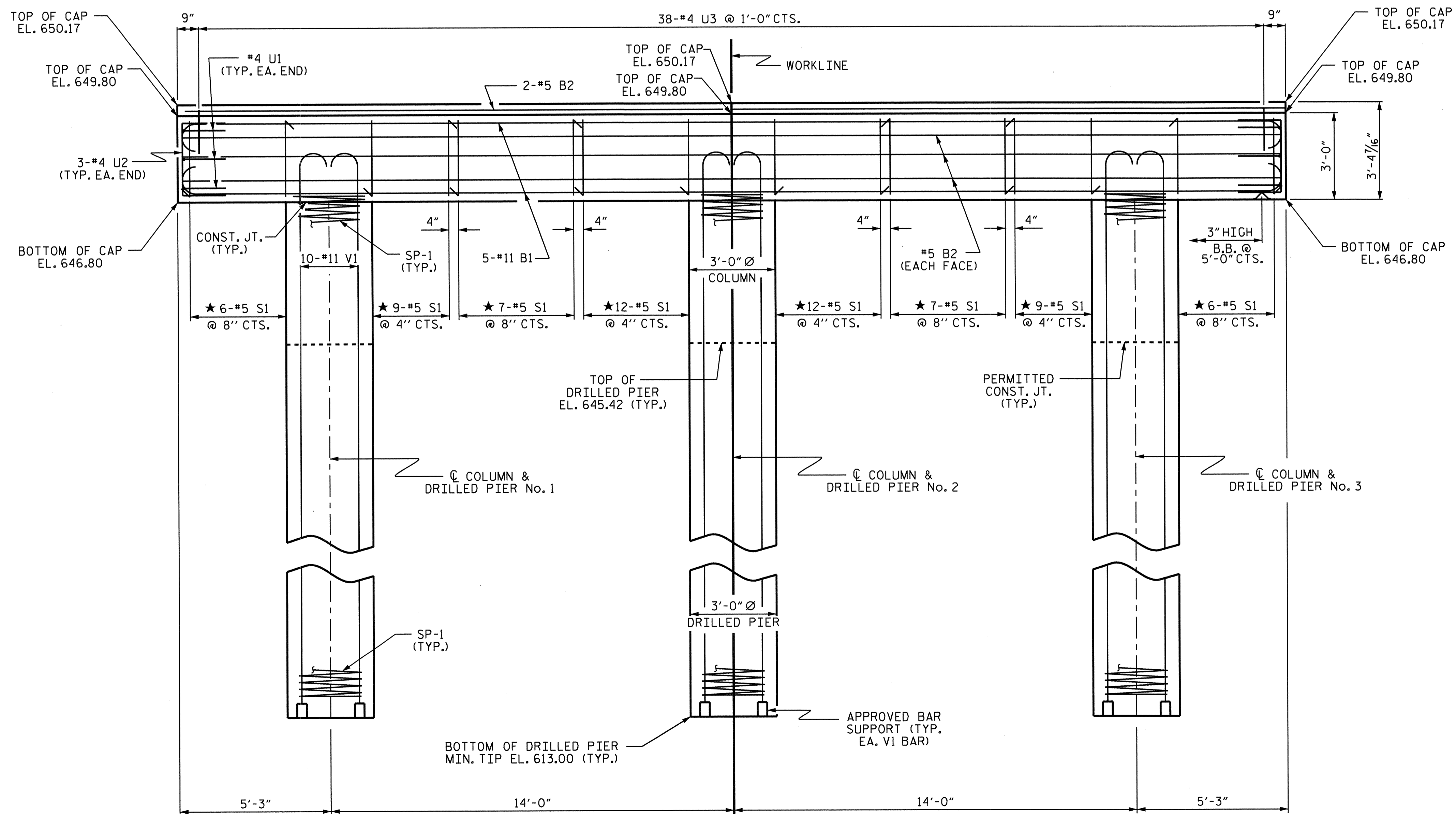
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

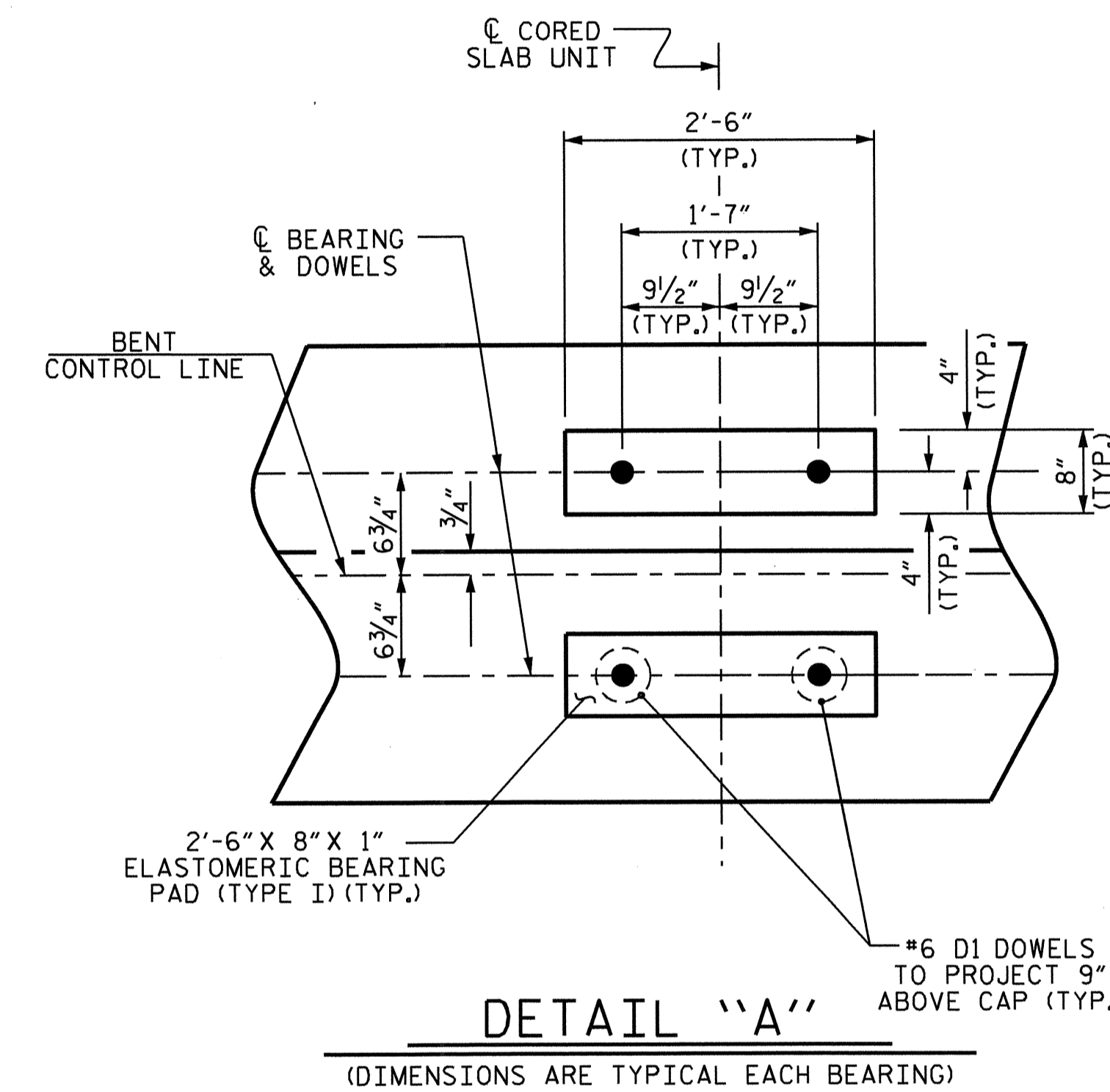


PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

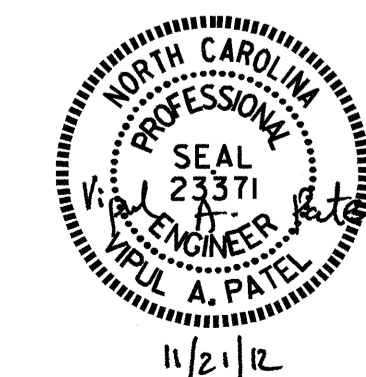
PROJECT NO. B-4809
ROWAN COUNTY
 STATION: 19+72.50 -L-

SHEET 1 OF 2

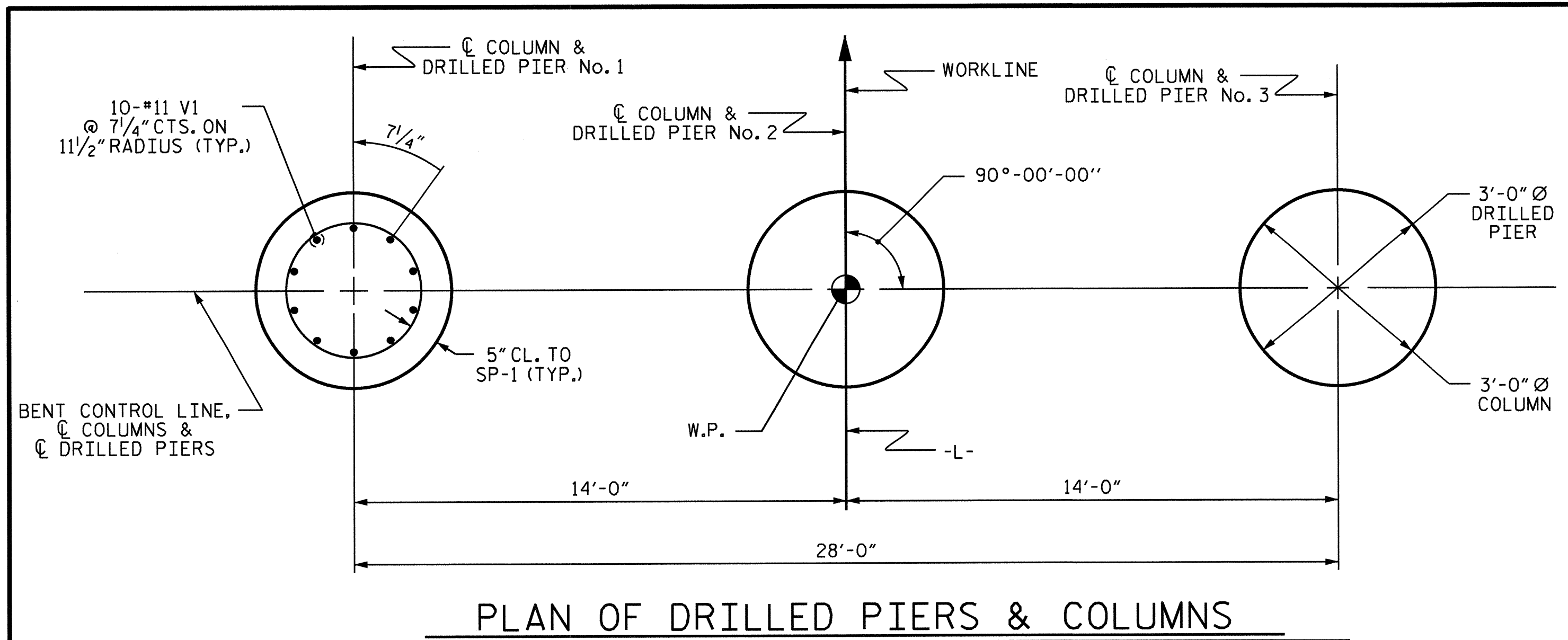
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #2

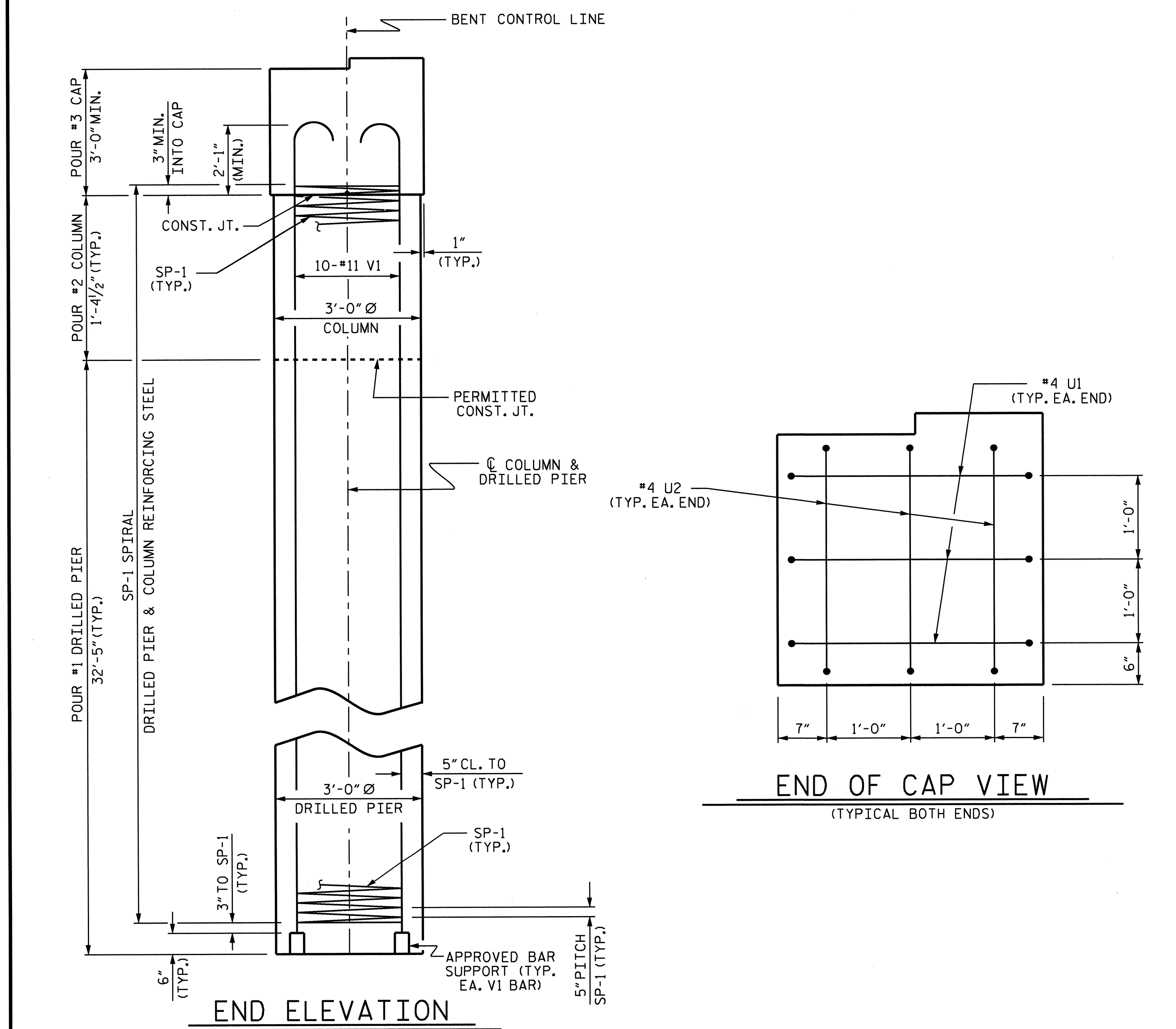
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL SHEETS	
2			4			25	



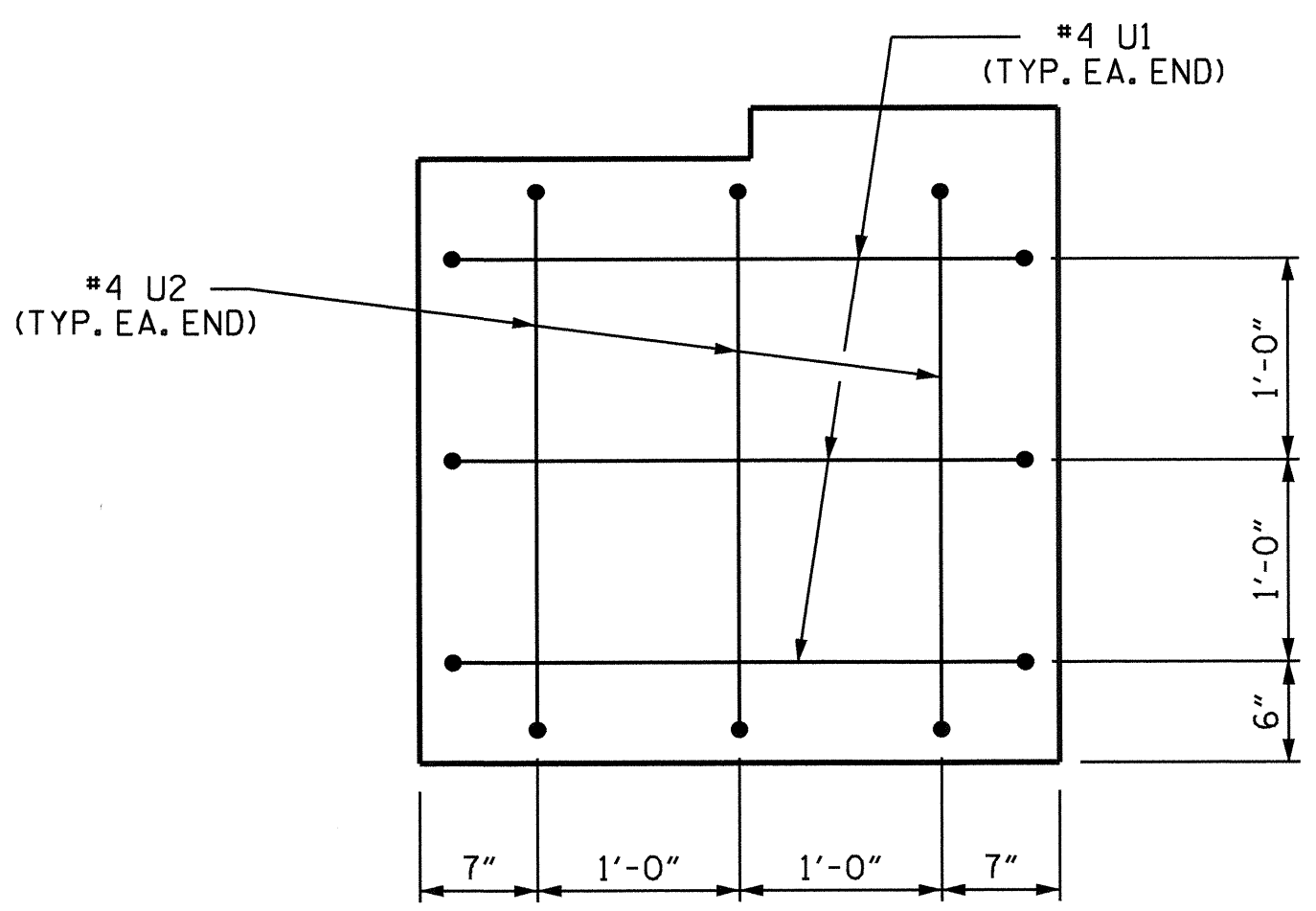
ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 08/2012
 DRAWN BY : DGE 03/10
 CHECKED BY : MKT 03/10



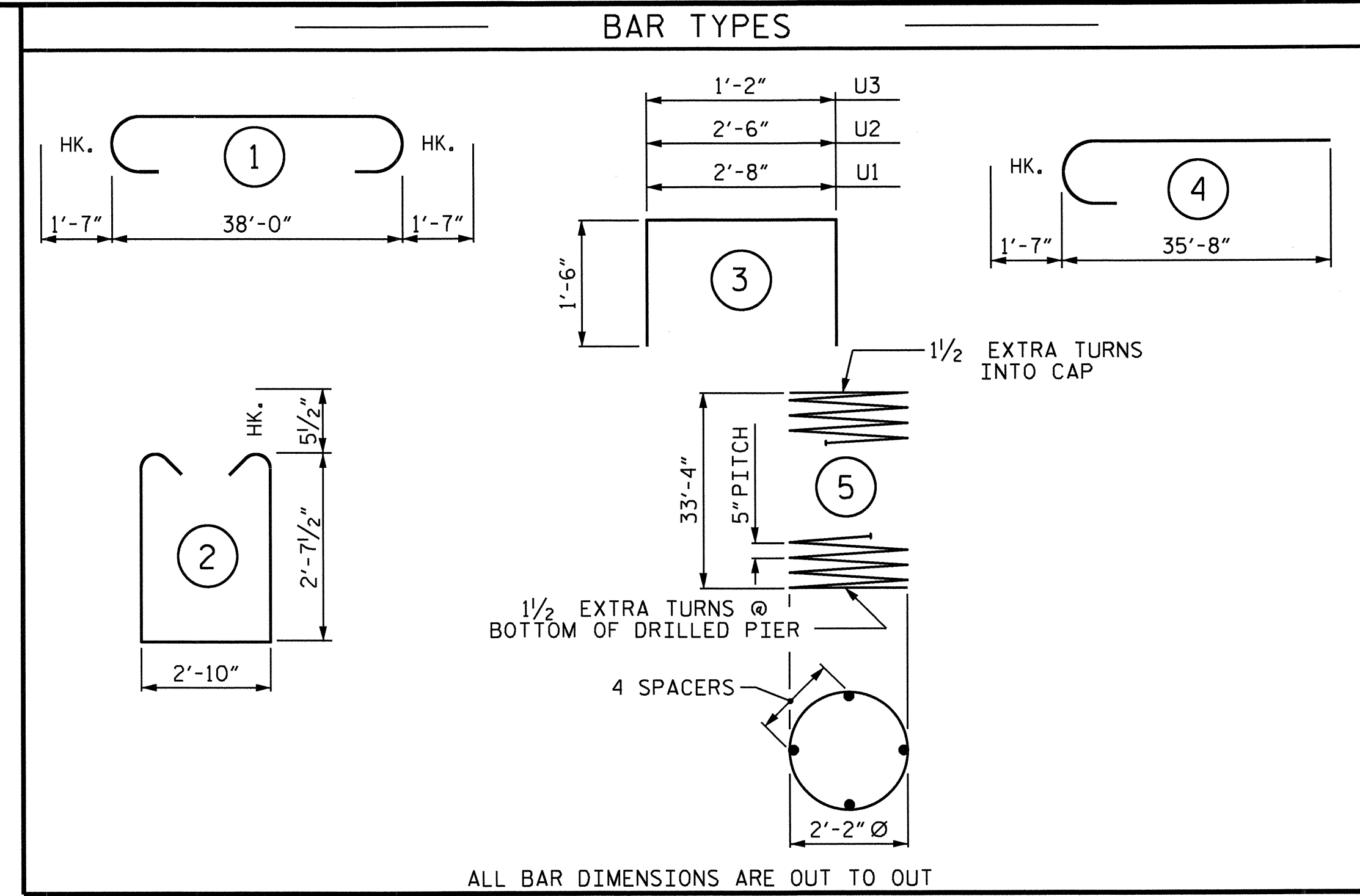
PLAN OF DRILLED PIERS & COLUMNS



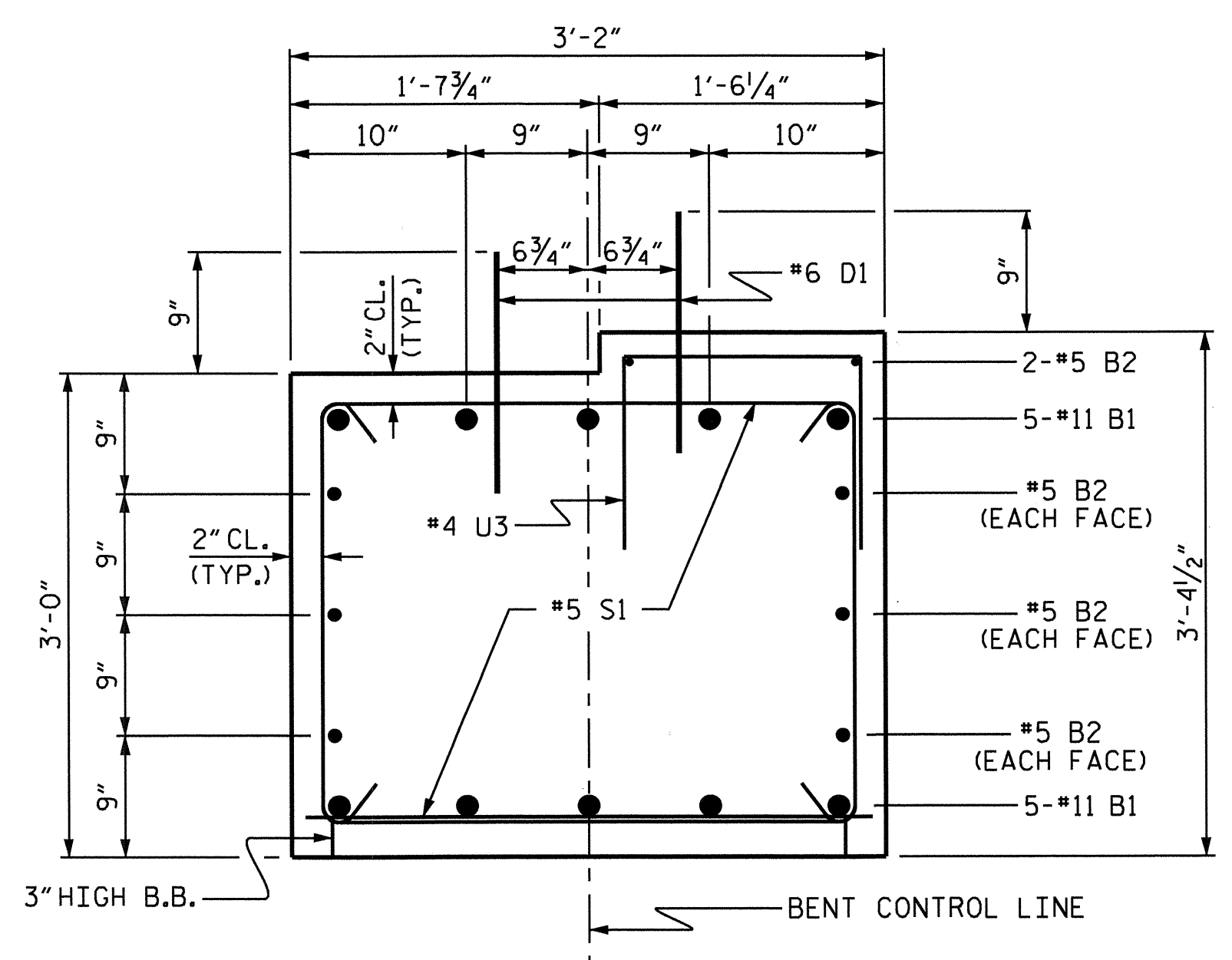
END ELEVATION



END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

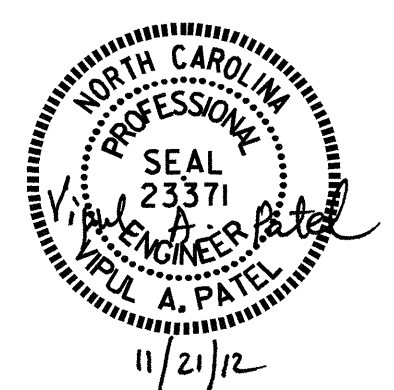
BILL OF MATERIAL					
BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	41'-2"	2187
B2	8	#5	STR	38'-2"	318
D1	48	#6	STR	1'-6"	108
S1	68	#5	2	9'-0"	638
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	38	#4	3	4'-2"	106
V1	30	#11	4	37'-3"	5937
REINFORCING STEEL (FOR ONE BENT)					9339 LBS.
SP-1					1729
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					1729 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS)	1.1 C.Y.
POUR #3 (CAP)	14.6 C.Y.
TOTAL CLASS A CONCRETE	15.7 C.Y.

DRILLED PIERS:	
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	25.5 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL	38 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL	59.3 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	58.3 LIN. FT.
CSL TUBES	407 LIN. FT.
SID INSPECTIONS	3 EACH

PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT #2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-24
					TOTAL SHEETS 25



ASSEMBLED BY : R. L. CHESSON DATE : 02/2012
 CHECKED BY : H. T. DIEU DATE : 08/2012
 DRAWN BY : DGE 03/10
 CHECKED BY : MKT 03/10

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE I IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

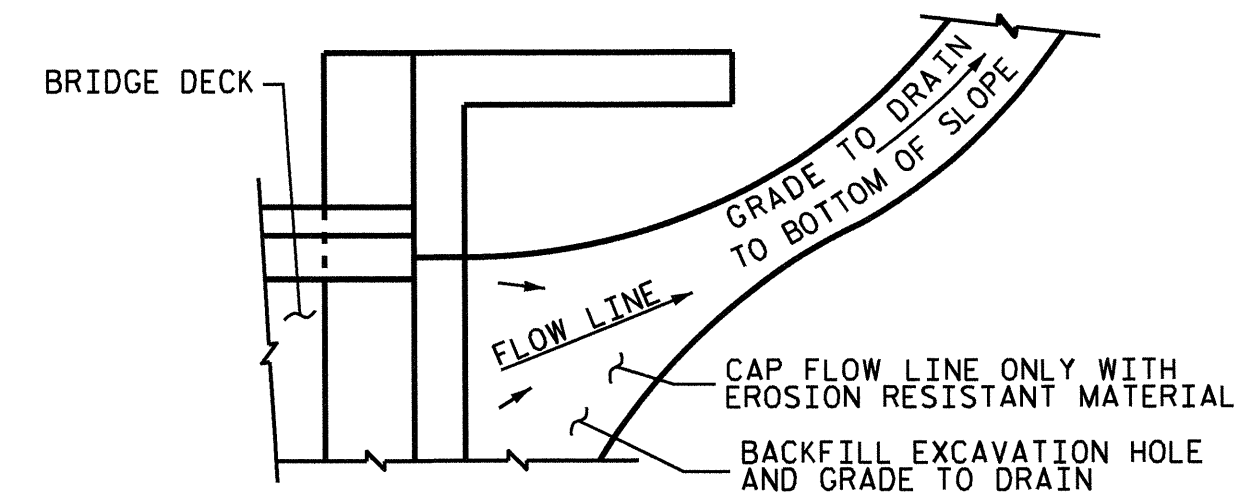
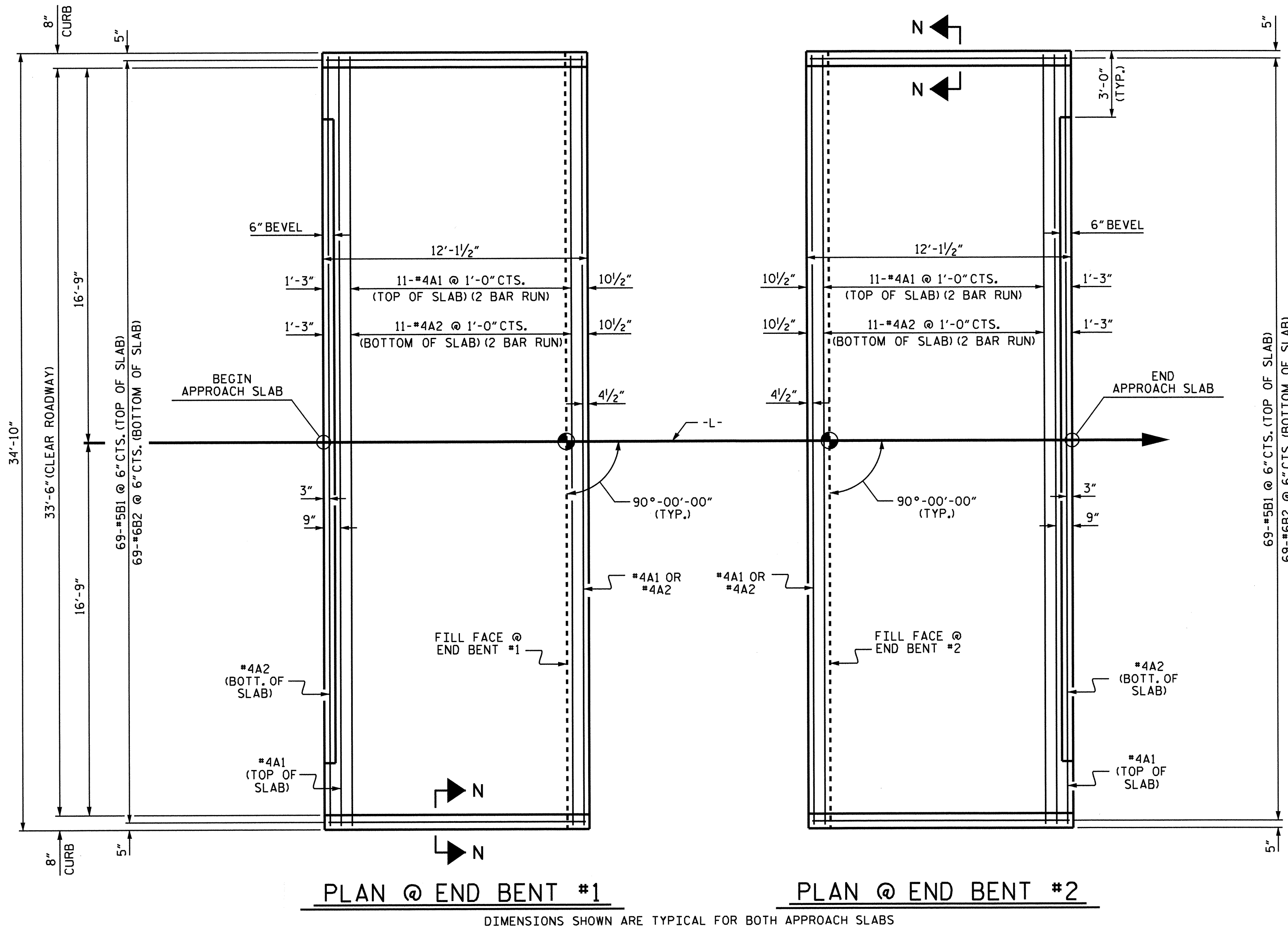
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

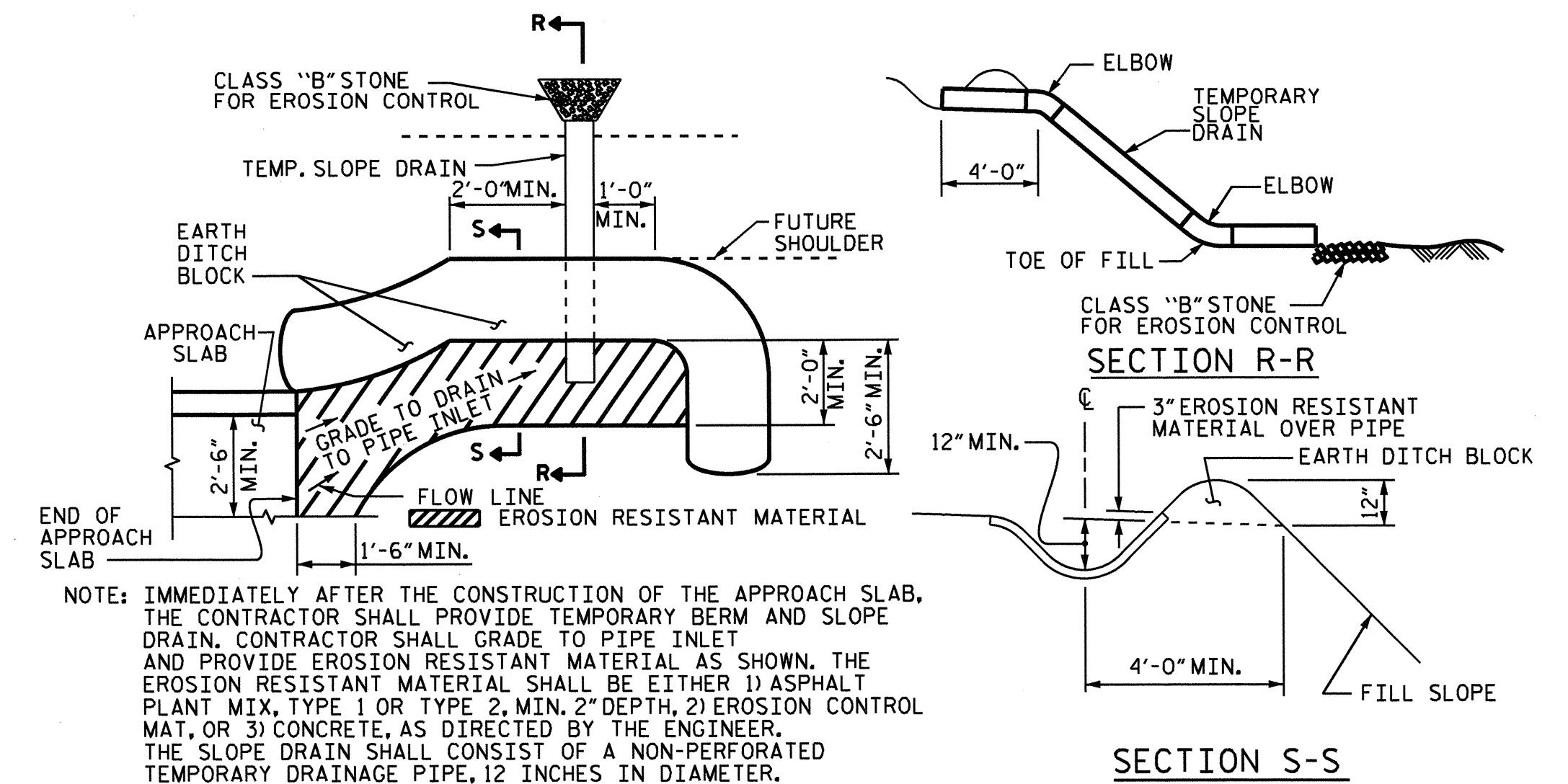
BILL OF MATERIAL

APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	18'-3"	317
A2	26	#4	STR	18'-2"	316
*B1	69	#5	STR	11'-2"	804
B2	69	#6	STR	11'-8"	1209
REINFORCING STEEL					LBS. 1525
* EPOXY COATED REINFORCING STEEL					LBS. 1121
CLASS AA CONCRETE					C. Y. 20.1

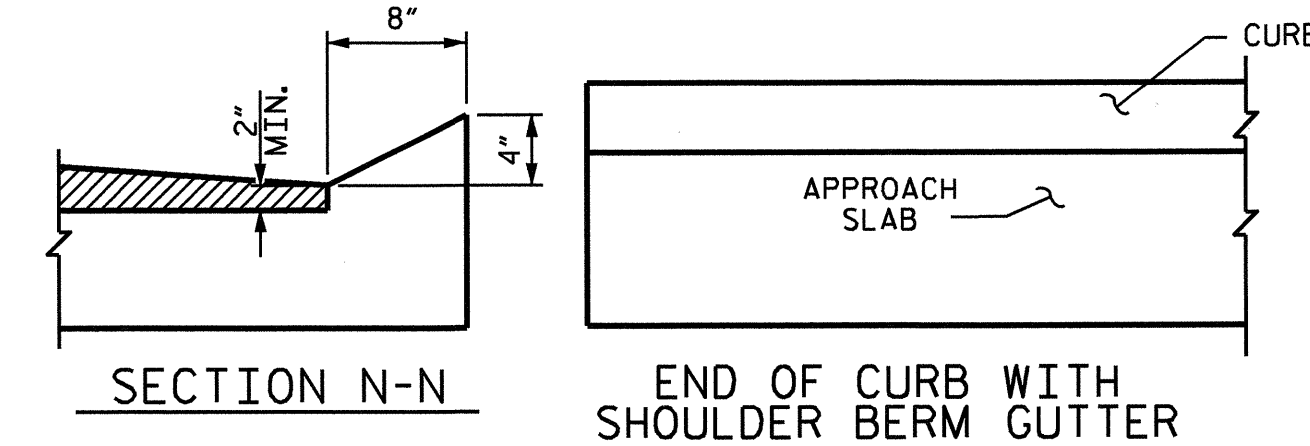
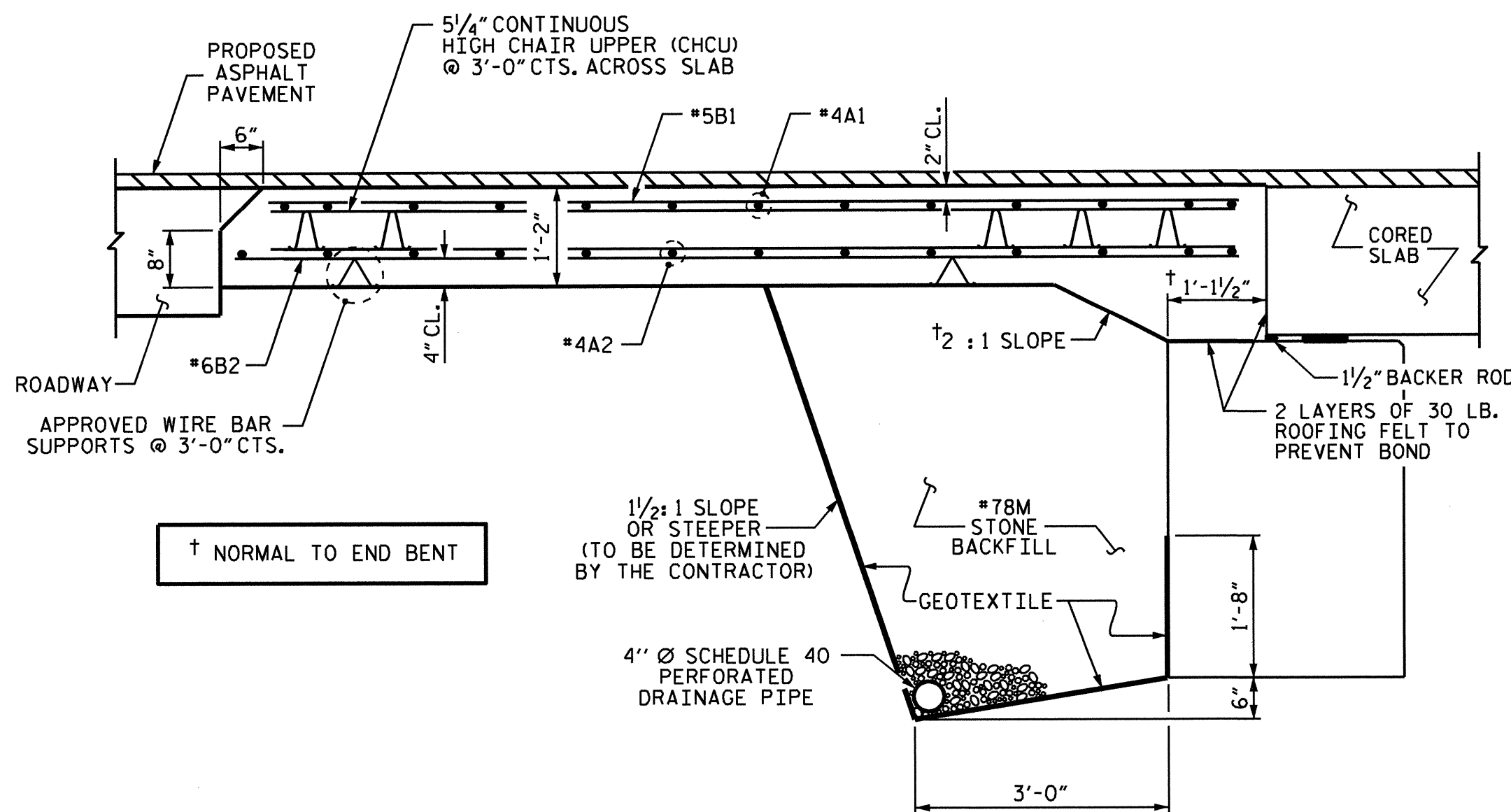
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	18'-3"	317
A2	26	#4	STR	18'-2"	316
*B1	69	#5	STR	11'-2"	804
B2	69	#6	STR	11'-8"	1209
REINFORCING STEEL					LBS. 1525
* EPOXY COATED REINFORCING STEEL					LBS. 1136
CLASS AA CONCRETE					C. Y. 20.1



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.

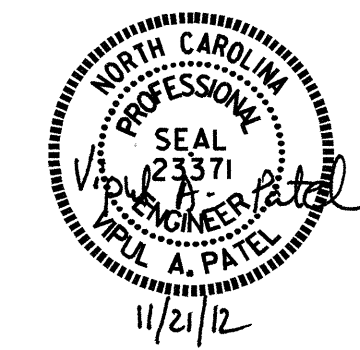


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) ASPHALT 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.



SPLICE LENGTHS

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



PROJECT NO. B-4809
 ROWAN COUNTY
 STATION: 19+72.50 -L-

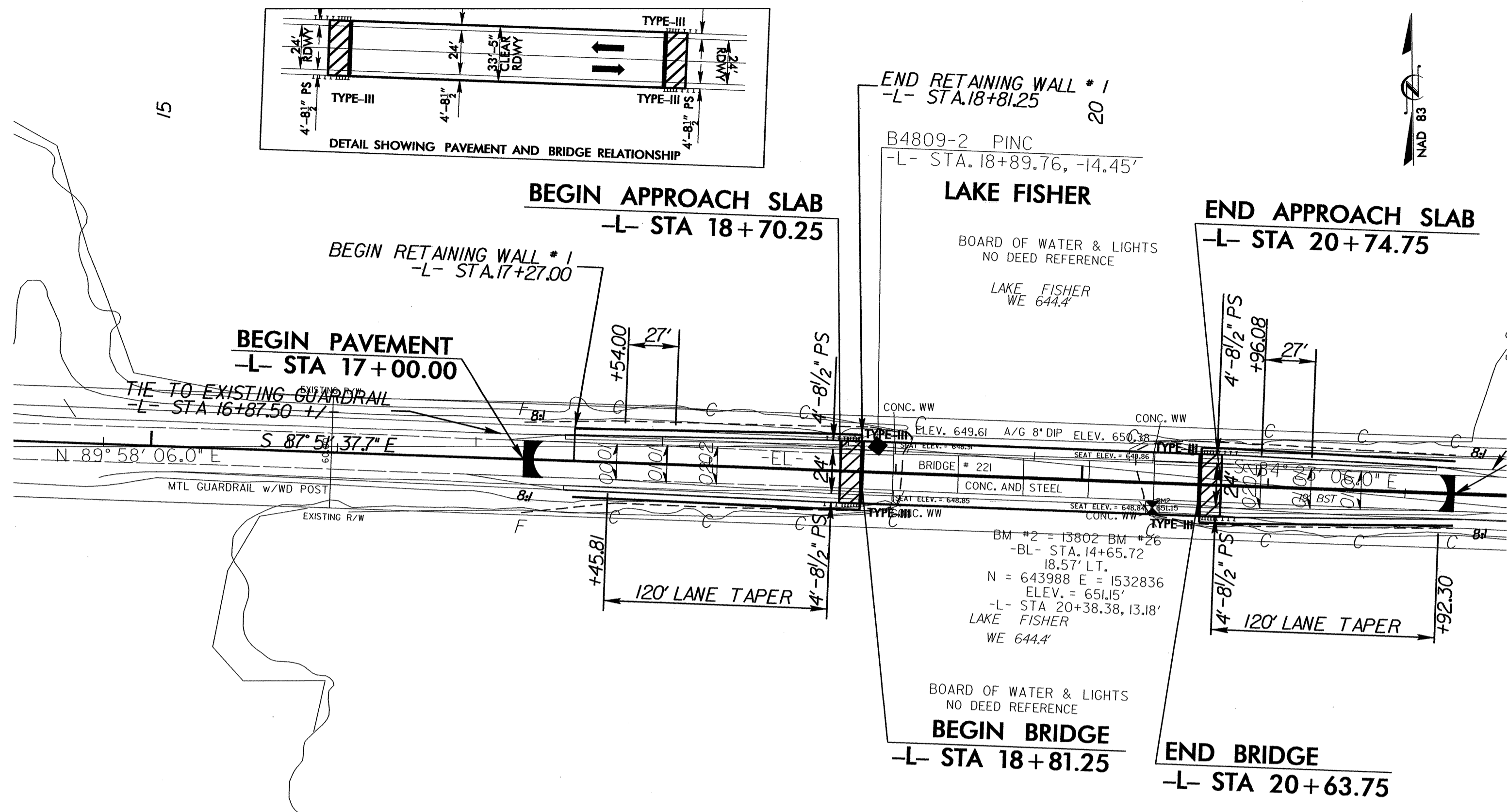
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 90° SKEW

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

TOTAL SHEETS: 25

ASSEMBLED BY: R. L. CHESSON DATE: 02/2012
 CHECKED BY: H. T. DIEU DATE: 08/2012
 DRAWN BY: SHS/MAA 5-09 REV. 12-11 MAA/AAC
 CHECKED BY: BCH 5-09

BM - 2 CHISLED SQUARE IN SE WINGWALL OF BRIDGE ON MOOSE ROAD OVER LAKE FISHER STA. 20+38.38 -L- 13.18' RT.
 EL. = 644.40' N 643988 E 1532836



LOCATION SKETCH

GEOTECHNICAL ENGINEER

ENGINEER

SEAL 29869

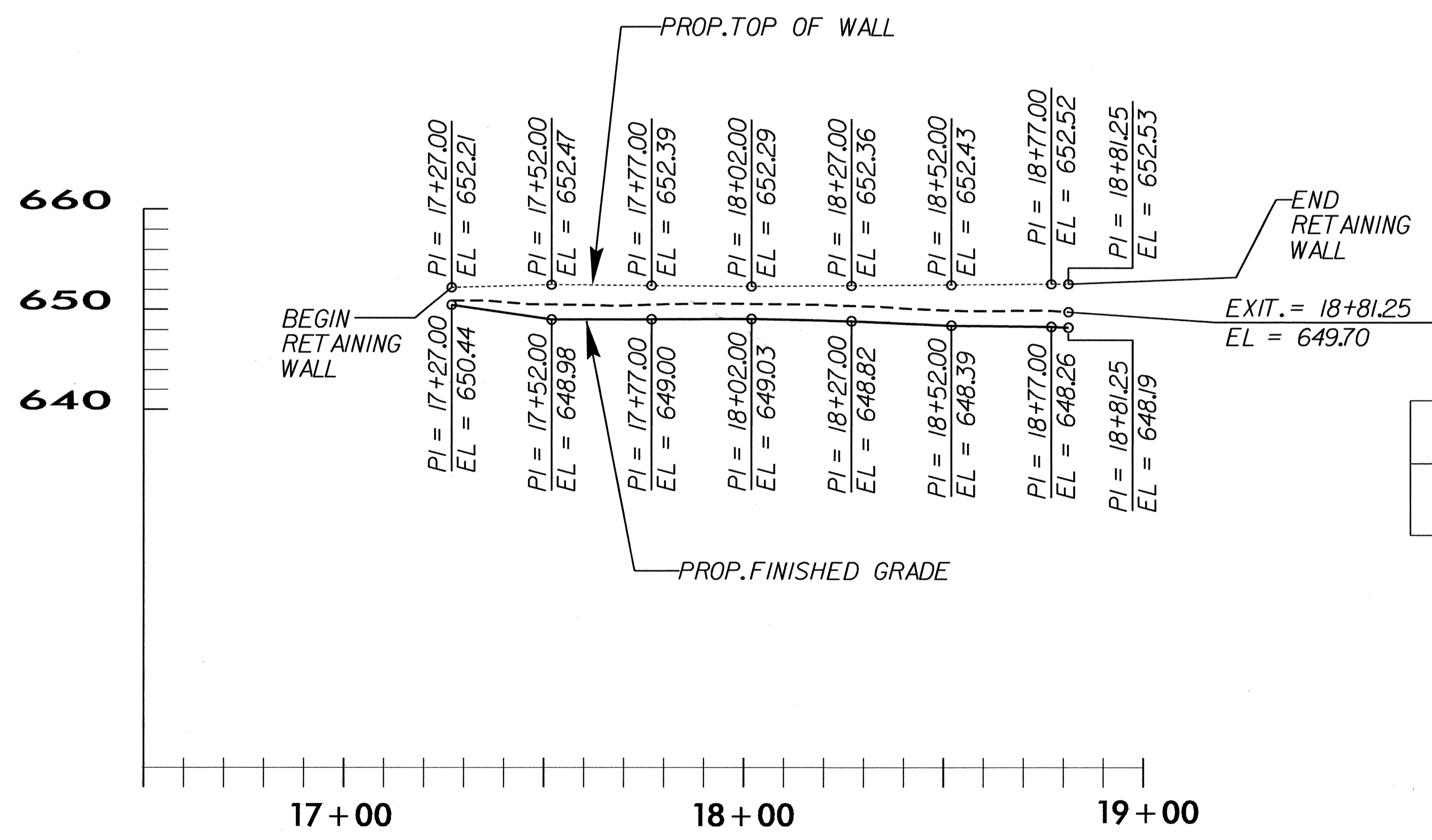
STATE OF NORTH CAROLINA

DATE: 5/12/12

RETAINING WALL ELEVATIONS

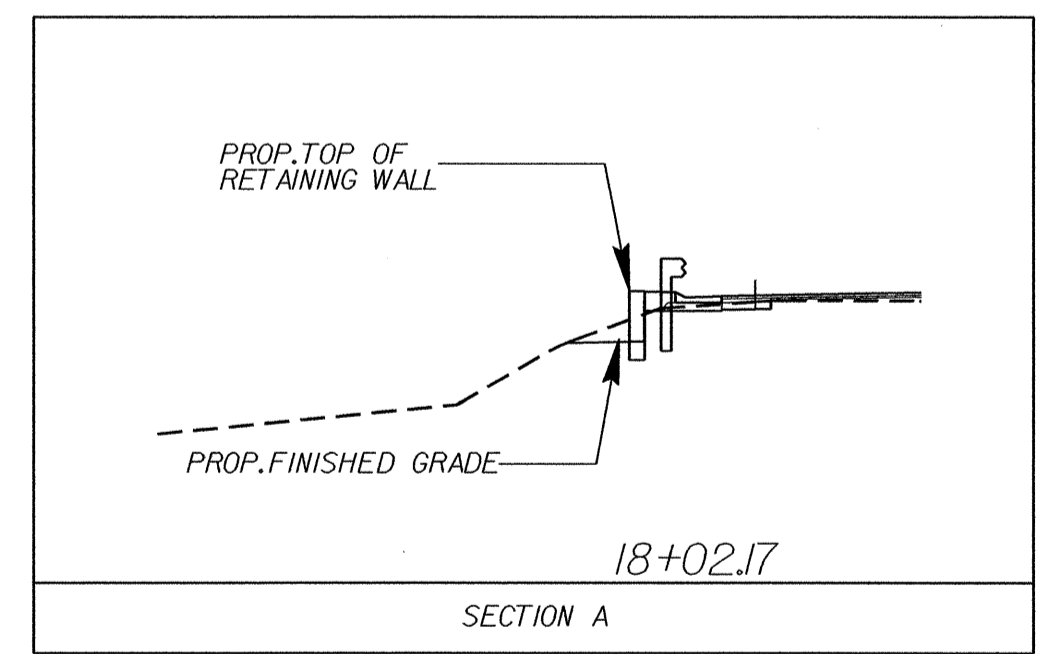
-L- STA	OFFSET FROM C (LEFT)	ELEV @ TOP OF WALL	* PROPOSED FINISHED GRADE	* EXPOSED WALL HEIGHT
17+27.00	16.95	652.21	650.44	1.77
17+52.00	17.40	652.47	648.98	3.49
17+77.00	17.85	652.39	649.00	3.39
18+02.00	18.29	652.29	649.03	3.26
18+27.00	18.74	652.36	648.82	3.54
18+52.00	19.19	652.43	648.39	4.04
18+77.00	19.38	652.52	648.26	4.26
18+81.25	19.38	652.53	648.19	4.34

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DO NOT INCLUDE EMBEDMENT DEPTH



TOTAL STRUCTURE QUANTITIES

SHEET PILE RETAINING WALL 545 SQ. FT.



PROJECT NO.: B-4809

ROWAN COUNTY

STATION: 17+27.00 -L- TO 18+81.25 -L-

SHEET 1 OF 6

PREPARED BY: J.T.W. DATE: 5.12

REVIEWED BY: S.C.C. DATE: 5.12

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

EASTERN REGIONAL OFFICE

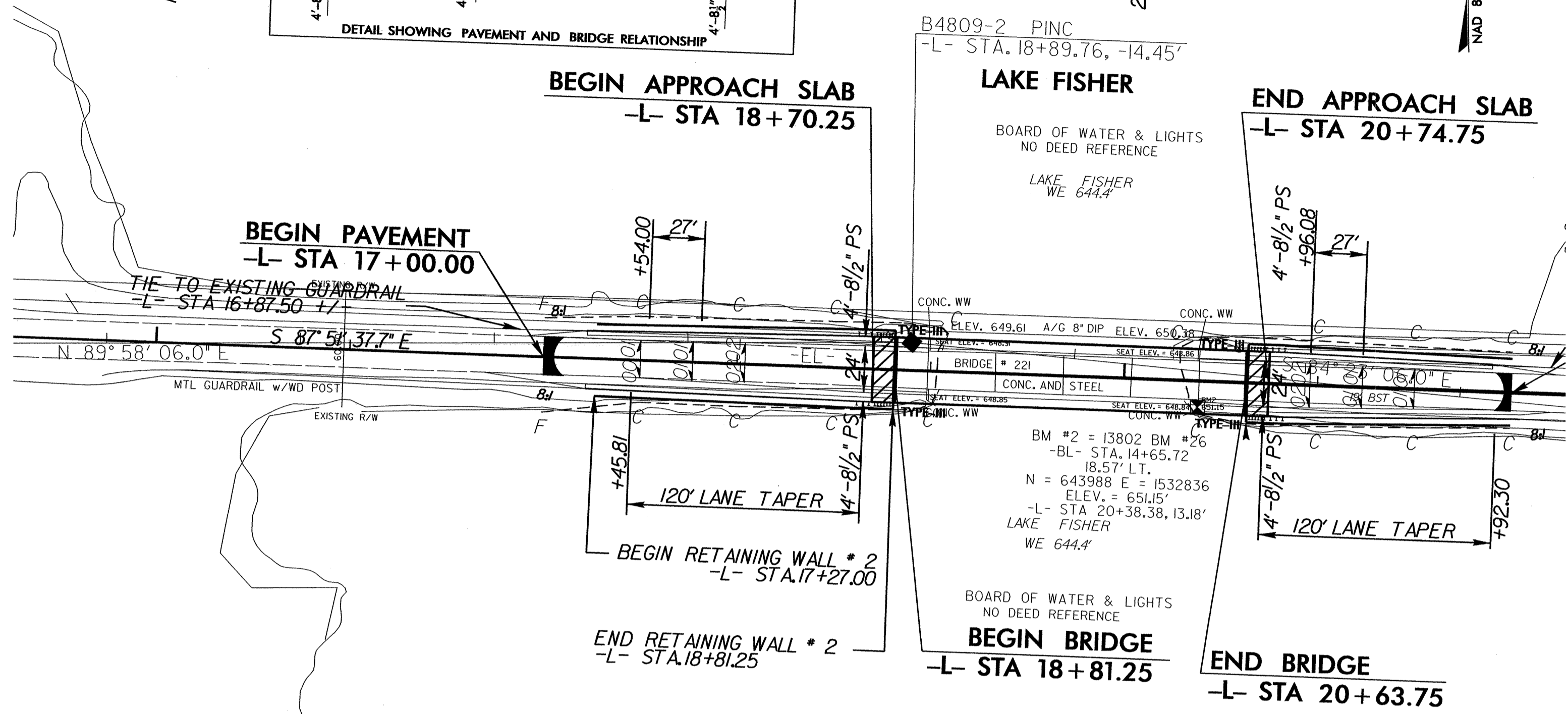
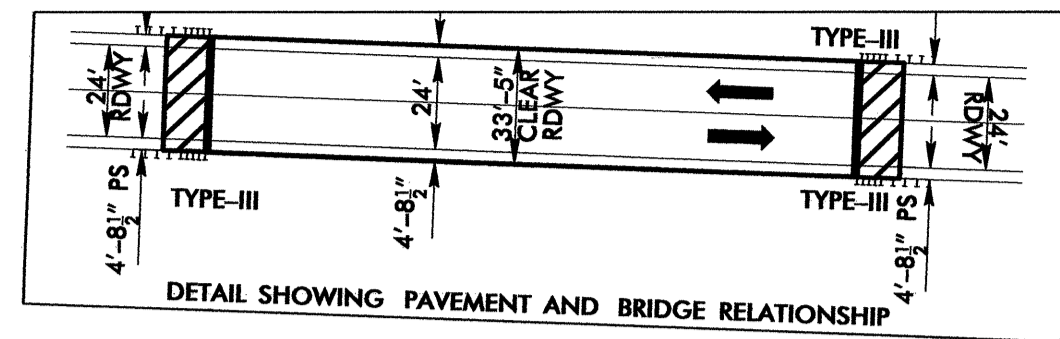
WESTERN REGIONAL OFFICE

CONTRACT OFFICE

SHEET PILE RETAINING WALL NO. 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	ω-1
1			3			TOTAL SHEETS
2			4			6

BM - 2 CHISLED SQUARE IN SE WINGWALL OF BRIDGE ON MOOSE ROAD OVER LAKE FISHER STA. 20+38.38 -L- 13.18' RT.
 EL. = 644.40' N 643988 E 1532836



LOCATION SKETCH

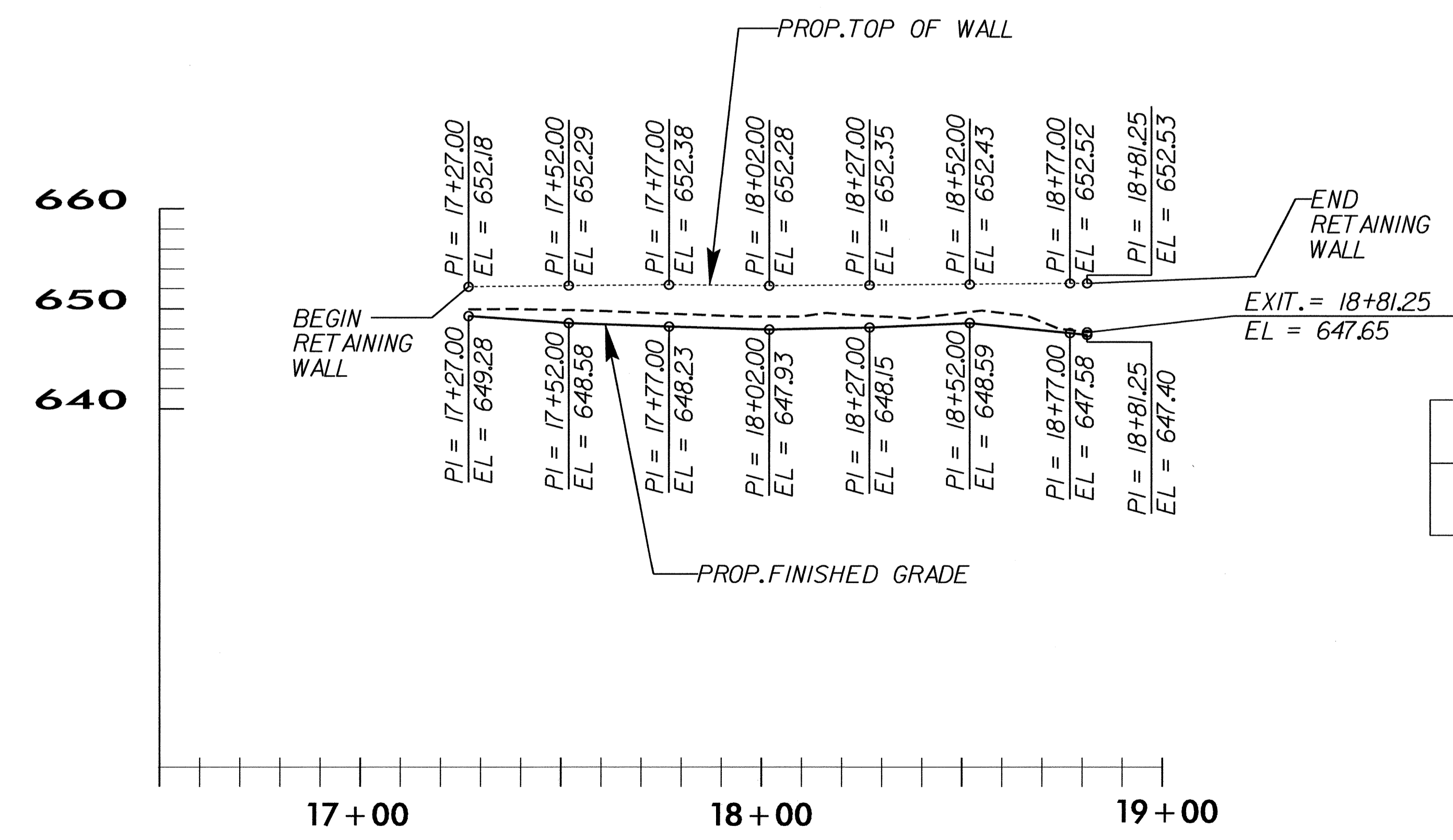
GEOTECHNICAL ENGINEER

ENGINEER

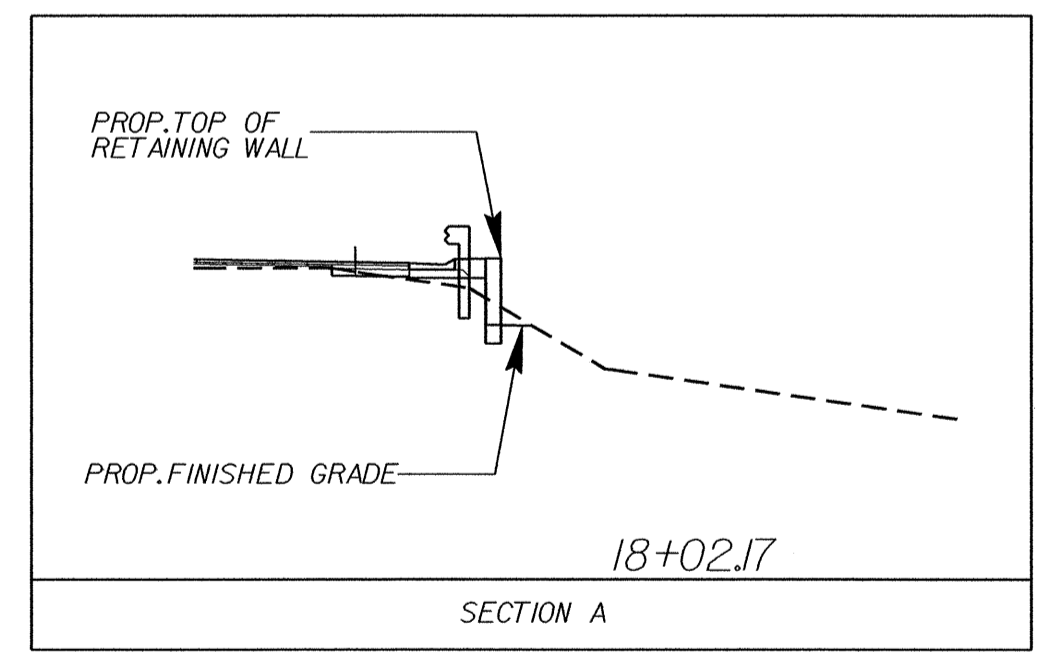
Signature: *C. Clark* Date: 11/21/11

RETAINING WALL ELEVATIONS				
-L- STA	OFFSET FROM C (RIGHT)	ELEV @ TOP OF WALL	* PROPOSED FINISHED GRADE	* EXPOSED WALL HEIGHT
17+27.00	18.16	652.18	649.28	2.90
17+52.00	18.39	652.29	648.58	3.71
17+77.00	17.85	652.38	648.23	4.15
18+02.00	18.83	652.28	647.93	4.35
18+27.00	19.06	652.35	648.15	4.20
18+52.00	19.28	652.43	648.59	3.84
18+77.00	19.38	652.52	647.58	4.94
18+81.25	19.38	652.53	647.40	5.13

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DO NOT INCLUDE EMBEDMENT DEPTH



TOTAL STRUCTURE QUANTITIES	
SHEET PILE RETAINING WALL	645 SQ. FT.



PROJECT NO.: B-4809
 ROWAN COUNTY
 STATION: 17+27.00 -L- TO 18+81.25 -L-
 SHEET 2 OF 6

PREPARED BY: J.T.W. DATE: 5.12
 REVIEWED BY: S.C.C. DATE: 5.12

GEOTECHNICAL ENGINEERING UNIT

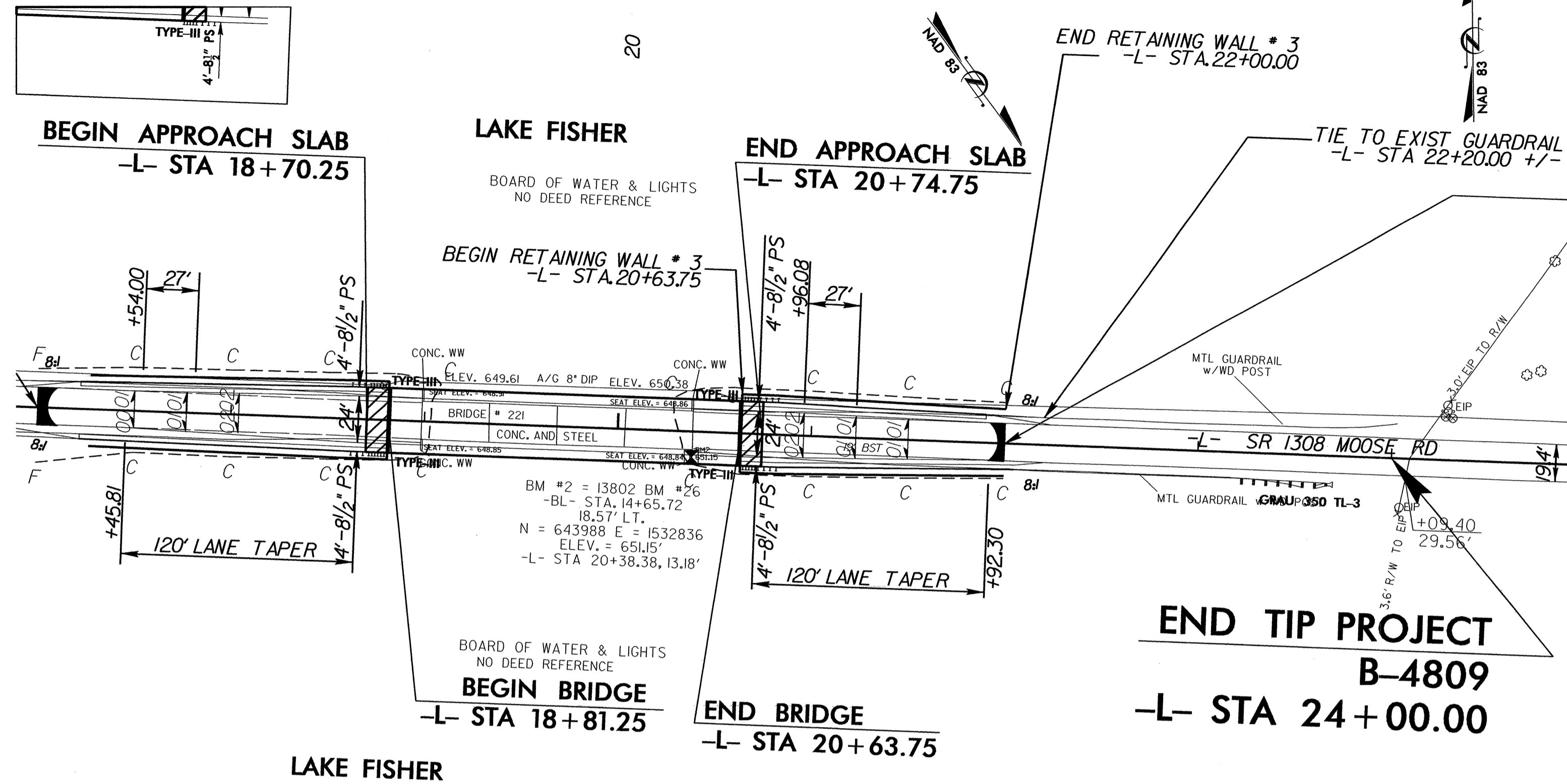
EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

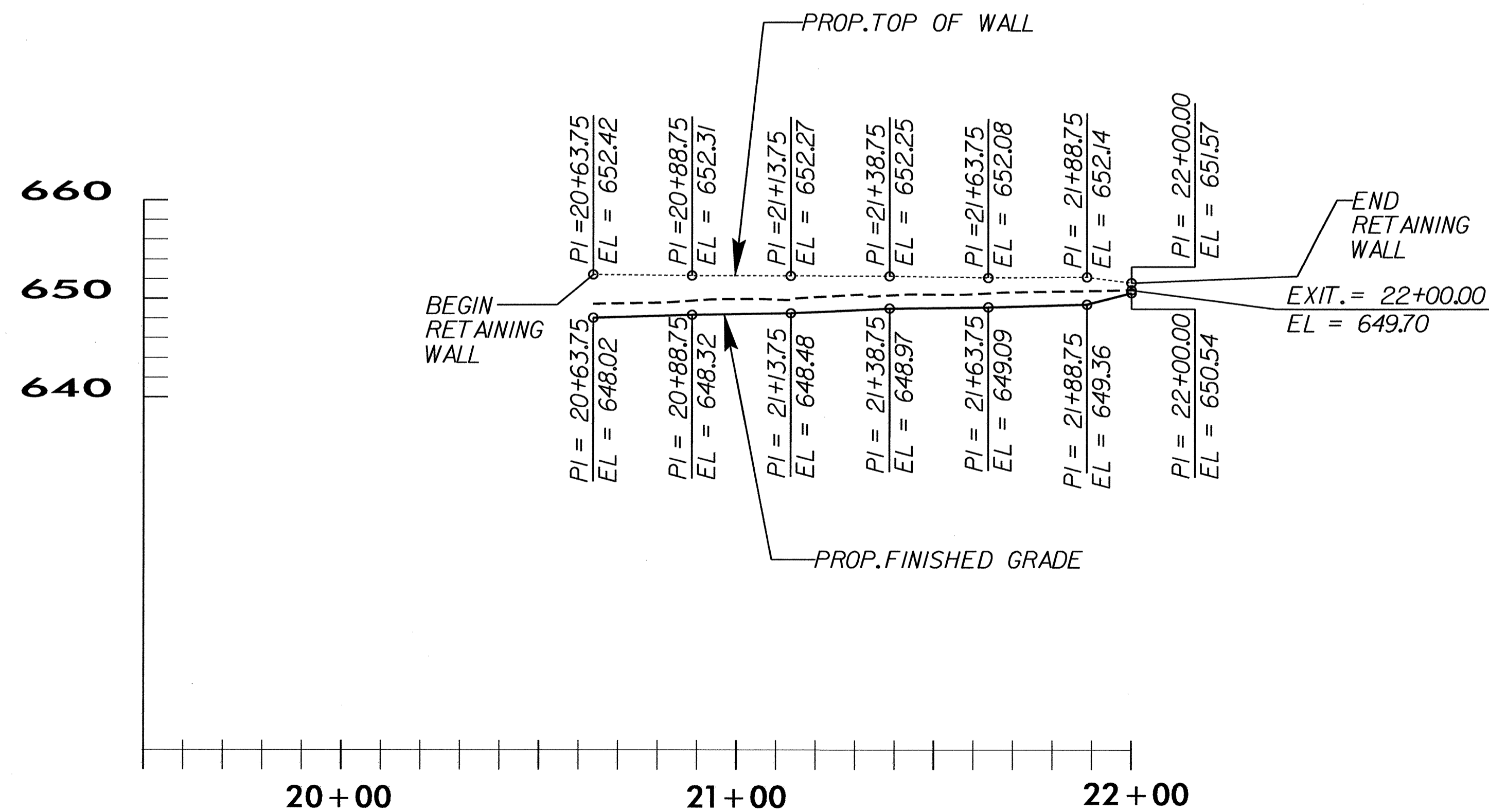
REVISIONS						SHEET NO. W-2
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 6
2			4			

SHEET PILE RETAINING WALL NO. 2

BM - 2 CHISLED SQUARE IN SE WINGWALL OF BRIDGE ON MOOSE ROAD OVER LAKE FISHER STA. 20+38.38 -L- 13.18' RT.
 EL. = 644.40' N 643988 E 1532836



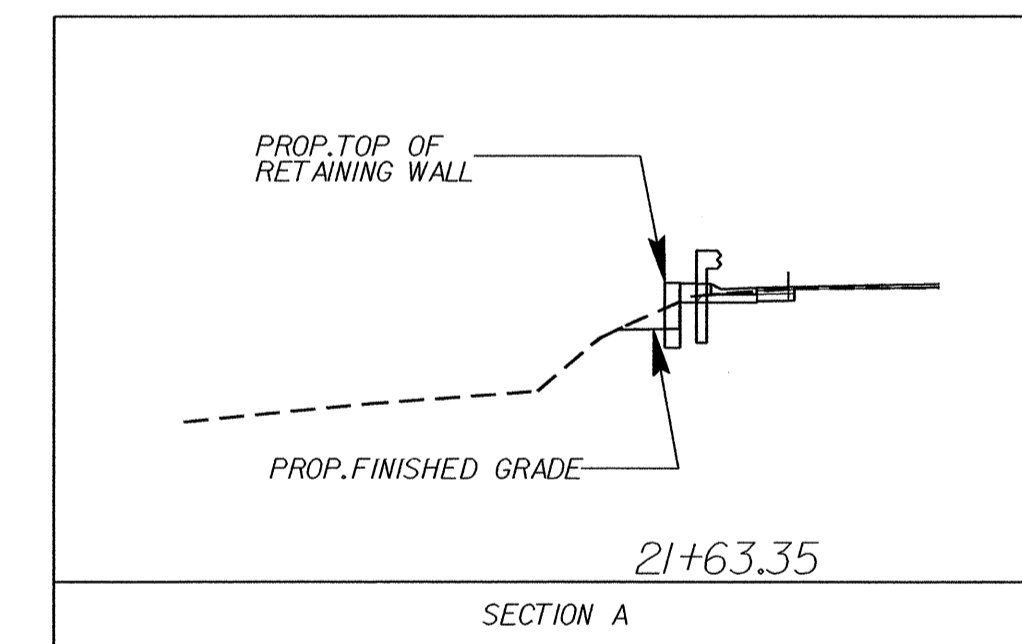
LOCATION SKETCH



RETAINING WALL ELEVATIONS

-L- STA	OFFSET FROM C (LEFT)	ELEV @ TOP OF WALL	* PROPOSED FINISHED GRADE	* EXPOSED WALL HEIGHT
20+63.75	19.38	652.42	648.02	4.40
20+88.75	19.25	652.31	648.32	3.99
21+13.75	18.74	652.27	648.48	3.79
21+38.75	18.23	652.25	648.97	3.28
21+63.75	17.71	652.08	649.09	2.99
21+88.75	17.20	652.14	649.36	2.78
22+00.00	16.49	651.57	650.54	1.03

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DO NOT INCLUDE EMBEDMENT DEPTH



TOTAL STRUCTURE QUANTITIES

SHEET PILE RETAINING WALL 435 SQ. FT.

GEOTECHNICAL ENGINEER



Signature: C. Clark, Date: 11/21/11

ENGINEER

Signature: _____, Date: _____

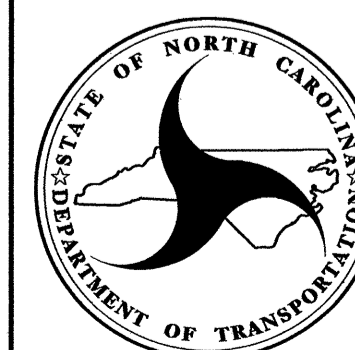
PROJECT NO.: B-4809

ROWAN COUNTY

STATION: 20+63.75 -L- TO 22+00.00 -L-

SHEET 3 OF 6

GEOTECHNICAL ENGINEERING UNIT



- EASTERN REGIONAL OFFICE
- WESTERN REGIONAL OFFICE
- CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SHEET PILE RETAINING WALL NO. 3

REVISIONS

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

PREPARED BY: J.T.W. DATE: 5.12
 REVIEWED BY: S.C.C. DATE: 5.12

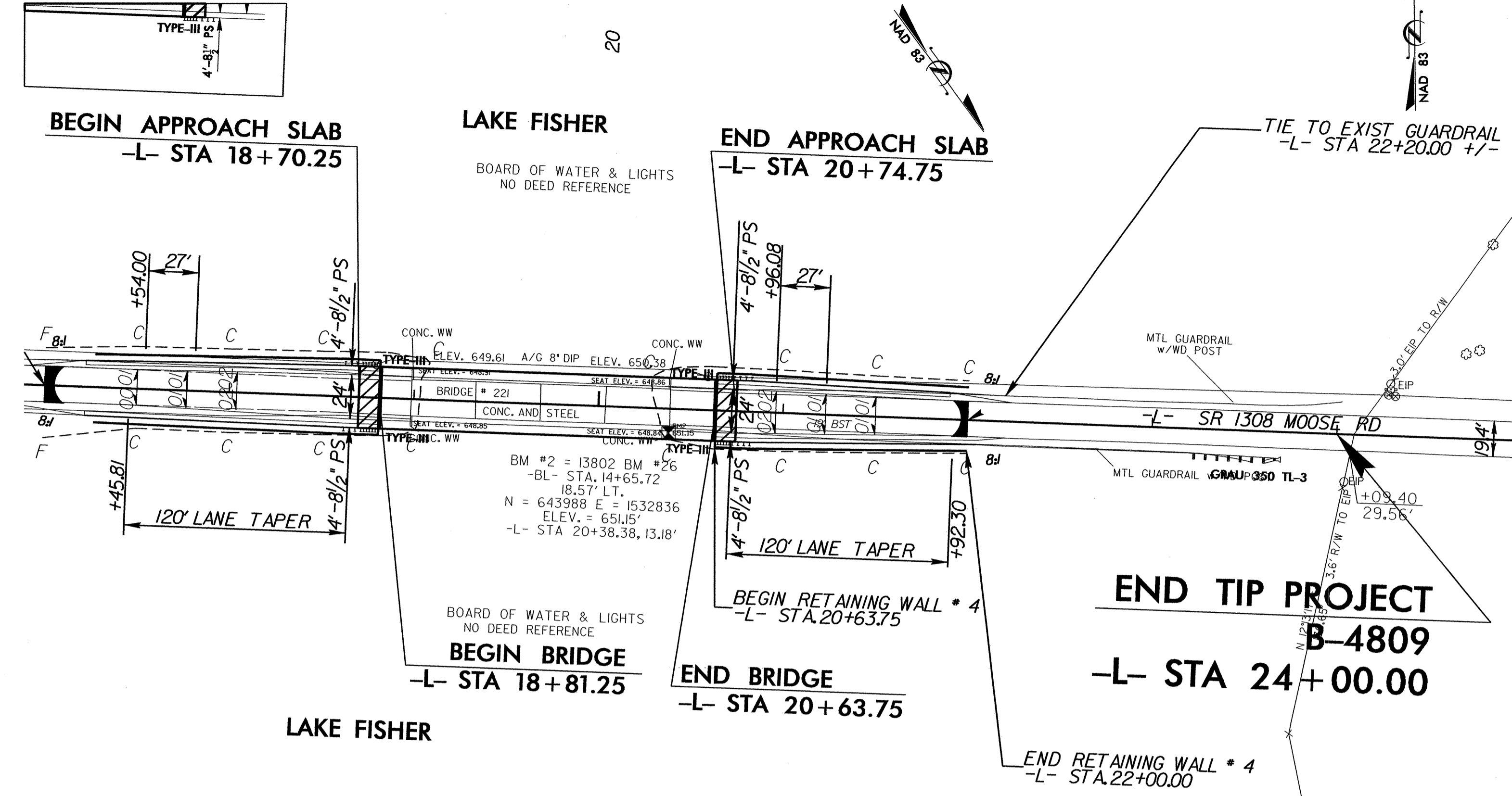
SHEET NO. W-3
 TOTAL SHEETS 6

BM - 2 CHISLED SQUARE IN SE WINGWALL OF BRIDGE ON MOOSE ROAD OVER LAKE FISHER STA. 20+38.38 -L- 13.18' RT.
 EL. = 644.40' N 643988 E 1532836

GEOTECHNICAL ENGINEER
 ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29869

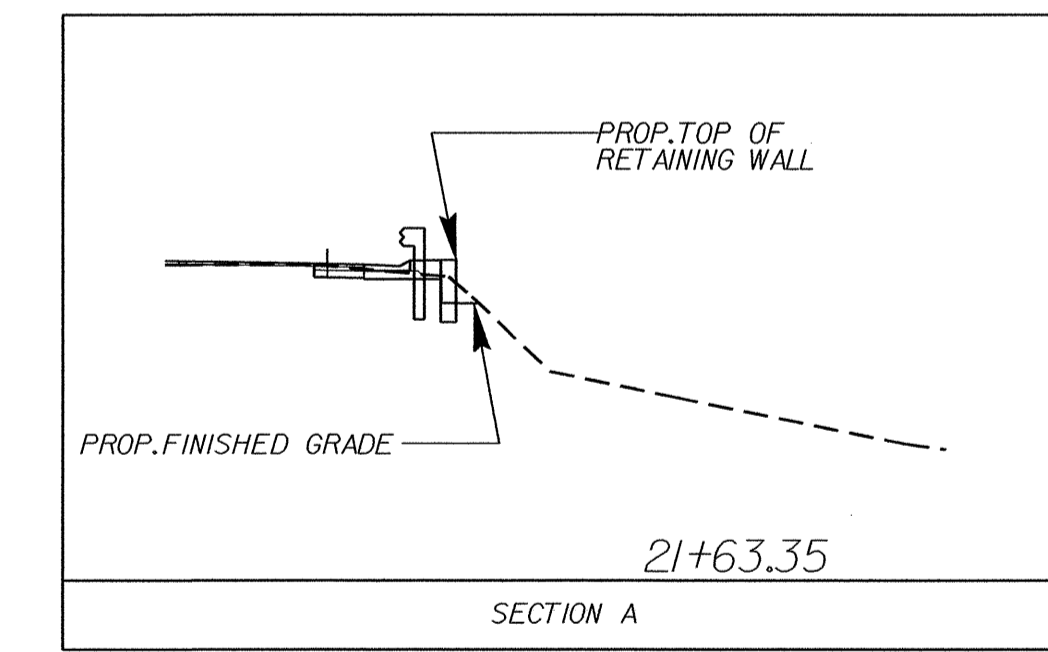
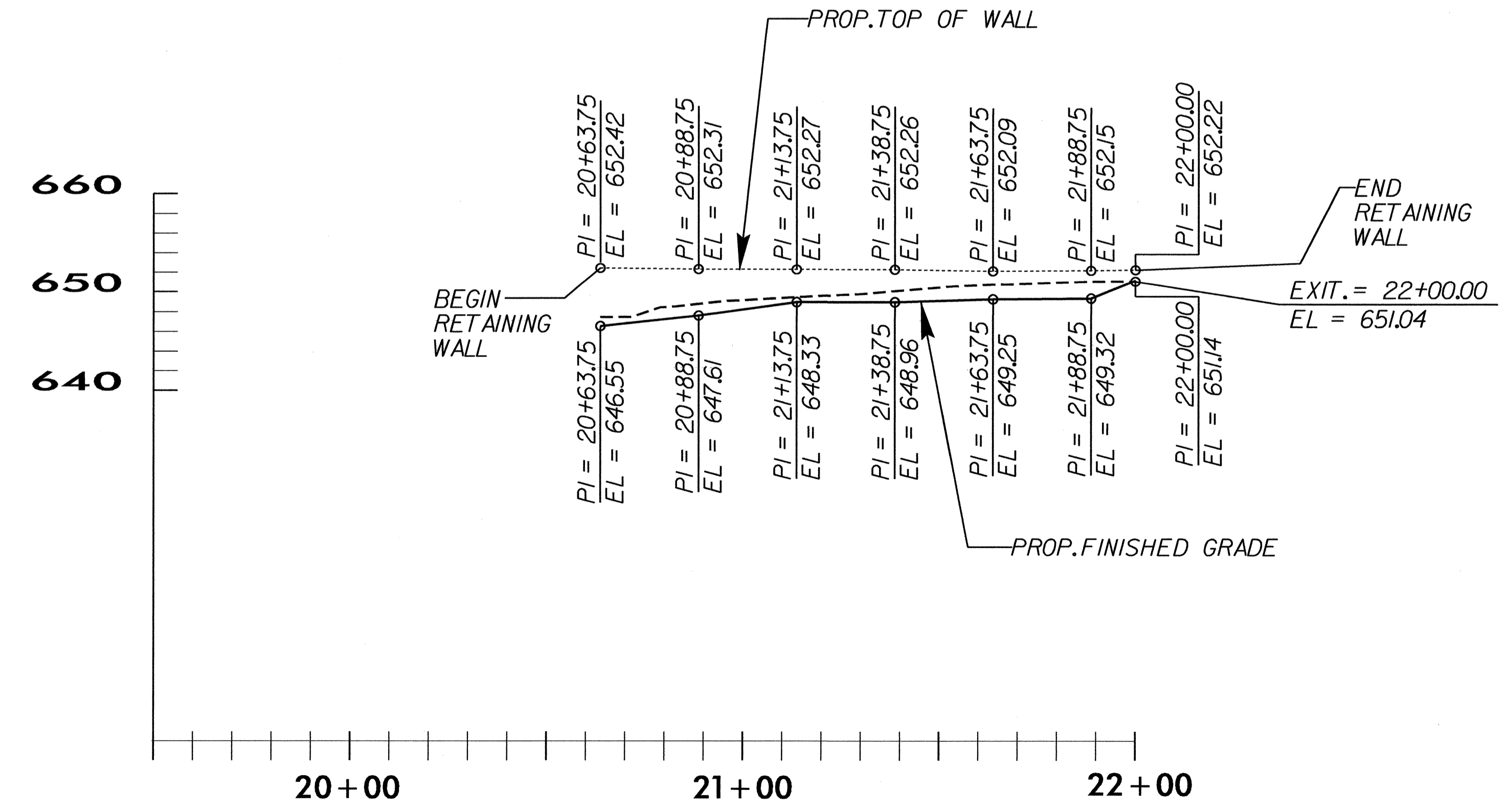
DATE: 11/12/12



LOCATION SKETCH

RETAINING WALL ELEVATIONS				
-L- STA	OFFSET FROM C (RIGHT)	ELEV @ TOP OF WALL	* PROPOSED FINISHED GRADE	* EXPOSED WALL HEIGHT
20+63.75	19.37	652.42	646.55	5.87
20+88.75	19.21	652.31	647.61	4.70
21+13.75	18.51	652.27	648.33	3.94
21+38.75	17.80	652.26	648.96	3.30
21+63.75	17.09	652.09	649.25	2.84
21+88.75	16.39	652.15	649.32	2.83
22+00.00	14.16	652.22	651.14	1.08

* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DO NOT INCLUDE EMBEDMENT DEPTH



TOTAL STRUCTURE QUANTITIES	
SHEET PILE RETAINING WALL	480 SQ. FT.

PROJECT NO.: B-4809
 ROWAN COUNTY
 STATION: 20+63.75 -L- TO 22+00.00 -L-
 SHEET 4 OF 6

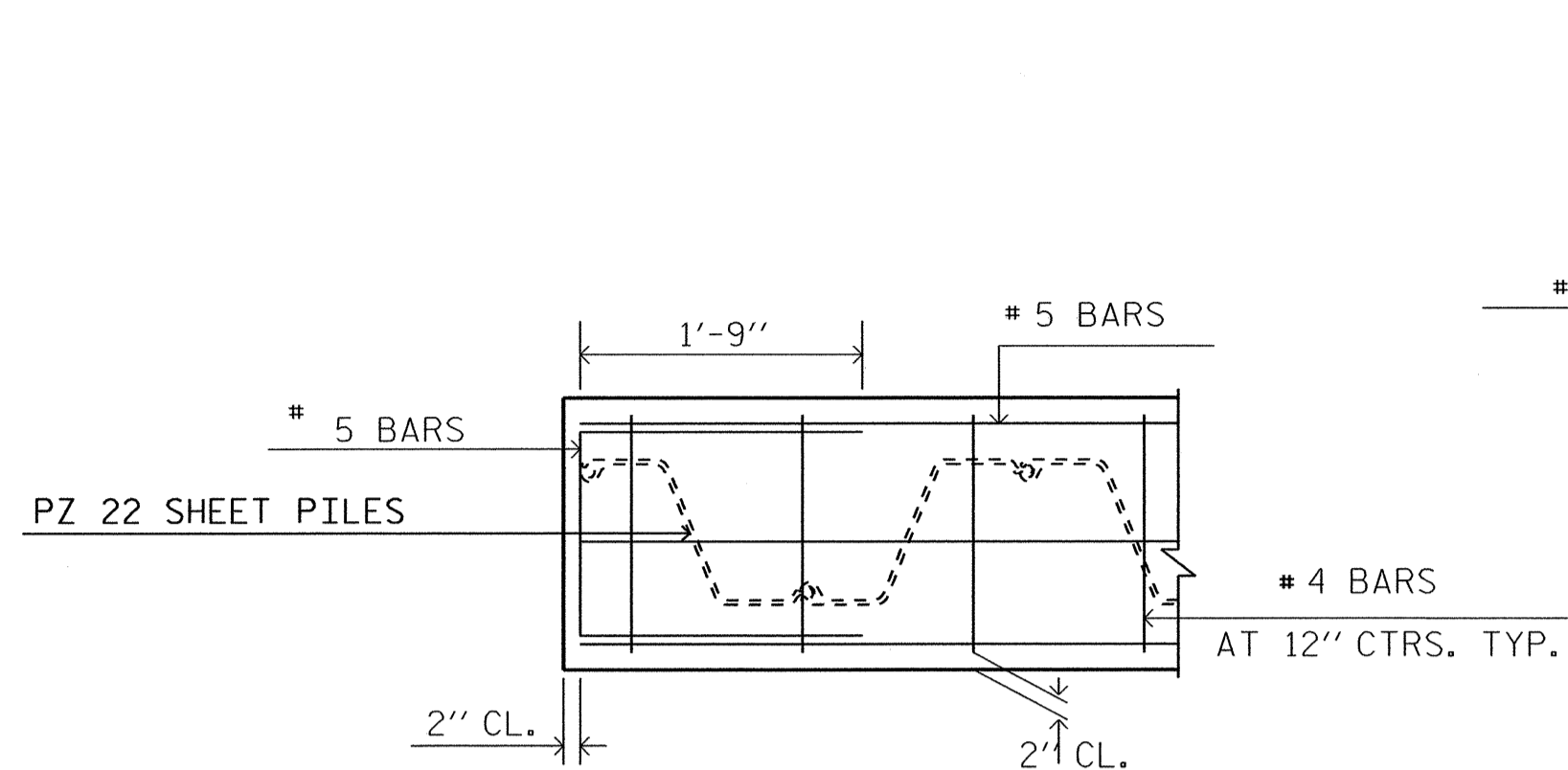
GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

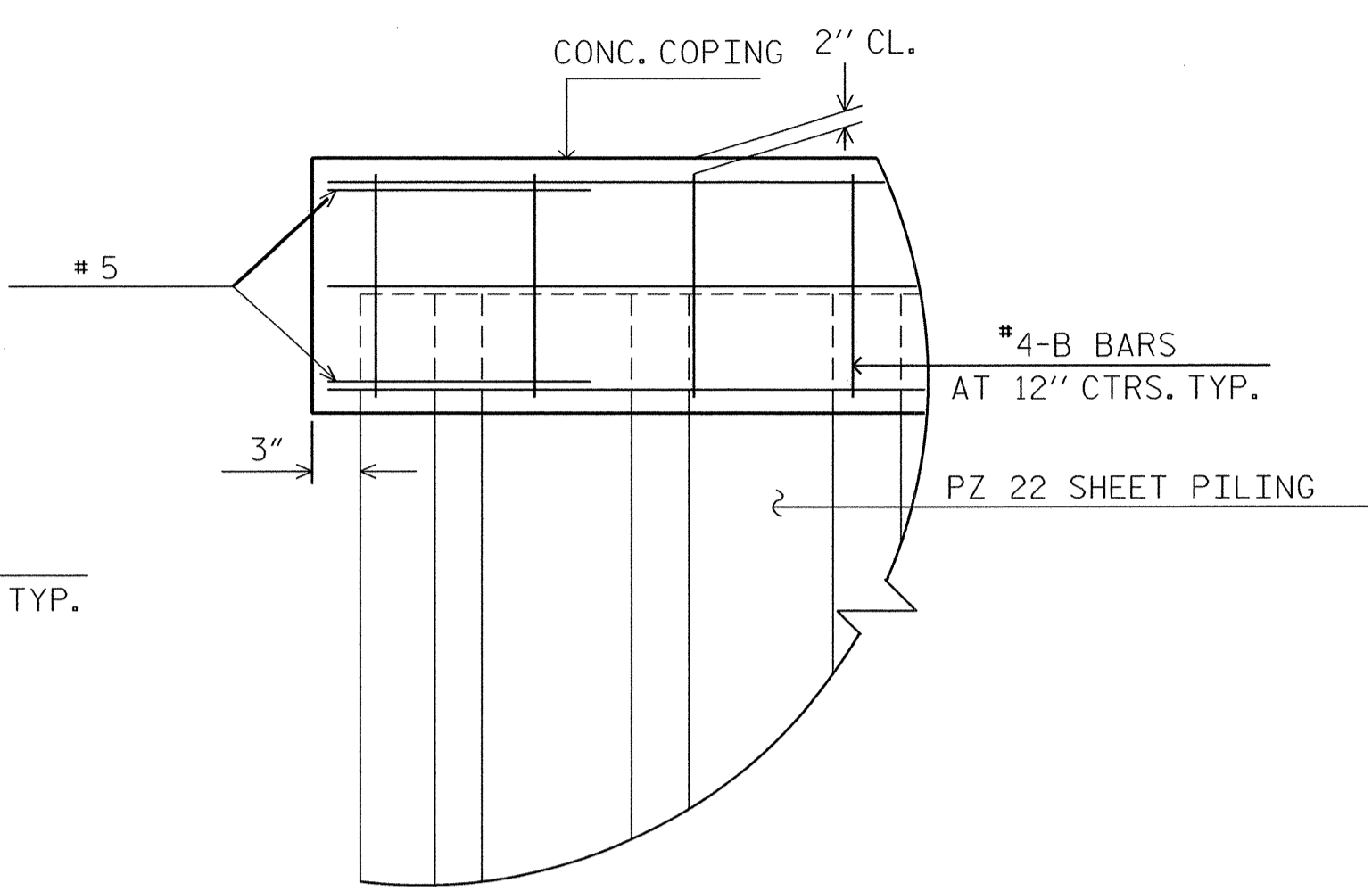
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REVISIONS						SHEET NO. W-4 TOTAL SHEETS 6
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

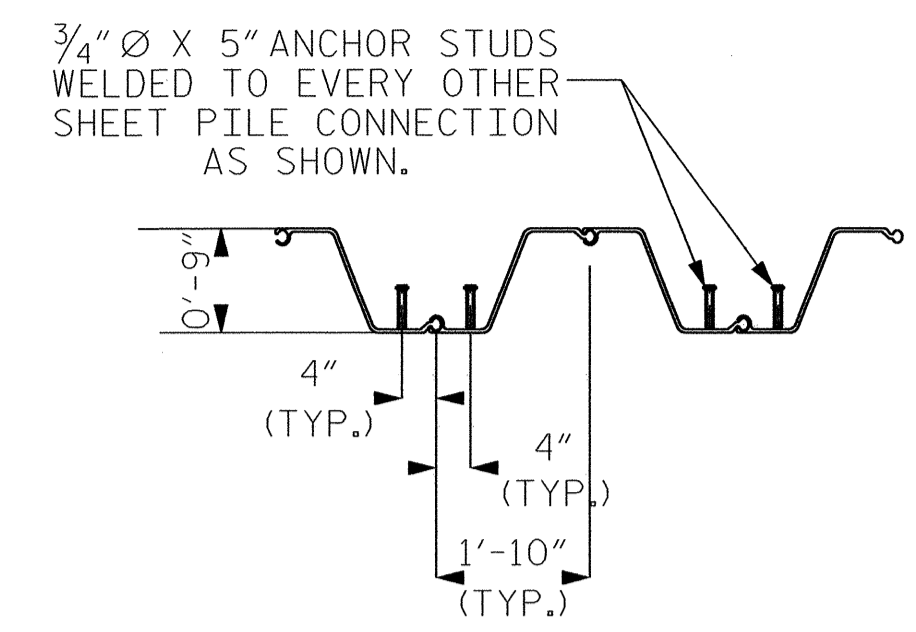
PREPARED BY: J.T.W. DATE: 5.12
 REVIEWED BY: S.C.C. DATE: 5.12



TOP VIEW



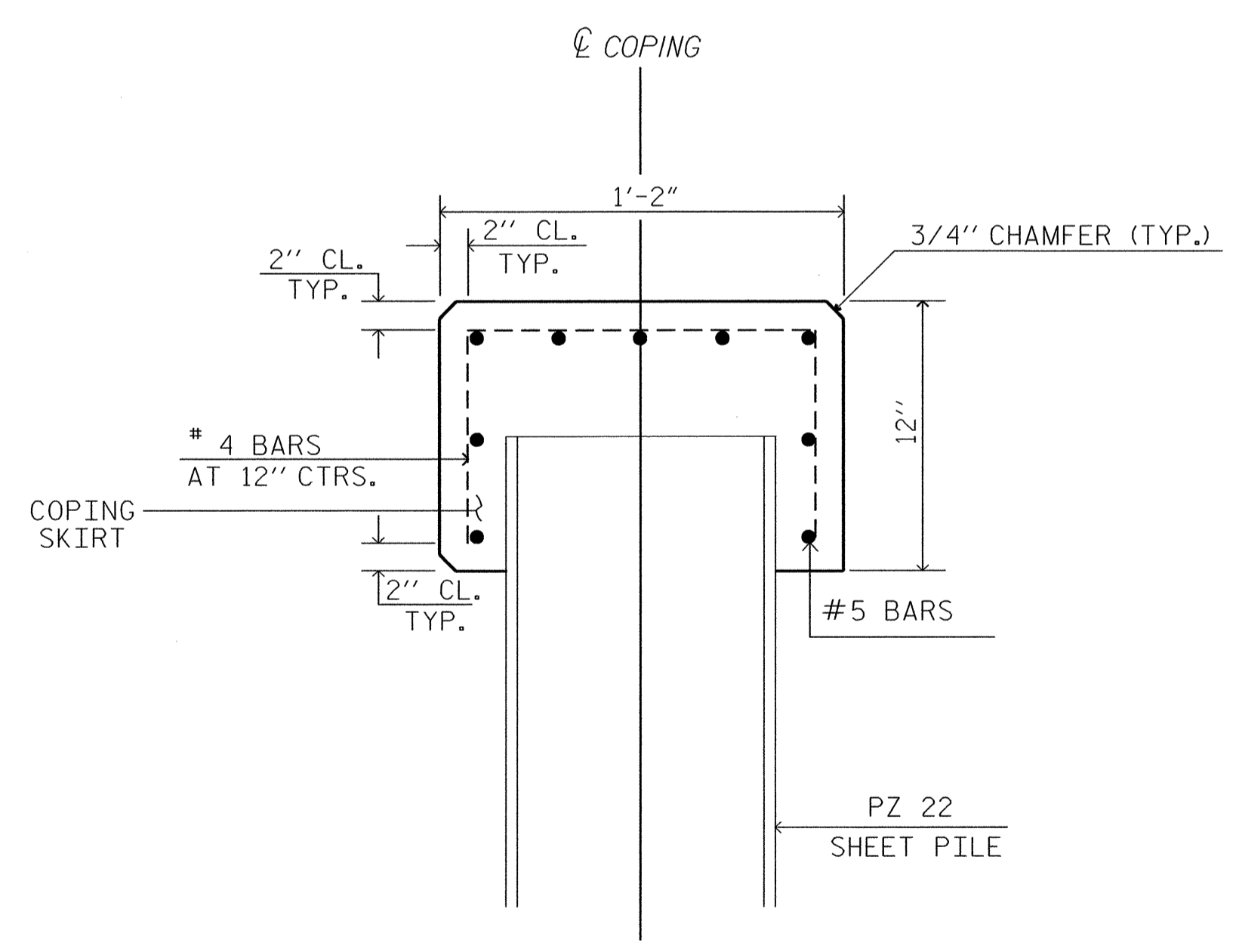
FRONT VIEW



ANCHOR STUD DETAIL

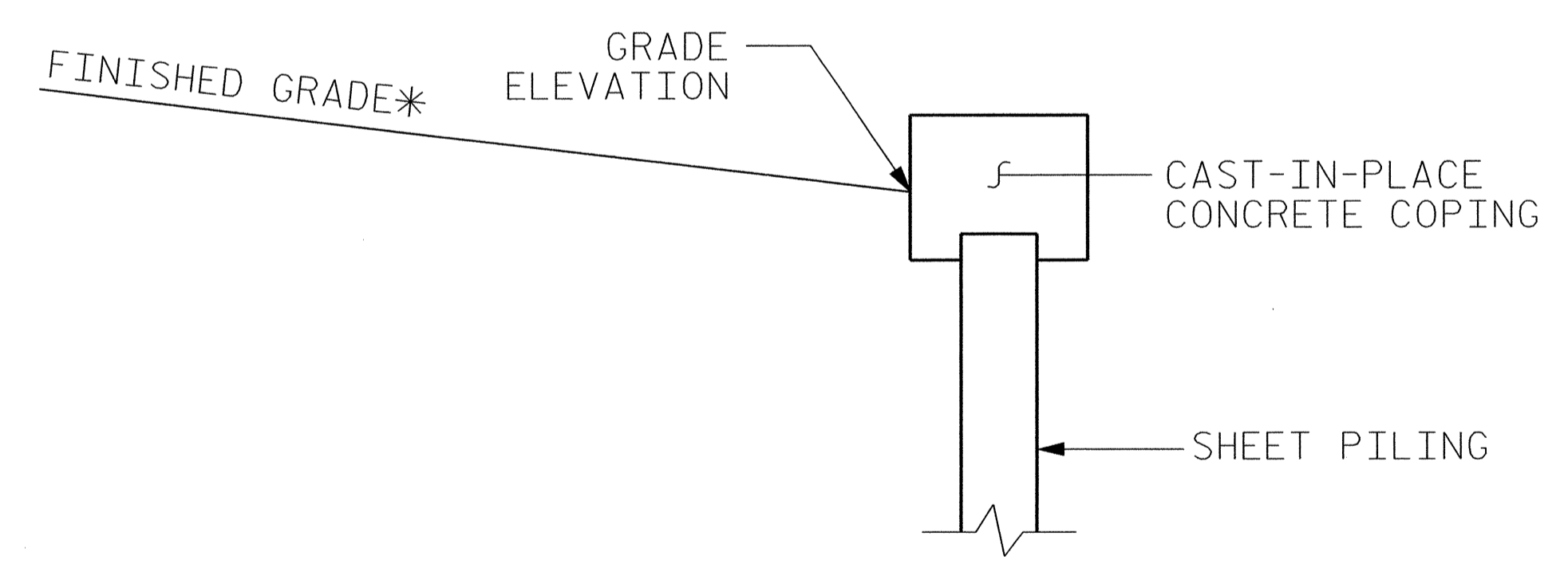
END OF COPING DETAILS

N. T. S.



FULL COPING DETAIL

N. T. S.



COPING DETAILS

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

PROJECT NO.: B-4809
 ROWAN COUNTY
 STATION: VARIES

SHEET 5 OF 6

PREPARED BY: EJS DATE: 8/12
 REVIEWED BY: SCC DATE: 8/12

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SHEET PILE WALL CONSTRUCTION DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			W-5
2			4			6

GEOTECHNICAL ENGINEER

ENGINEER

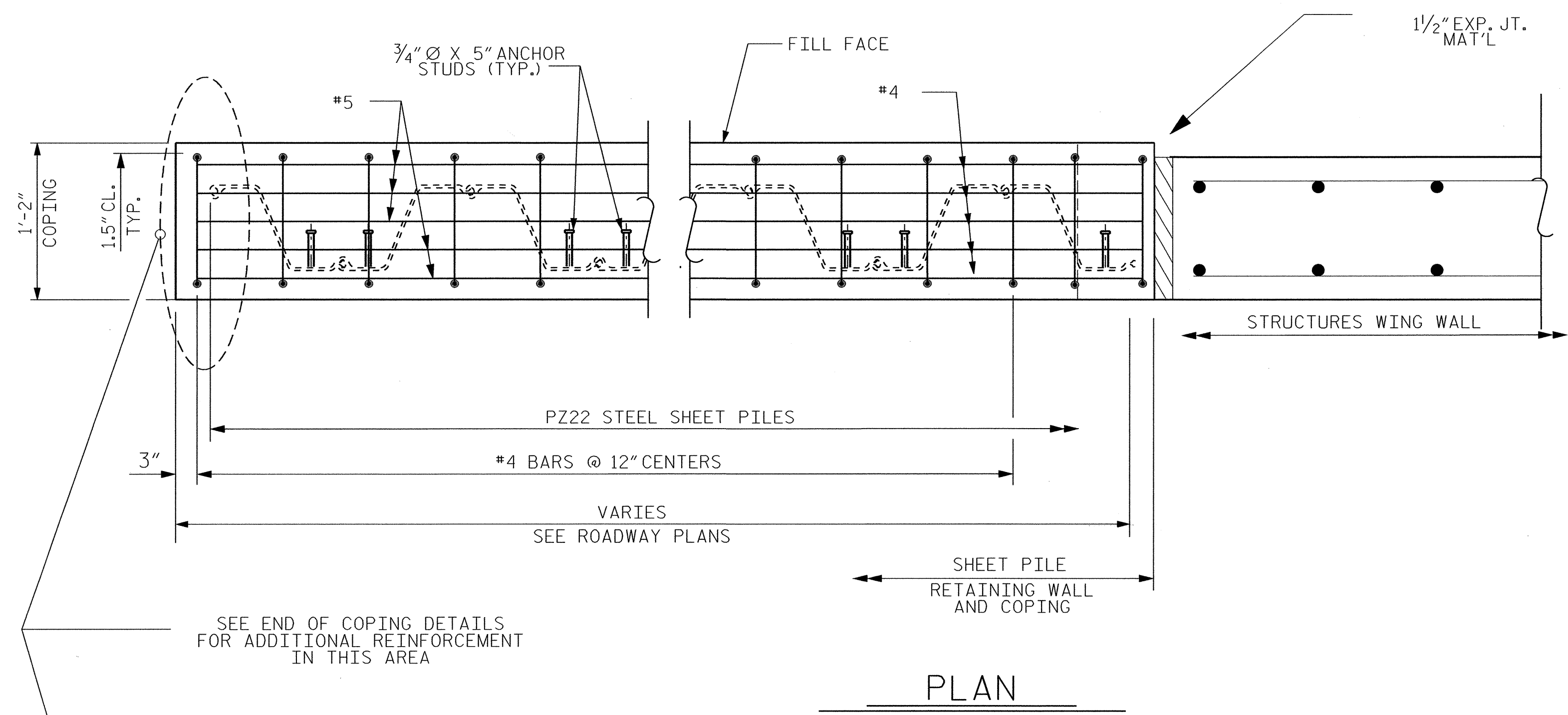
SEAL 29869

STATE OF NORTH CAROLINA

PROFESSIONAL ENGINEER

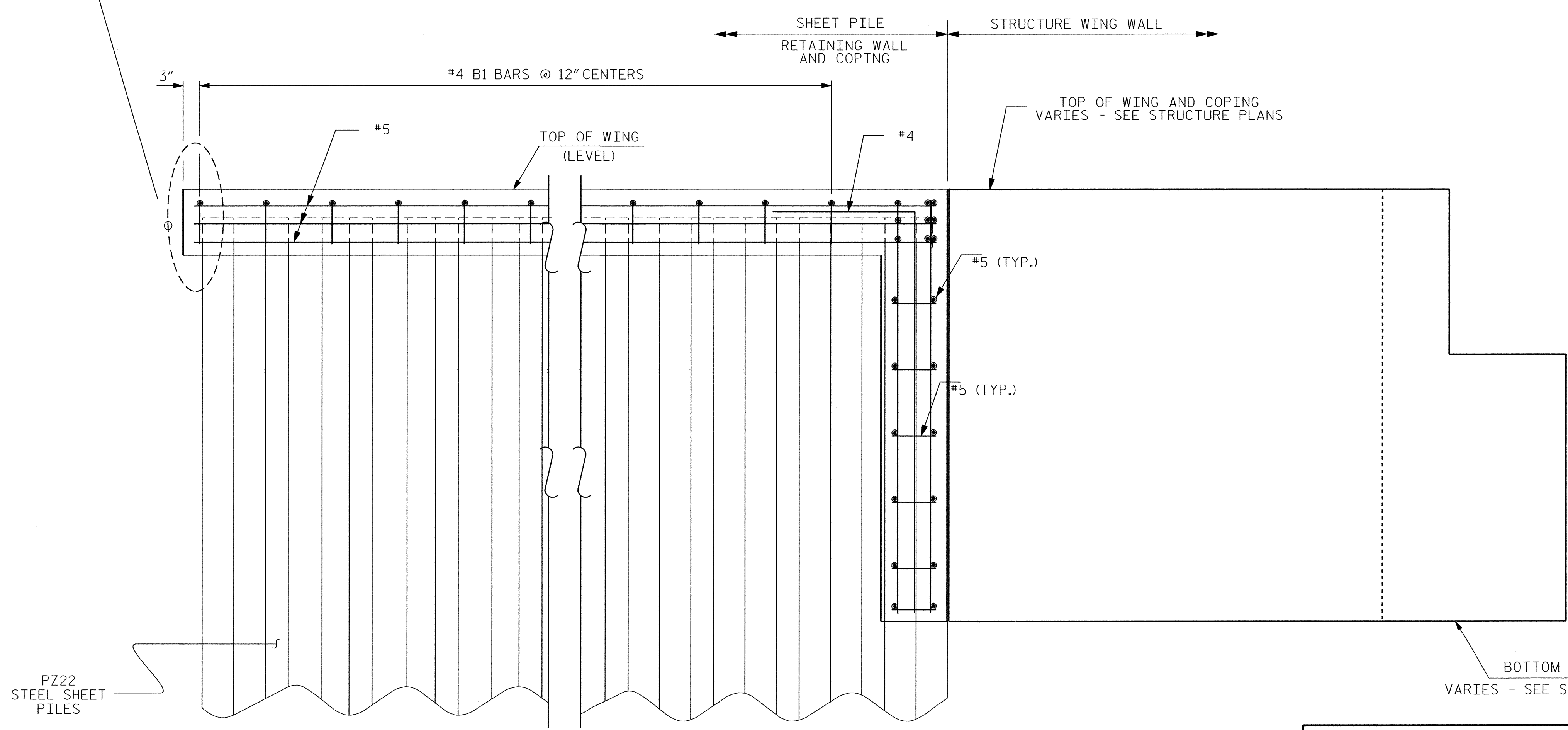
DATE: 11/21/12

SIGNATURE: [Signature]



SEE END OF COPING DETAILS FOR ADDITIONAL REINFORCEMENT IN THIS AREA

PLAN



ELEVATION

NOTES

CONTRACTOR IS TO DESIGN COPING AND REINFORCEMENT AND SUBMIT PROPOSED DESIGN FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIALS OR CONSTRUCTING COPING. TYPICAL REINFORCEMENT BAR SIZES AND CLEARANCES ARE SHOWN ON PLANS FOR REFERENCE. FIELD ADJUSTMENT OF BARS MAY BE NECESSARY FOR PLACEMENT IN COPING.

ALL REINFORCING SHALL BE GRADE 60 AS DESCRIBED IN SECTION 1070 OF THE STANDARD SPECIFICATIONS.

FOR SHEET PILE RETAINING WALLS AND CAST-IN-PLACE COPING, SEE SECTION 452 OF THE STANDARD SPECIFICATIONS.

ALL SHEET PILES TO BE PZ22

SHEET PILES ARE TO BE INSTALLED TO A MINIMUM ELEVATION OF 632.0 FT.

SHEET PILES ARE TO BE INSTALLED PLUMB (+/- 1% OF FULL INSTALLED LENGTH) ALONG THE FRONT FACE AND LEADING EDGES.

THE SCOUR CRITICAL ELEVATION FOR THE SHEET PILE RETAINING WALL IS ELEVATION 645 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

STEEL SHEET PILES SHALL BE EMBEDDED A MINIMUM OF 0'-9" INTO COPING.

PROJECT NO.: B-4809

ROWAN COUNTY

STATION: VARIES

SHEET 6 OF 6

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE

WESTERN REGIONAL OFFICE

CONTRACT OFFICE

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SHEET PILE WALL CONSTRUCTION DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-6
1			3			TOTAL SHEETS
2			4			6

PREPARED BY: EJS DATE: 8/12

REVIEWED BY: SCC DATE: 8/12

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 2012 "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. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990