

09/08/99

TIP PROJECT: B-4734

CONTRACT: C203308

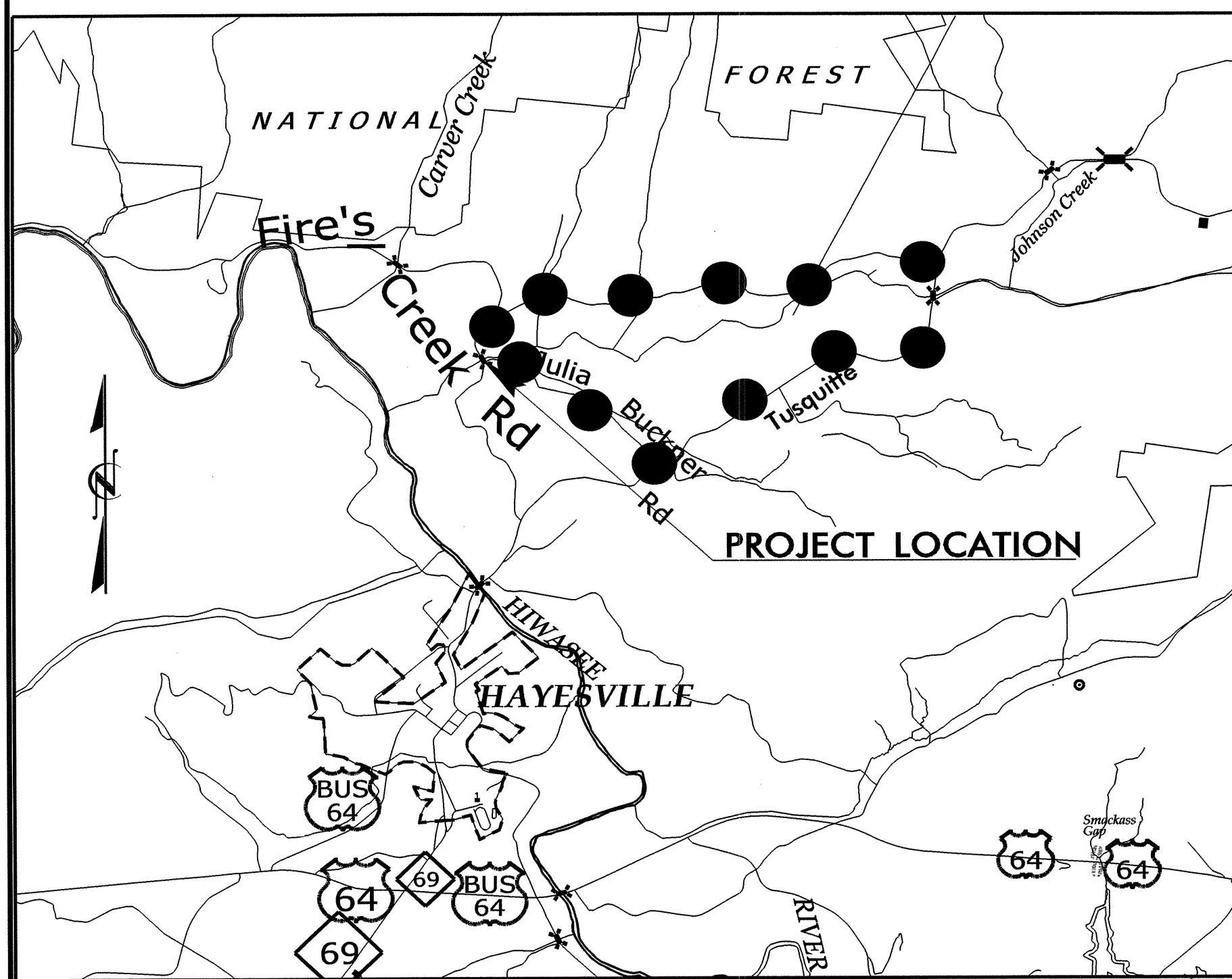
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLAY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4734		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38507.1.1	BRZ-1300(8)	PE	
38507.2.1	BRZ-1300(8)	RW & UTILITIES	
38507.3.1	BRZ-1300(8)	CONSTRUCTION	

*LOCATION: REPLACEMENT OF BRIDGE NO. 9 ON SR 1300
(FIRES CREEK ROAD) OVER TUSQUITEE CREEK*

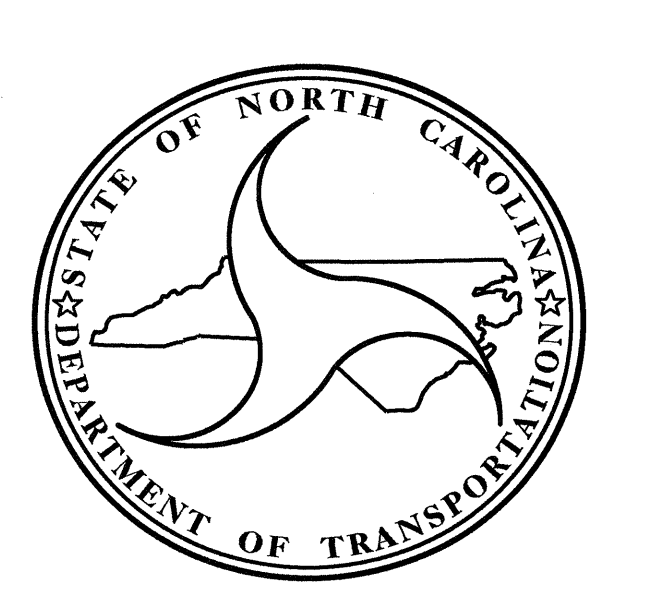
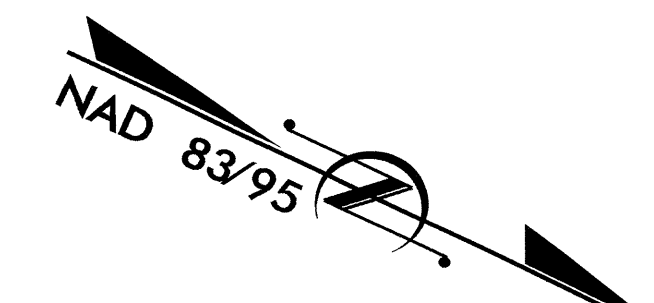
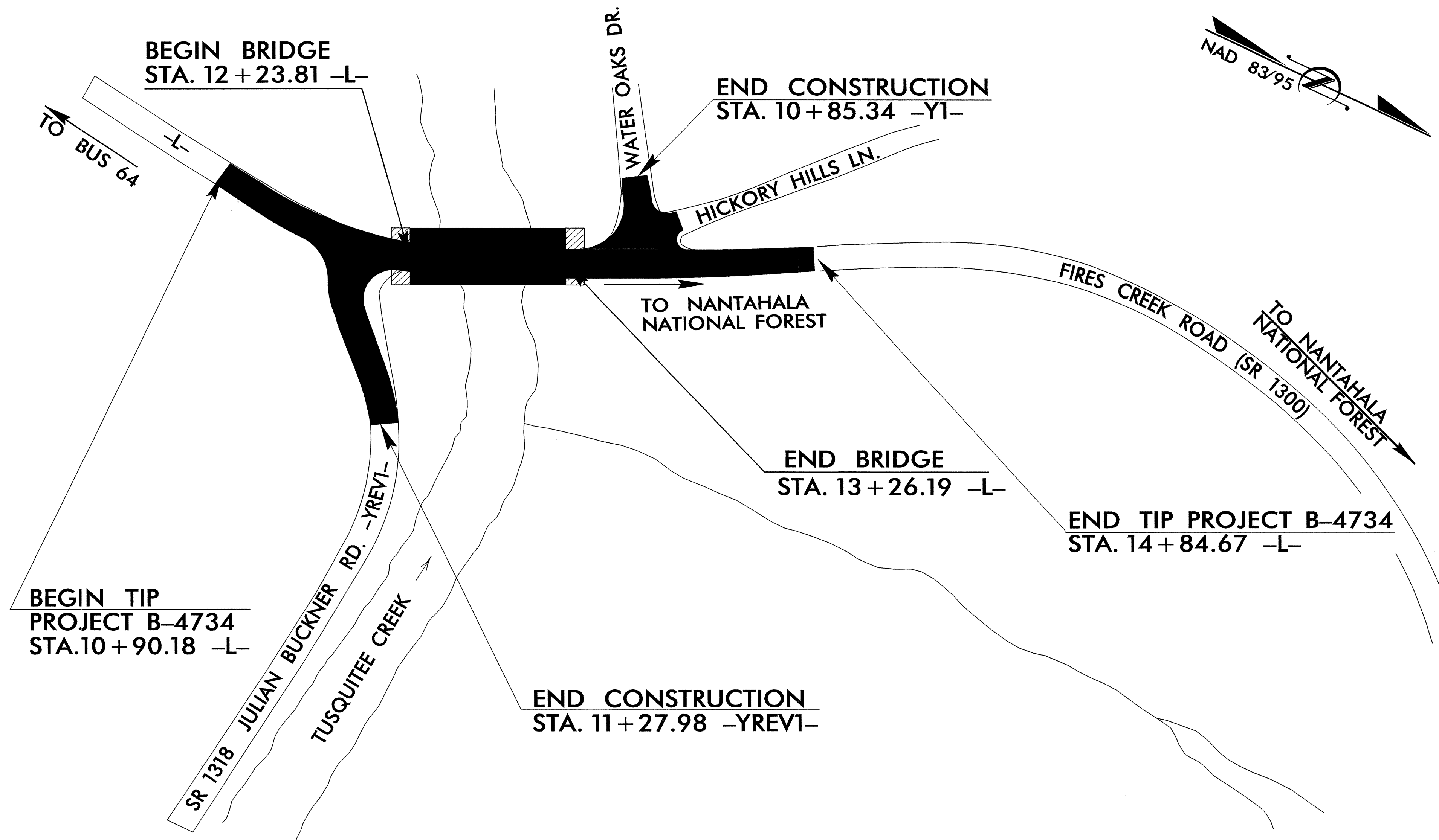
TYPE OF WORK: PAVING, GRADING, DRAINAGE AND STRUCTURE.



VICINITY MAP

● ● ● OFFSITE DETOUR

STRUCTURE



DESIGN DATA
 ADT 2010 = 500
 ADT 2035 = 900
 DHV = 10 %
 D = 60 %
 T = 5 % *
 V = 40 MPH
 * TTST = 2% DUAL 3%
 FUNC. CLASS. =
 LOCAL RURAL
 SUBREGIONAL TIER

PROJECT LENGTH
 LENGTH ROADWAY TIP PROJECT B-4734 = 0.056 MI.
 LENGTH STRUCTURE TIP PROJECT B-4734 = 0.019 MI.
 TOTAL LENGTH TIP PROJECT B-4734 = 0.075 MI.

Prepared In the Office of:
DIVISION OF HIGHWAYS
 1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:
AUGUST 20, 2013

Q. H. NGUYEN, P.E.
 PROJECT ENGINEER

MARC G. CHEEK, P.E.
 PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT
 1000 BIRCH RIDGE DRIVE
 RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

P.E.
 STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED
 DIVISION ADMINISTRATOR

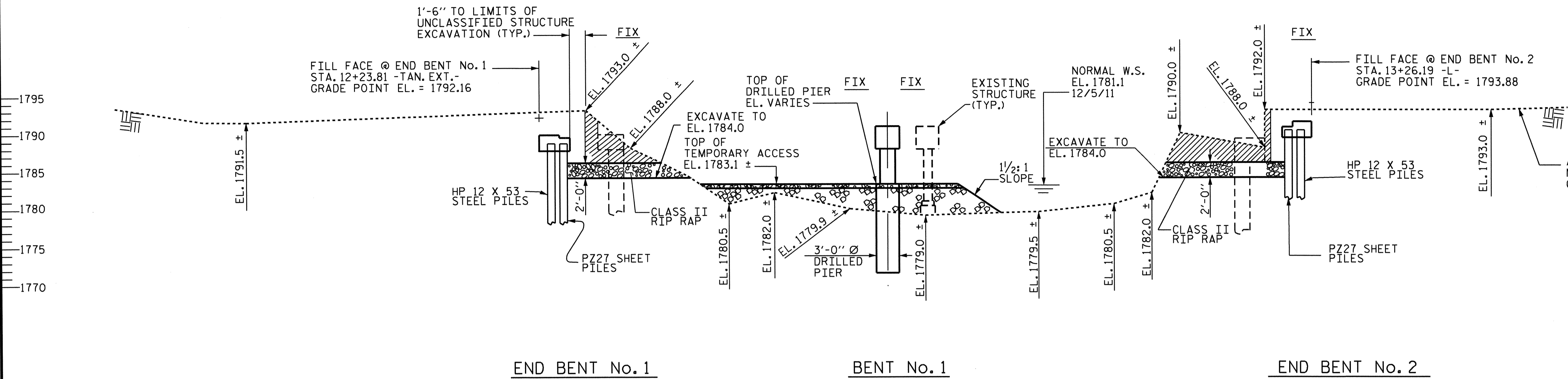
DATE

18-JUN-2013 08:30
\$\$\$\$\$\$\$\$DCN\$
moodle

11+80 11+90 12+00 12+10 12+20 12+30 12+40 12+50 12+60 12+70 12+80 12+90 13+00 13+10 13+20 13+30 13+40 13+50

SPAN A

SPAN B

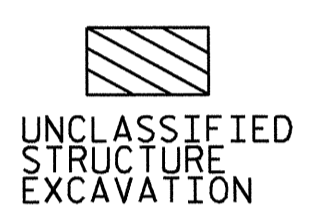


+2.2449% Δ +1.0483%
 PI STA. = 12+77.67 -L-
 EL = 1793.37
 VC = 95'

GRADE DATA

PI STA. = 11+97.35 -L-
 Δ = 34° - 53' - 17.4" (LT.)
 D = 22° - 55' - 05.9"
 L = 152.23'
 T = 78.56'
 R = 250.00

HORIZONTAL CURVE DATA



END BENT No. 1

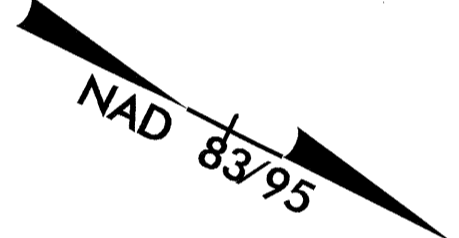
BENT No. 1

END BENT No. 2

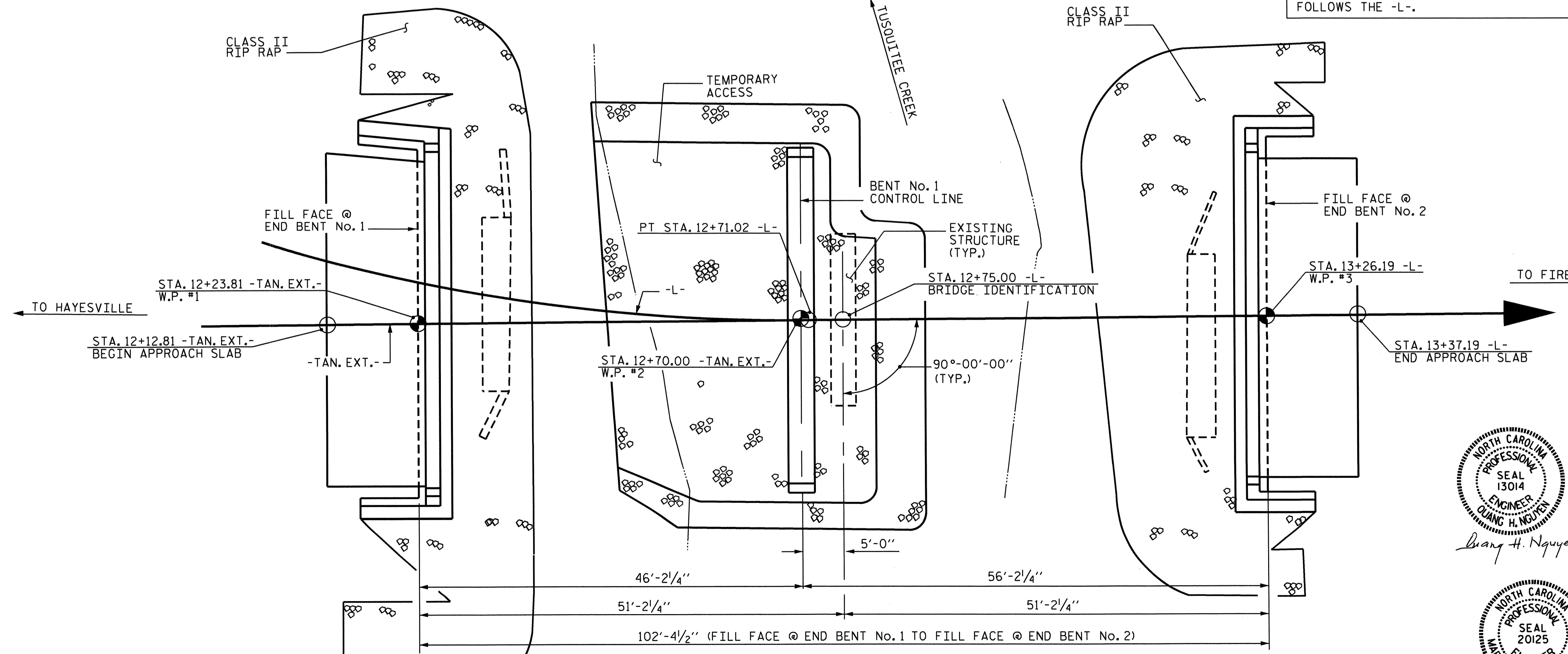
SECTION ALONG -L-

SECTIONS THROUGH BENT & END BENTS ARE TAKEN @ RIGHT ANGLES
 APPROXIMATE GROUND LINE ELEVATIONS ARE SHOWN ALONG UPSTREAM EDGE OF BRIDGE

NOTE TO CONTRACTOR: ALL STATIONING ON THE BRIDGE AND APPROACH SLAB @ END BENT No. 1 IS ALONG THE TANGENT EXTENDED, WHILE THE GRADE POINT FOLLOWS THE -L-.



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



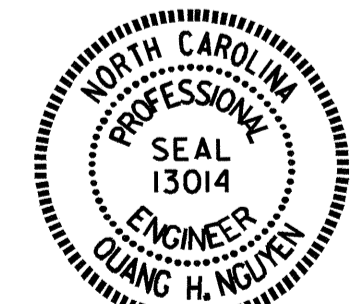
PLAN

PILES, COLUMNS & SHEET PILES NOT SHOWN IN PLAN VIEW

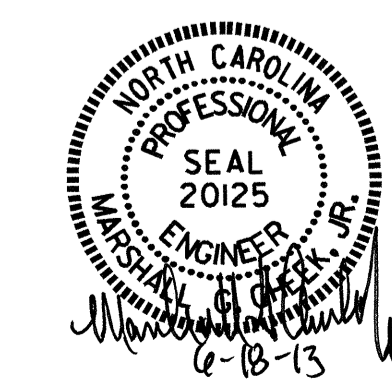
PROJECT NO. B-4734
 CLAY COUNTY
 STATION: 12+75.00-L-

SHEET 1 OF 2 REPLACES BRIDGE No. 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON SR 1300
 (FIRES CREEK RD.)
 OVER TUSQUITEE CREEK
 BETWEEN SR 1318 AND SR 1319



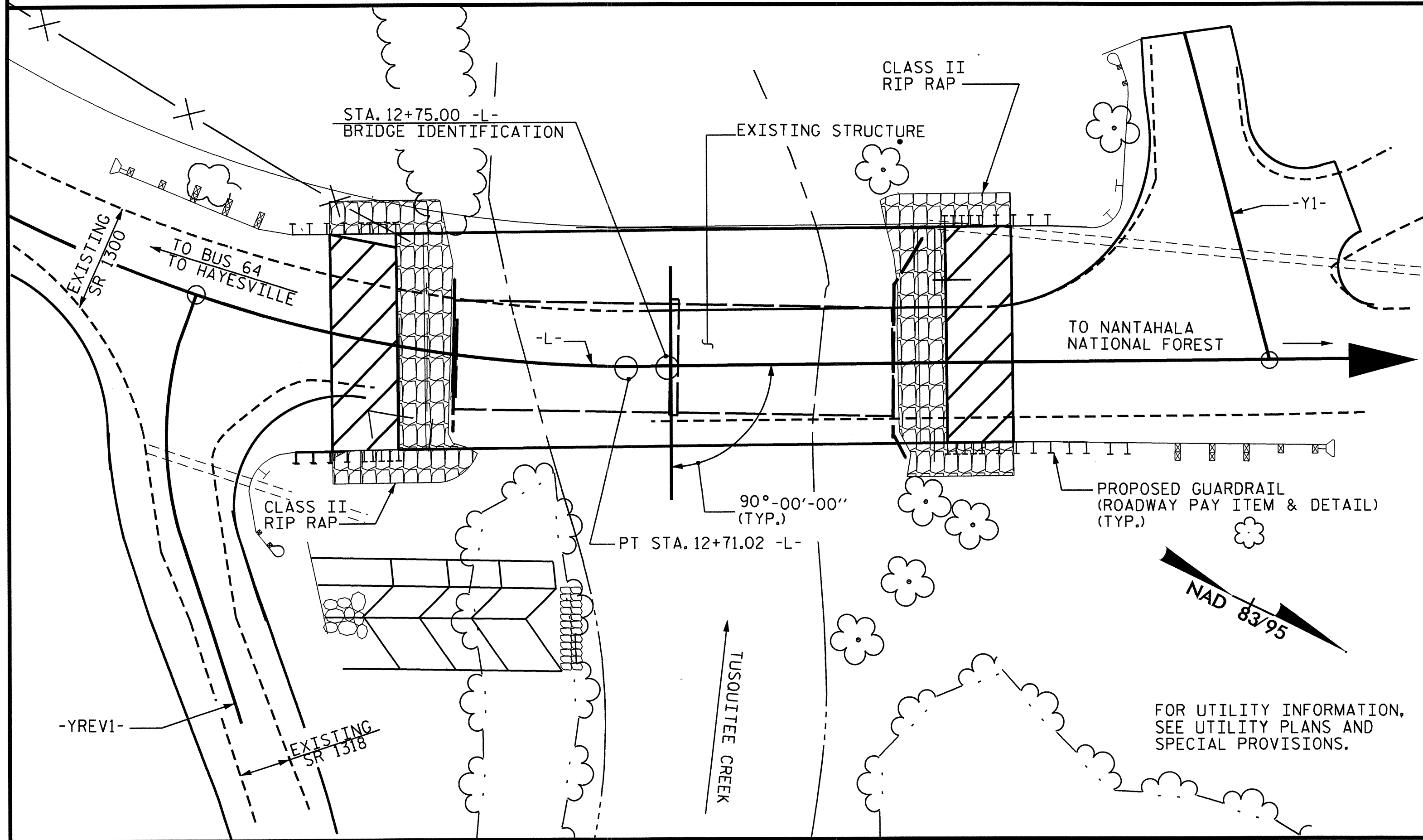
Quang H. Nguyen 6-18-13



DRAWN BY: M. POOLE DATE: 07/12
 CHECKED BY: M. G. CHEEK DATE: 04/13

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

BENCHMARK #2 : R.R. SPIKE IN 30" POPLAR, STA. 10+49.00 -BL-, 47 FT. LT., ELEV. 1791.20



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE I.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 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.
 AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS.
 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 THE CONTRACTOR'S OPTION AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS.
 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 SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
 THE EXISTING 2 SPAN STRUCTURE (2 @ 40'-3") CONSISTING OF A TIMBER FLOOR WITH A 2" ASPHALT WEARING SURFACE ON 8 LINES OF STEEL I BEAMS AND A SUBSTRUCTURE CONSISTING OF TIMBER CAPS & TIMBER POSTS AND SILLS ABUTMENTS AND TIMBER CAP & TIMBER POSTS ON A CONCRETE FOOTING AT THE BENT, AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.
 PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 1776 FT. (LT.) AND 1772 FT. (RT.).
 FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
 DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 395 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 130.0 TSF.
 PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1779.5 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.
 INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 1773.5 FT WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 6 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
 THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 1776.5 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
 CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR 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 AT BENT NO. 1. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
 PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 2. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 1777.5 FT. (LT.) AND 1779.7 (RT.)
 CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2.
 FOR 18" GALVANIZED STEEL SHEET PILES, SEE SPECIAL PROVISIONS.
 SHEET PILES FOR VERTICAL WALLS SHOULD BE DRIVEN TO REFUSAL. REFUSAL IS ESTIMATED AT ELEVATIONS 1781.0 FT. (LT.) AND 1778.6 FT. (RT.) FOR END BENT NO. 1 AND 1782.5 FT. (LT.) AND 1784.7 FT. (RT.) FOR END BENT NO. 2.
 18" GALVANIZED STEEL SHEET PILES SHALL BE HOT ROLLED AND SHALL MEET THE REQUIREMENTS OF ASTM A572
 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.

HYDRAULIC DATA

DESIGN DISCHARGE.....6000 CFS
 FREQUENCY OF DESIGN FLOOD.....25 YEARS
 DESIGN HIGH WATER ELEVATION.....1791.7
 DRAINAGE AREA.....42.8 SQ. MI.
 BASE DISCHARGE(Q100).....8400 CFS
 BASE HIGH WATER ELEVATION.....1793.28

PROJECT NO. B-4734
 CLAY COUNTY
 STATION: 12+75.00 -L-

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE.....3800 CFS
 FREQUENCY OF OVERTOPPING FLOOD.....10 YRS +
 OVERTOPPING FLOOD ELEVATION.....1789.2

TOTAL BILL OF MATERIAL

	CONST., MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERM. STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.
SUPERSTRUCTURE	LUMP SUM	LUMP SUM										3688
END BENT NO. 1			54.00	29.00								
BENT NO. 1					8.00	18.00	7.89					
END BENT NO. 2			39.00	30.00								
TOTAL	LUMP SUM	LUMP SUM	93.00	59.00	8.00	18.00	7.89	1	1	1	LUMP SUM	3688

TOTAL BILL OF MATERIAL

	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	18" GALVANIZED STEEL SHEET PILES
	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO. LIN. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	NO. LIN. FT.	SQ. FT.
SUPERSTRUCTURE	4198		LUMP SUM				200.50			LUMP SUM	26 1300.00	
END BENT NO. 1		21.4		2818		7 125		113	126			550
BENT NO. 1		17.8		6254	783			131	145			410
END BENT NO. 2		21.3		2818		7 105						410
TOTAL	4198	60.5	LUMP SUM	11890	783	14 230	200.50	244	271	LUMP SUM	26 1300.00	960

DRAWN BY : M. POOLE DATE : 07/12
 CHECKED BY : M. G. CHEEK DATE : 04/13



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON SR 1300
 (FIRES CREEK RD.)
 OVER TUSQUITEE CREEK
 BETWEEN SR 1318 AND SR 1319

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

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	1.00	--	1.75	0.281	1.54	A	EL	22.00	0.539	1.00	A	EL	2.20	0.80	0.281	1.32	A	EL	22.00		
	HL-93(0pr)	N/A	--	1.30	--	1.35	0.281	2.00	A	EL	22.00	0.539	1.30	A	EL	2.20	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.19	42.681	1.75	0.281	1.89	A	EL	22.00	0.539	1.19	A	EL	2.20	0.80	0.281	1.62	A	EL	22.00		
	HS-20(0pr)	36.000	--	1.54	55.327	1.35	0.281	2.45	A	EL	22.00	0.539	1.54	A	EL	2.20	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.17	42.778	1.40	0.281	4.62	A	EL	22.00	0.539	3.27	A	EL	2.20	0.80	0.281	3.17	A	EL	22.00	
		SNGARBS2	20.000	--	2.40	48.082	1.40	0.281	3.73	A	EL	22.00	0.539	2.40	A	EL	2.20	0.80	0.281	2.56	A	EL	22.00	
		SNAGRIS2	22.000	--	2.26	49.774	1.40	0.281	3.61	A	EL	26.40	0.539	2.26	A	EL	2.20	0.80	0.281	2.49	A	EL	22.00	
		SNCOTTS3	27.250	--	1.58	43.112	1.40	0.281	2.31	A	EL	22.00	0.539	1.64	A	EL	2.20	0.80	0.281	1.58	A	EL	22.00	
		SNAGGRS4	34.925	--	1.40	48.759	1.40	0.281	2.03	A	EL	22.00	0.539	1.42	A	EL	2.20	0.80	0.281	1.40	A	EL	22.00	
		SNS5A	35.550	--	1.36	48.347	1.40	0.281	1.98	A	EL	22.00	0.539	1.47	A	EL	2.20	0.80	0.281	1.36	A	EL	22.00	
		SNS6A	39.950	--	1.28	51.179	1.40	0.281	1.87	A	EL	22.00	0.539	1.36	A	EL	2.20	0.80	0.281	1.28	A	EL	22.00	
	SNS7B	42.000	--	1.22	51.292	1.40	0.281	1.78	A	EL	22.00	0.539	1.37	A	EL	2.20	0.80	0.281	1.22	A	EL	22.00		
	TTST	TNAGRIT3	33.000	--	1.57	51.887	1.40	0.281	2.29	A	EL	22.00	0.539	1.60	A	EL	2.20	0.80	0.281	1.57	A	EL	22.00	
		TNT4A	33.075	--	1.53	50.739	1.40	0.281	2.32	A	EL	22.00	0.539	1.53	A	EL	2.20	0.80	0.281	1.59	A	EL	22.00	
		TNT6A	41.600	--	1.33	55.470	1.40	0.281	1.94	A	EL	22.00	0.539	1.49	A	EL	2.20	0.80	0.281	1.33	A	EL	22.00	
		TNT7A	42.000	--	1.36	57.085	1.40	0.281	1.98	A	EL	22.00	0.539	1.38	A	EL	2.20	0.80	0.281	1.36	A	EL	22.00	
		TNT7B	42.000	--	1.31	55.201	1.40	0.281	2.06	A	EL	22.00	0.539	1.31	A	EL	2.20	0.80	0.281	1.42	A	EL	22.00	
		TNAGRIT4	43.000	--	1.26	54.350	1.40	0.281	1.96	A	EL	22.00	0.539	1.26	A	EL	2.20	0.80	0.281	1.35	A	EL	22.00	
TNAGT5A		45.000	--	1.25	56.433	1.40	0.281	1.83	A	EL	22.00	0.539	1.29	A	EL	2.20	0.80	0.281	1.25	A	EL	22.00		
TNAGT5B	45.000	③	1.20	53.904	1.40	0.281	1.78	A	EL	22.00	0.539	1.20	A	EL	2.20	0.80	0.281	1.22	A	EL	22.00			

LOAD FACTORS:

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

NOTES:

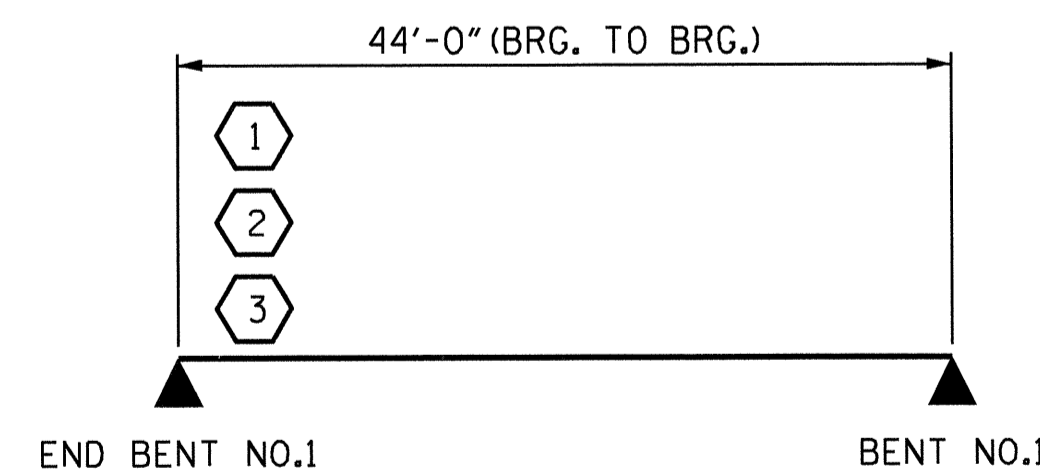
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

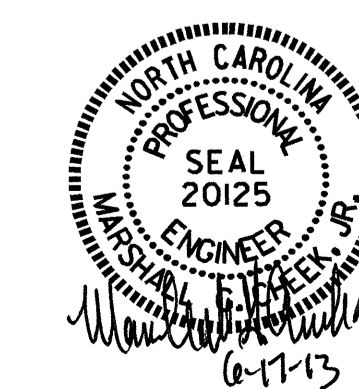
- 1.
- 2.
- 3.
- 4.

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



LRFR SUMMARY
FOR SPAN A

PROJECT NO. B-4734
CLAY COUNTY
STATION: 12+75.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

DRAWN BY: M.A. LEBLANC DATE: 4/13
CHECKED BY: J.R. MCROY DATE: 4/13
DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13

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	1.03	--	1.75	0.276	1.03	B	EL	27.00	0.523	1.03	B	EL	2.70	0.80	0.276	1.05	B	EL	27.00		
	HL-93(Opr)	N/A	--	1.33	--	1.35	0.276	1.33	B	EL	27.00	0.523	1.34	B	EL	2.70	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.25	44.843	1.75	0.276	1.29	B	EL	27.00	0.523	1.25	B	EL	2.70	0.80	0.276	1.31	B	EL	27.00		
	HS-20(Opr)	36.000	--	1.62	58.129	1.35	0.276	1.67	B	EL	27.00	0.523	1.61	B	EL	2.70	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.75	37.145	1.4	0.276	3.37	B	EL	27.00	0.523	3.58	B	EL	2.70	0.80	0.276	2.75	B	EL	27.00	
		SNGARBS2	20.000	--	2.14	42.714	1.4	0.276	2.62	B	EL	27.00	0.523	2.58	B	EL	2.70	0.80	0.276	2.14	B	EL	27.00	
		SNAGRIS2	22.000	--	2.06	45.330	1.4	0.276	2.53	B	EL	27.00	0.523	2.41	B	EL	2.70	0.80	0.276	2.06	B	EL	27.00	
		SNCOTTS3	27.250	--	1.37	37.376	1.4	0.276	1.68	B	EL	27.00	0.523	1.79	B	EL	2.70	0.80	0.276	1.37	B	EL	27.00	
		SNAGGRS4	34.925	--	1.18	41.160	1.4	0.276	1.45	B	EL	27.00	0.523	1.51	B	EL	2.70	0.80	0.276	1.18	B	EL	27.00	
		SNS5A	35.550	--	1.15	40.891	1.4	0.276	1.41	B	EL	27.00	0.523	1.55	B	EL	2.70	0.80	0.276	1.15	B	EL	27.00	
		SNS6A	39.950	--	1.07	42.721	1.4	0.276	1.31	B	EL	27.00	0.523	1.42	B	EL	2.70	0.80	0.276	1.07	B	EL	27.00	
	SNS7B	42.000	--	1.02	42.794	1.4	0.276	1.25	B	EL	27.00	0.523	1.42	B	EL	2.70	0.80	0.276	1.02	B	EL	27.00		
	TTST	TNAGRIT3	33.000	--	1.31	43.172	1.4	0.276	1.60	B	EL	27.00	0.523	1.69	B	EL	2.70	0.80	0.276	1.31	B	EL	27.00	
		TNT4A	33.075	--	1.32	43.591	1.4	0.276	1.62	B	EL	27.00	0.523	1.63	B	EL	2.70	0.80	0.276	1.32	B	EL	27.00	
		TNT6A	41.600	--	1.09	45.407	1.4	0.276	1.34	B	EL	27.00	0.523	1.54	B	EL	2.70	0.80	0.276	1.09	B	EL	27.00	
		TNT7A	42.000	--	1.12	46.391	1.4	0.276	1.35	B	EL	27.00	0.523	1.46	B	EL	2.70	0.80	0.276	1.10	B	EL	27.00	
		TNT7B	42.000	--	1.15	48.417	1.4	0.276	1.41	B	EL	27.00	0.523	1.37	B	EL	2.70	0.80	0.276	1.15	B	EL	27.00	
		TNAGRIT4	43.000	--	1.09	46.912	1.4	0.276	1.34	B	EL	27.00	0.523	1.32	B	EL	2.70	0.80	0.276	1.09	B	EL	27.00	
TNAGT5A		45.000	--	1.02	45.995	1.4	0.276	1.25	B	EL	27.00	0.523	1.33	B	EL	2.70	0.80	0.276	1.02	B	EL	27.00		
TNAGT5B	45.000	3	1.00	45.180	1.4	0.276	1.23	B	EL	27.00	0.523	1.26	B	EL	2.70	0.80	0.276	1.00	B	EL	27.00			

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

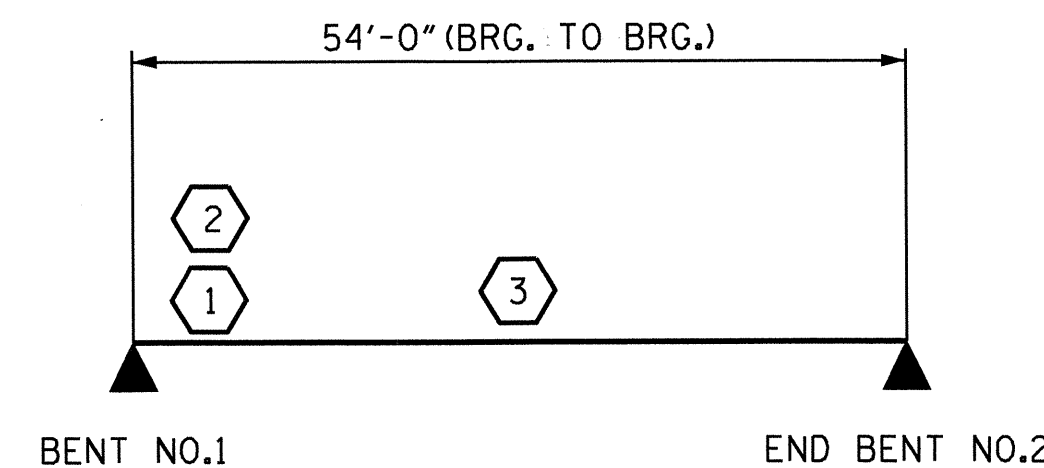
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



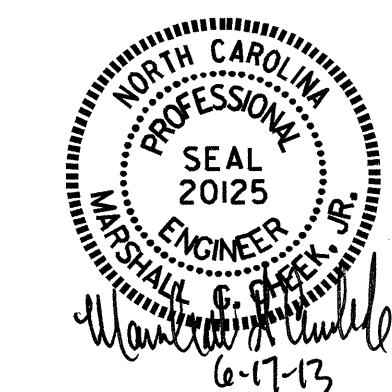
LRFR SUMMARY
FOR SPAN B

PROJECT NO. B-4734
CLAY COUNTY
 STATION: 12+75.00 -L-

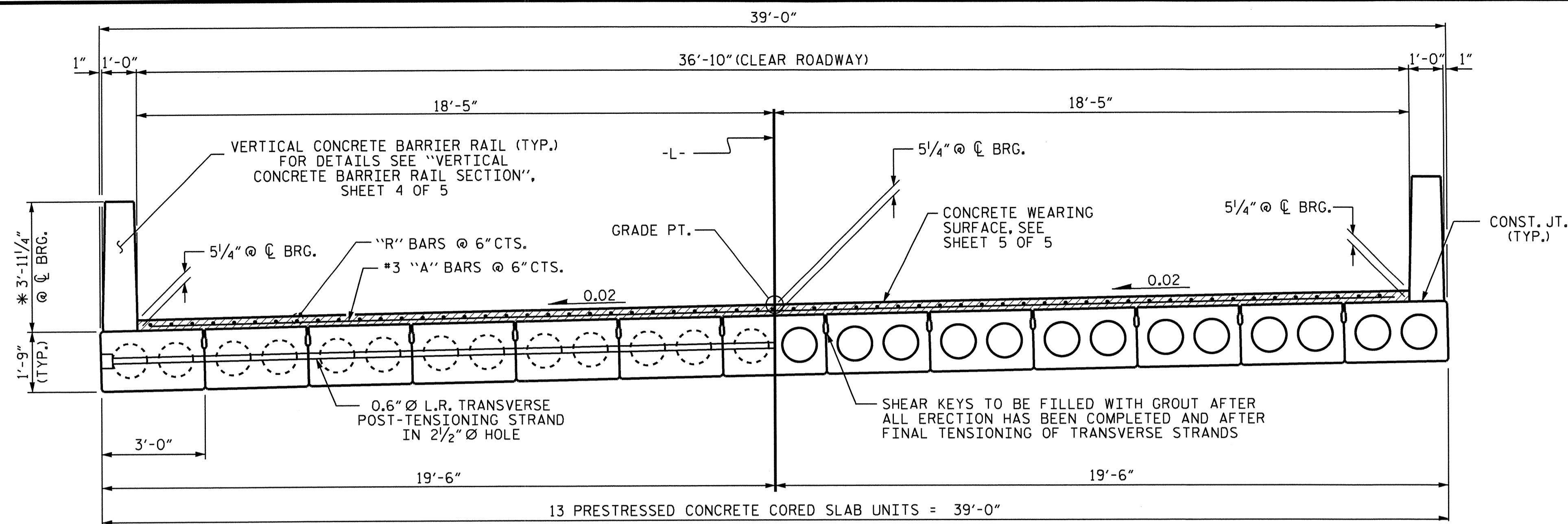
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-4
2			4			20



DRAWN BY: M.A. LEBLANC DATE: 4/13
 CHECKED BY: J.R. MCROY DATE: 4/13
 DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13

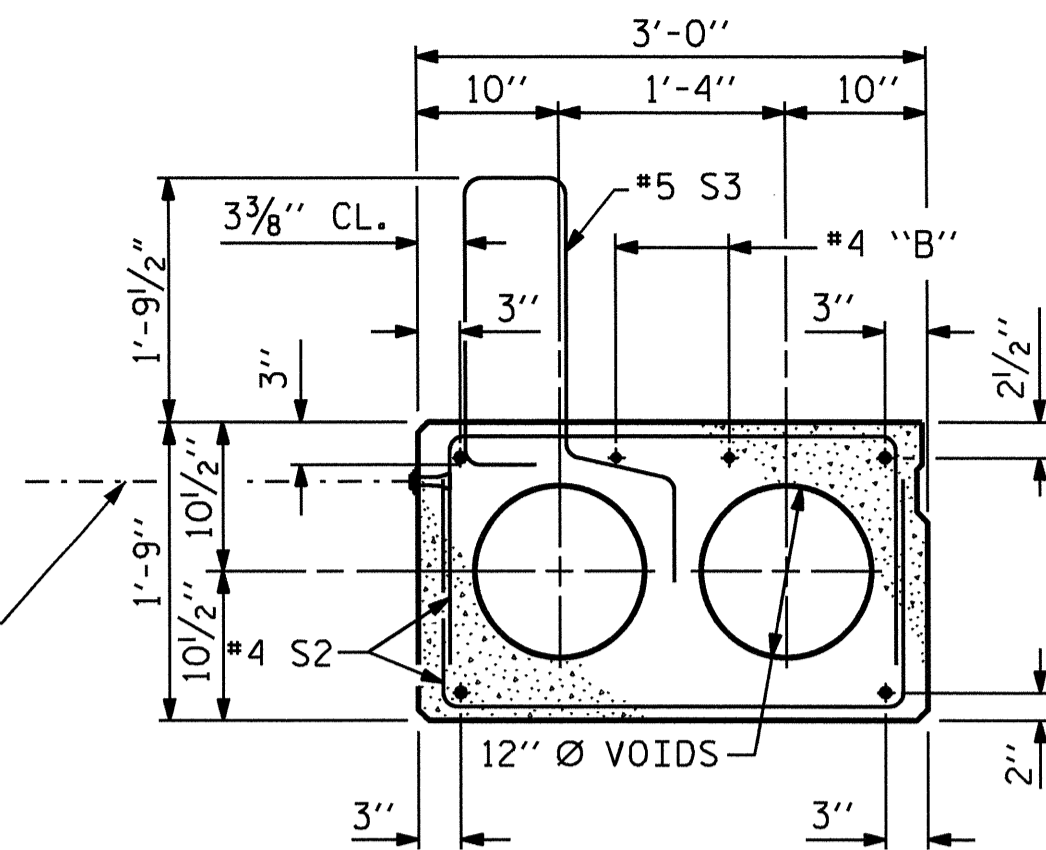


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

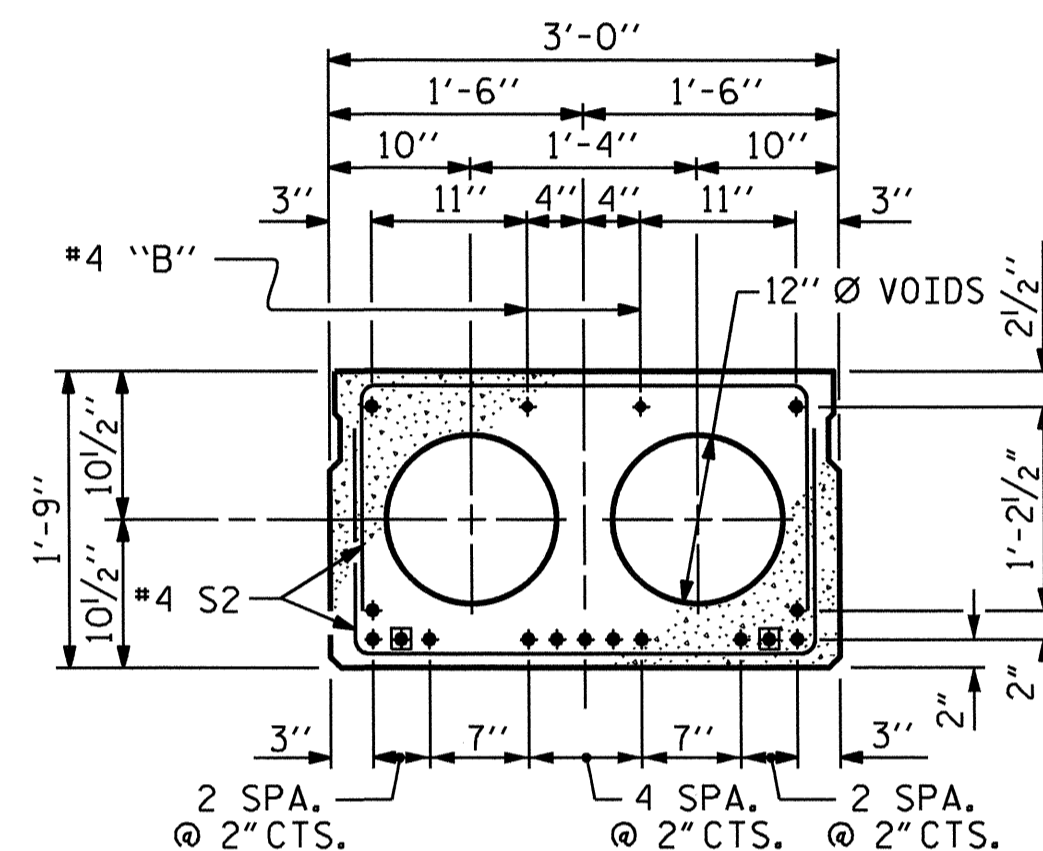
TYPICAL SECTION

* -THE MAXIMUM BARRIER RAIL HEIGHT AND CONCRETE THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND CONCRETE THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND CONCRETE THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL, SHEET 4 OF 5.

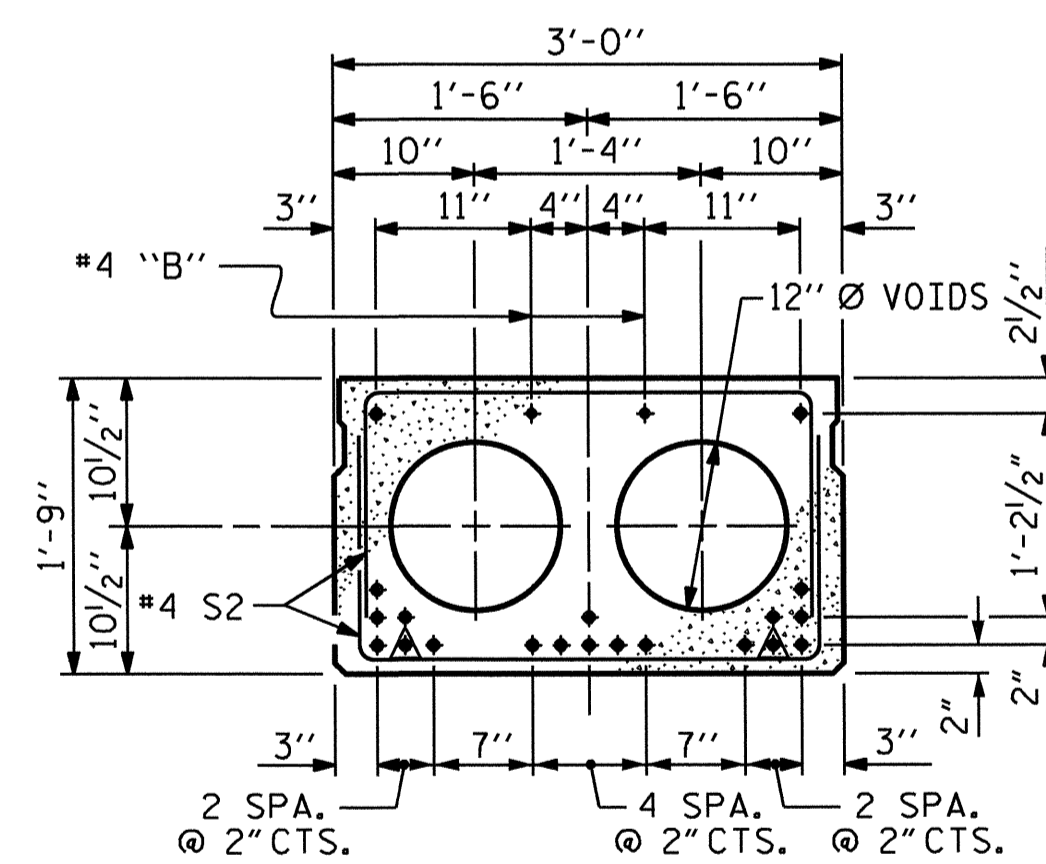


EXT. SLAB SECTION

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



**INTERIOR SLAB SECTION
(45' UNIT)**
(15 STRANDS REQUIRED)

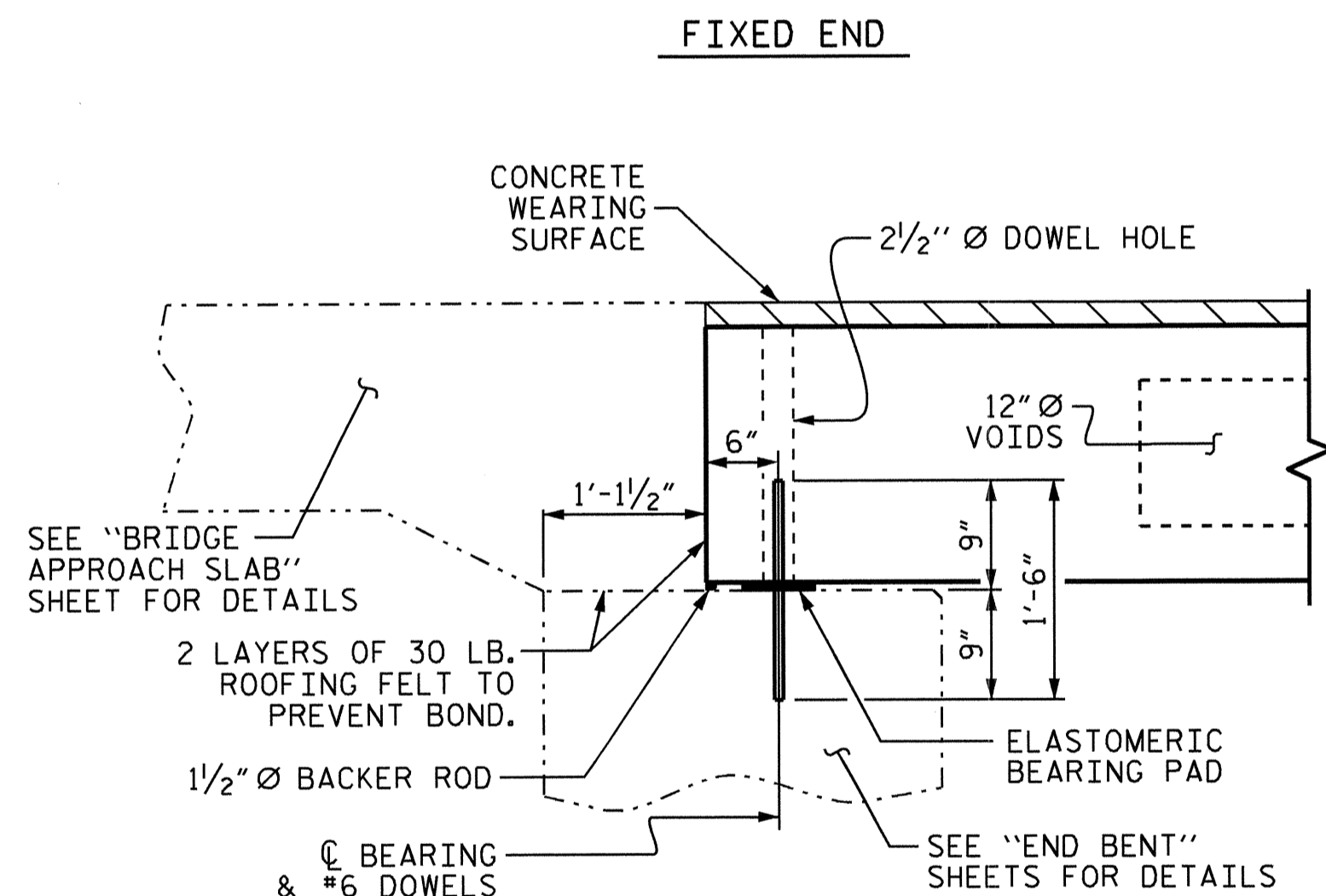


**INTERIOR SLAB SECTION
(55' UNIT)**
(20 STRANDS REQUIRED)

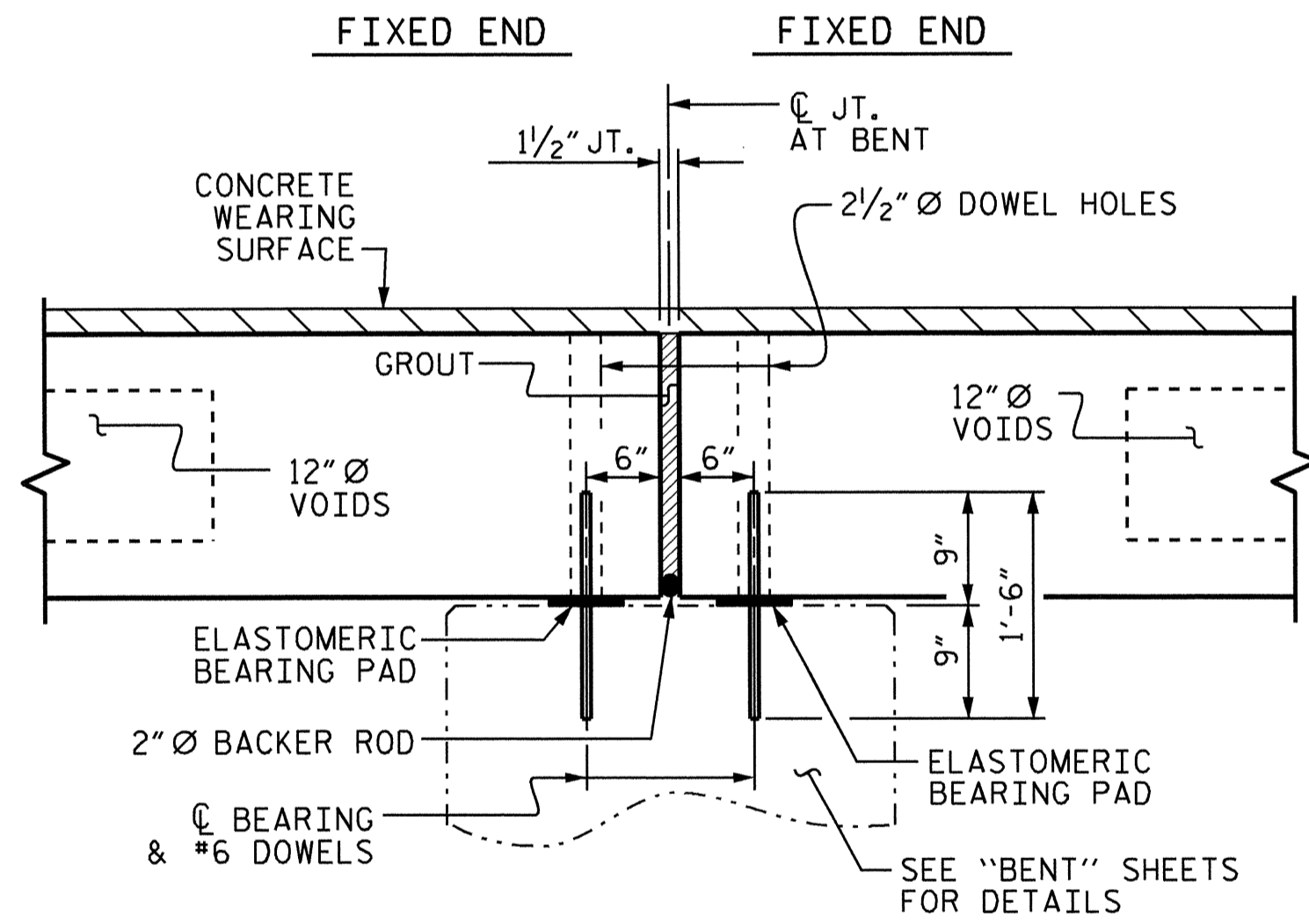
**0.6" Ø LOW
RELAXATION STRAND LAYOUT**

- 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.

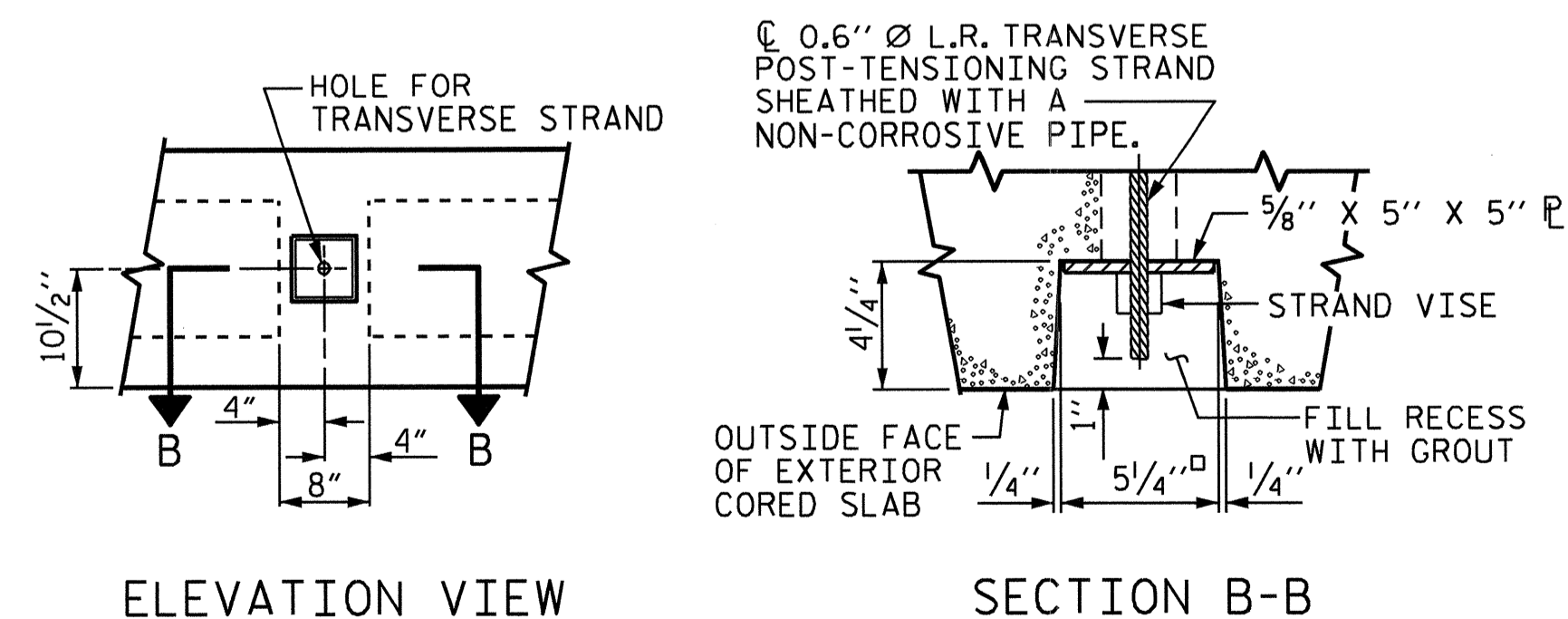
DEBONDING LEGEND



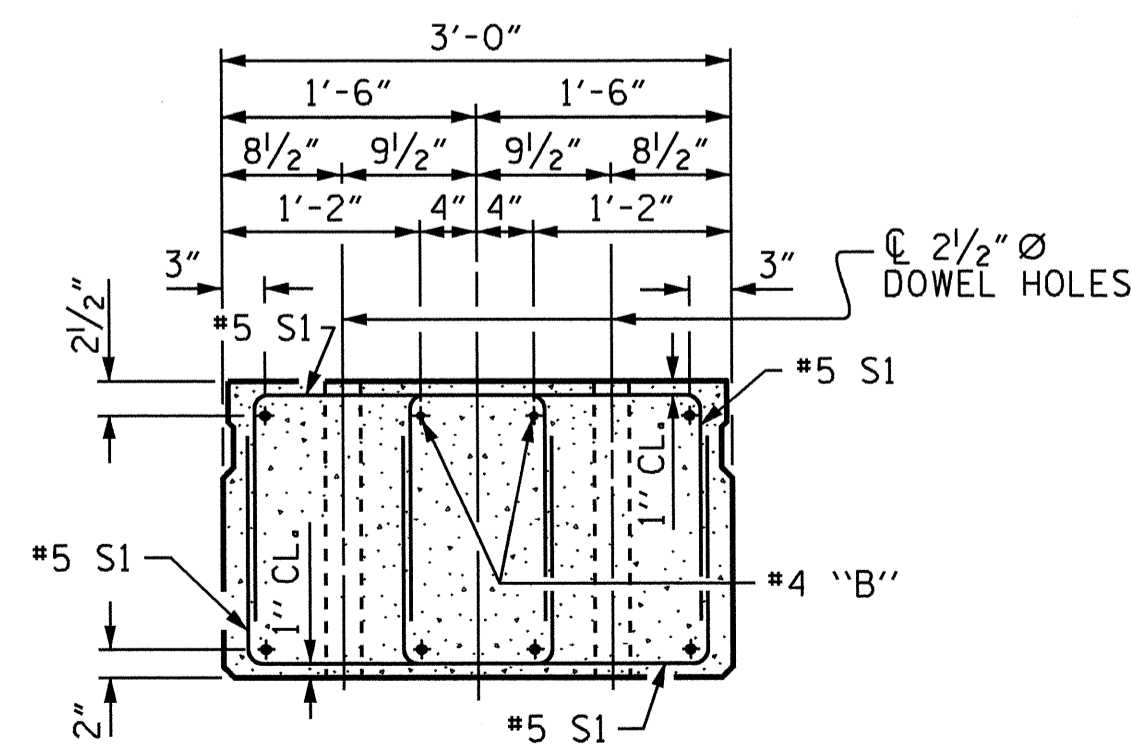
SECTION AT END BENT



SECTION AT BENT

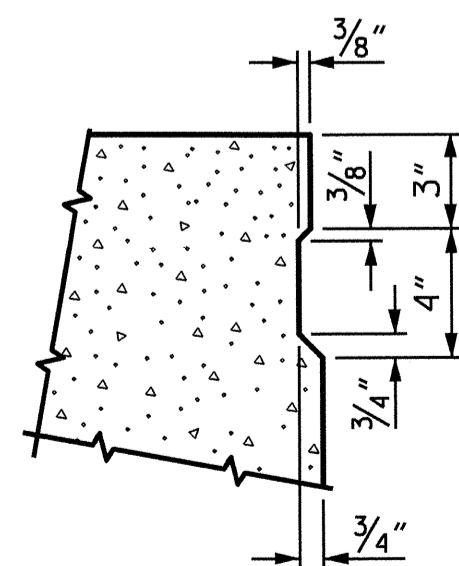


**GROUTED RECESS AT END OF
POST-TENSIONED STRAND OF CORED SLABS**



END ELEVATION

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



SHEAR KEY DETAIL

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

PROJECT NO. B-4734
CLAY COUNTY
STATION: 12+75.00 -L-

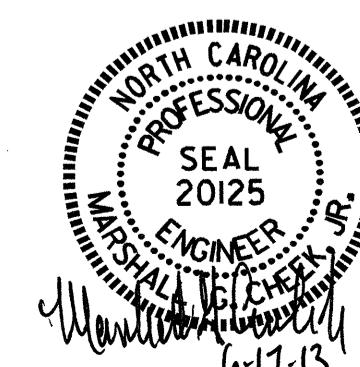
SHEET 1 OF 5

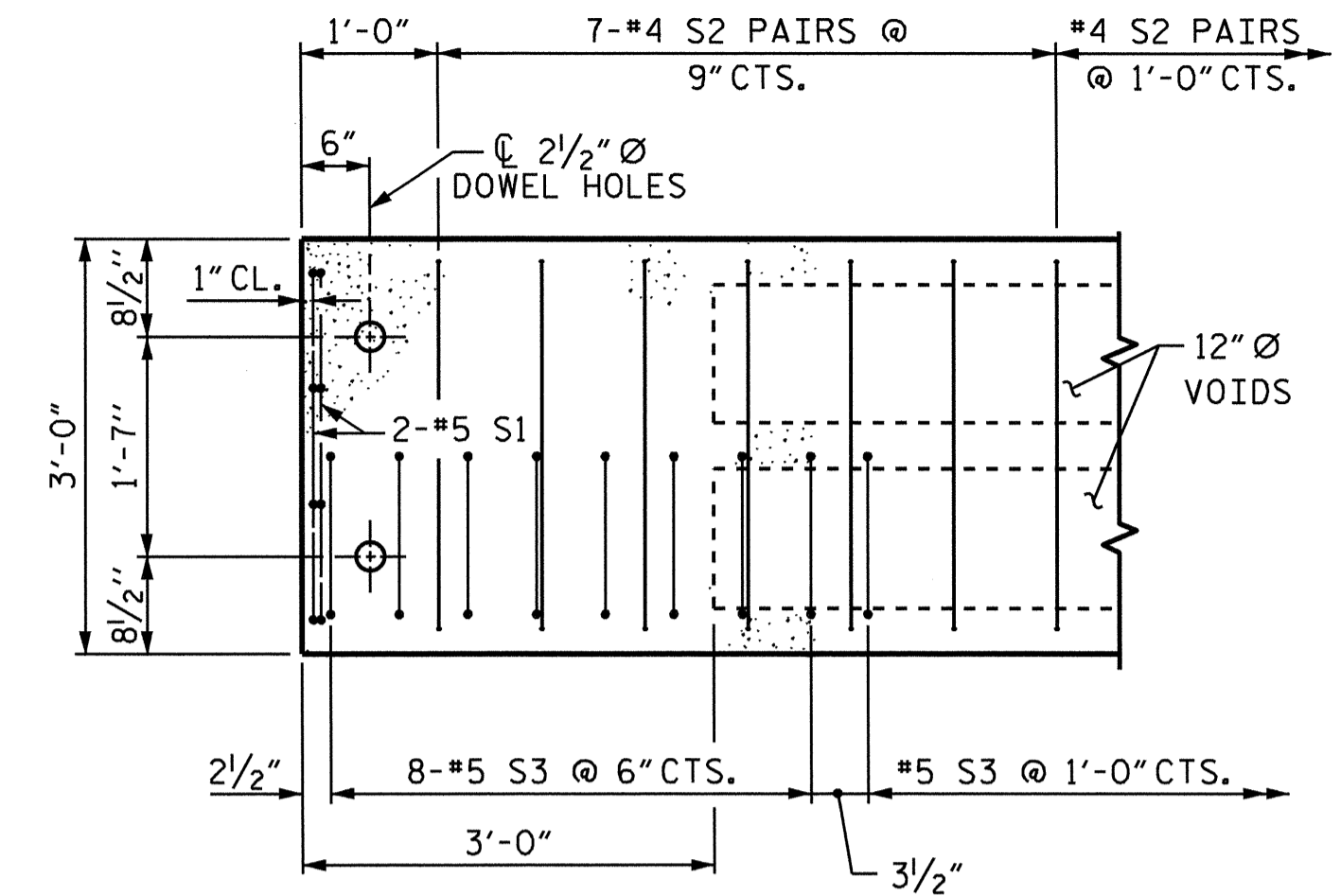
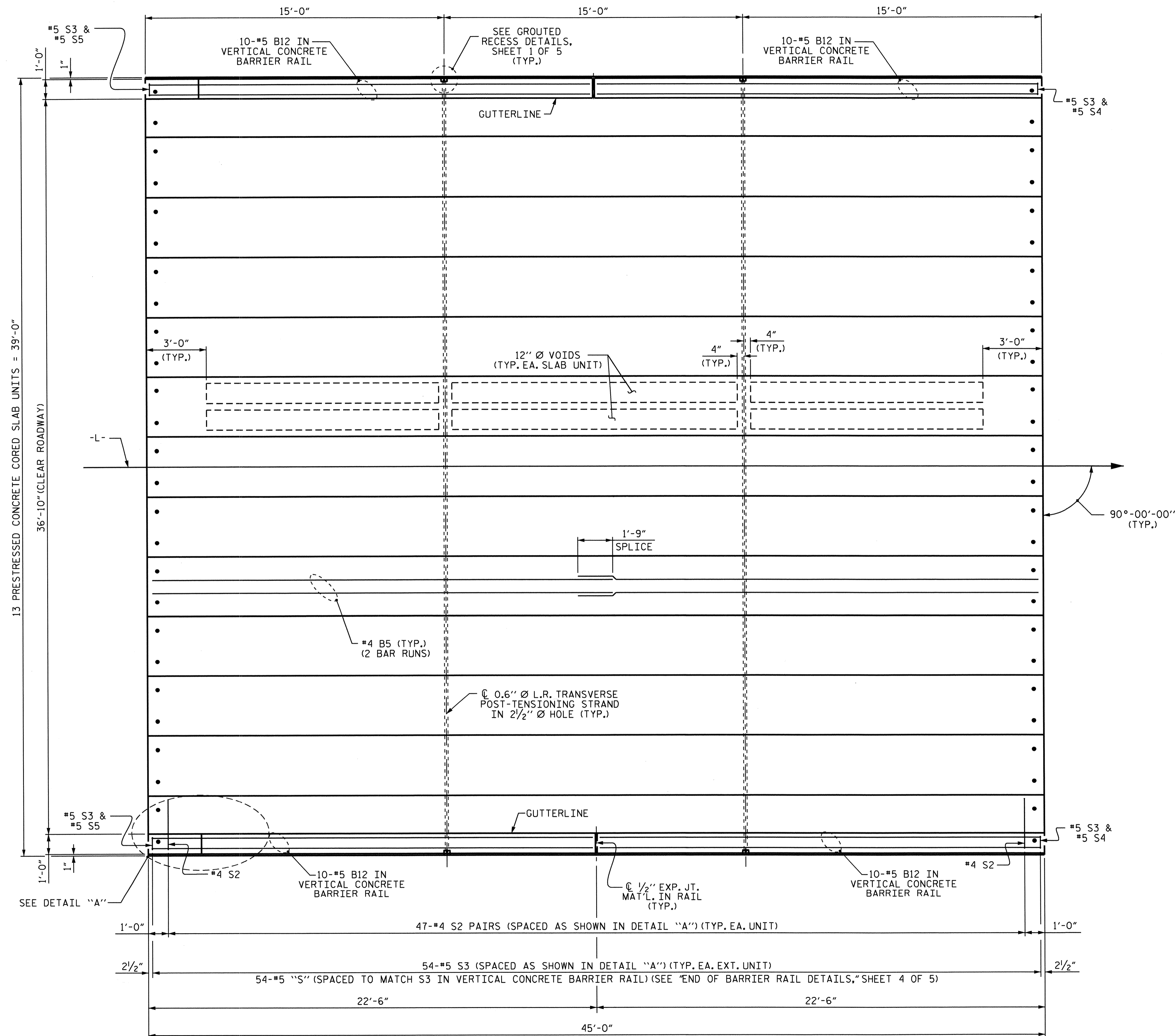
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5	
1			3			TOTAL SHEETS 20	
2			4				

DRAWN BY: M.A. LEBLANC DATE: 3/13
CHECKED BY: J.R. MCROY DATE: 3/13
DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13





DETAIL "A"

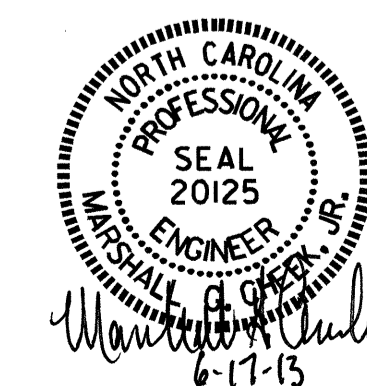
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. B-4734
 CLAY COUNTY
 STATION: 12+75.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 45' UNIT
 36'-10" CLEAR ROADWAY
 90° SKEW



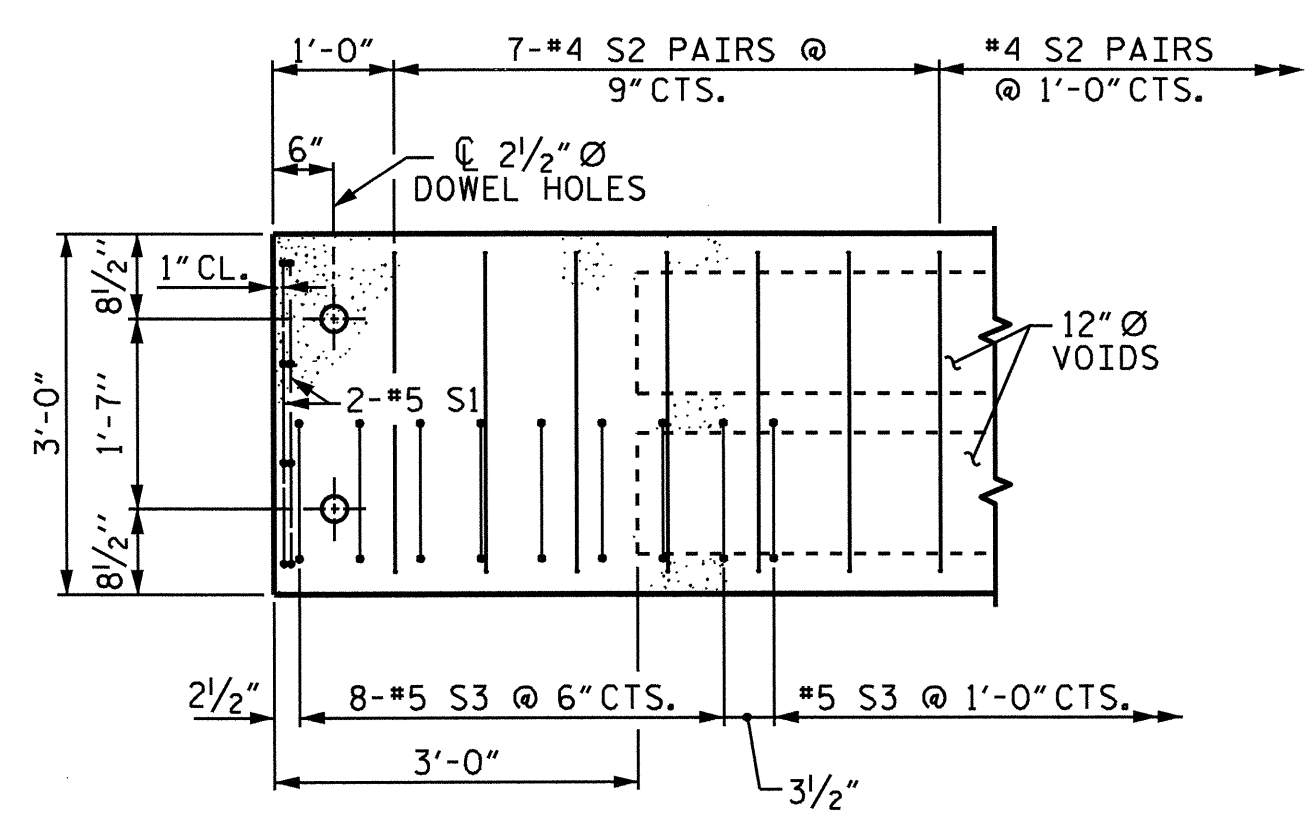
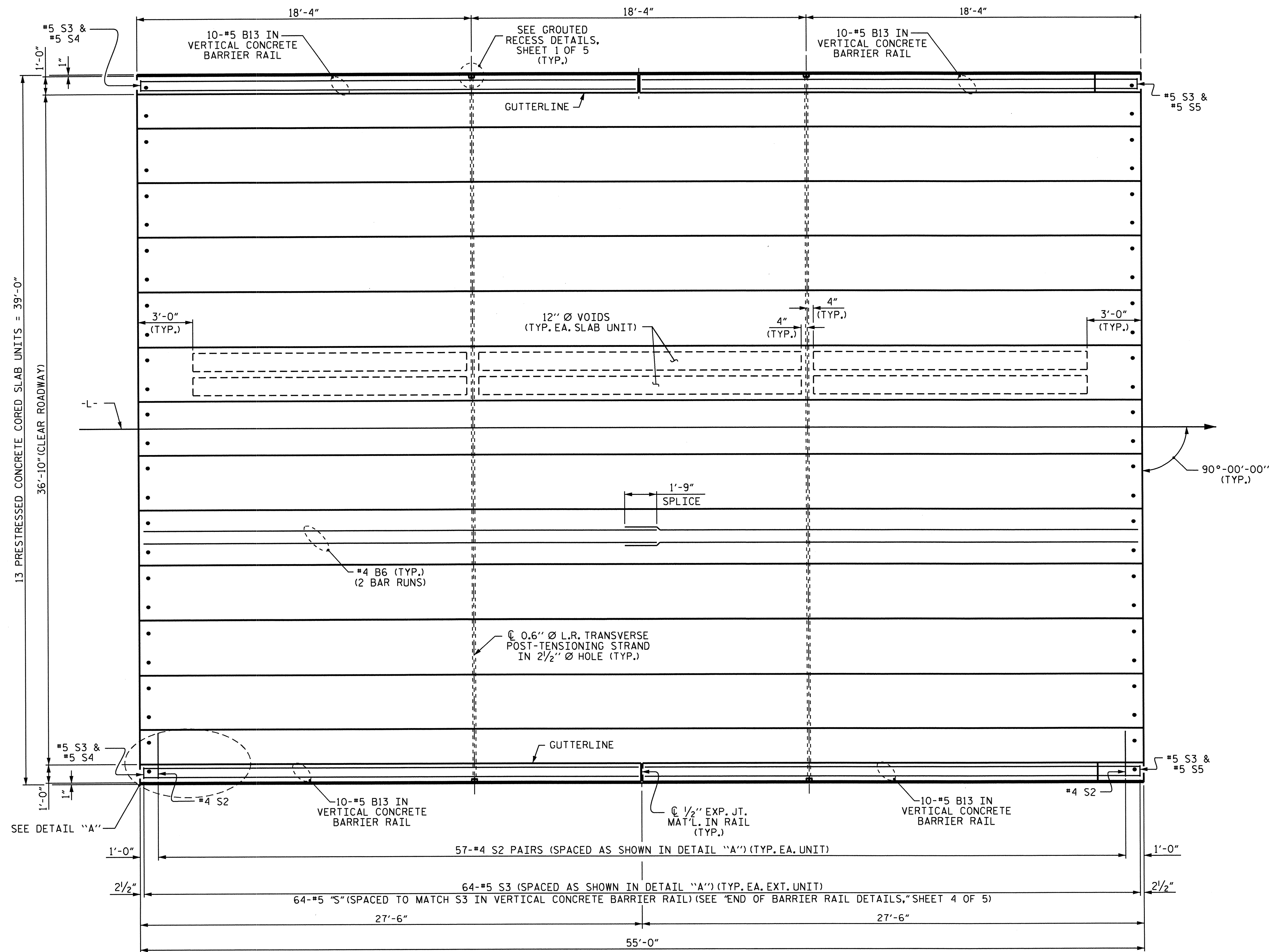
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			20

ASSEMBLED BY: M.A. LEBLANC	DATE: 3/13
CHECKED BY: J.R. MCROY	DATE: 3/13
DRAWN BY: DGE 6/09	REV. 12/5/11 MAA/AAC
CHECKED BY: BCH 6/09	

13-MAY-2013 10:41
 M:\Structures\Final Plans\B-4734.SD_CS.dgn
 mlebanc

PLAN OF UNIT

STD. NO. 21" PCS_39_90S_45L



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

PLAN OF UNIT

PROJECT NO. B-4734
CLAY COUNTY
 STATION: 12+75.00 -L-
 SHEET 3 OF 5

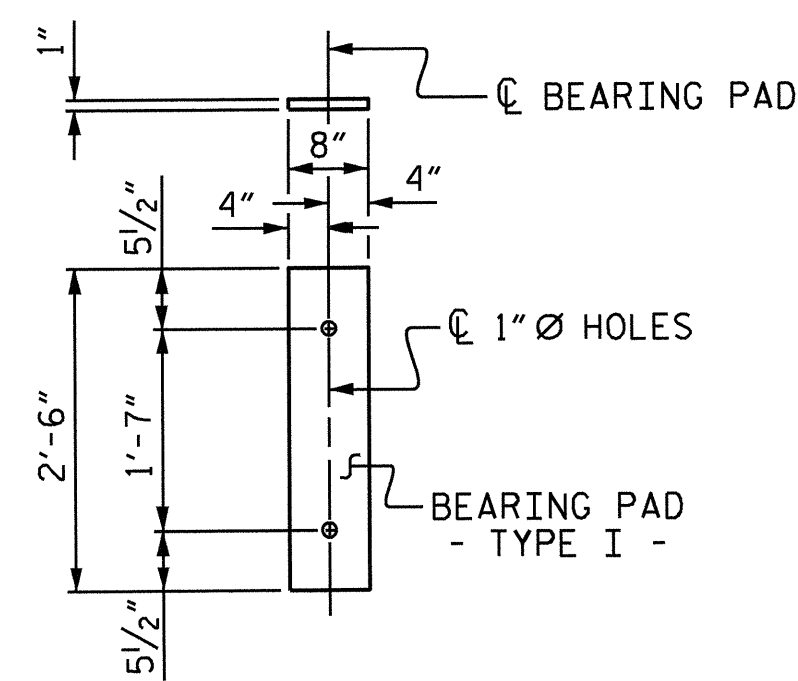
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 55' UNIT
 36'-10" CLEAR ROADWAY
 90° SKEW

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 20
2			4			



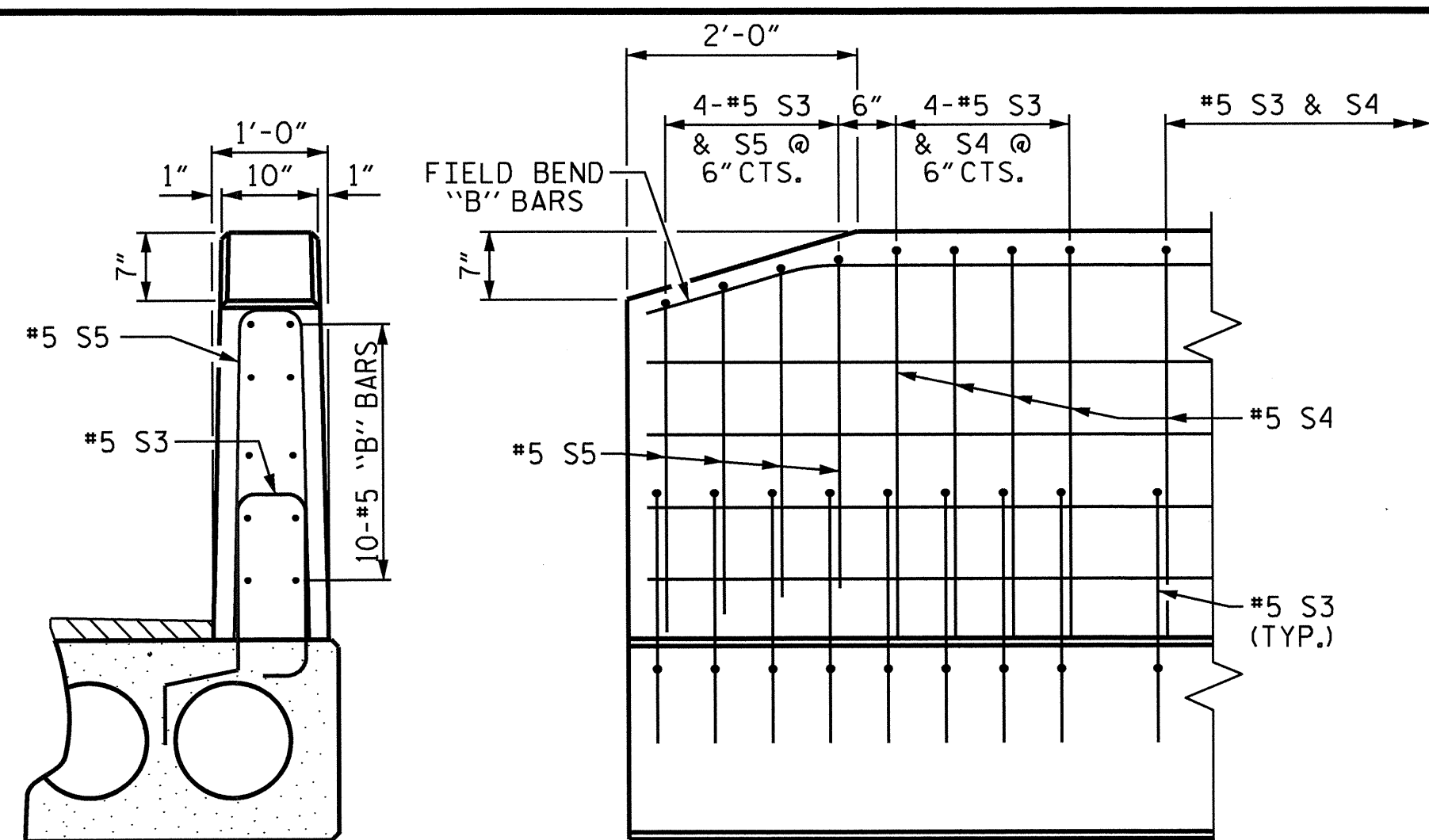
ASSEMBLED BY : M.A. LEBLANC DATE : 3/13
 CHECKED BY : J.R. MCROY DATE : 3/13
 DRAWN BY : DCE 6/09 REV. 12/5/11 MAA/AAC
 CHECKED BY: BCH 6/09



FIXED END
(TYPE I - 52 REQ'D)

ELASTOMERIC BEARING DETAILS

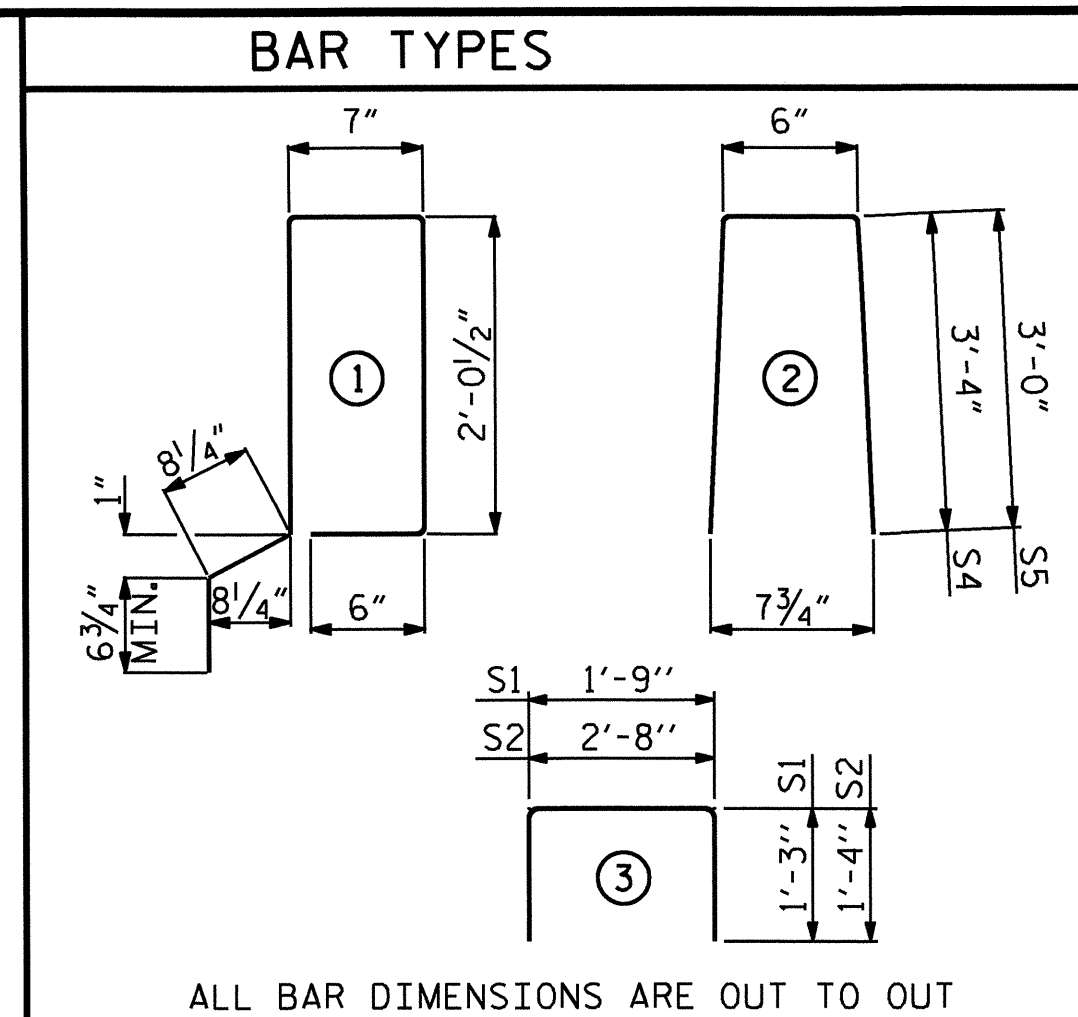
ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.



END VIEW

SIDE VIEW

END OF BARRIER RAIL DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT

DEAD LOAD DEFLECTION AND CAMBER	
45' CORED SLAB UNIT	3'-0" x 1'-9" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 5/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/4" ↓
FINAL CAMBER	1 3/8" ↑
55' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 3/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	9/16" ↓
FINAL CAMBER	2 3/16" ↑

** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
45' UNIT			
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	11	45'-0"	495'-0"
TOTAL	13		585'-0"
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	11	55'-0"	605'-0"
TOTAL	13		715'-0"

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
45' UNIT	4000
55' UNIT	5000

BILL OF MATERIAL FOR ONE 45' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B5	4	#4	STR	23'-3"	62	23'-3"	62
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	94	#4	3	5'-4"	335	5'-4"	335
* S3	54	#5	1	6'-5"	361		
REINFORCING STEEL				LBS.	432		432
* EPOXY COATED REINFORCING STEEL				LBS.	361		
5300 P.S.I. CONCRETE				CU. YDS.	6.5		6.5
0.6" Ø L.R. STRANDS				No.	15		15

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B6	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406
* S3	64	#5	1	6'-5"	428		
REINFORCING STEEL				LBS.	516		516
* EPOXY COATED REINFORCING STEEL				LBS.	428		
6300 P.S.I. CONCRETE				CU. YDS.	7.8		7.8
0.6" Ø L.R. STRANDS				No.	20		20

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL							
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT	
45' UNIT							
* B12	40	40	#5	STR	22'-1"	921	
* S4	100	100	#5	2	7'-2"	747	
* S5	8	8	#5	2	6'-6"	54	
* EPOXY COATED REINFORCING STEEL						LBS.	1722
CLASS AA CONCRETE						CU. YDS.	12.0
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT.	90.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL							
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT	
55' UNIT							
* B13	40	40	#5	STR	27'-1"	1130	
* S4	120	120	#5	2	7'-2"	897	
* S5	8	8	#5	2	6'-6"	54	
* EPOXY COATED REINFORCING STEEL						LBS.	2081
CLASS AA CONCRETE						CU. YDS.	14.7
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT.	110.25

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 RODS 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 VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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.

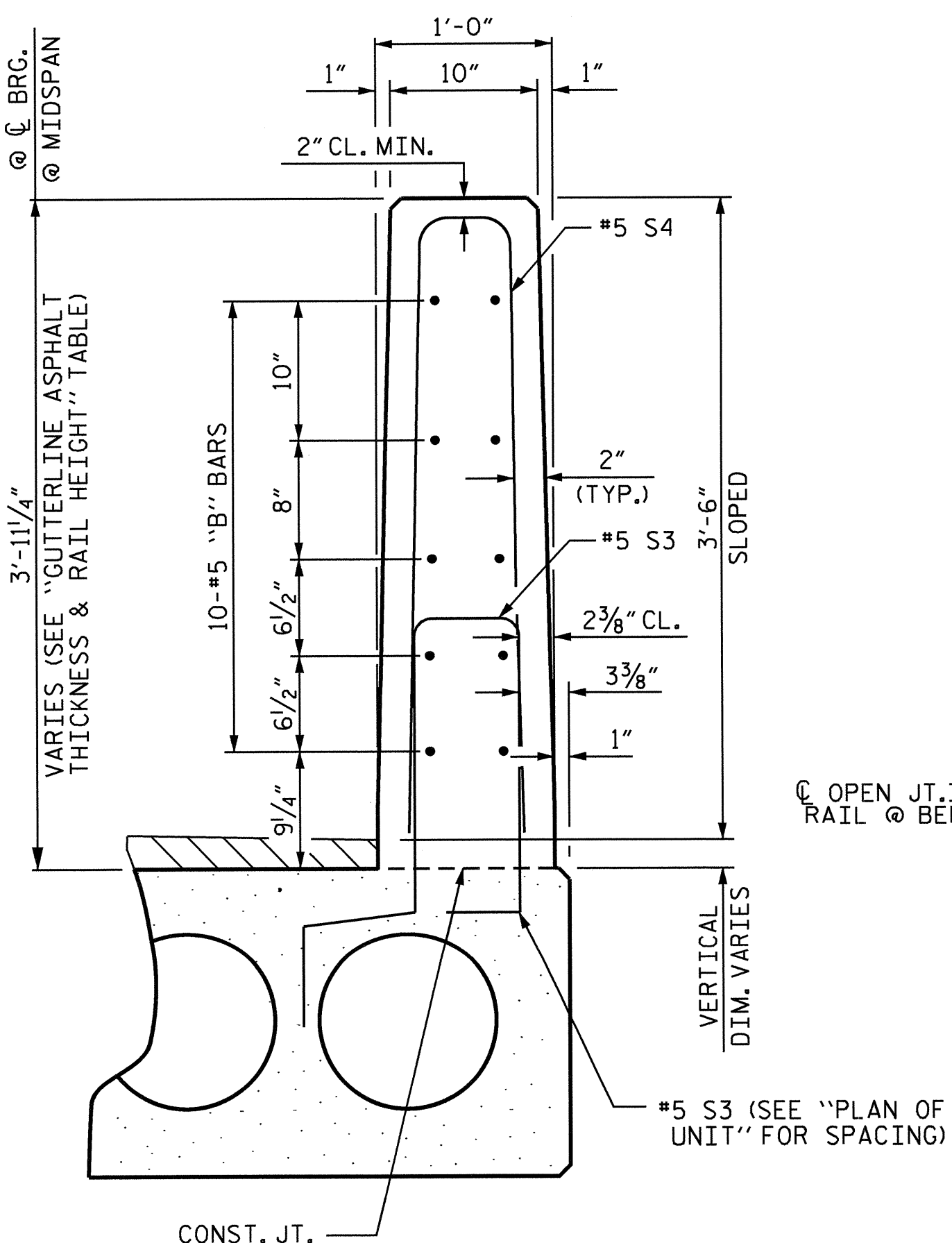
THE 3/4" Ø BOLTS, WASHERS AND CONCRETE INSERTS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

THE BOLTS, WASHERS AND CONCRETE INSERTS ARE PROVIDED AS AN OPTION FOR THE CONTRACTOR TO ATTACH MATERIALS TO PREVENT DEBRIS FROM DROPPING INTO THE WATER DURING CONSTRUCTION OF THE VERTICAL CONCRETE BARRIER RAILS.

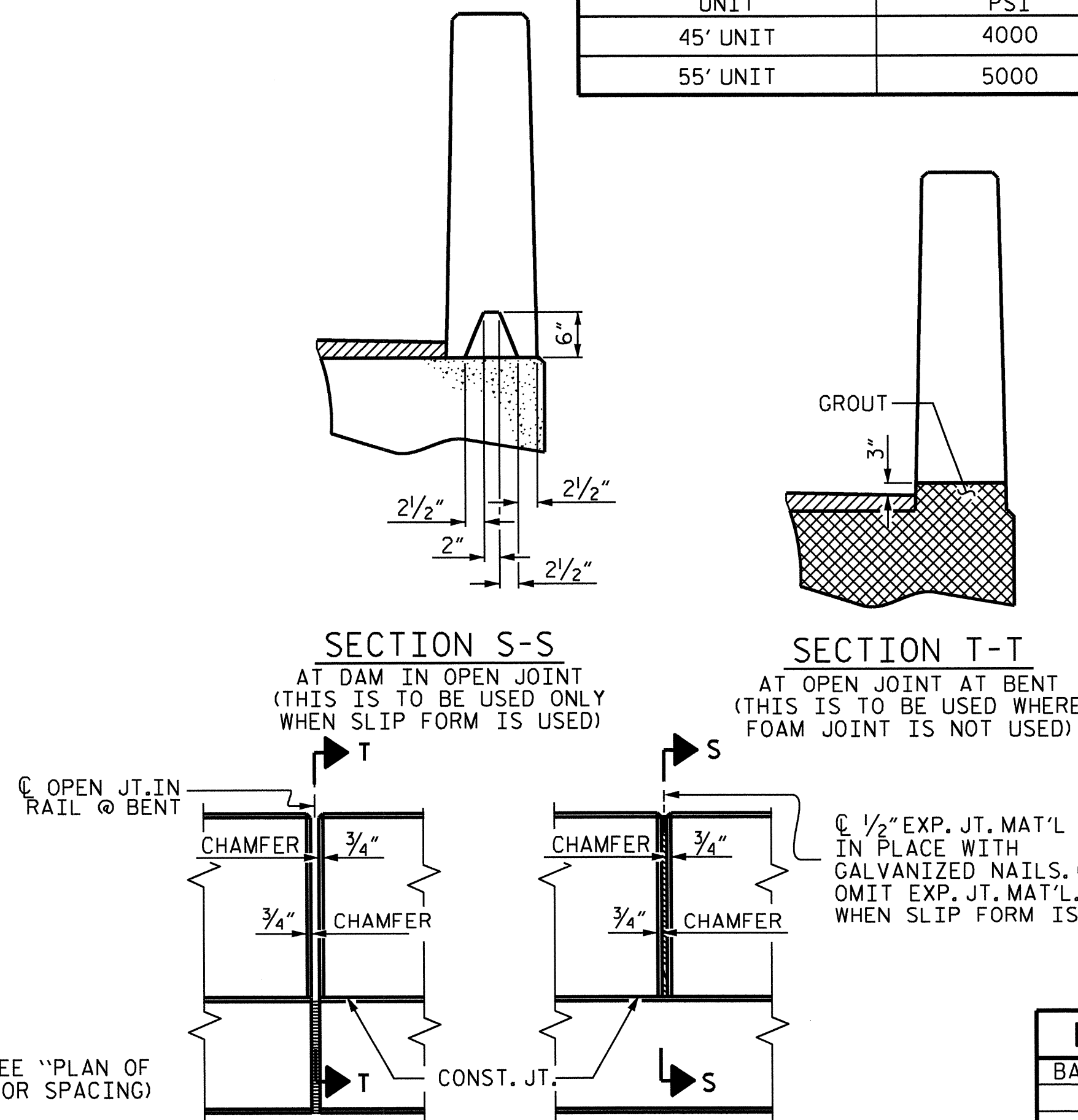
UPON COMPLETION OF THE BRIDGE CONSTRUCTION, THE 3/4" Ø BOLTS AND WASHERS SHALL BE REMOVED AND THE CONCRETE INSERTS SHALL BE GROUTED.

THE COST OF THE 3/4" Ø BOLTS, WASHERS, AND INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



VERTICAL CONCRETE BARRIER RAIL SECTION



ELEVATION AT EXPANSION JOINTS

GROOVING BRIDGE FLOORS	
APPROACH SLABS	810 SQ. FT.
CONCRETE WEARING SURFACE	3388 SQ. FT.
TOTAL	4198 SQ. FT.

PROJECT NO. B-4734
CLAY COUNTY
STATION: 12+75.00 -L-

SHEET 4 OF 5

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

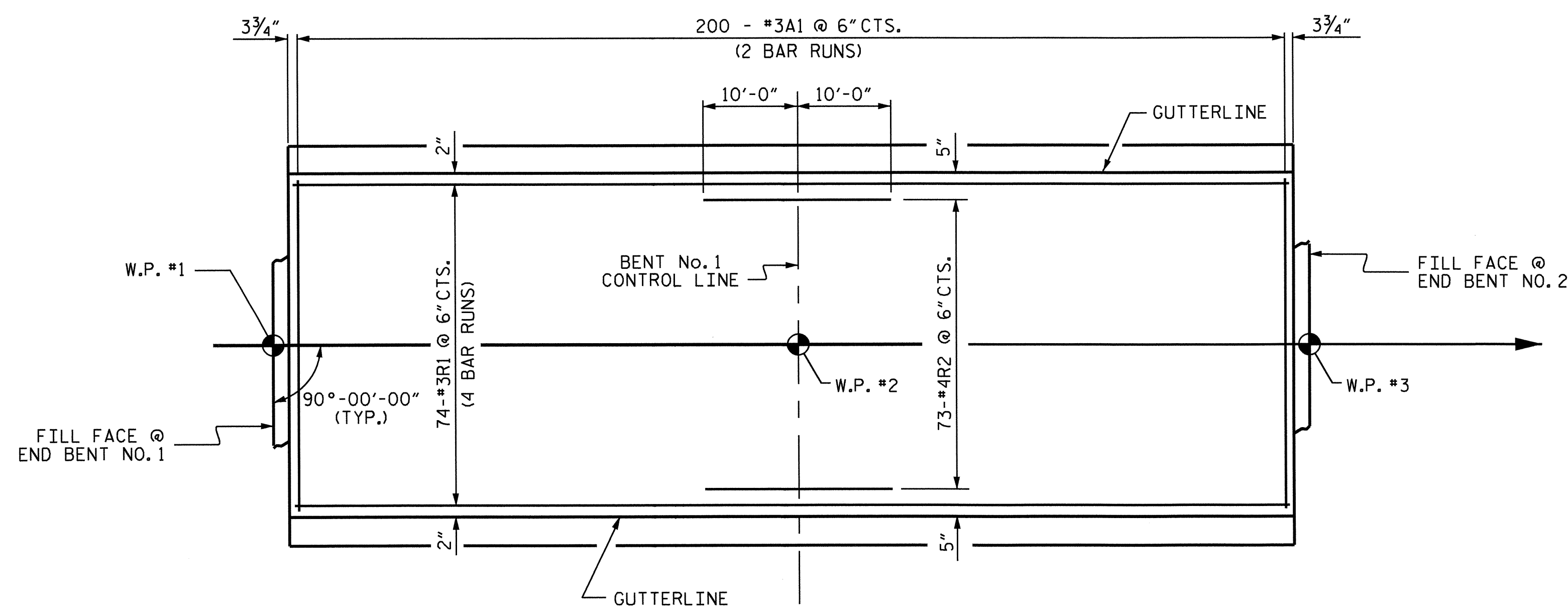


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS 20
2			4			

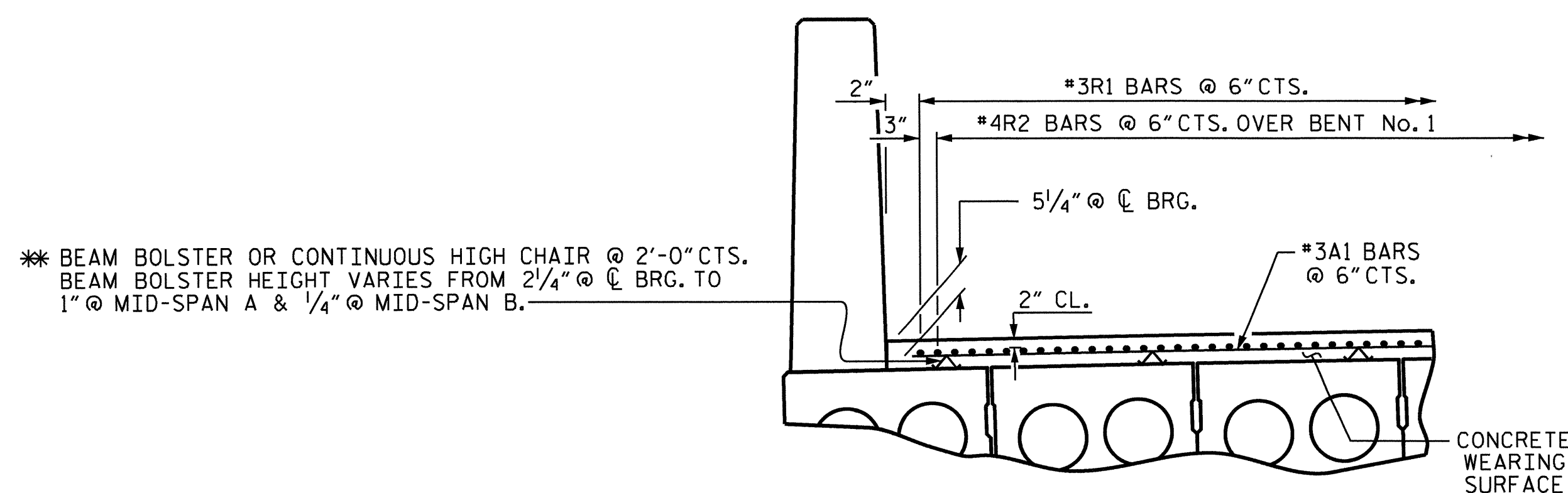
DRAWN BY: M.A. LEBLANC DATE: 3/13
CHECKED BY: J.R. MCROY DATE: 3/13
DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13

NOTES

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE #3 & #4 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.



PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



REINFORCING FOR CONCRETE WEARING SURFACE

** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	400	#3	STR	18'-11"	2845
*R1	296	#3	STR	25'-11"	2884
*R2	73	#4	STR	20'-0"	975
* EPOXY COATED REINFORCING STEEL				LBS.	6704
CONCRETE WEARING SURFACE				SQ. FT.	3688

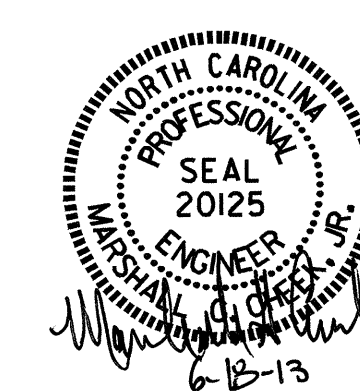
SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1'-3"

PROJECT NO. B-4734
 CLAY COUNTY
 STATION: 12+75.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 1'-9"
 PRESTRESSED
 CONCRETE CORED
 SLAB UNIT



DRAWN BY : M.A. LEBLANC DATE : 3/13
 CHECKED BY : J.R. MCROY DATE : 3/13
 DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE : 5/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			20

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.)

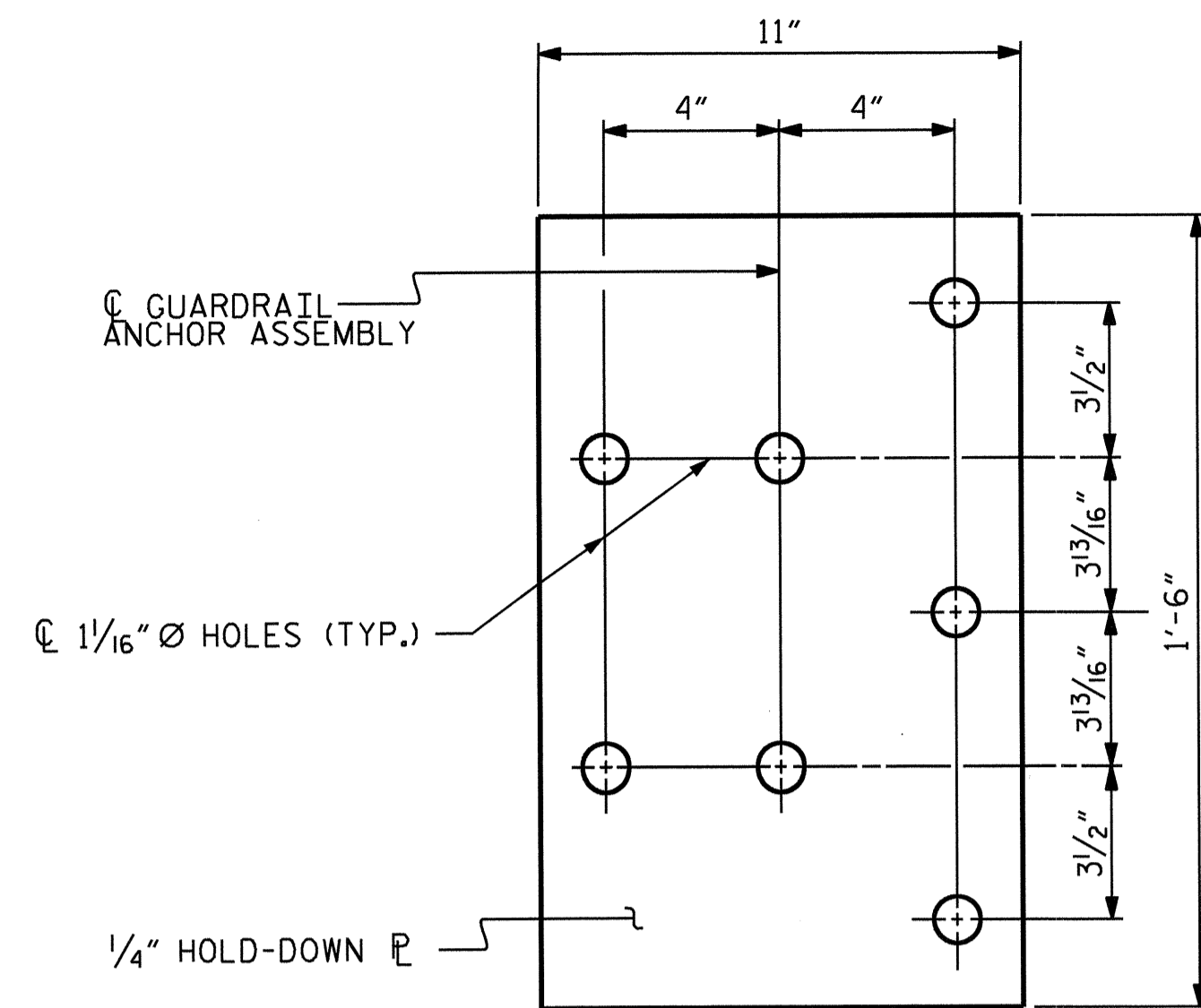
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

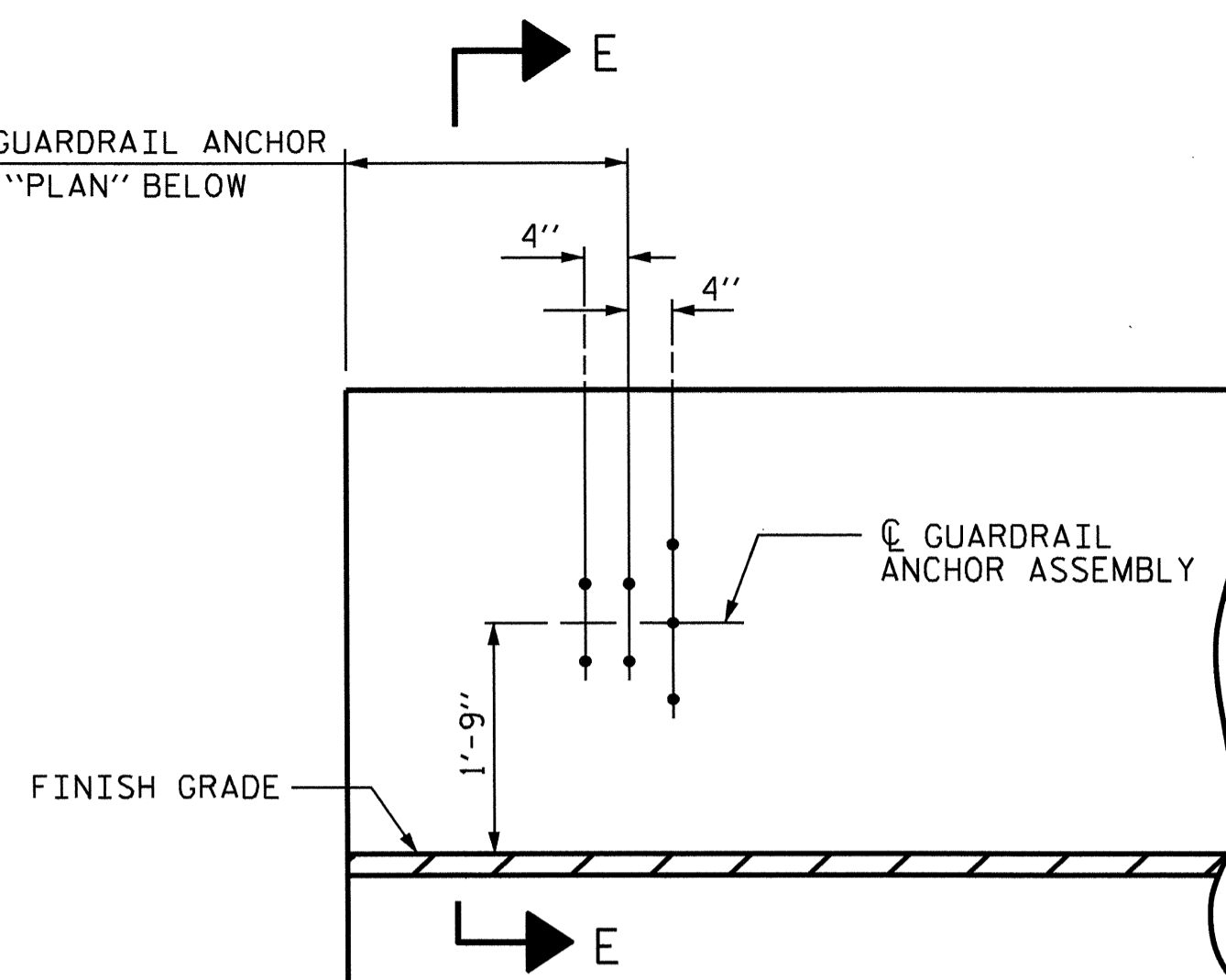
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

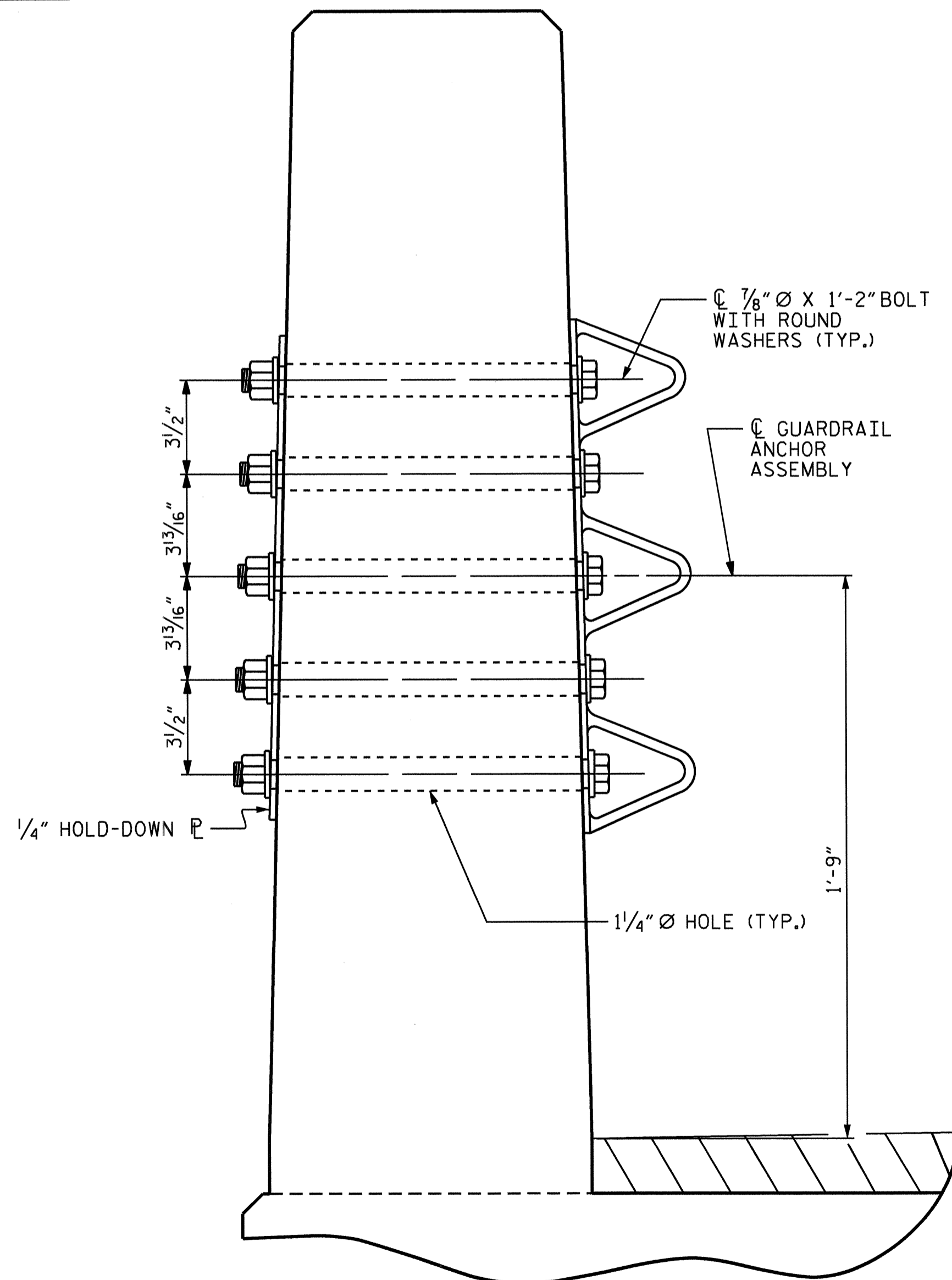


PLAN

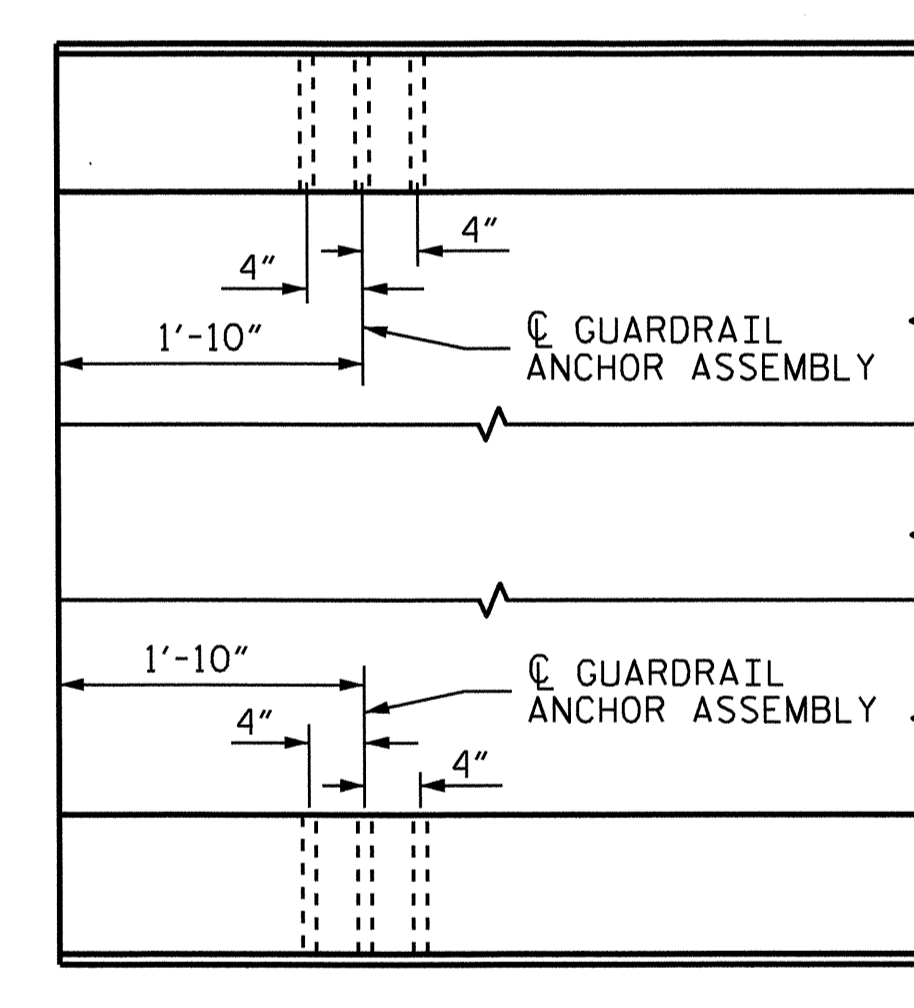
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



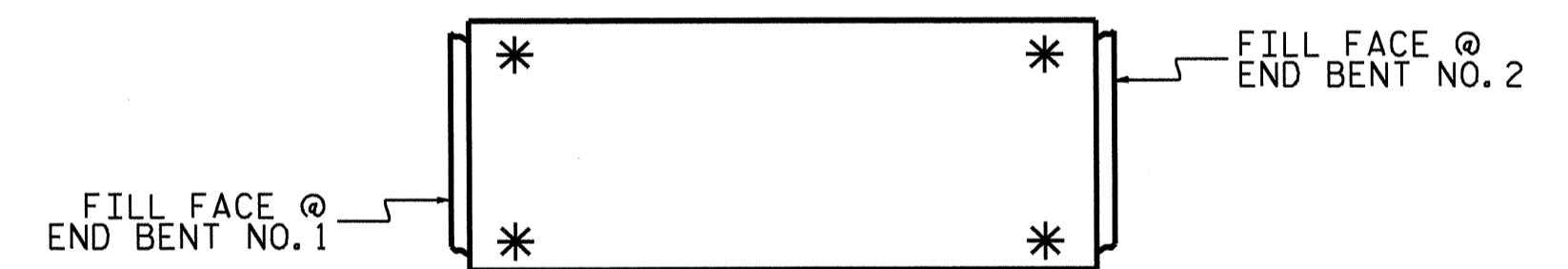
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

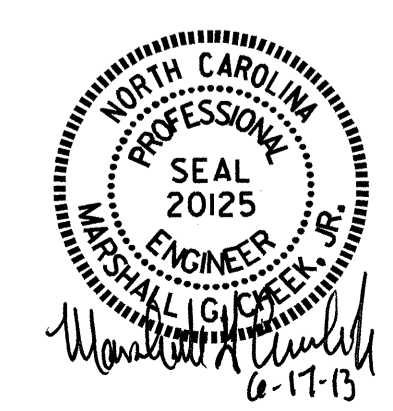


SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

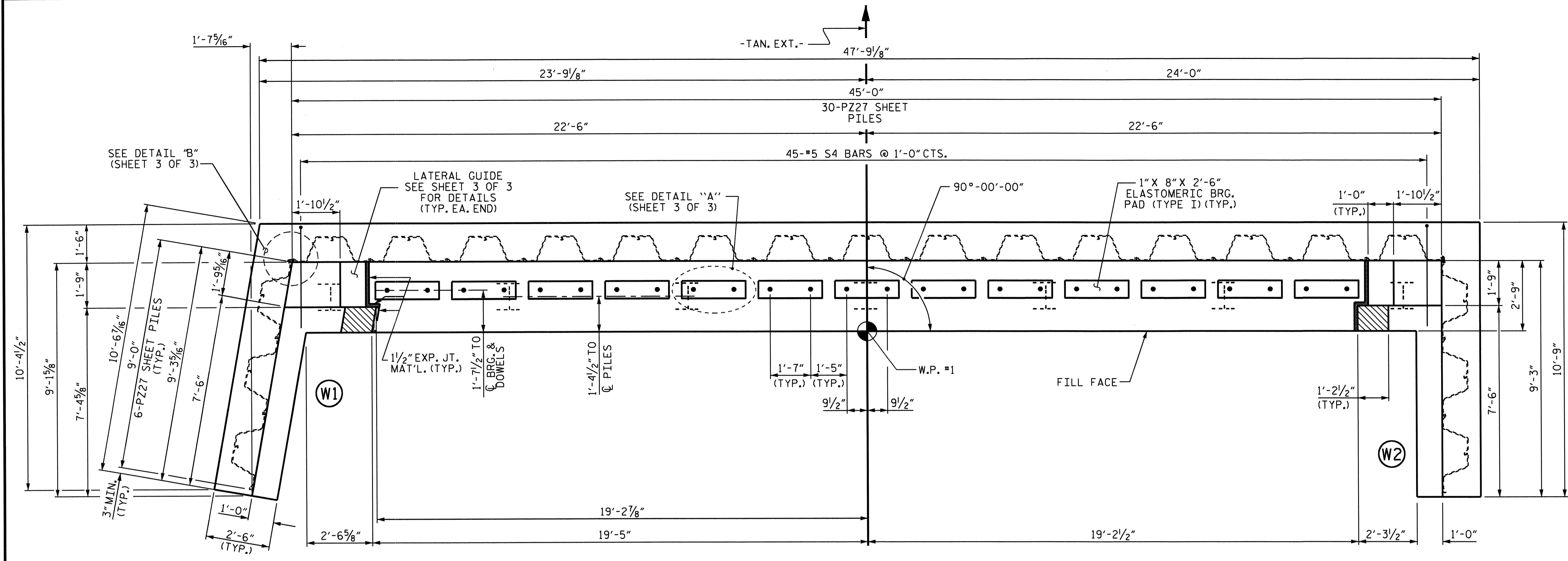
PROJECT NO. B-4734
CLAY COUNTY
 STATION: 12+75.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR VERTICAL CONCRETE
 BARRIER RAIL

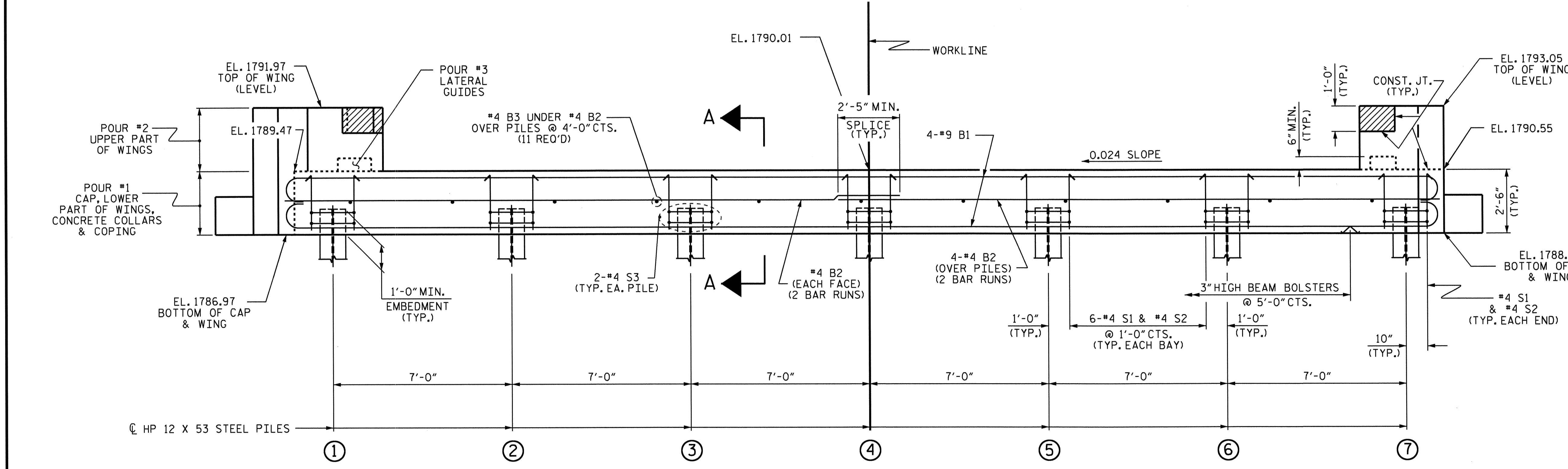


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS 20	
2			4				

ASSEMBLED BY : M.A. LEBLANC	DATE : 3/13
CHECKED BY : J.R. MCROY	DATE : 3/13
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	REV. 10/1/11
	REV. 12/5/11



PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

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 VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
- FOR WING DETAILS, SEE SHEET 2 OF 3.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.
- THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.

TOP OF PILE ELEVATIONS	
①	1788.02
②	1788.19
③	1788.36
④	1788.53
⑤	1788.69
⑥	1788.86
⑦	1789.03

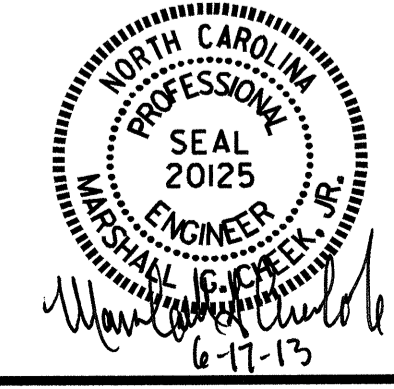
PROJECT NO. B-4734
CLAY COUNTY
 STATION: 12+75.00 -L-
 SHEET 1 OF 3

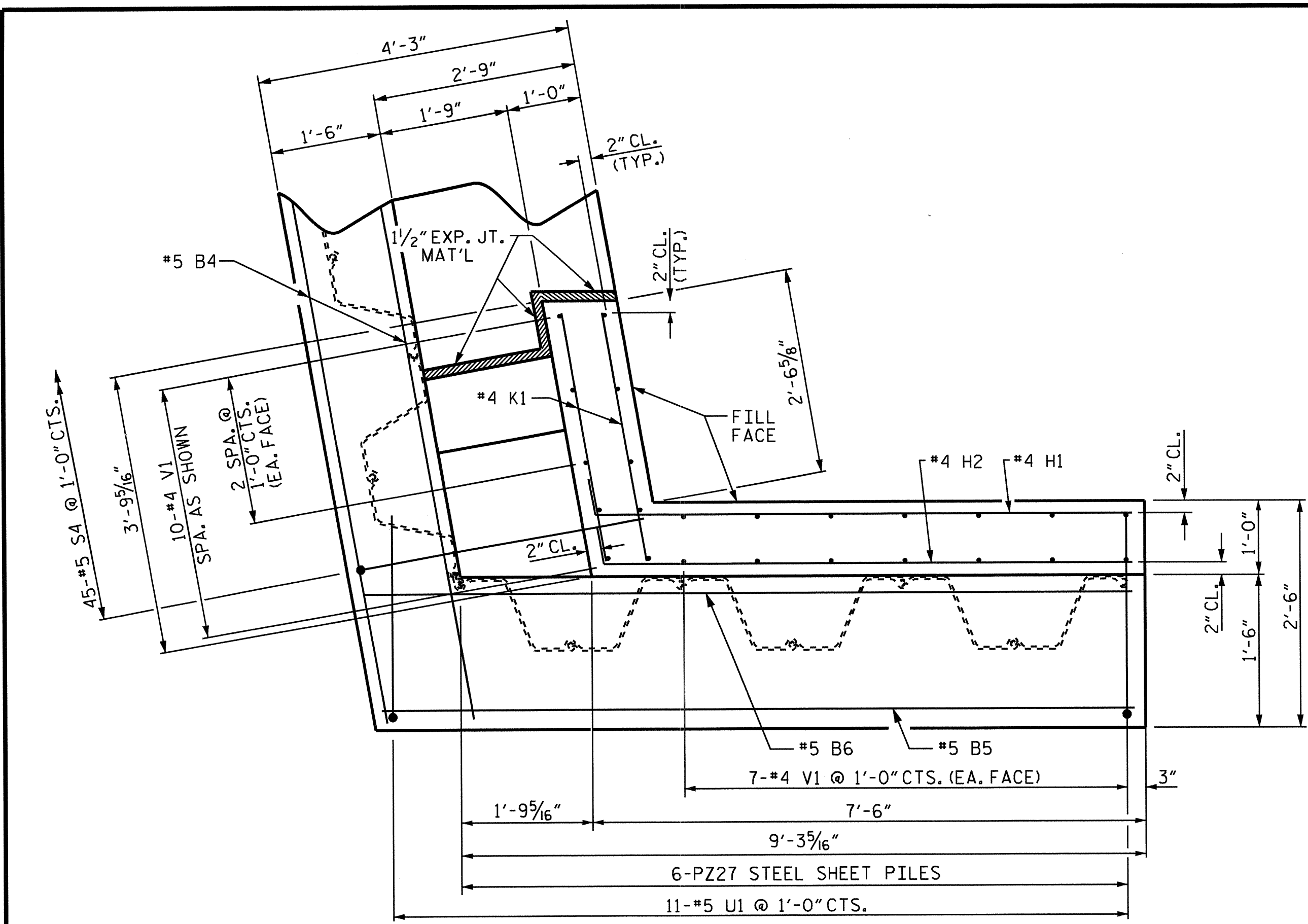
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

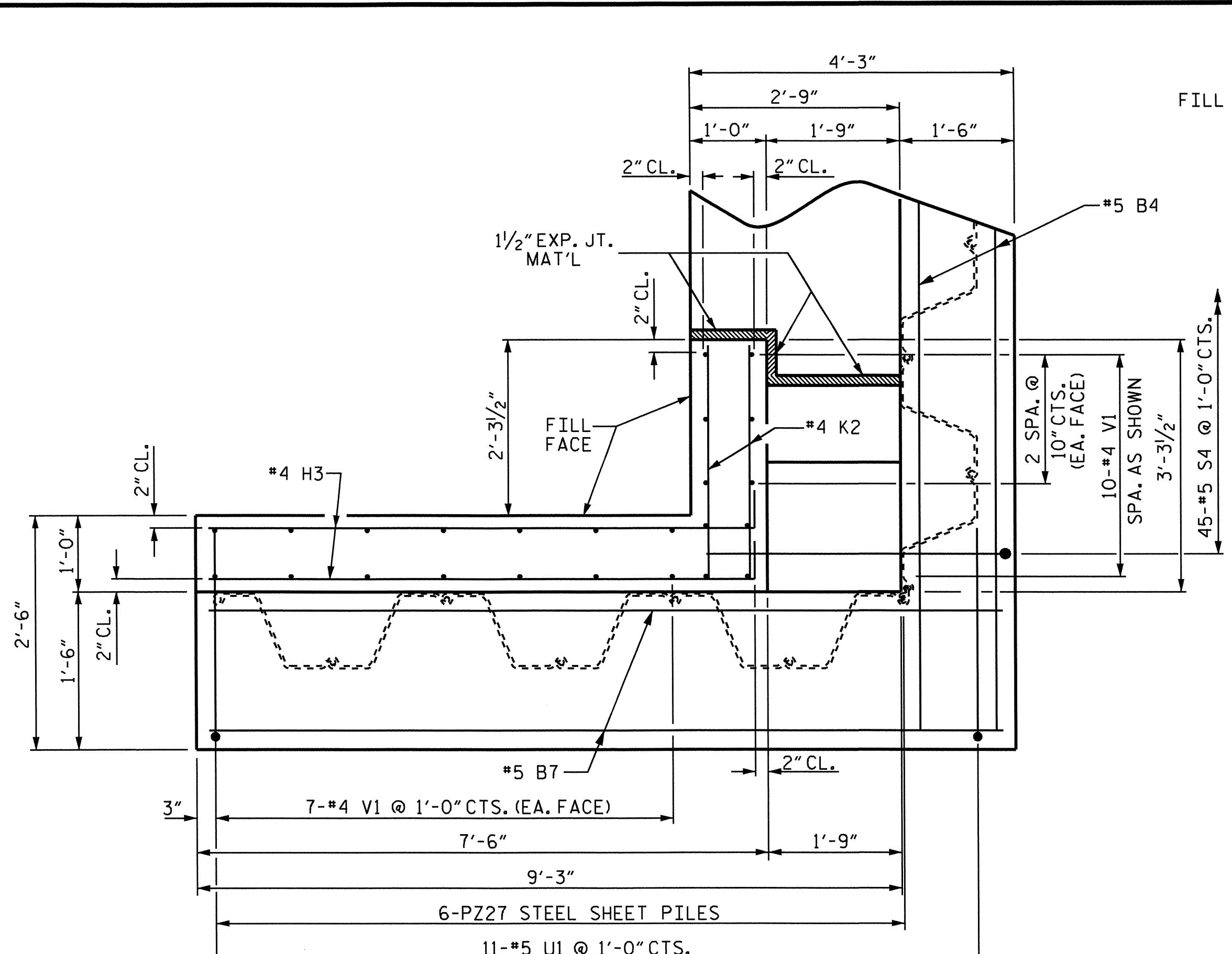
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
1			3			TOTAL SHEETS 20	
2			4				

DRAWN BY : M.A. LEBLANC DATE : 4/13
 CHECKED BY : J.R. MCROY DATE : 4/13
 DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE : 5/13

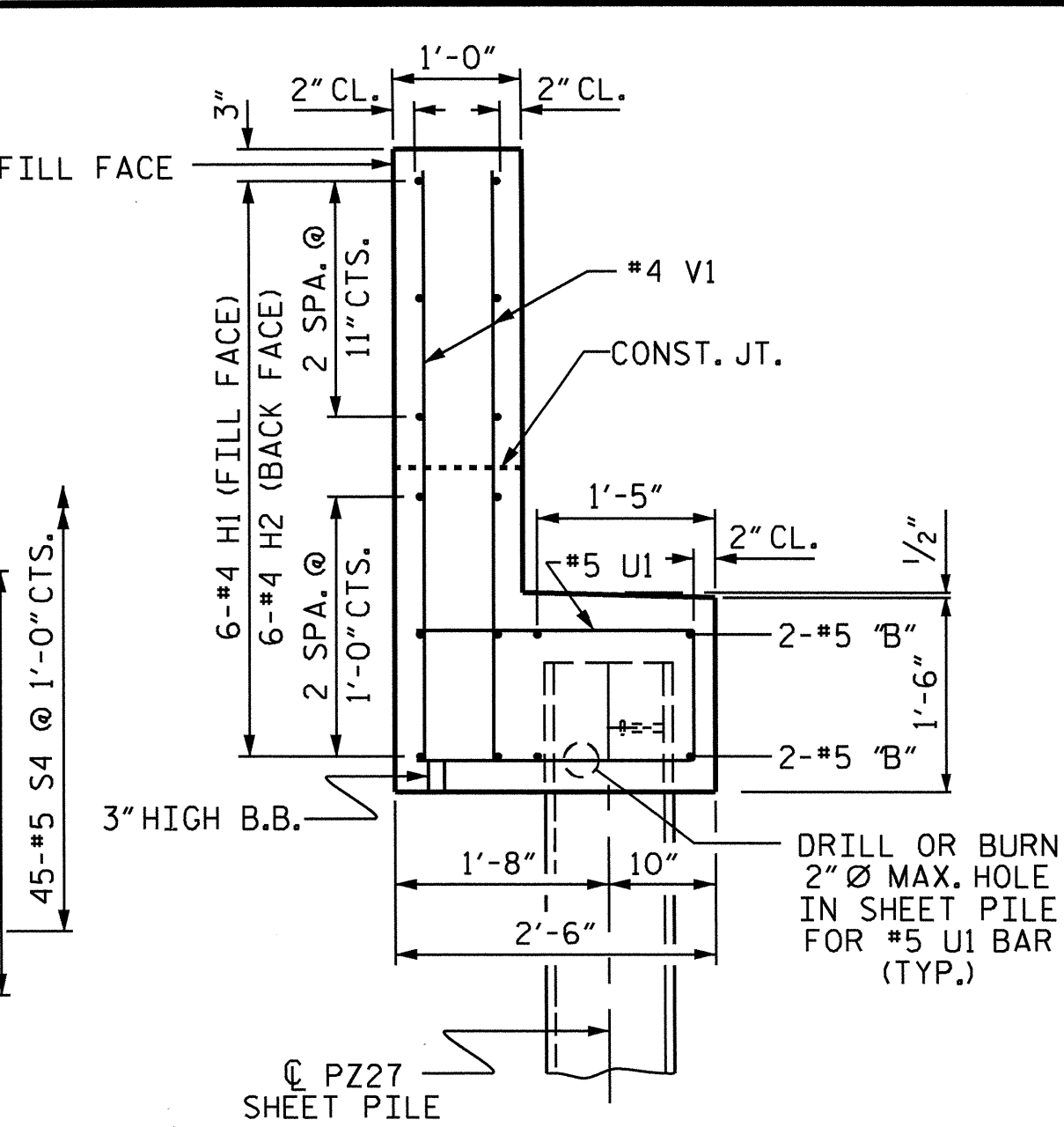




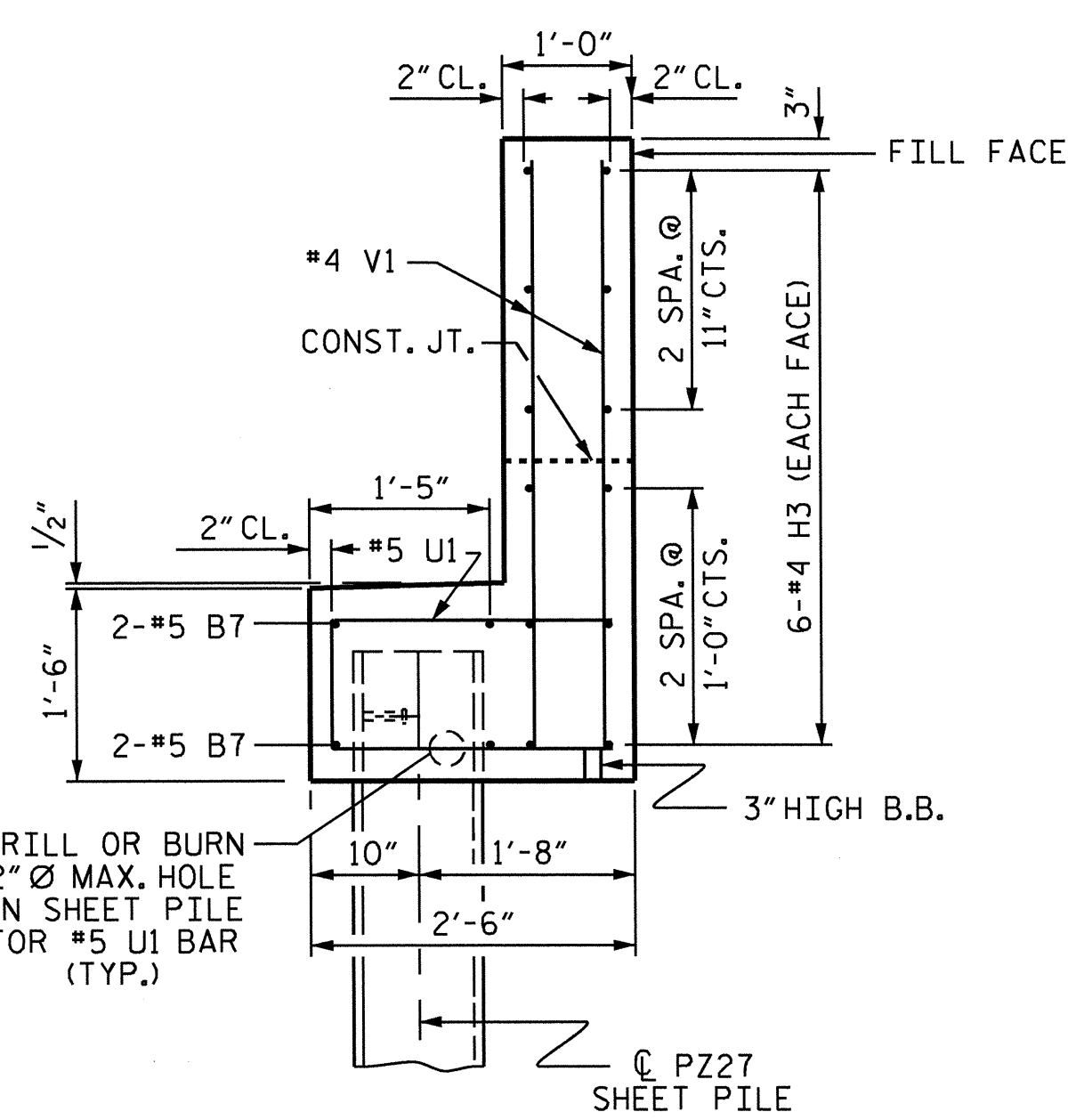
PLAN OF WING (W1)



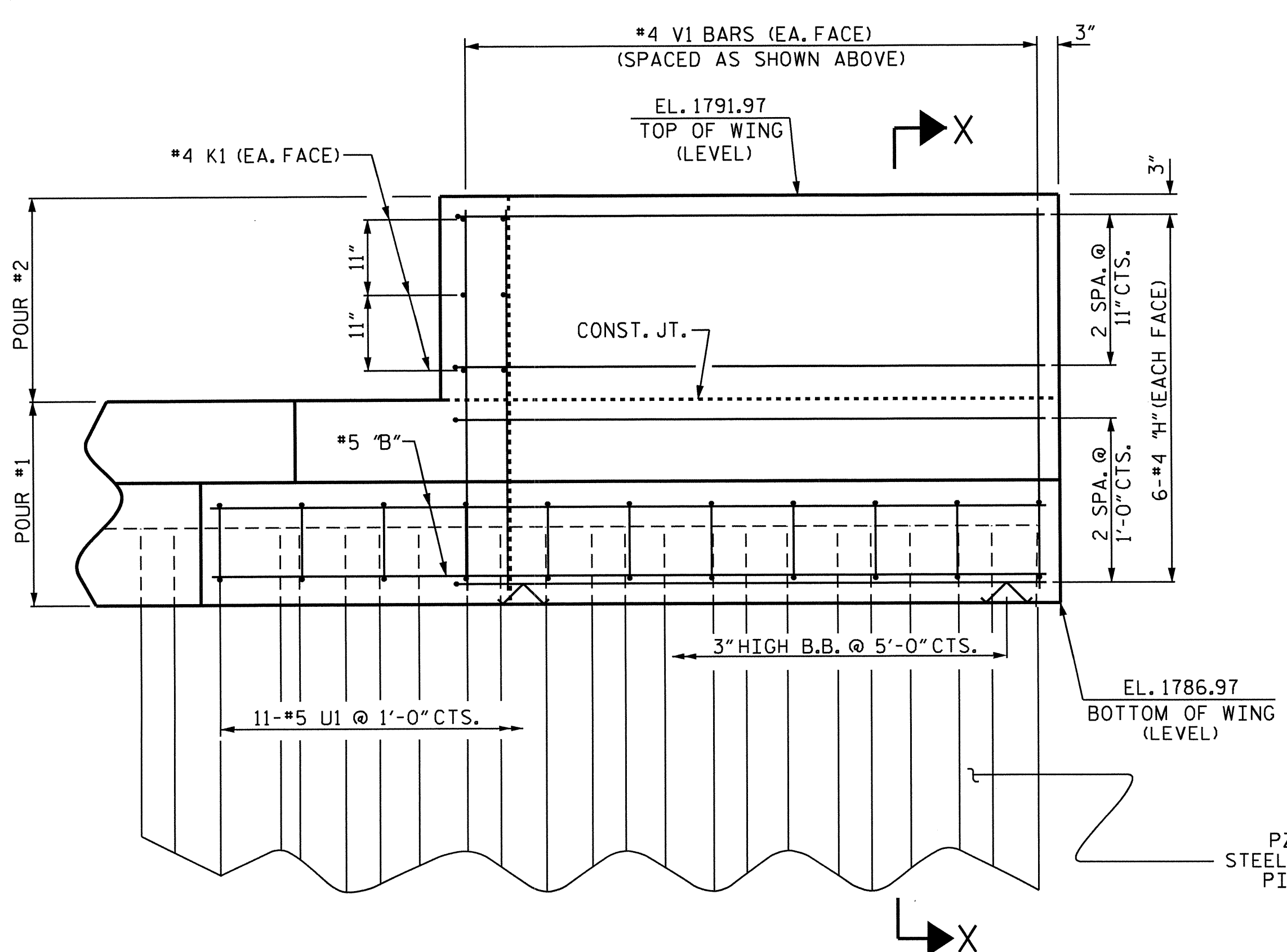
PLAN OF WING (W2)



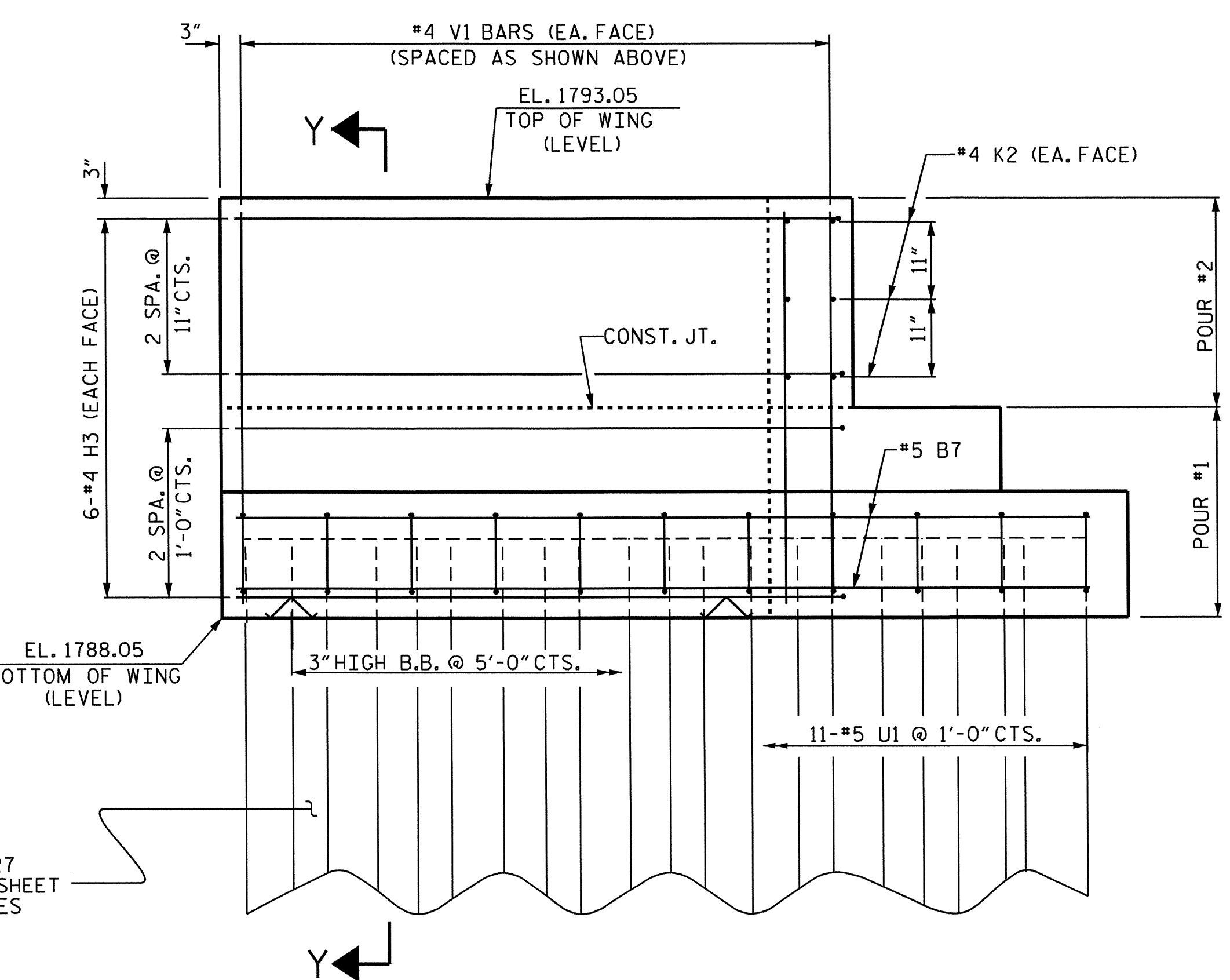
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)

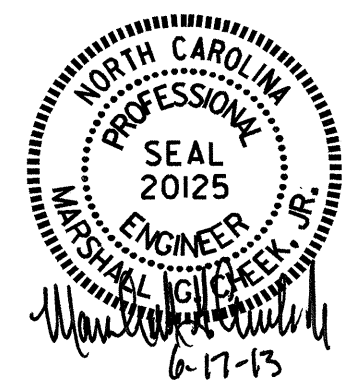


ELEVATION OF WING (W2)

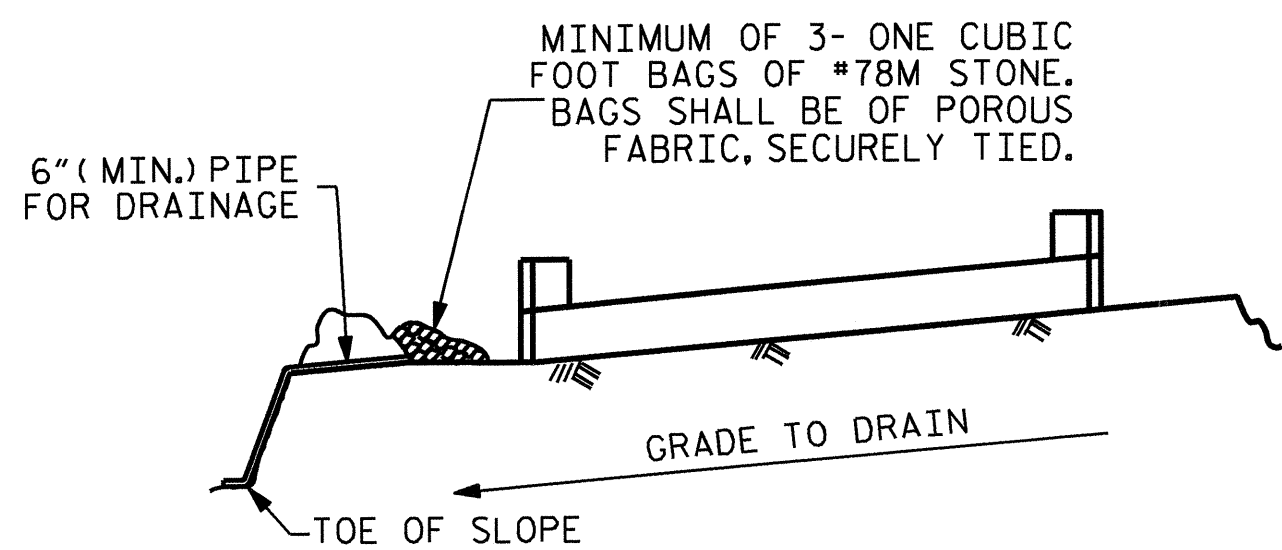
PROJECT NO. B-4734
 CLAY COUNTY
 STATION: 12+75.00 -L-

SHEET 2 OF 3

REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 20
2			4			



DRAWN BY: M.A. LEBLANC DATE: 4/13
 CHECKED BY: J.R. MCROY DATE: 4/13
 DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

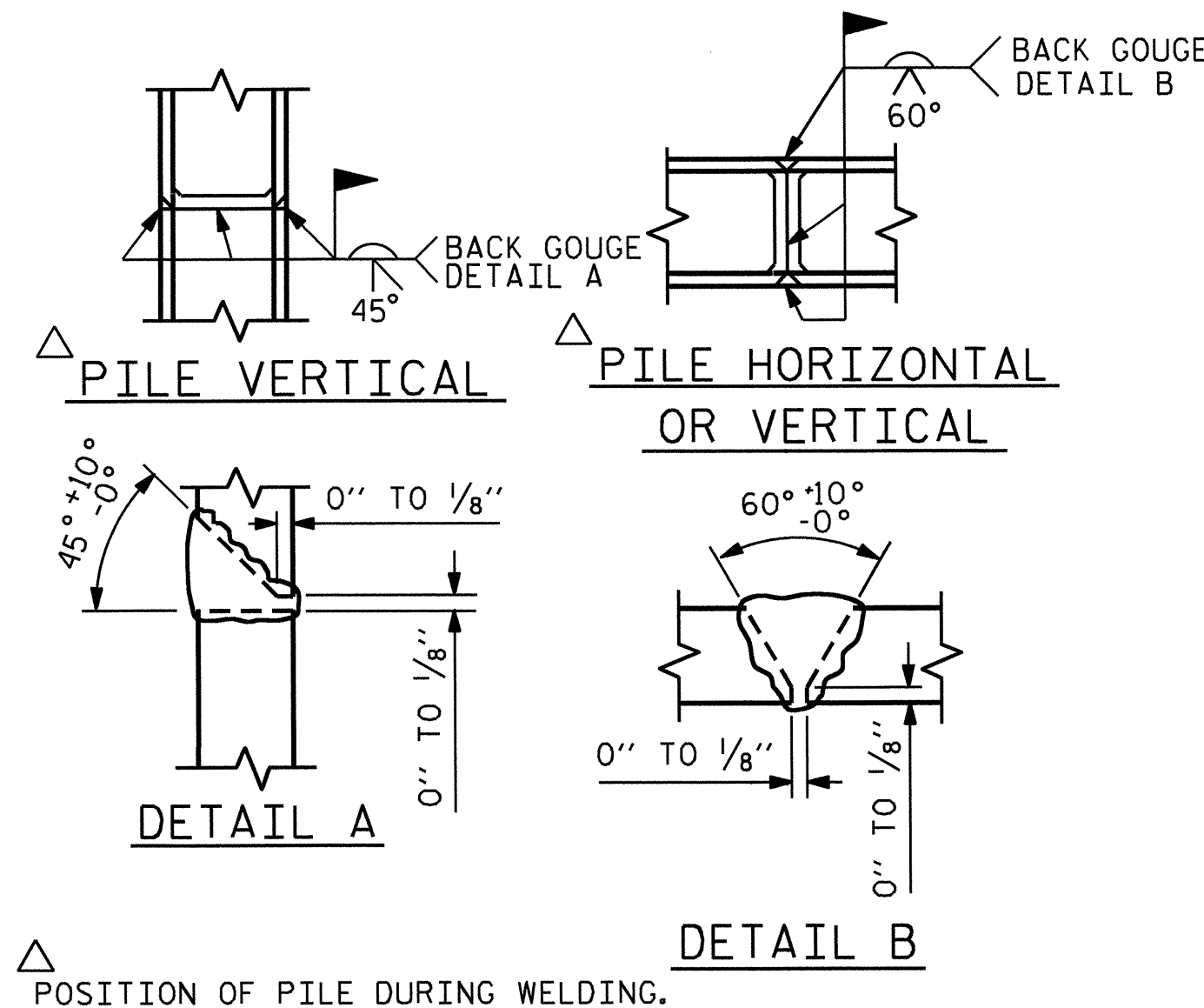
TOE OF SLOPE

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

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

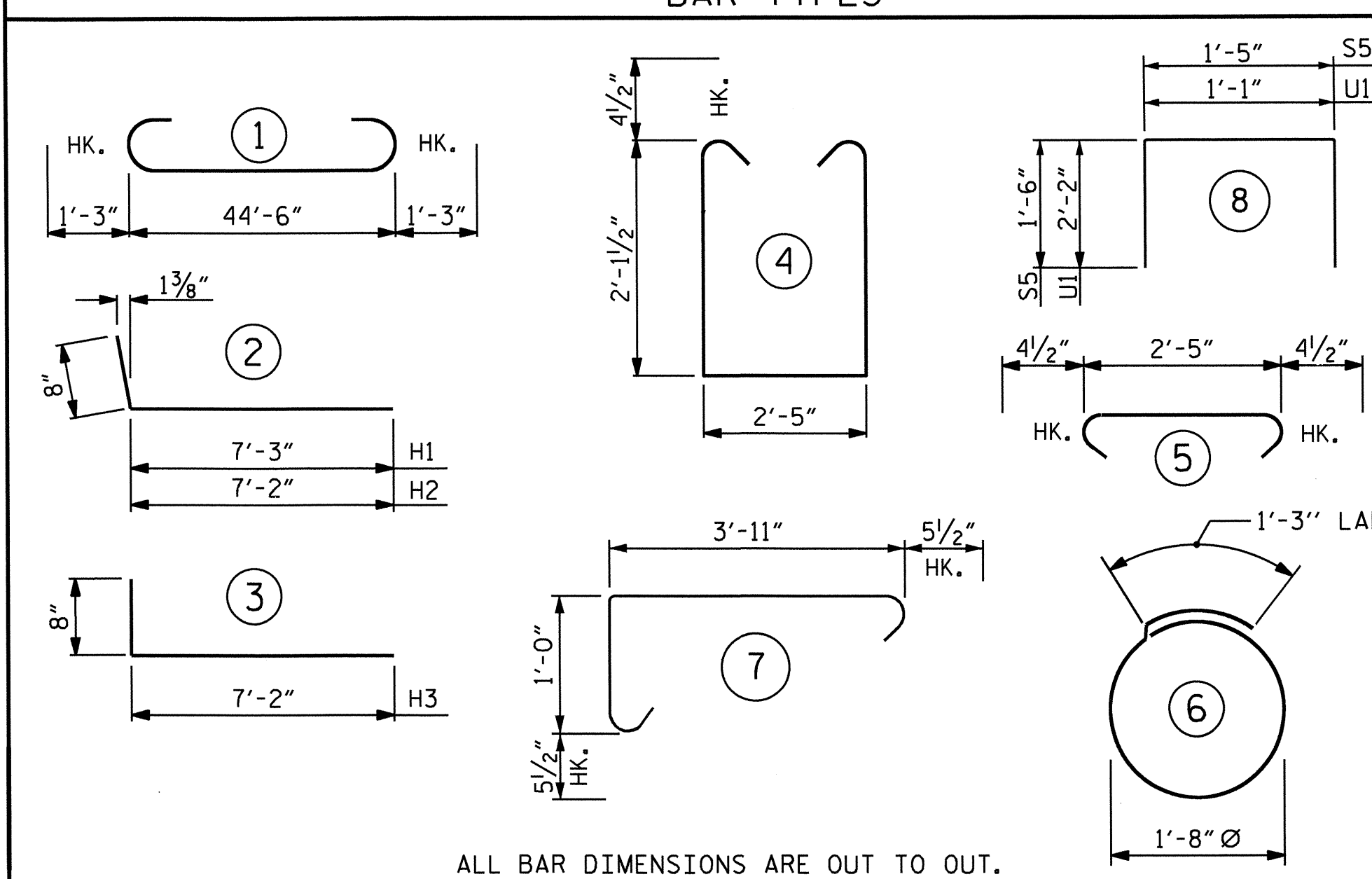
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

HP 12 X 53 STEEL PILES
NO: 7
125 LIN. FT.

18" STEEL SHEET PILES
NO. PZ27 = 42
NO. PZ90 = 2
TOTAL NO. = 44
550 SQ. FT.

PILE EXCAVATION
PILE EXCAVATION IN SOIL 54.00 LIN. FT.
PILE EXCAVATION NOT IN SOIL 29.00 LIN. FT.

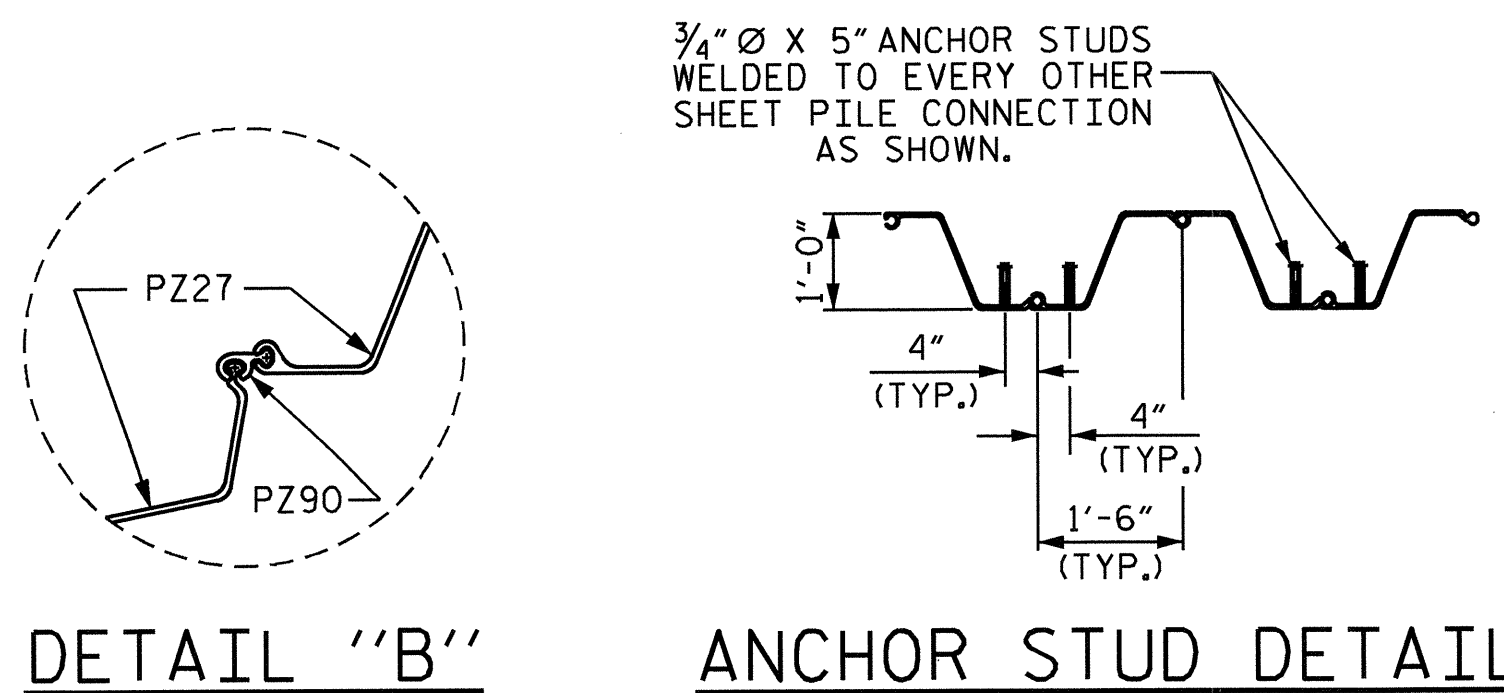
BILL OF MATERIAL

END BENT NO.1

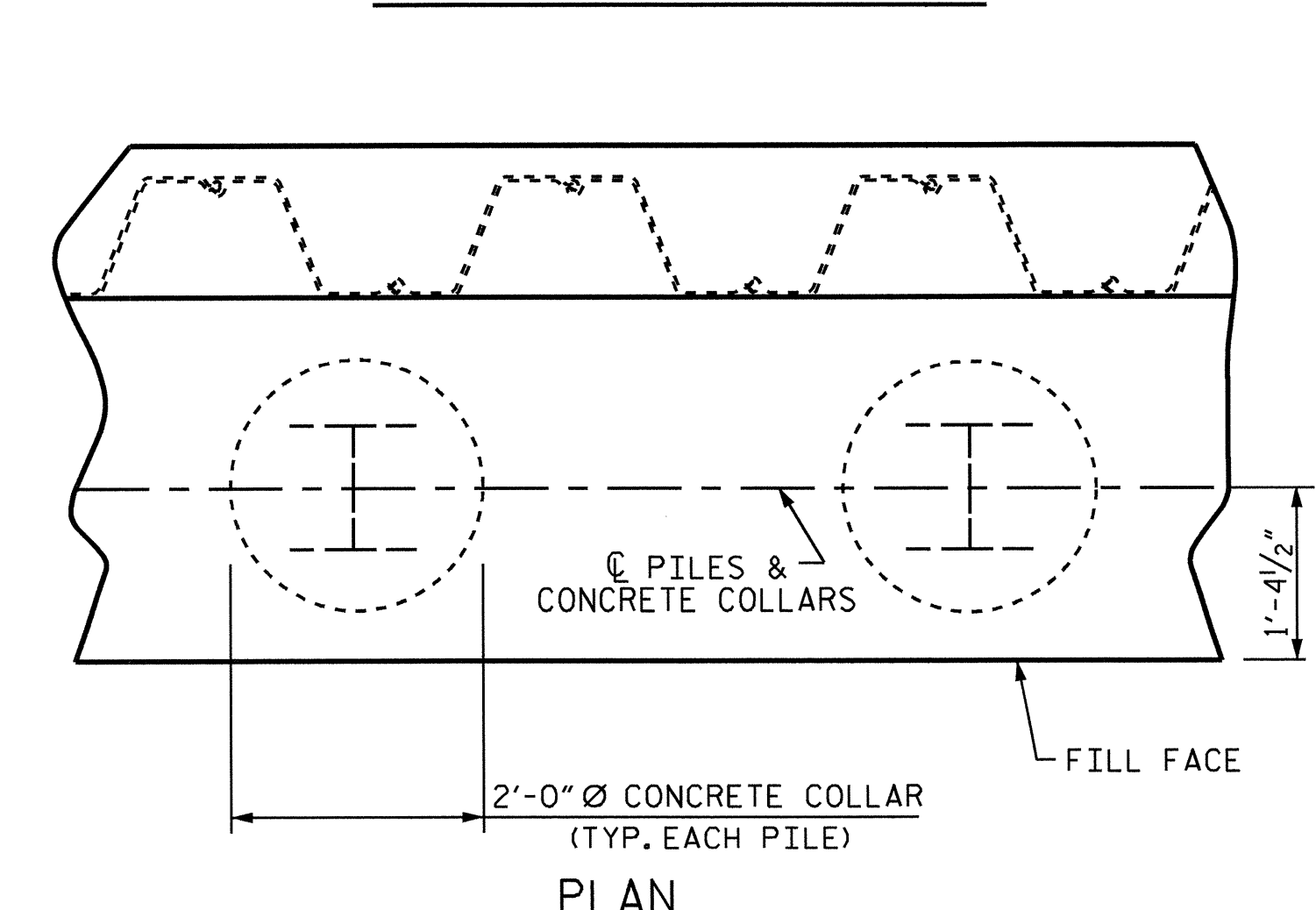
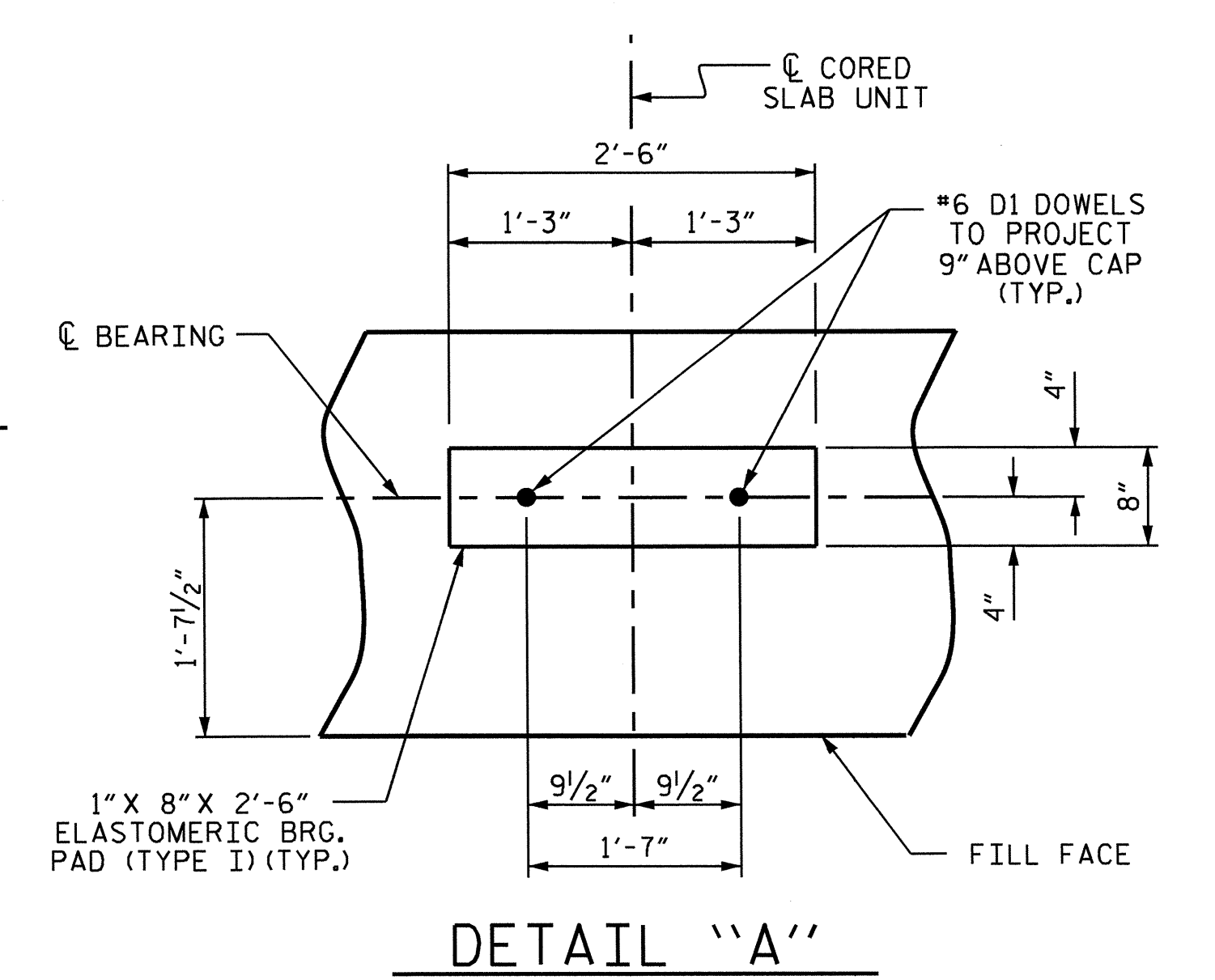
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	47'-0"	1278
B2	12	#4	STR	23'-7"	189
B3	11	#4	STR	2'-5"	18
B4	3	#5	STR	47'-5"	148
B5	2	#5	STR	10'-2"	21
B6	2	#5	STR	10'-4"	22
B7	4	#5	STR	10'-5"	43
D1	26	#6	STR	1'-6"	59
H1	6	#4	2	7'-11"	32
H2	6	#4	2	7'-10"	31
H3	12	#4	3	7'-10"	63
K1	6	#4	STR	3'-2"	13
K2	6	#4	STR	2'-11"	12
S1	38	#4	4	7'-5"	188
S2	38	#4	5	3'-2"	80
S3	14	#4	6	6'-6"	61
S4	45	#5	7	5'-10"	274
S5	4	#4	8	4'-5"	12
U1	22	#5	8	5'-5"	124
V1	48	#4	STR	4'-8"	150

REINFORCING STEEL 2818 LBS.

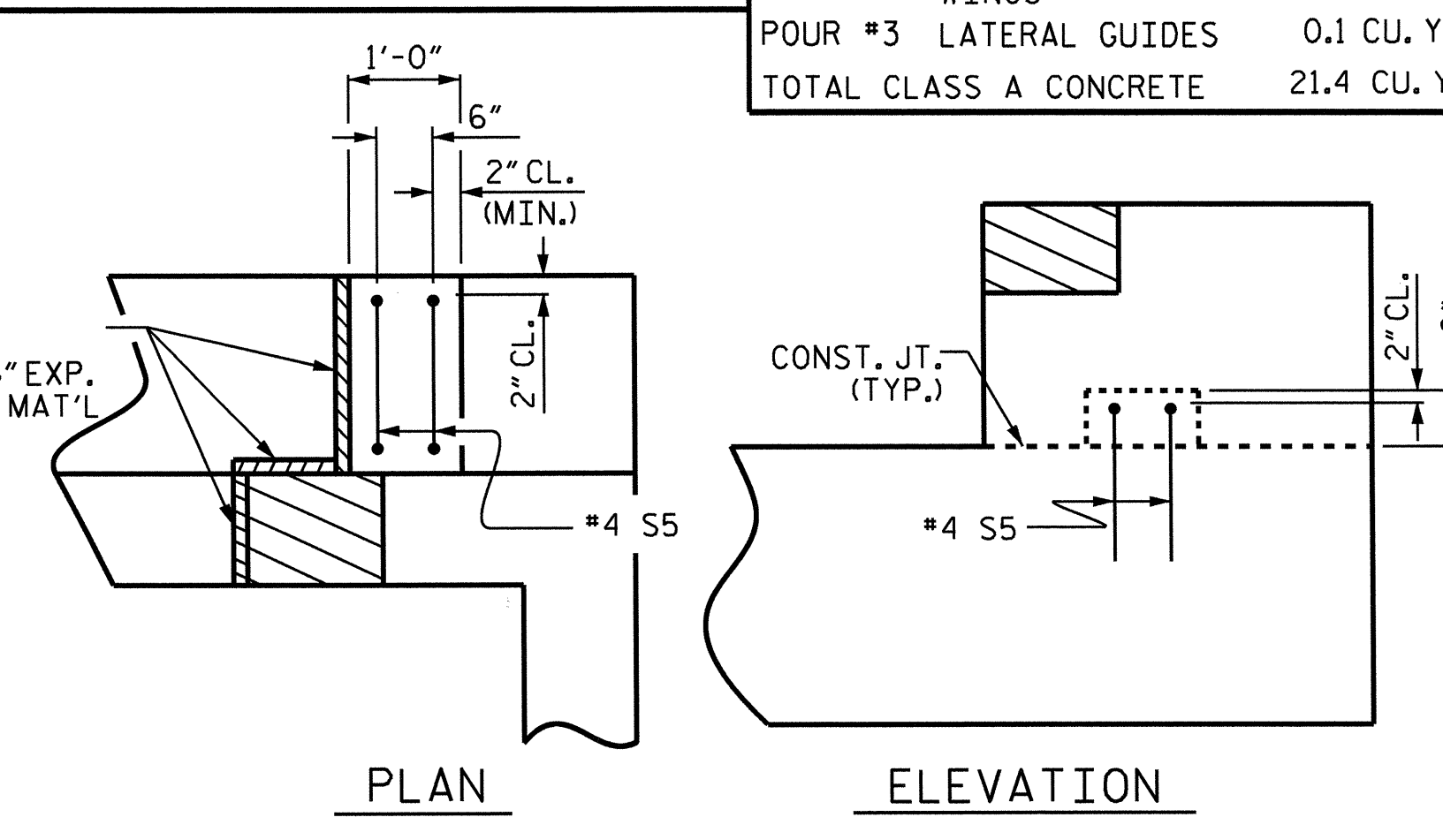
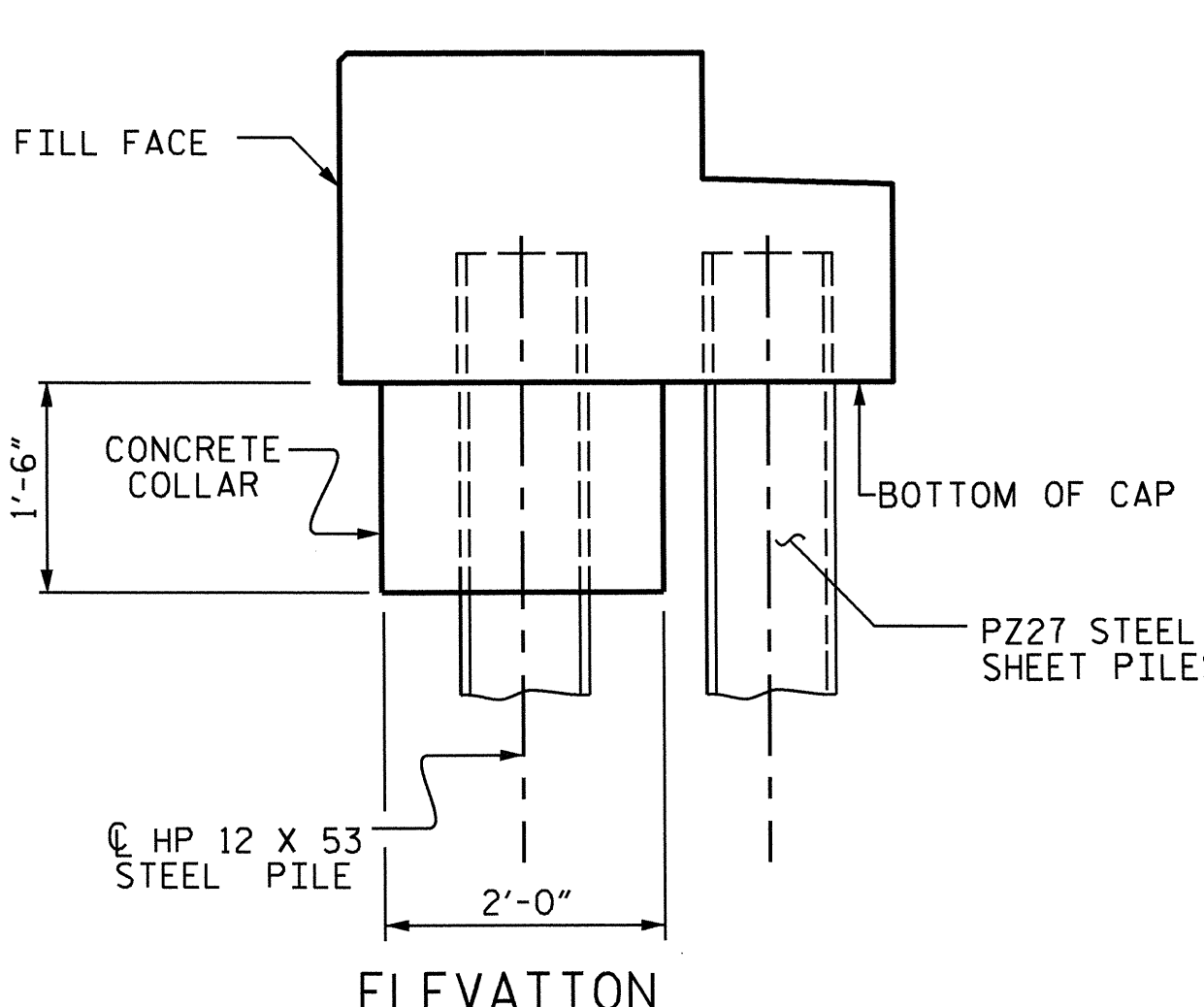
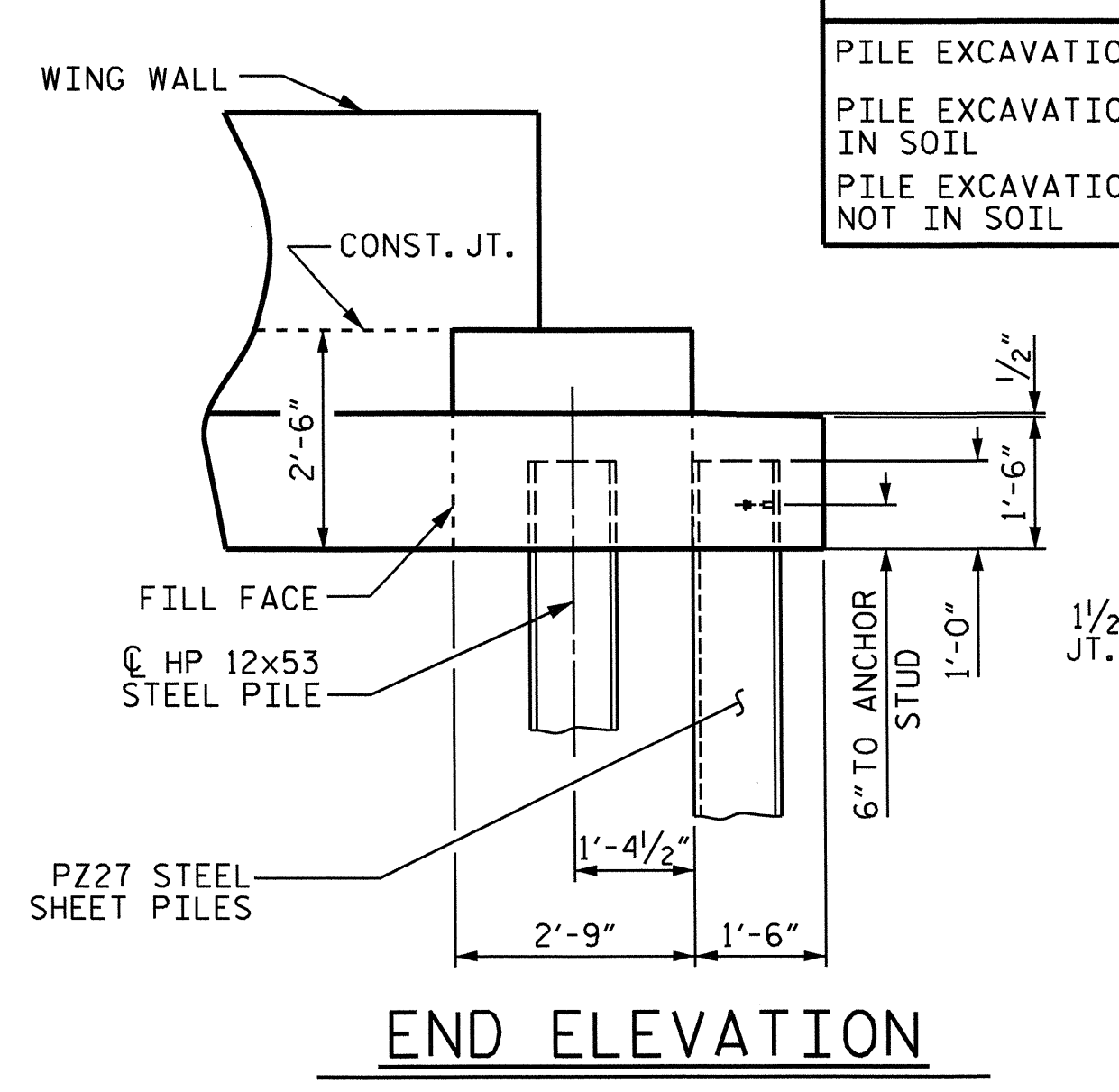
CLASS A CONCRETE BREAKDOWN
POUR #1 CAP, LOWER PART OF WINGS, COLLARS & COPING 19.5 CU. YDS.
POUR #2 UPPER PART OF WINGS 1.8 CU. YDS.
POUR #3 LATERAL GUIDES 0.1 CU. YDS.
TOTAL CLASS A CONCRETE 21.4 CU. YDS.



DETAIL "B" ANCHOR STUD DETAIL



CORROSION PROTECTION FOR STEEL PILES DETAIL



LATERAL GUIDE DETAILS

(RIGHT LATERAL GUIDE SHOWN, LEFT END SIMILAR)

PROJECT NO. B-4734
CLAY COUNTY
STATION: 12+75.00 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No. 1
DETAILS



DRAWN BY: M.A. LEBLANC DATE: 4/13
CHECKED BY: J.R. MCROY DATE: 4/13
DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 20
2			4			

NOTES

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

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

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

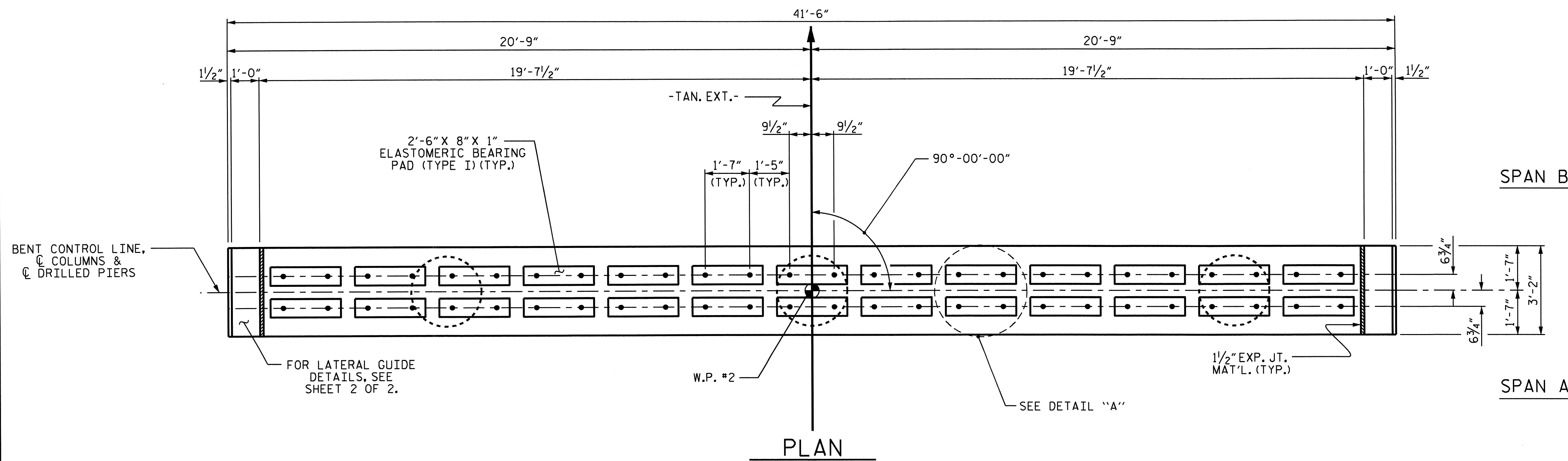
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

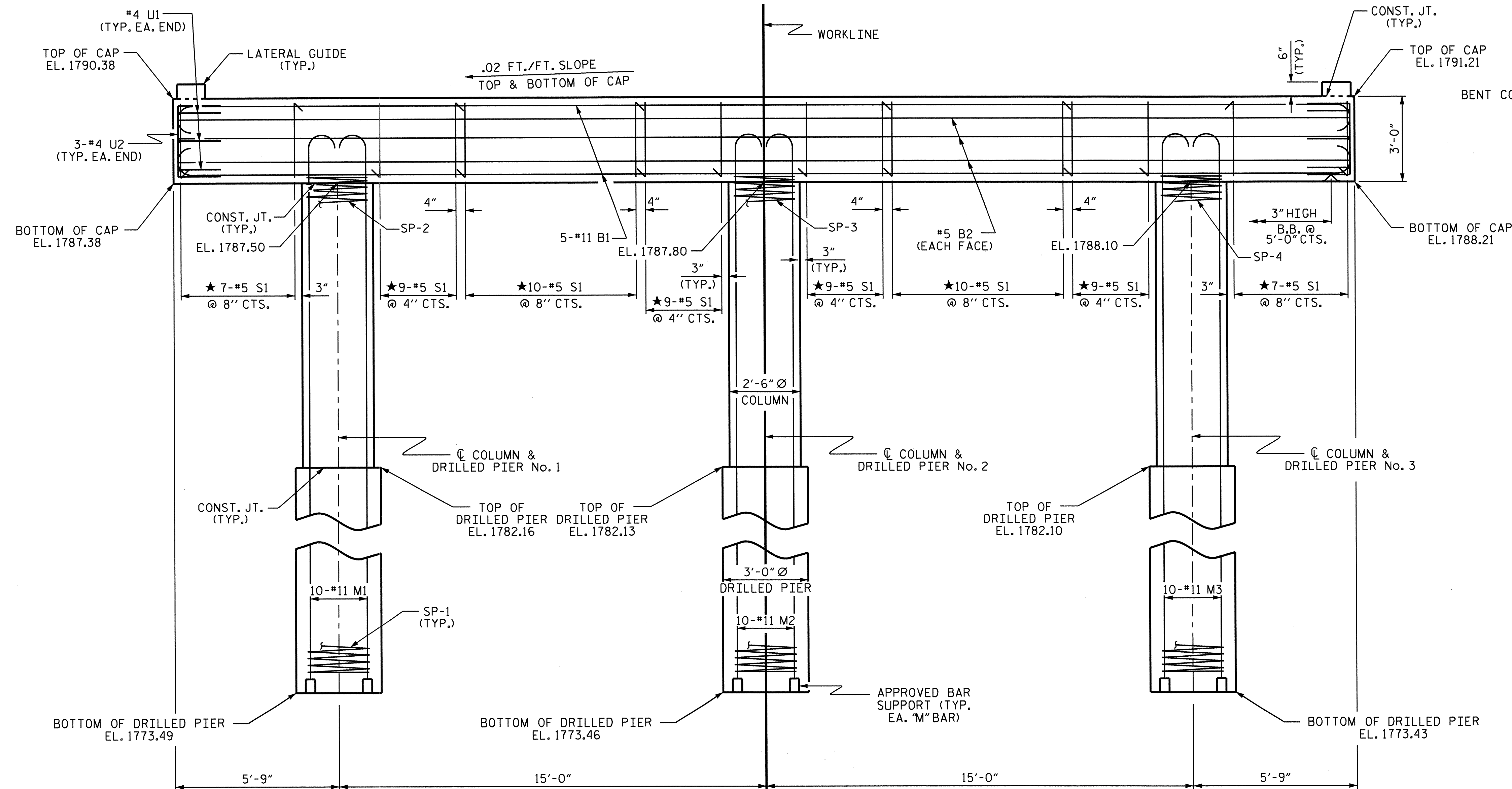
★ INVERT ALTERNATE STIRRUPS.

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

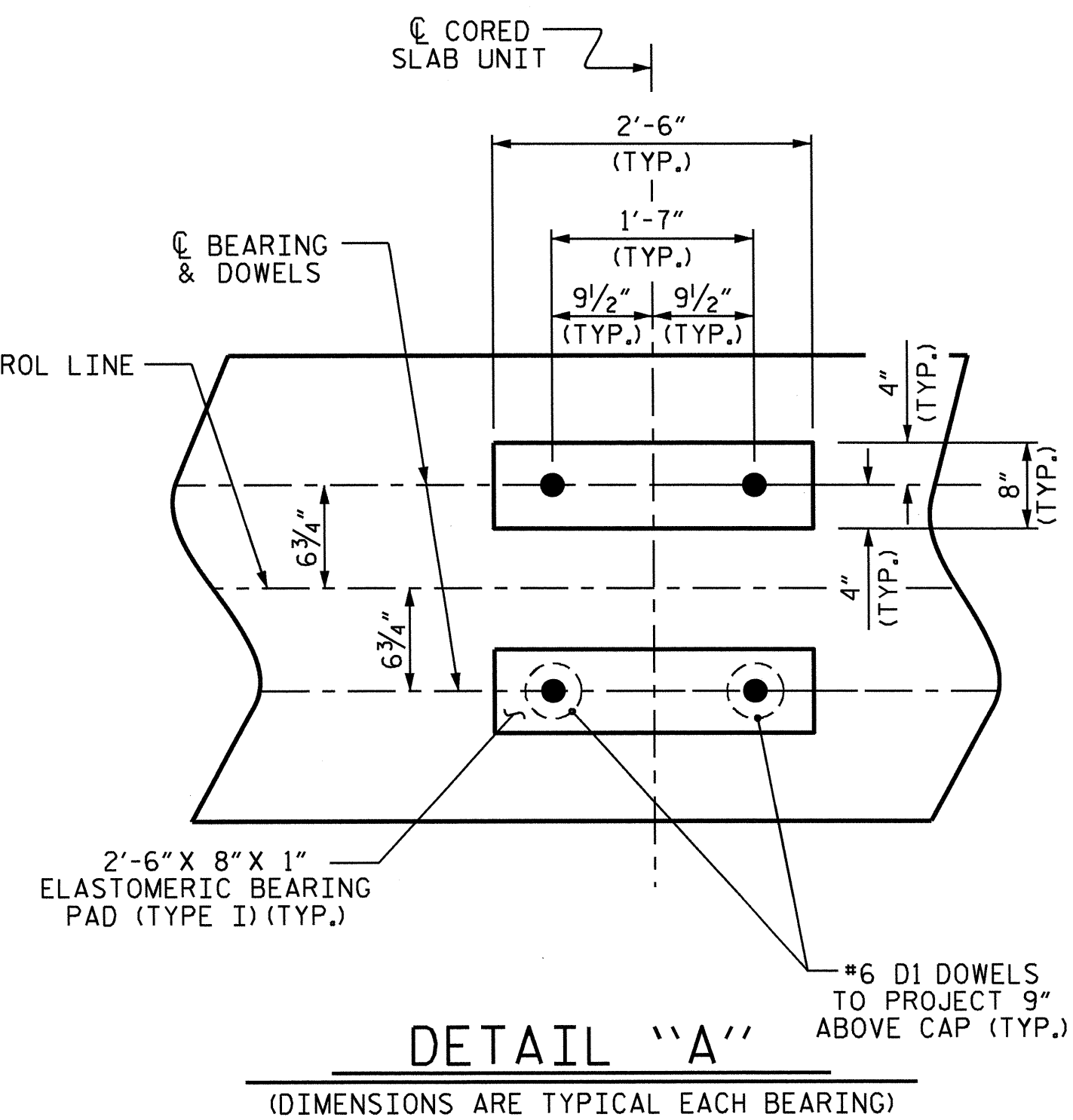
THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDES IF APPROVED BY THE ENGINEER.



PLAN



ELEVATION



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. B-4734
CLAY COUNTY
 STATION: 12+75.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

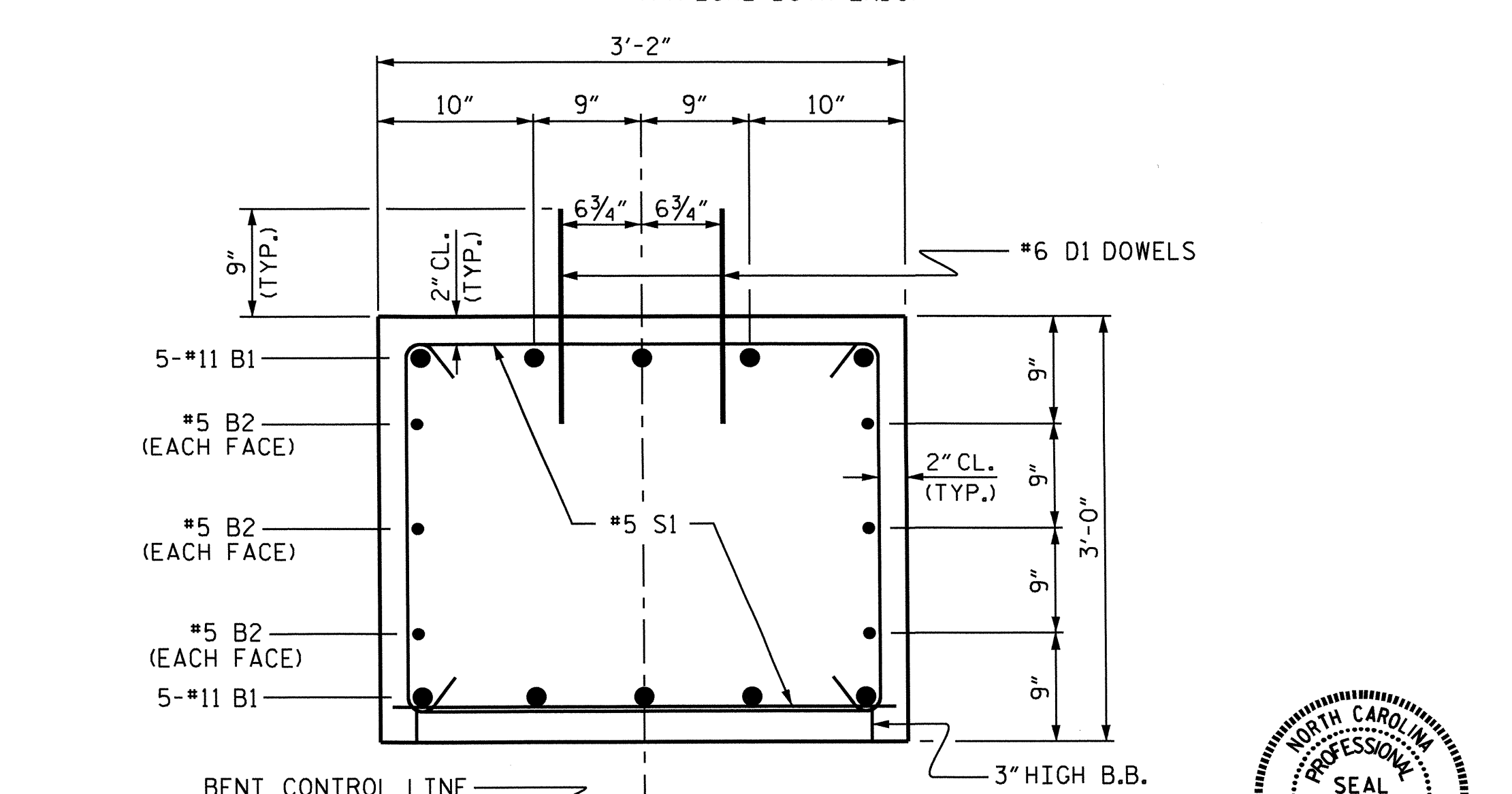
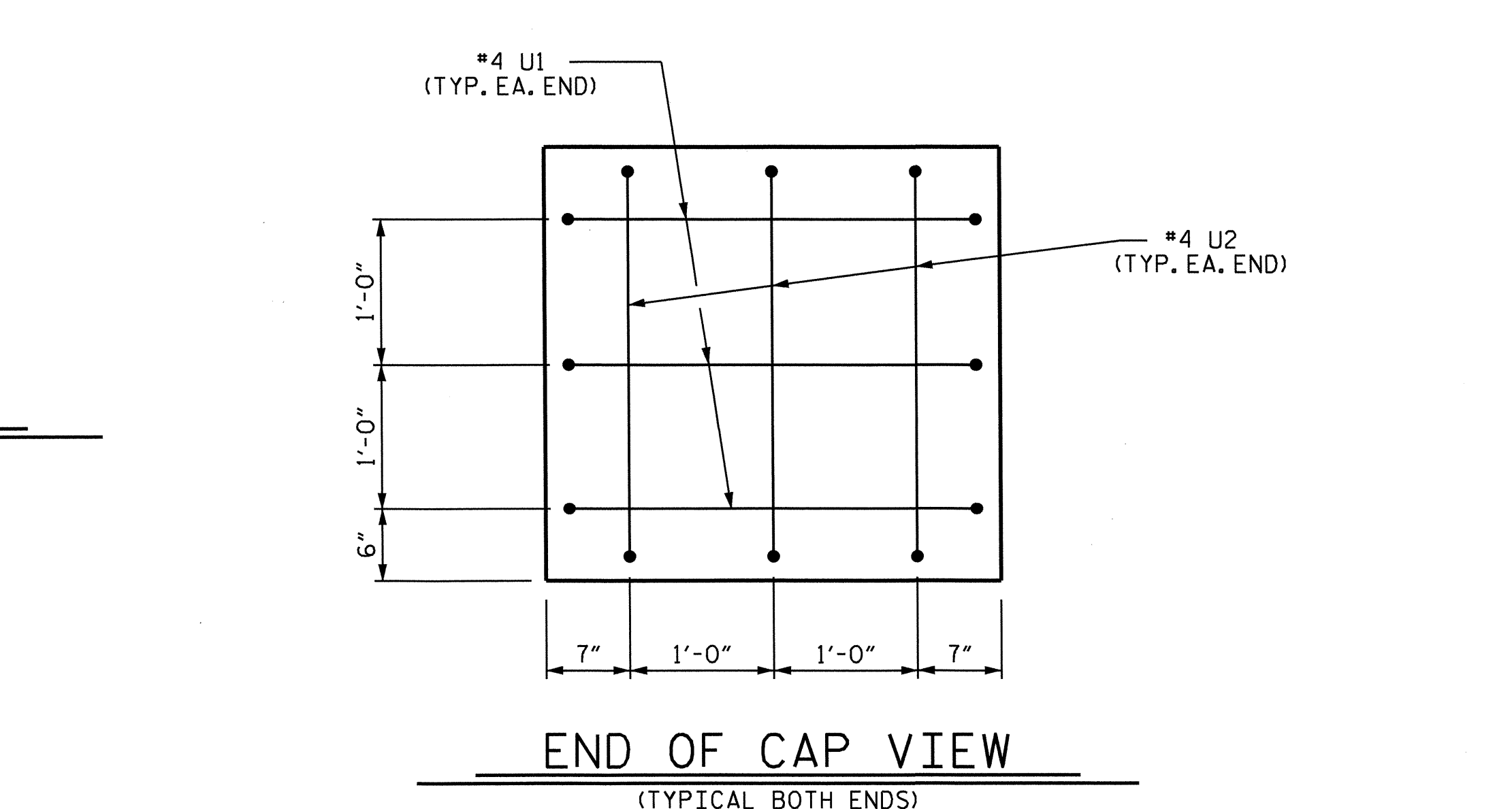
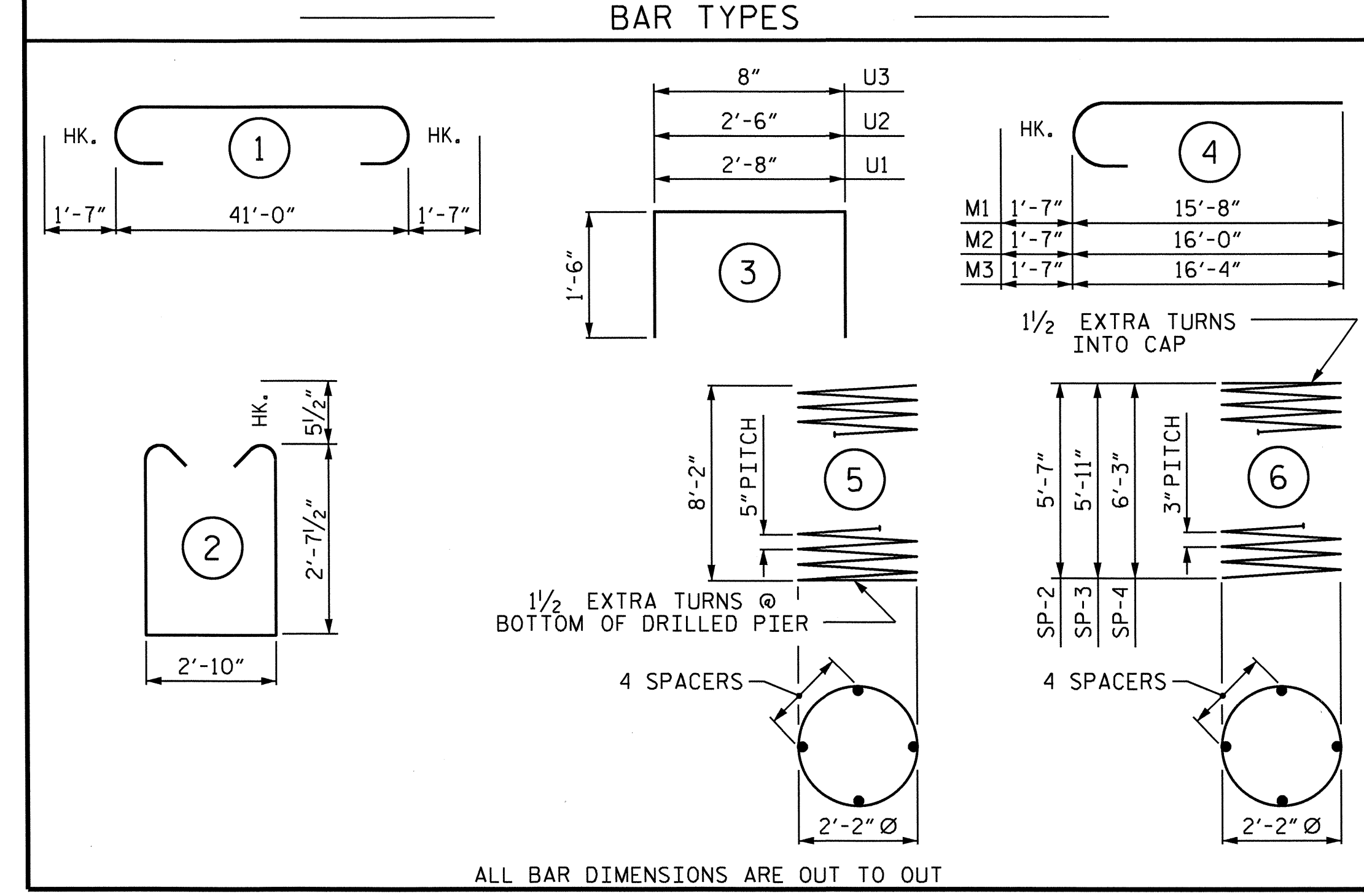
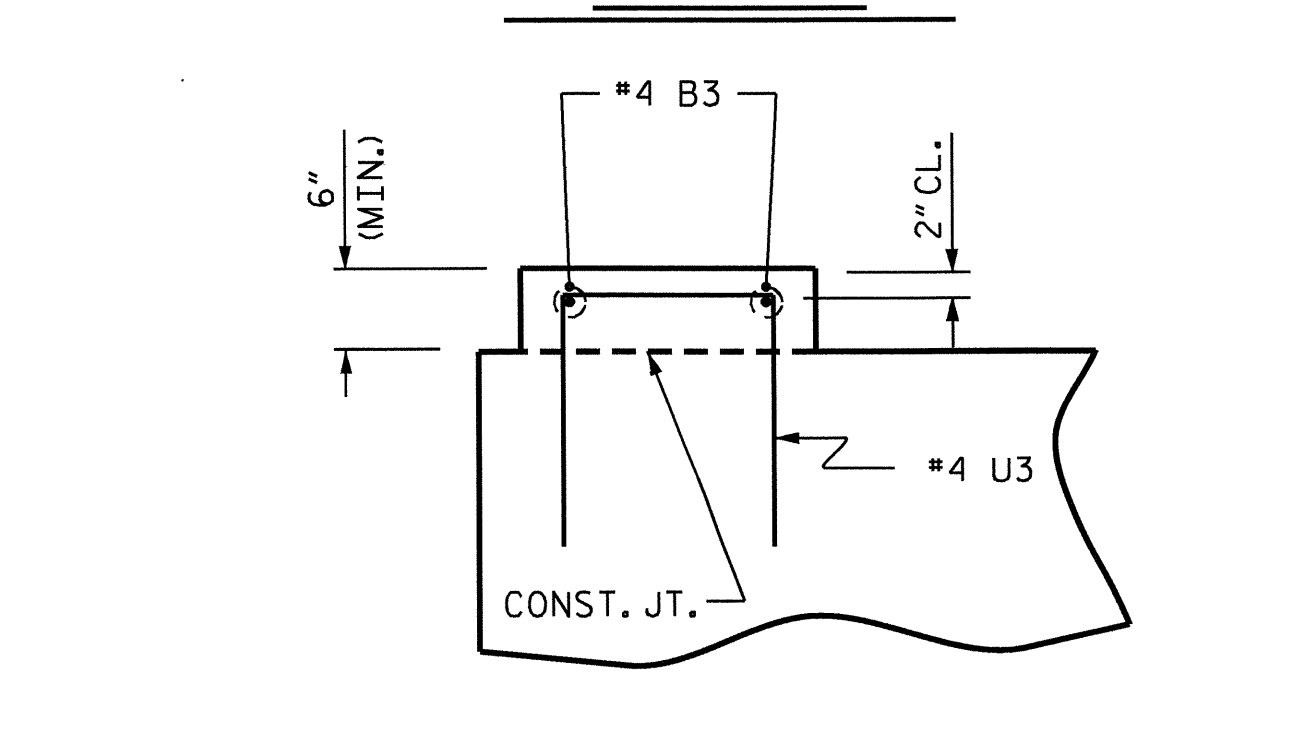
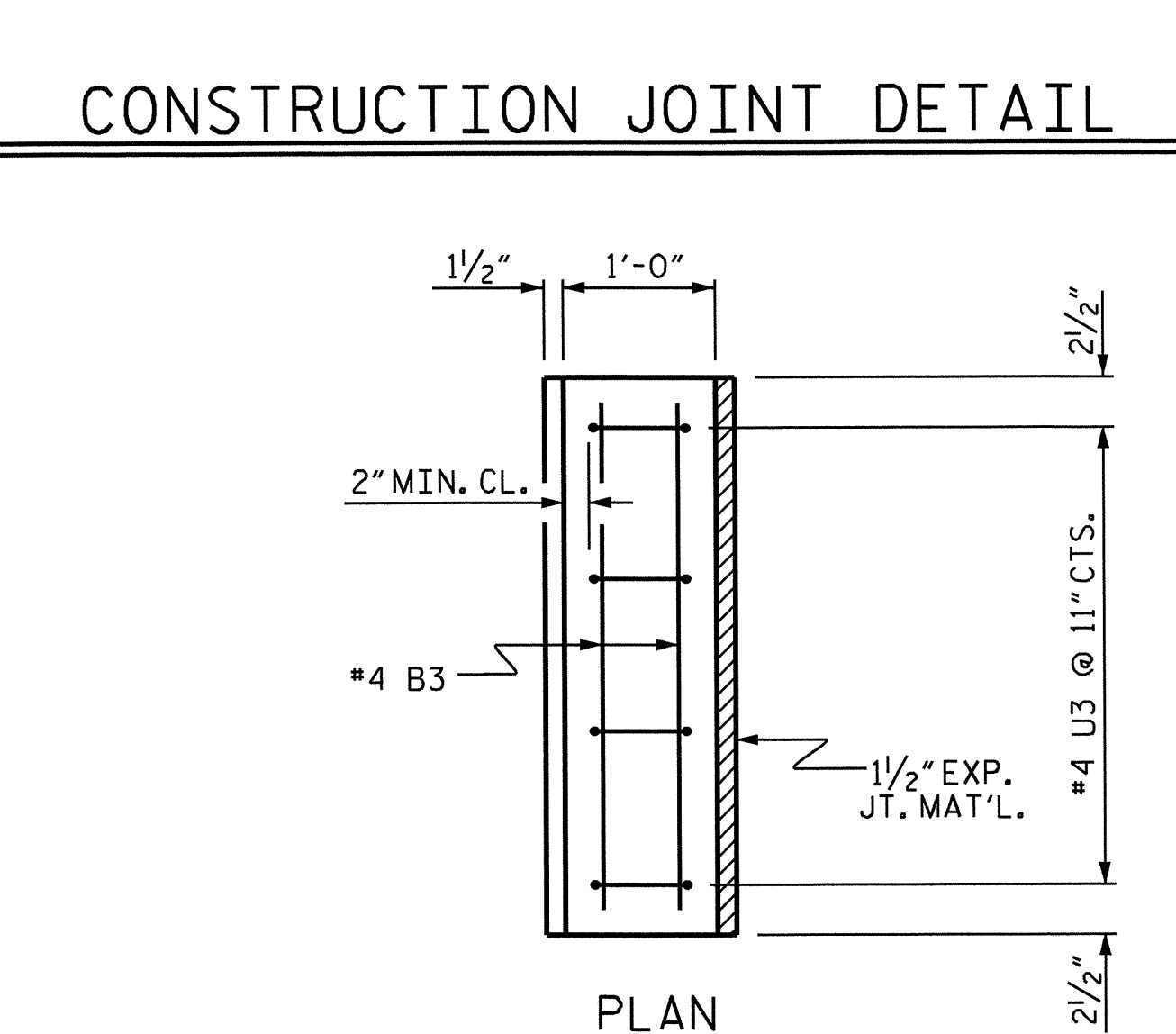
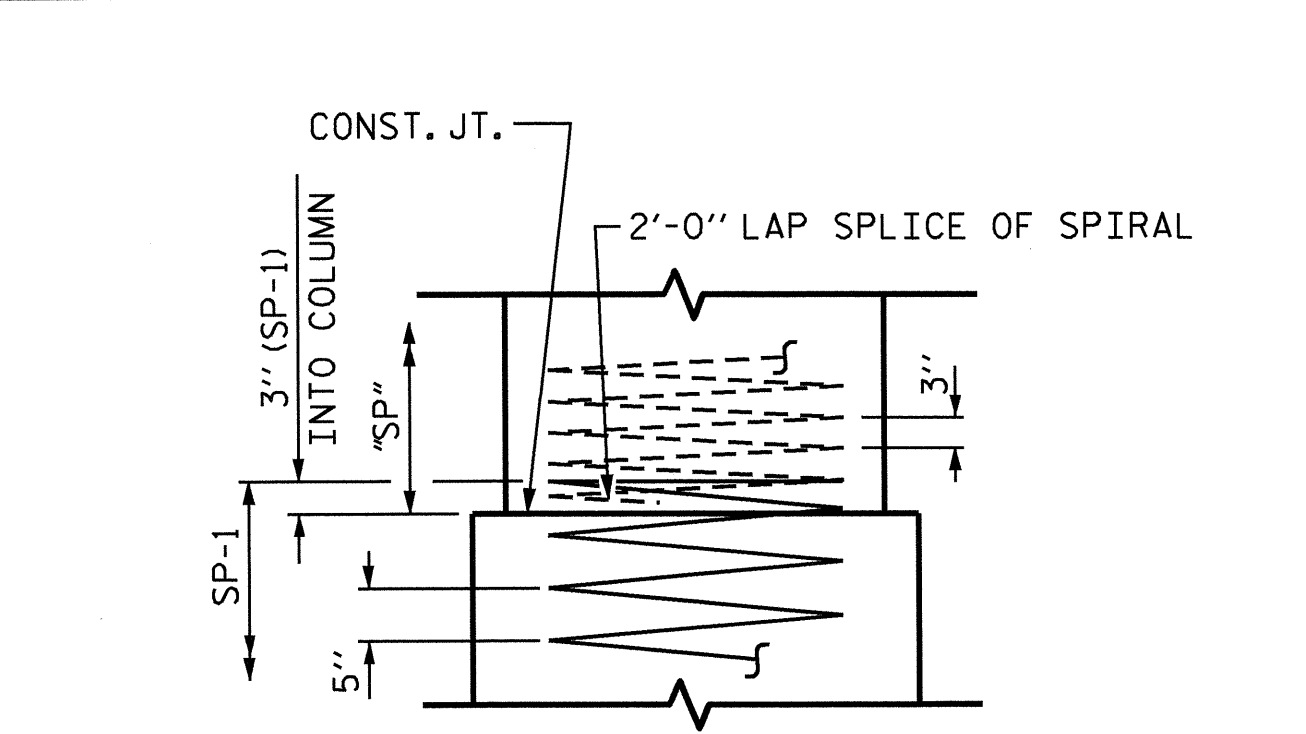
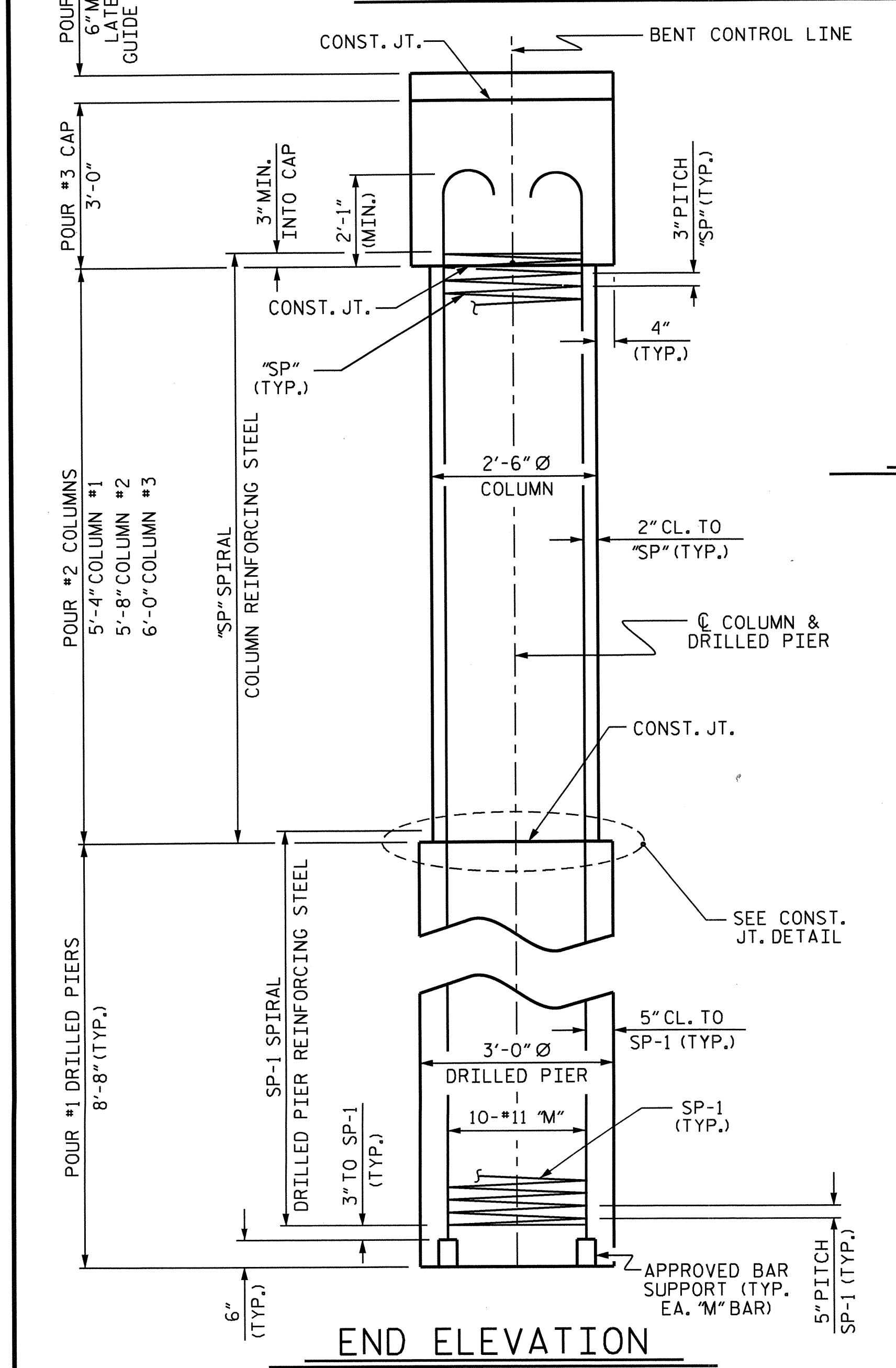
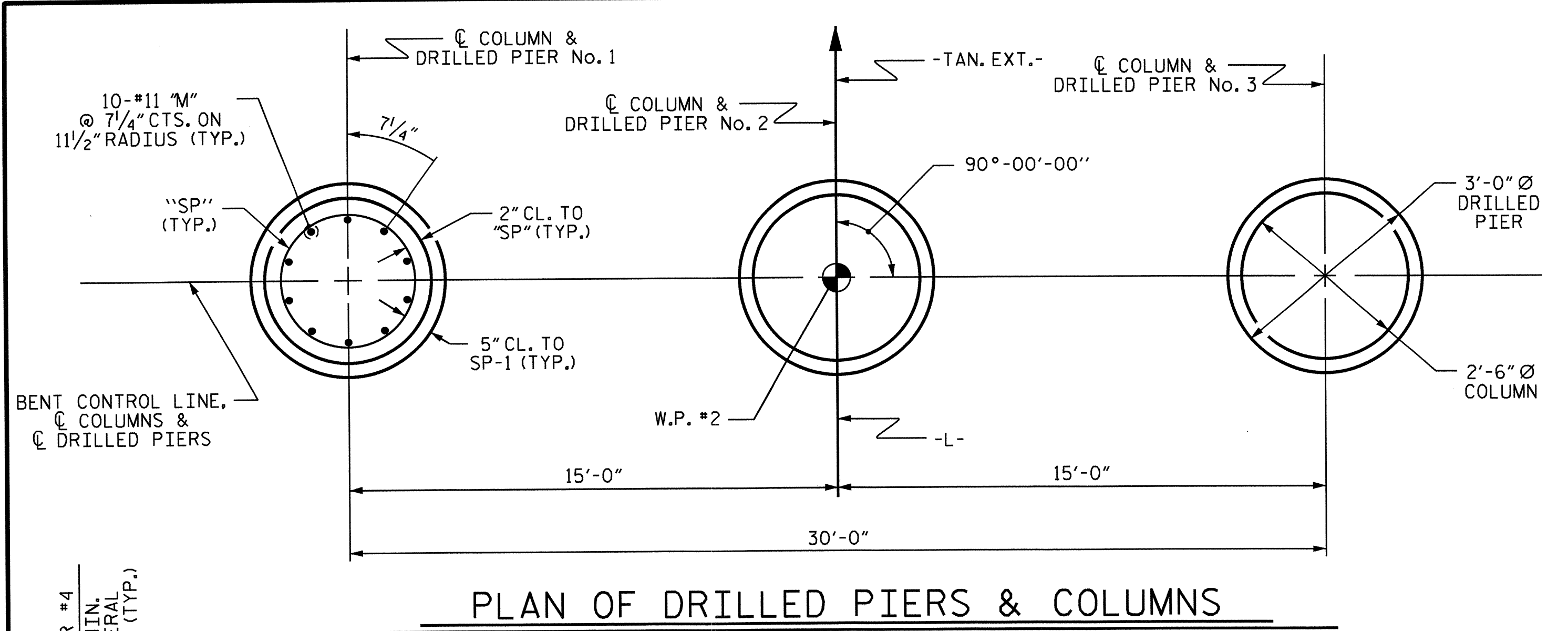


ASSEMBLED BY : M.A. LEBLANC DATE : 4/13
 CHECKED BY : M.G. CHEEK DATE : 4/13

DRAWN BY : DGE 03/10
 CHECKED BY : MKT 03/10

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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14	
1			3			TOTAL SHEETS	
2			4			20	



BILL OF MATERIAL					
BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11		44'-2"	2347
B2	6	#5	STR	41'-2"	258
B3	4	#4	STR	2'-10"	8
D1	52	#6	STR	1'-6"	117
M1	10	#11		17'-3"	916
M2	10	#11		17'-7"	934
M3	10	#11		17'-11"	952
S1	70	#5		9'-0"	657
U1	6	#4		5'-8"	23
U2	6	#4		5'-6"	22
U3	8	#4		3'-8"	20

REINFORCING STEEL					
					6254 LBS.
SP-1	3	*	5	141'-6"	443
SP-2	1	**	6	160'-5"	107
SP-3	1	**	6	170'-5"	114
SP-4	1	**	6	178'-9"	119
SPIRAL COLUMN REINFORCING STEEL					783 LBS.

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS)	3.1 C.Y.
POUR #3 (CAP)	14.6 C.Y.
POUR #4 (LATERAL GUIDES)	0.1 C.Y.
TOTAL CLASS A CONCRETE	17.8 C.Y.

DRILLED PIERS:	
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	6.8 C.Y.
3'-0" Ø DRILLED PIERS NOT IN SOIL	18.00 LIN. FT.
3'-0" Ø DRILLED PIERS IN SOIL	8.00 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	7.89 LIN. FT.
△ CSL TUBES	122.00 LIN. FT.

△ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT PRICE BID FOR DRILLED PIERS.

PROJECT NO. B-4734
CLAY COUNTY
 STATION: 12+75.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

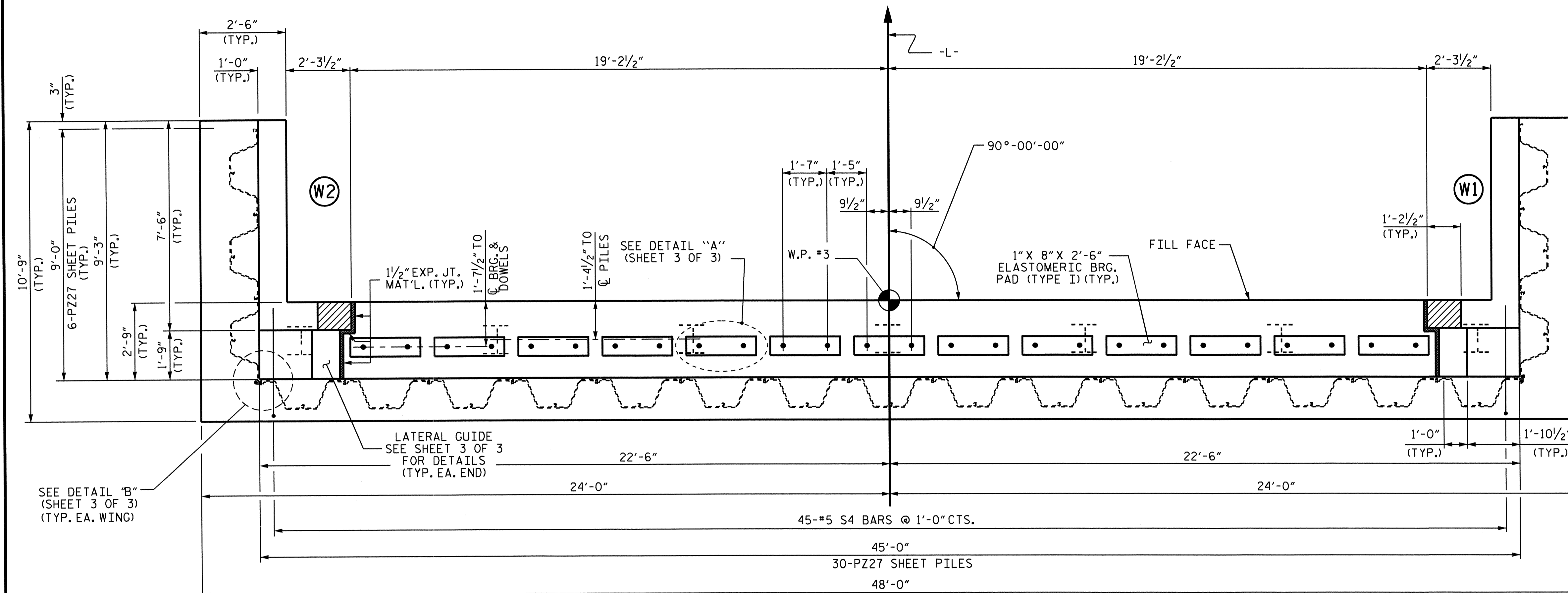
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 20

ASSEMBLED BY: M.A. LEBLANC DATE: 4/13
 CHECKED BY: M.G. CHEEK DATE: 4/13
 DRAWN BY: DGE 03/10
 CHECKED BY: MKT 03/10

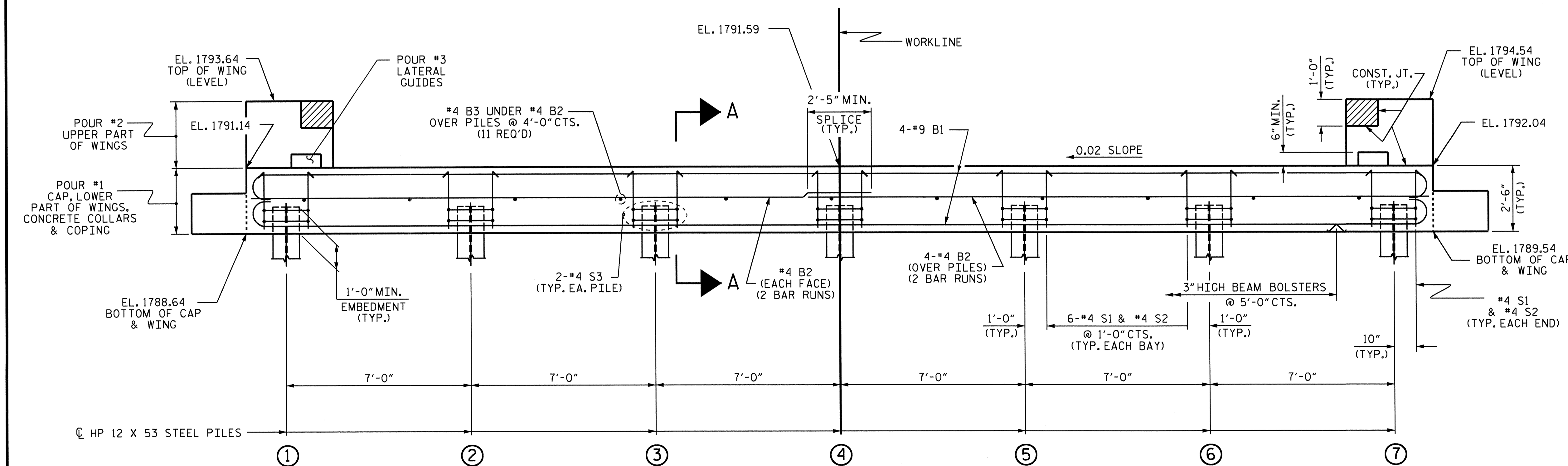
NOTES

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 VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR PILE SPlice DETAILS, SEE SHEET 3 OF 3.
 FOR WING DETAILS, SEE SHEET 2 OF 3.
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.
 THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



PLAN

TOP OF PILE ELEVATIONS	
①	1789.68
②	1789.82
③	1789.96
④	1790.10
⑤	1790.24
⑥	1790.38
⑦	1790.52



ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

PROJECT NO. B-4734
CLAY COUNTY
 STATION: 12+75.00 -L-

SHEET 1 OF 3

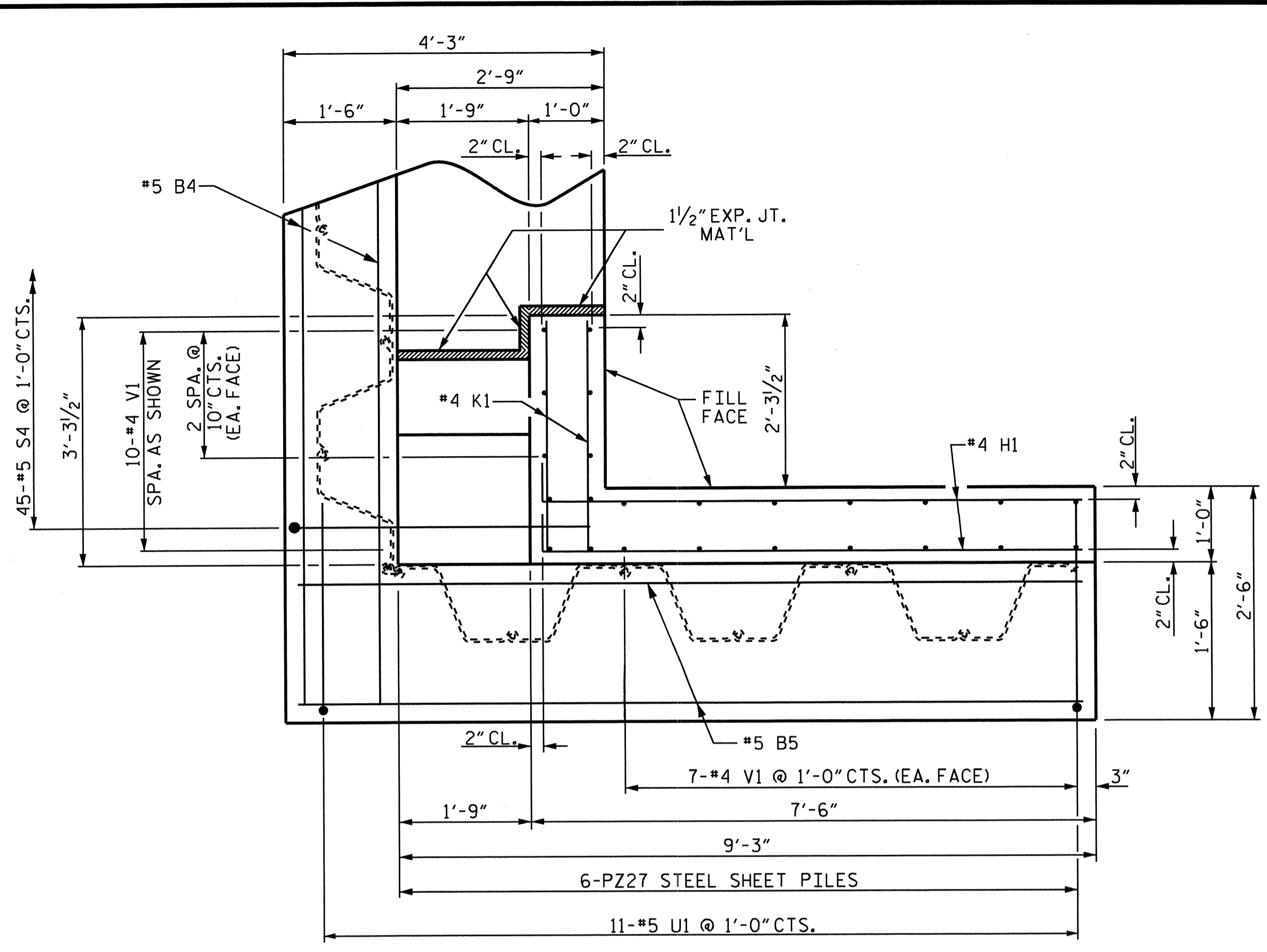
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

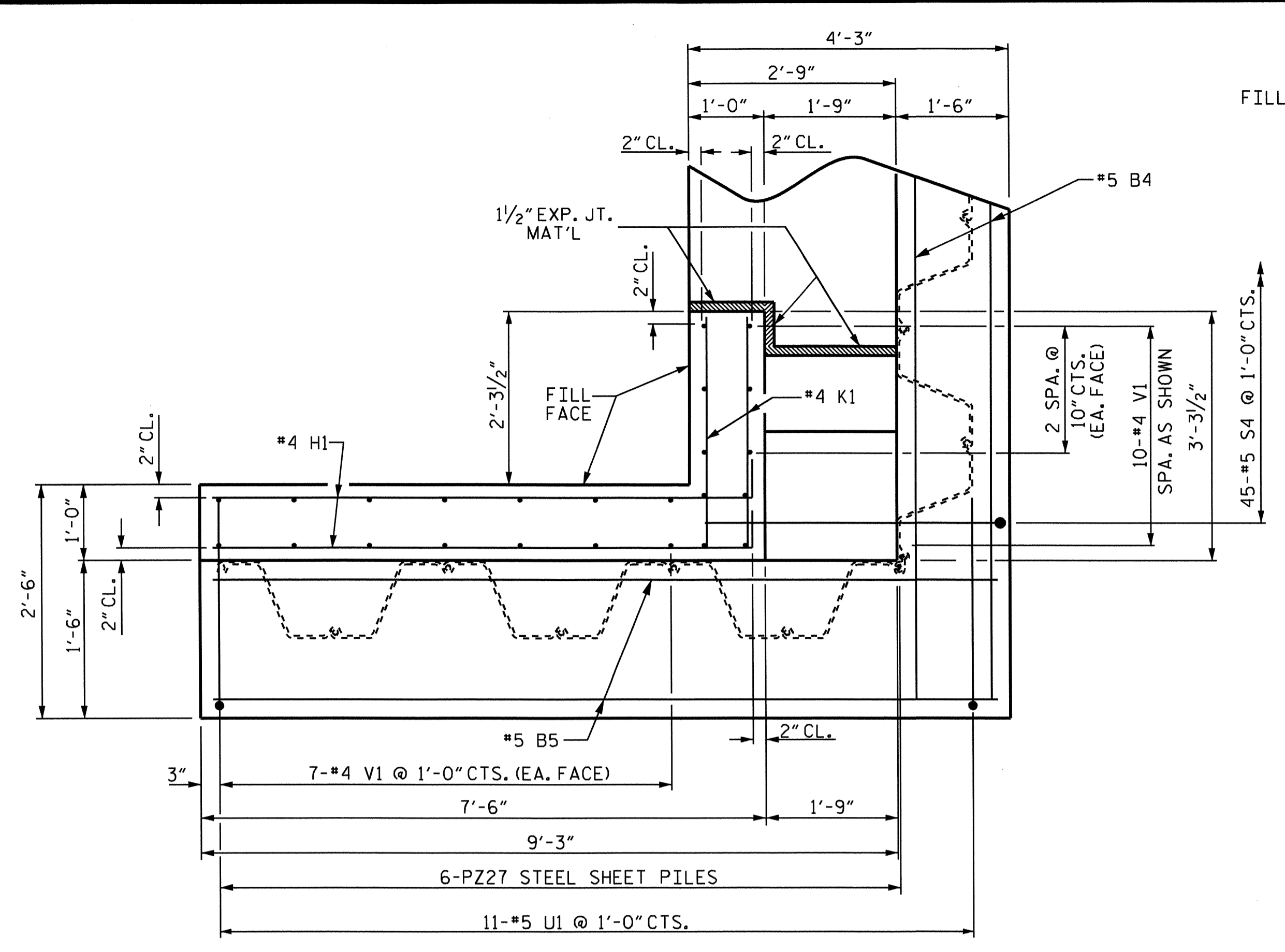
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS 20
2			4			

DRAWN BY: M.A. LEBLANC DATE: 4/13
 CHECKED BY: J.R. MCROY DATE: 4/13
 DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13

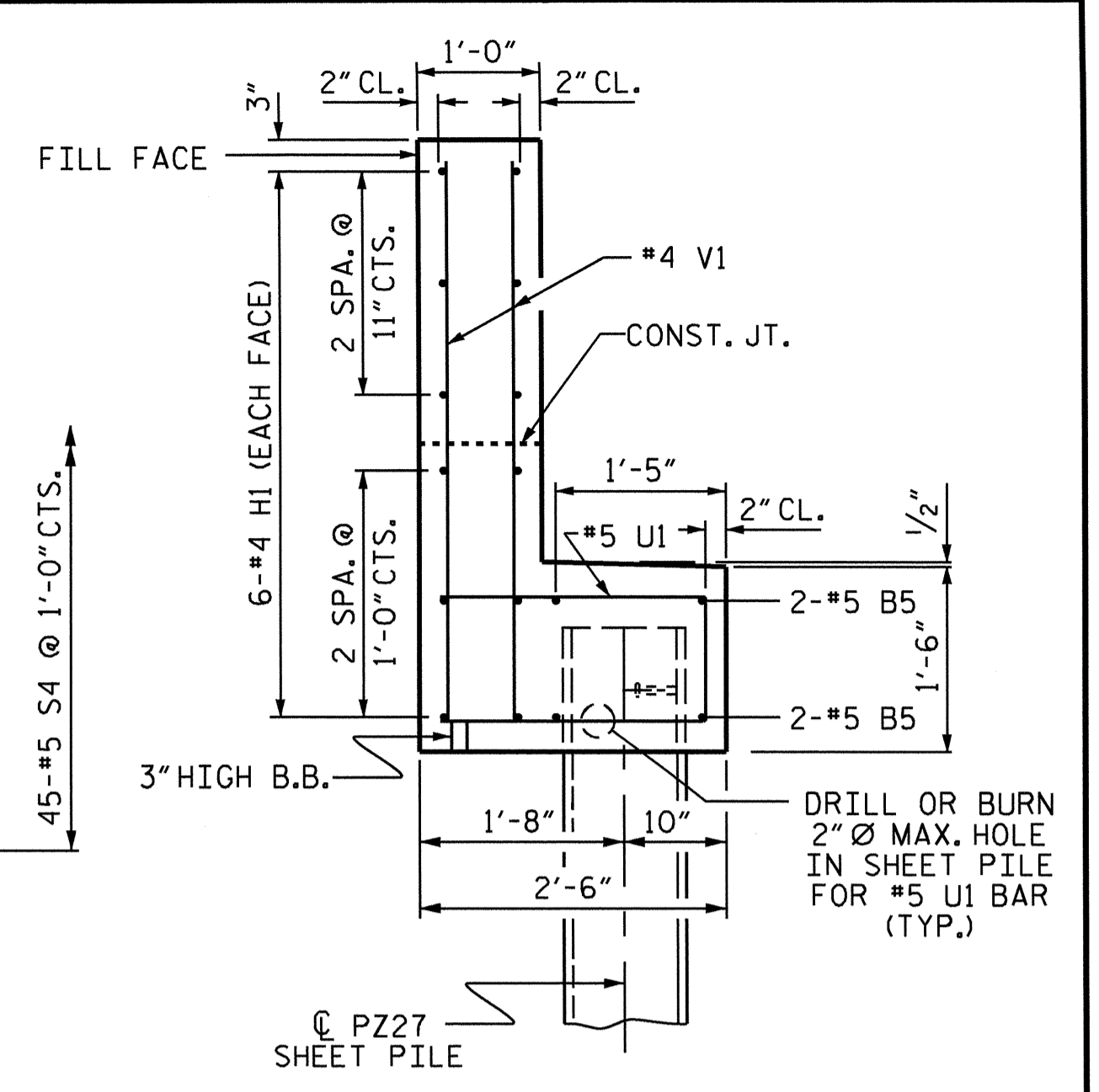




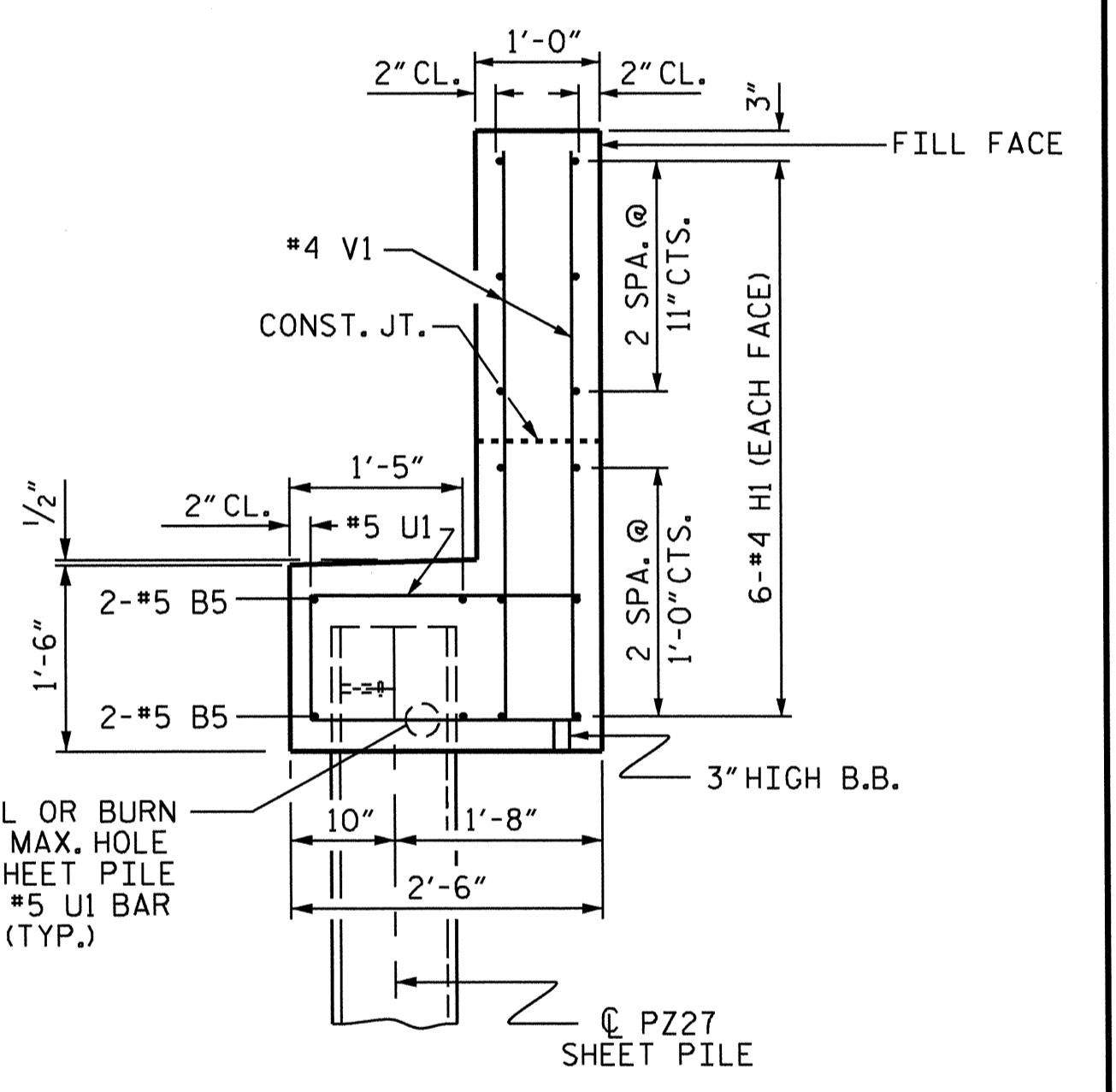
PLAN OF WING (W1)



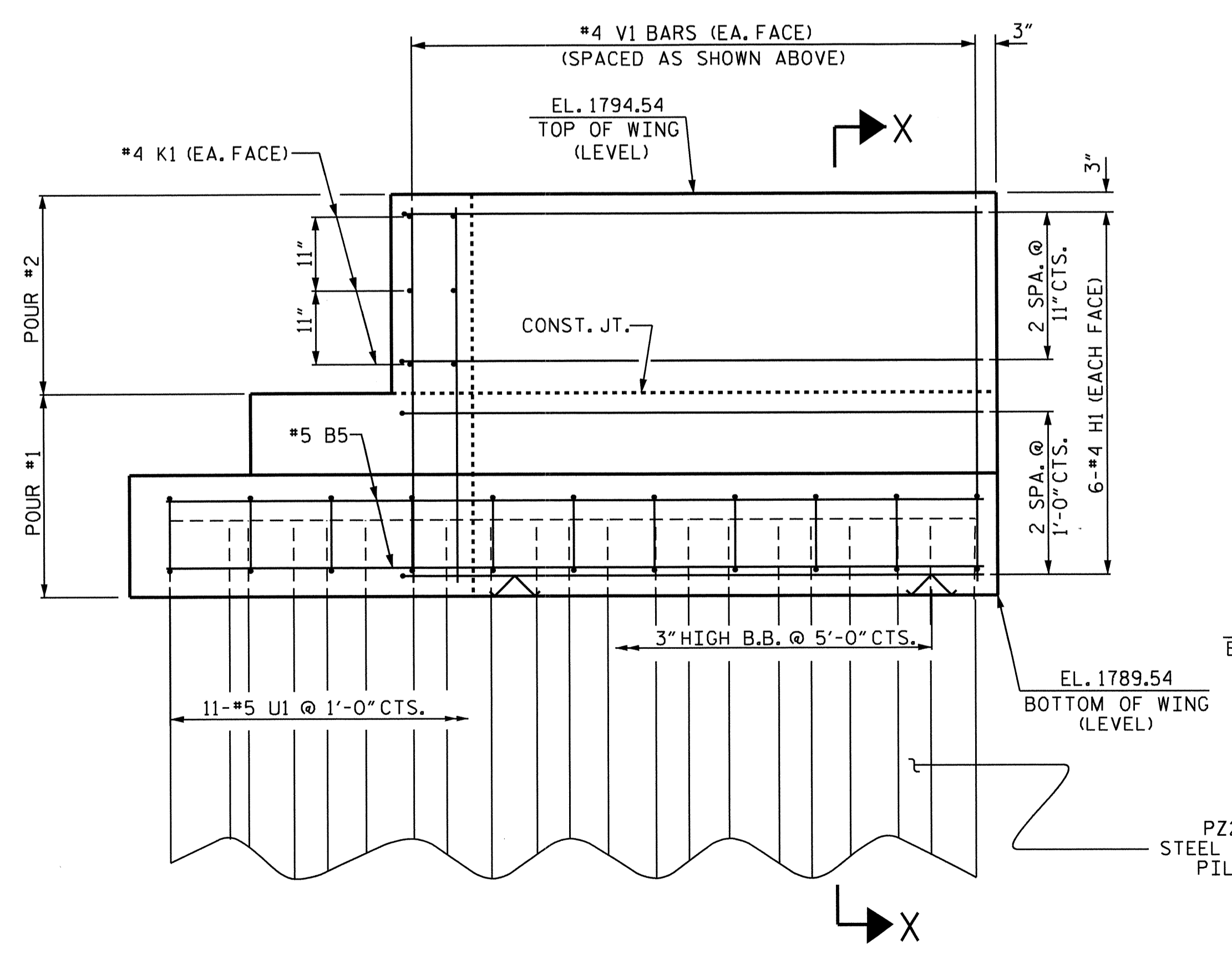
PLAN OF WING (W2)



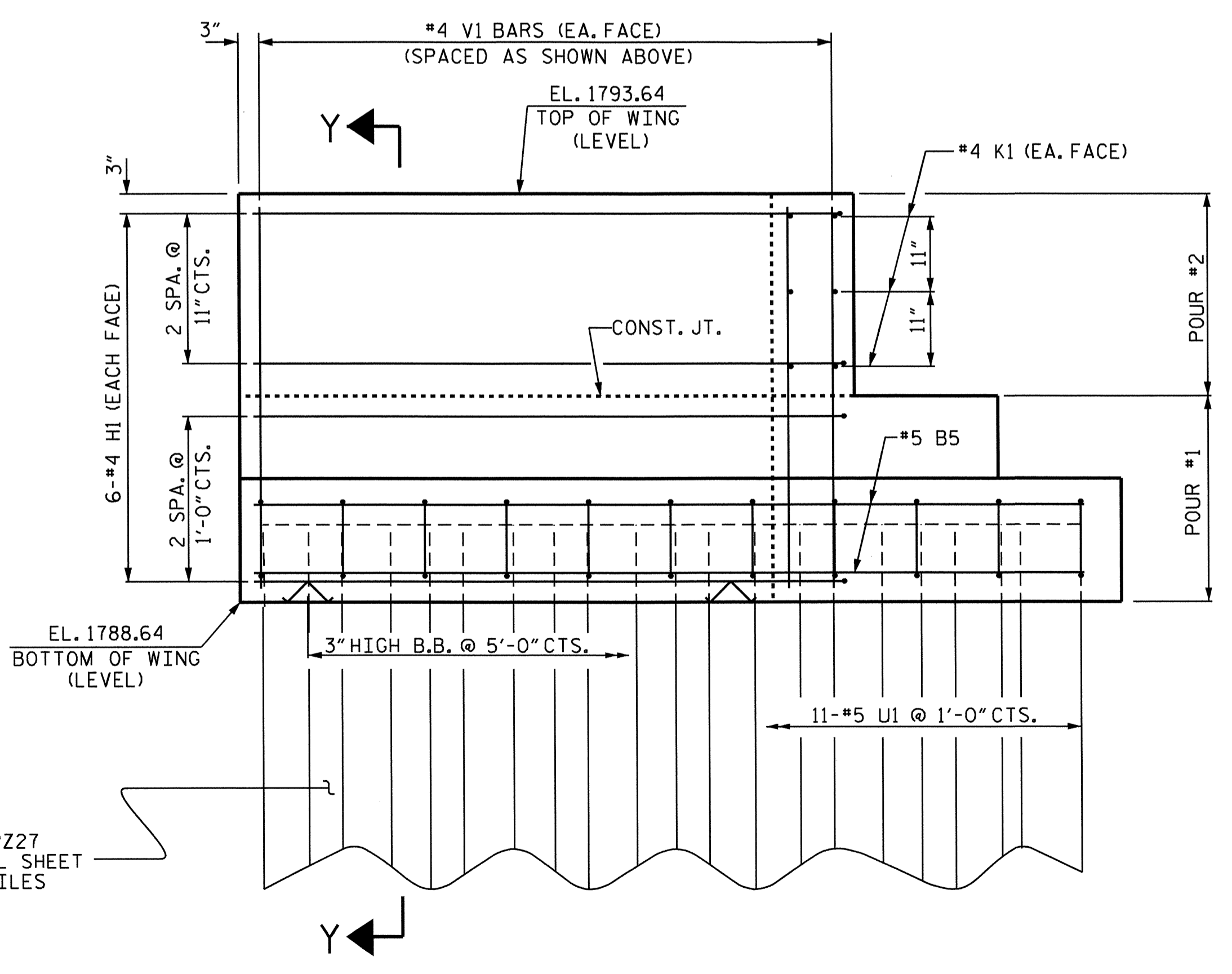
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



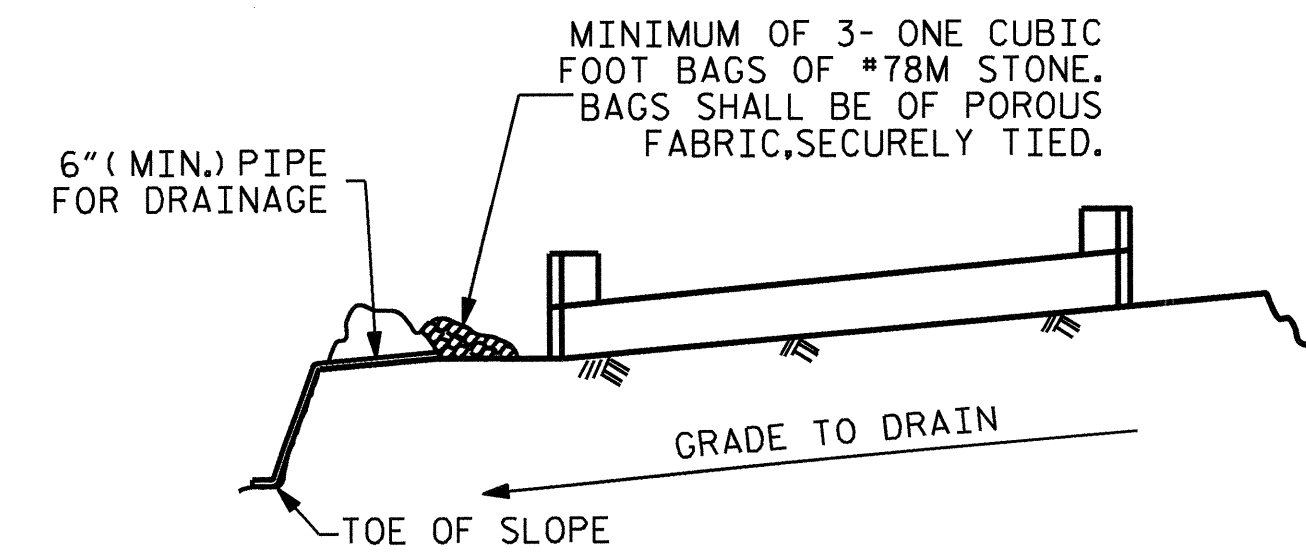
ELEVATION OF WING (W2)

PROJECT NO. B-4734
 CLAY COUNTY
 STATION: 12+75.00 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2 WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-17
TOTAL SHEETS					20



DRAWN BY: M.A. LEBLANC DATE: 4/13
 CHECKED BY: J.R. MCROY DATE: 4/13
 DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

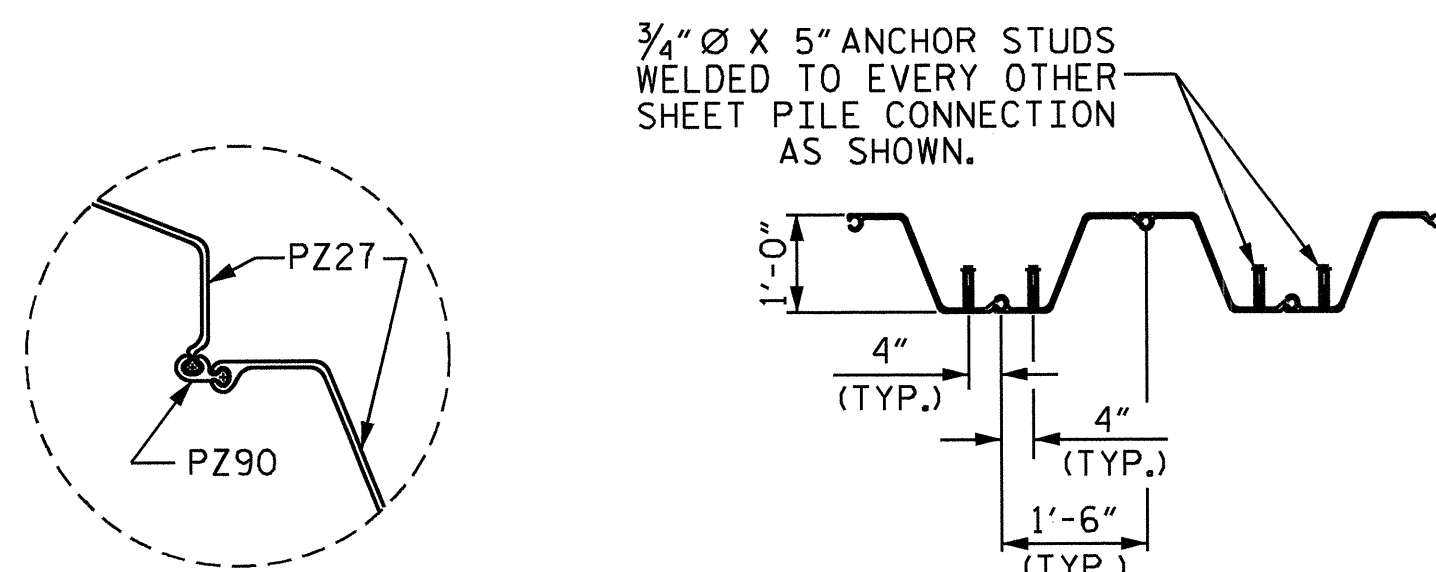
TOE OF SLOPE

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.

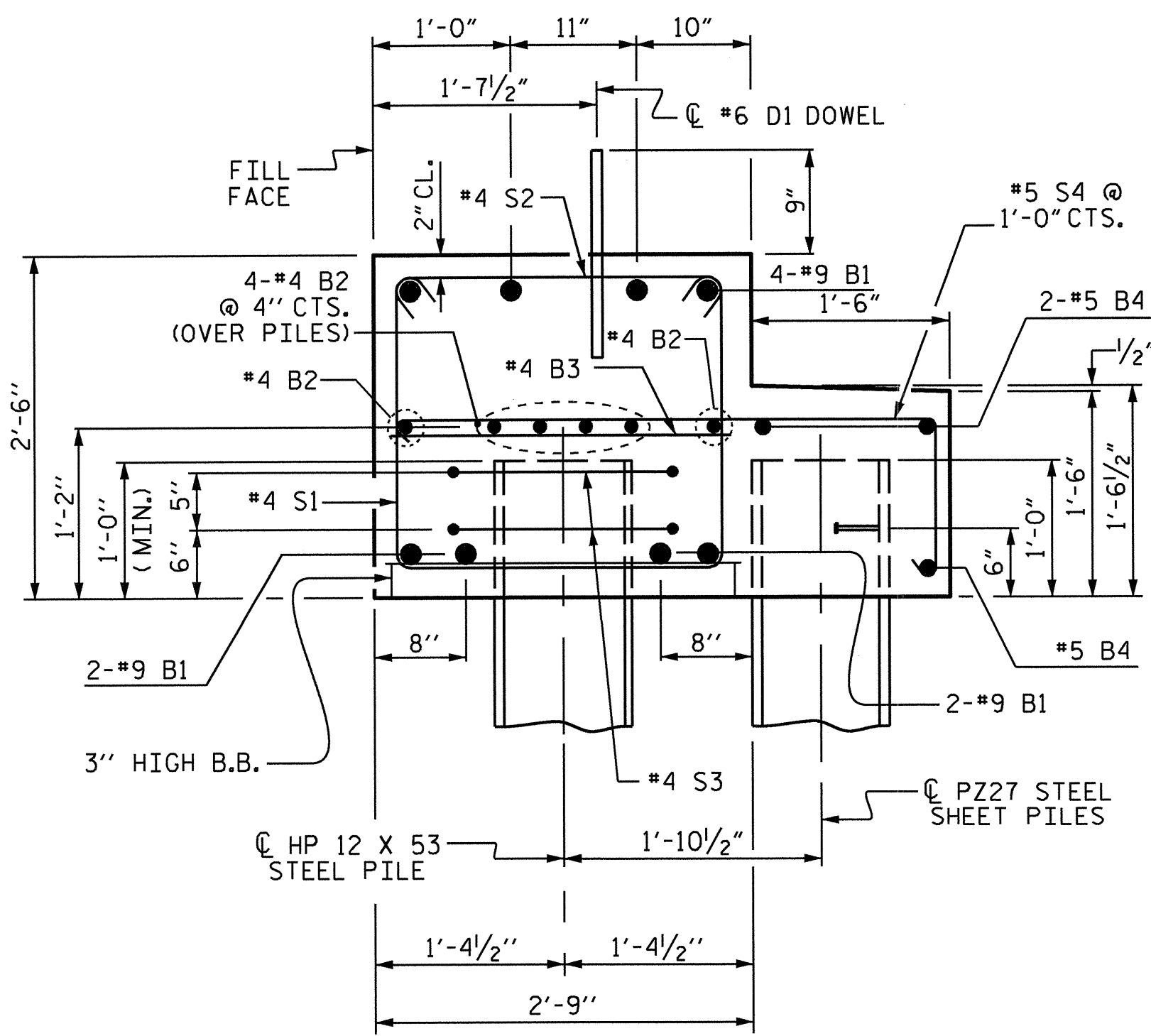
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

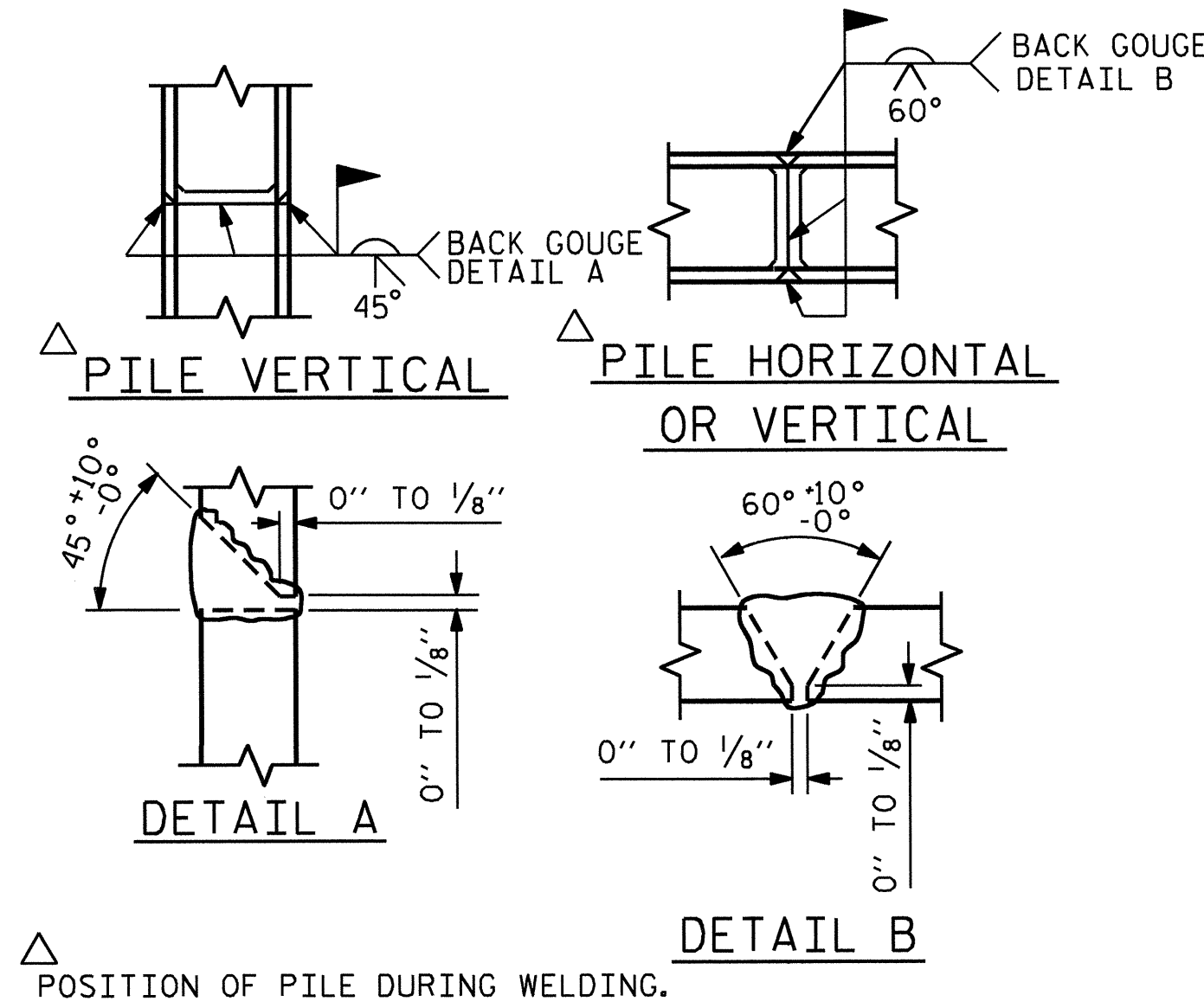
TEMPORARY DRAINAGE AT END BENT



DETAIL "B" ANCHOR STUD DETAIL

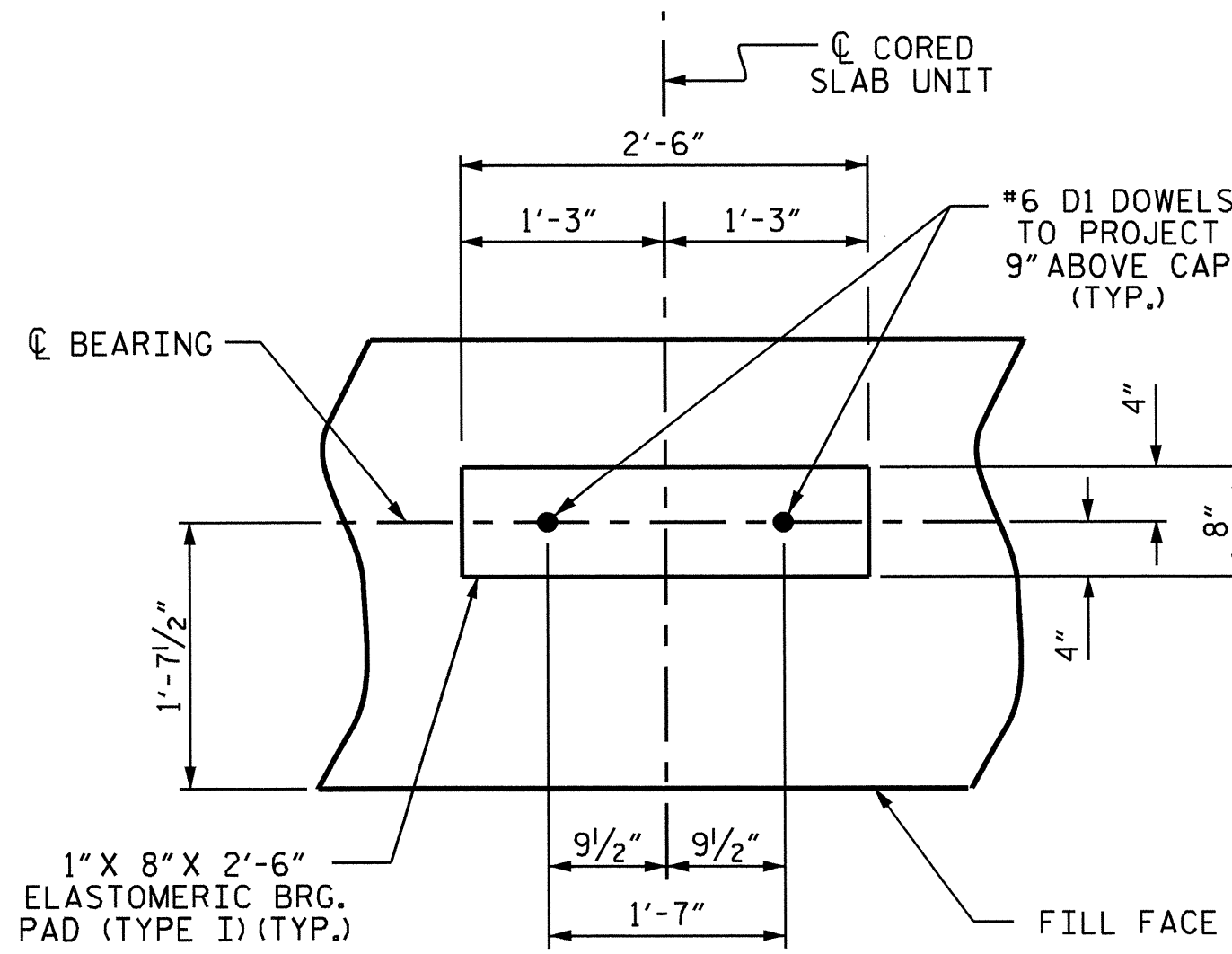


SECTION A-A

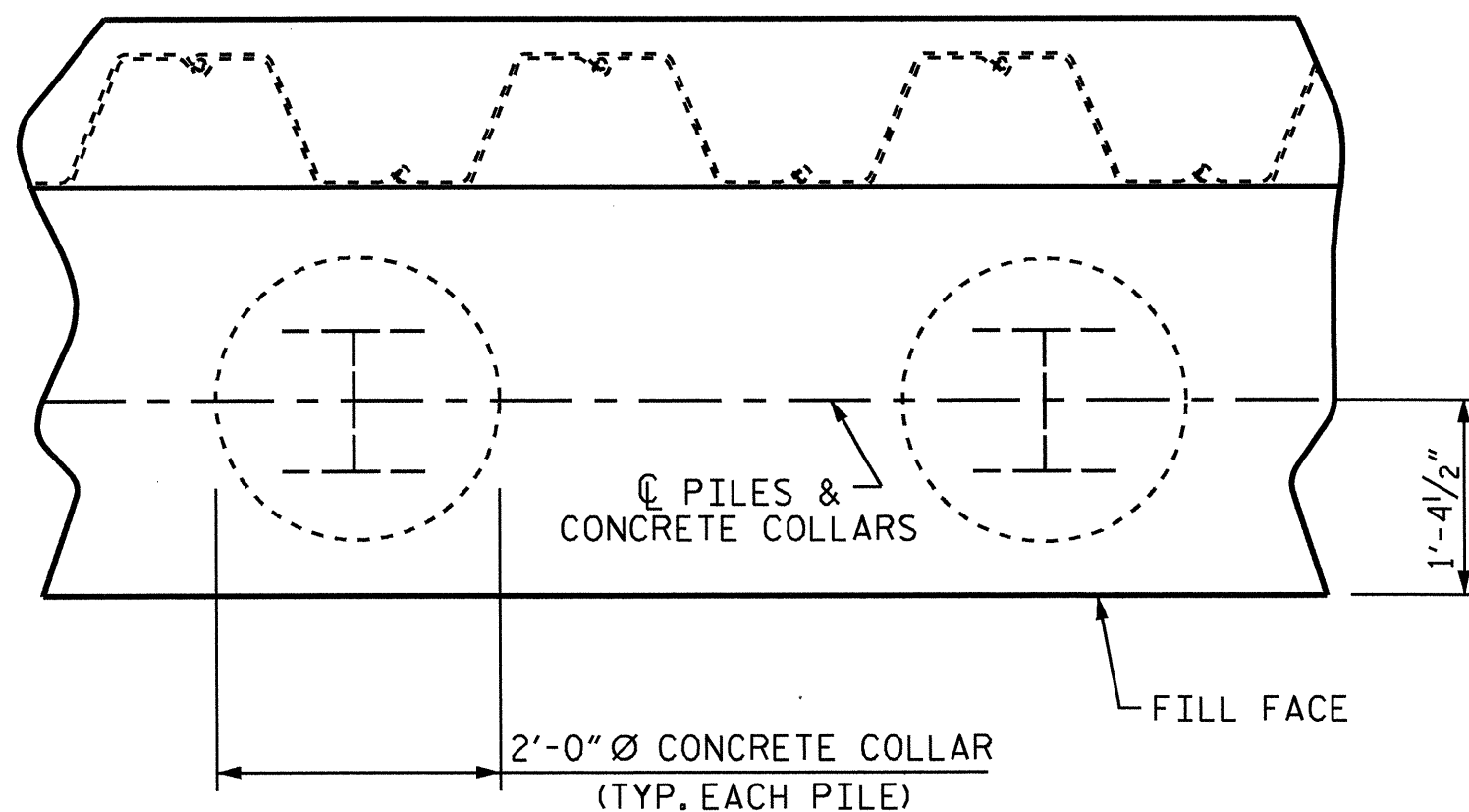


PILE SPLICE DETAILS

POSITION OF PILE DURING WELDING.

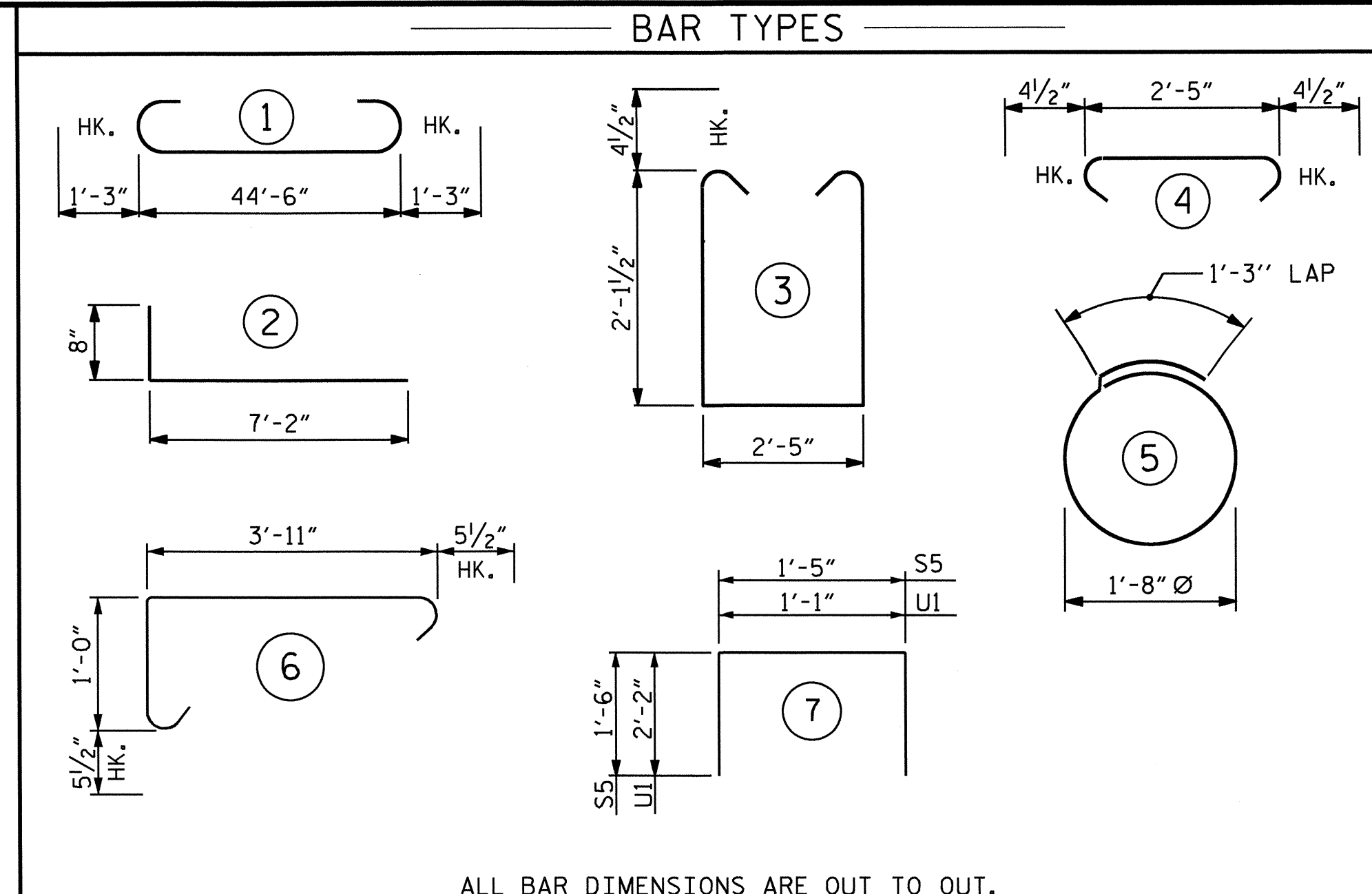


DETAIL "A"



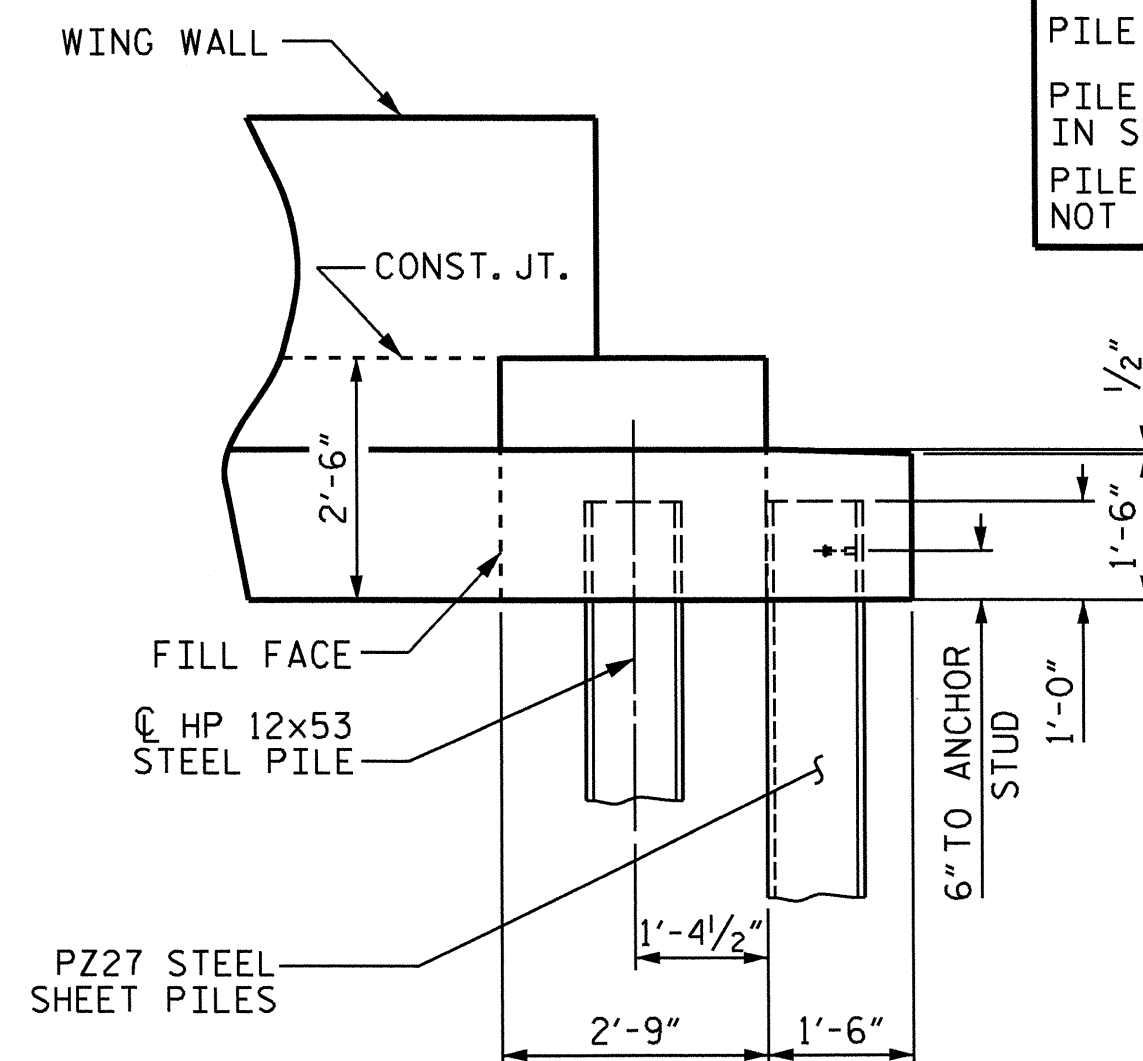
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

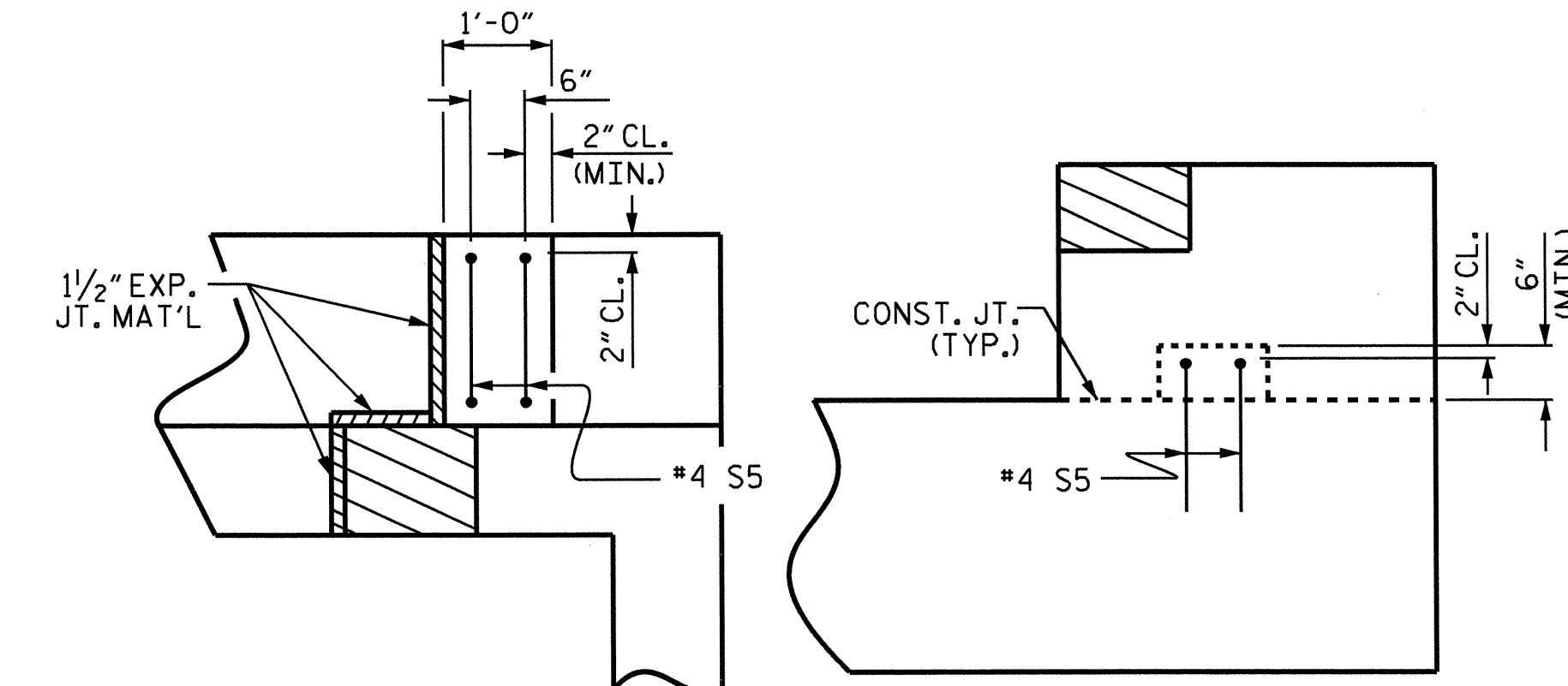


ALL BAR DIMENSIONS ARE OUT TO OUT.

HP 12 X 53 STEEL PILES NO: 7	18" STEEL SHEET PILES NO. PZ27 = 42 NO. PZ90 = 2 TOTAL NO. = 44	105 LIN. FT.	410 SQ. FT.
PILE EXCAVATION		39.00 LIN. FT.	
PILE EXCAVATION IN SOIL		30.00 LIN. FT.	
PILE EXCAVATION NOT IN SOIL			



END ELEVATION



PLAN ELEVATION
LATERAL GUIDE DETAILS

(LEFT LATERAL GUIDE SHOWN, RIGHT END SIMILAR CONCRETE COPING NOT SHOWN FOR CLARITY)

PROJECT NO. B-4734
CLAY COUNTY
STATION: 12+75.00 -L-

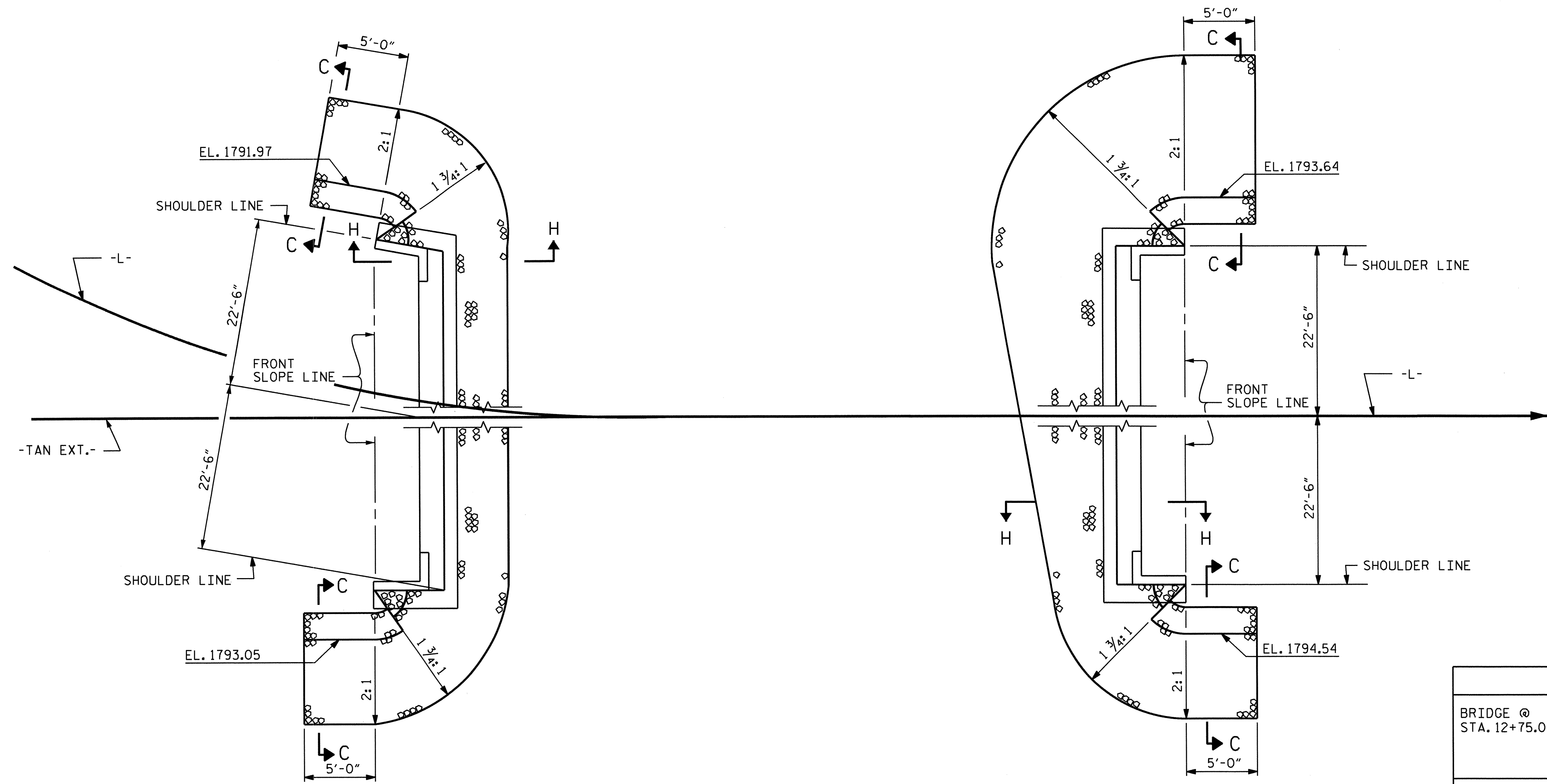
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No. 2
DETAILS



DRAWN BY: M.A. LEBLANC DATE: 4/13
CHECKED BY: J.R. MCROY DATE: 4/13
DESIGN ENGINEER OF RECORD: M.A. LEBLANC DATE: 5/13

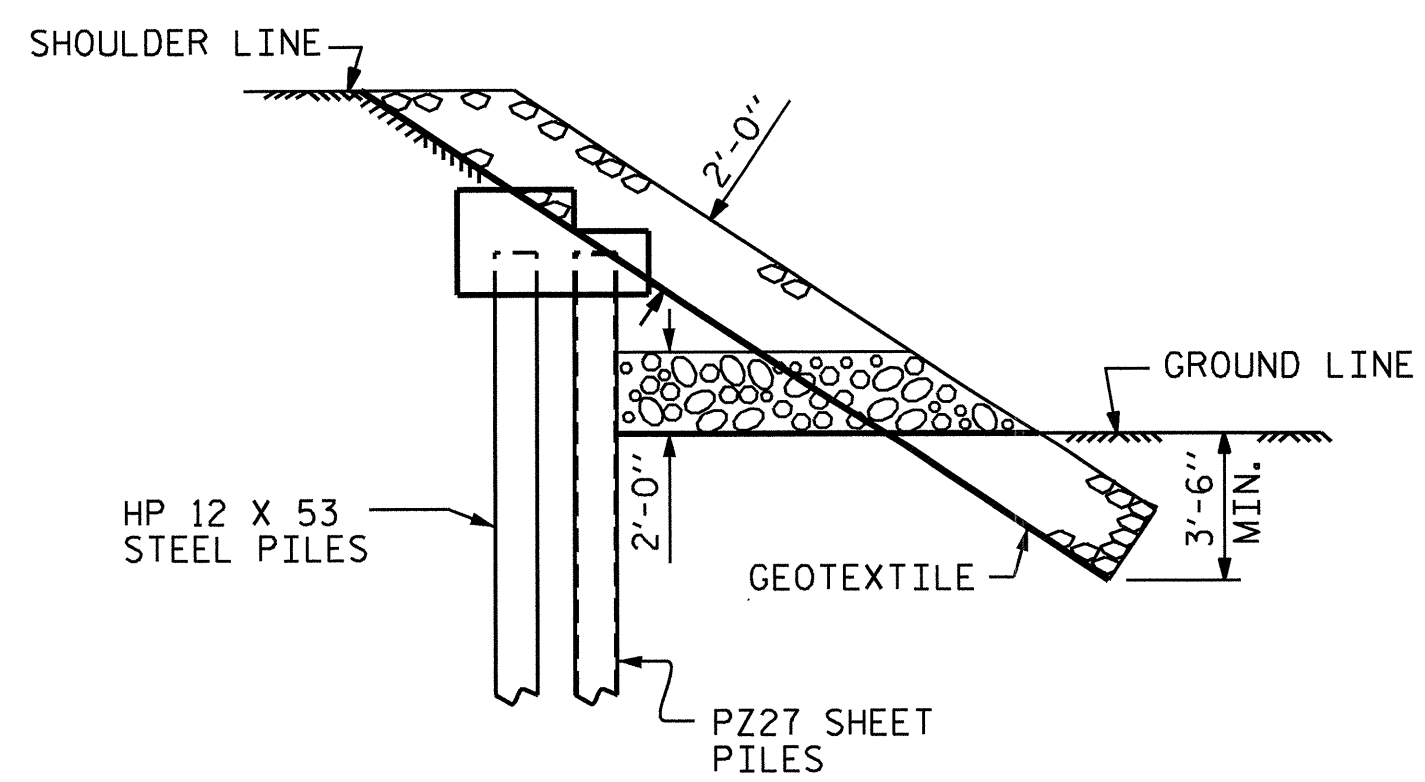
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18	
1			3			TOTAL SHEETS	
2			4			20	



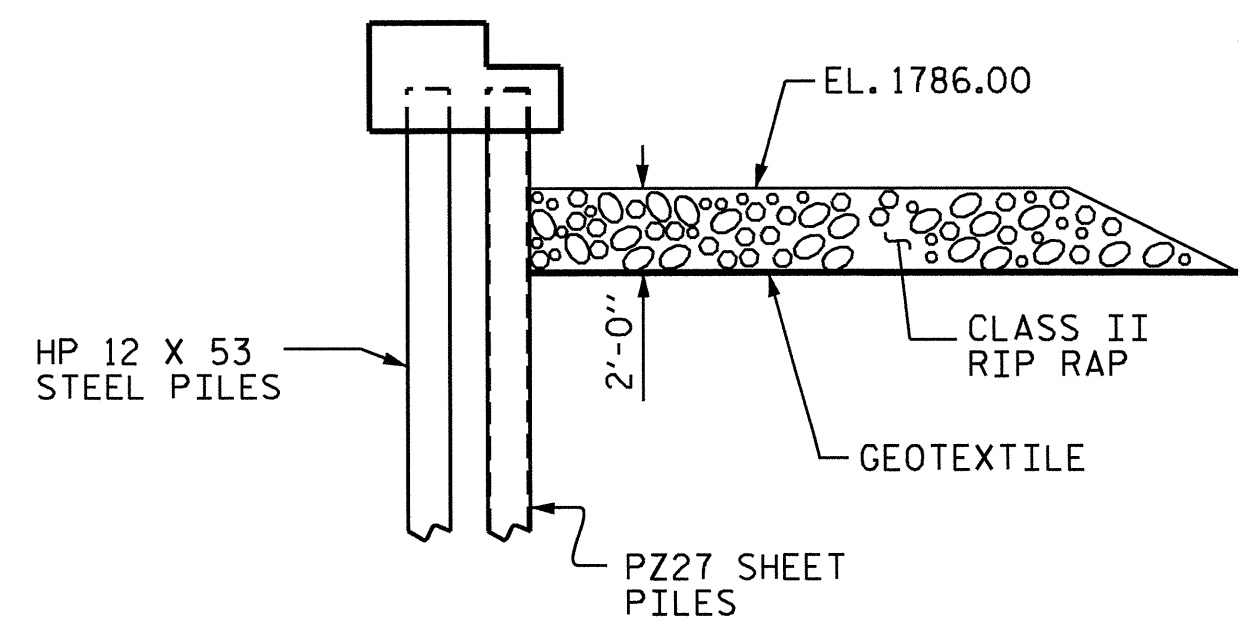
END BENT No. 1

END BENT No. 2

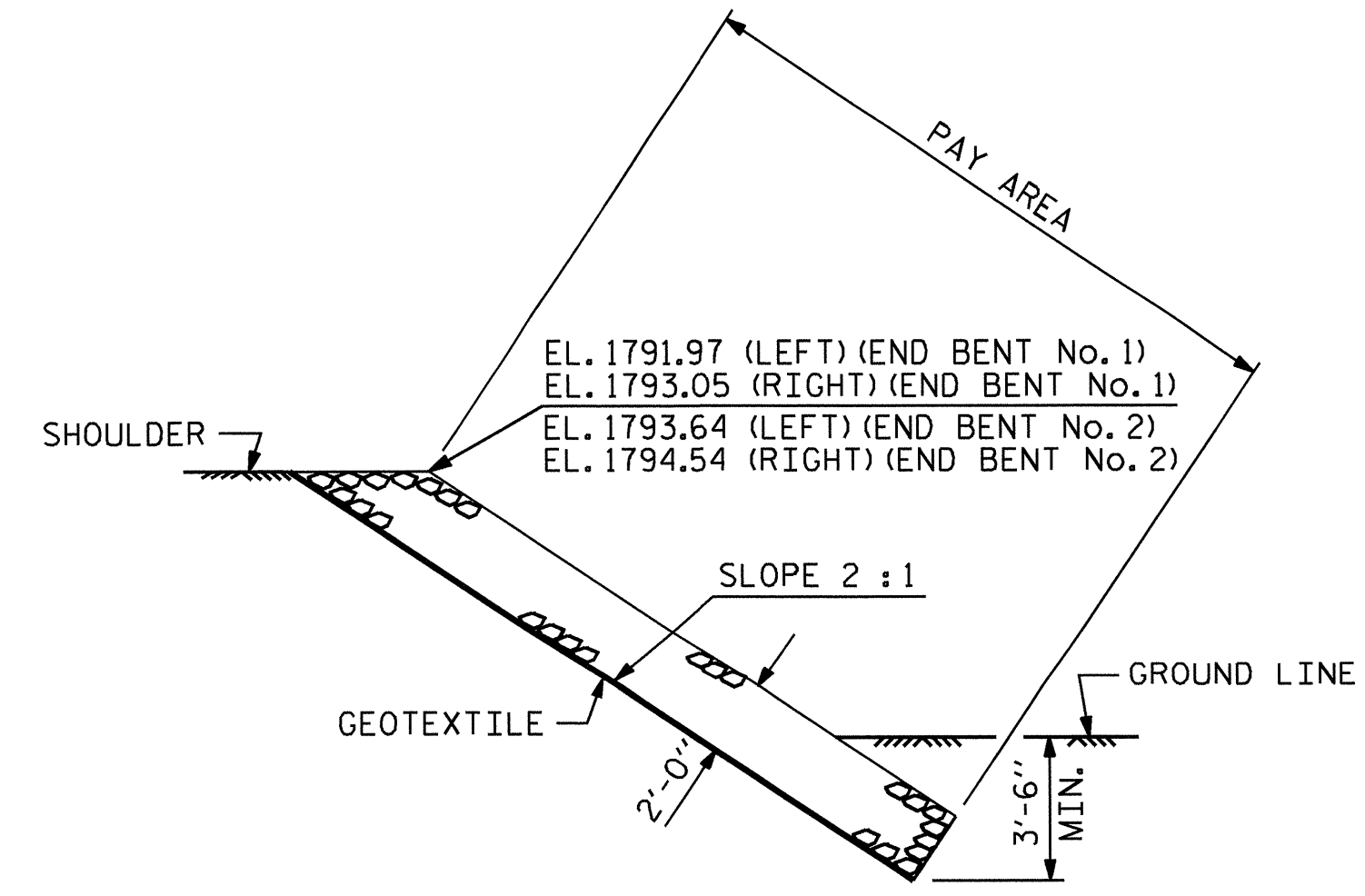
ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+75.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	113	126
END BENT No. 2	131	145



SECTION H-H



**SECTION C-C
BERM RIP RAPPED**



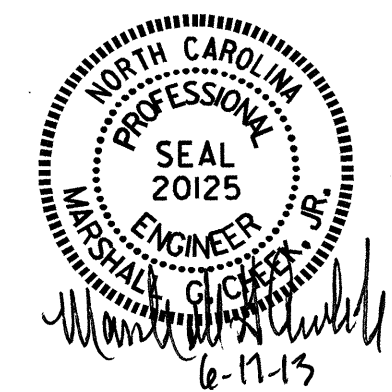
SECTION C-C

PROJECT NO. B-4734
CLAY COUNTY
 STATION: 12+75.00 -L-

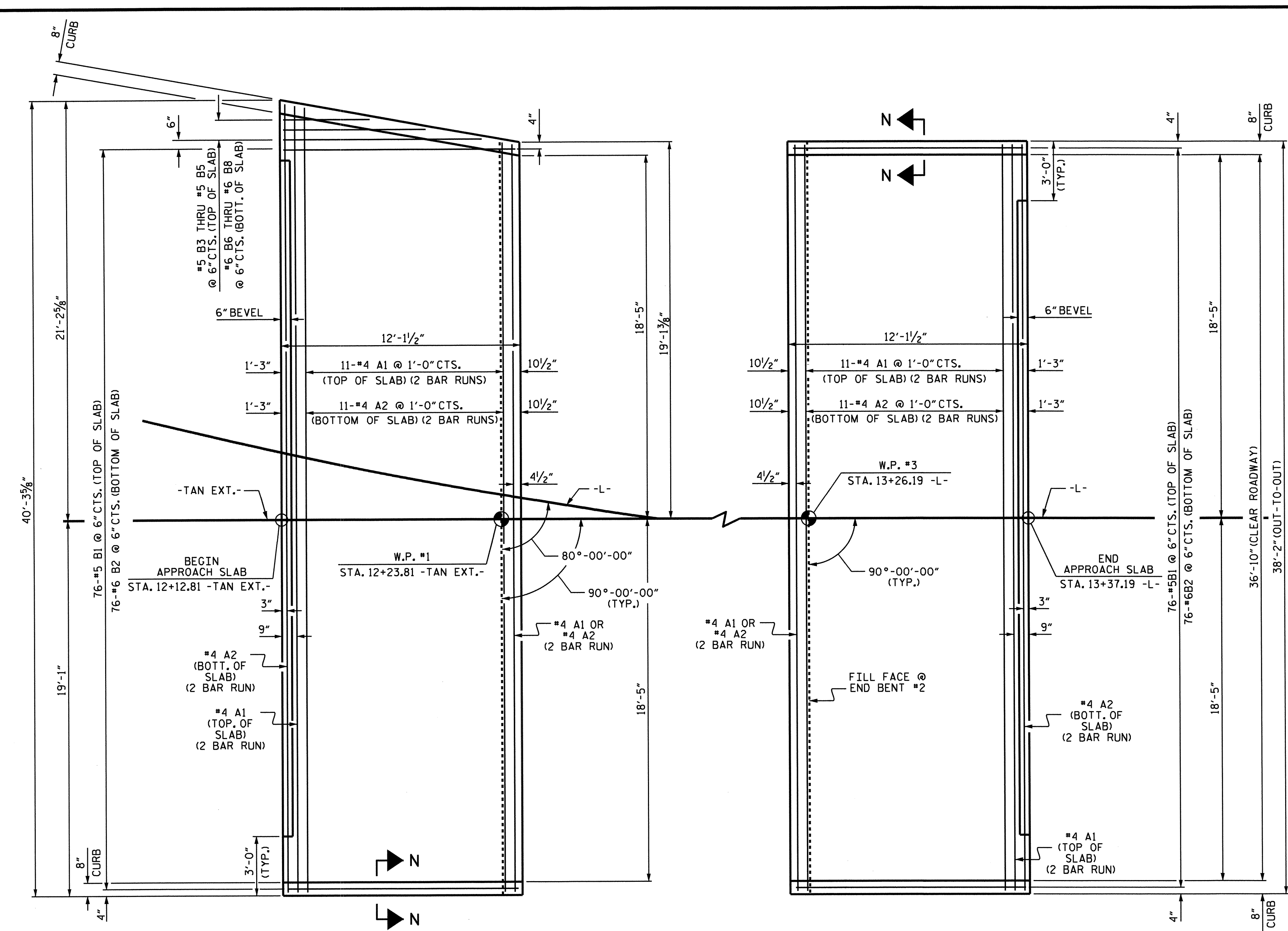
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

—RIP RAP DETAILS—

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-19
1			3			TOTAL SHEETS
2			4			20



ASSEMBLED BY : D. HODGE DATE : 3/13
 CHECKED BY : M.G. CHEEK DATE : 4/13
 DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM
 CHECKED BY : RDU 1/84 REV. 10/1/11 MAA/GM
 REV. 12/21/11 MAA/GM



NOTES

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

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

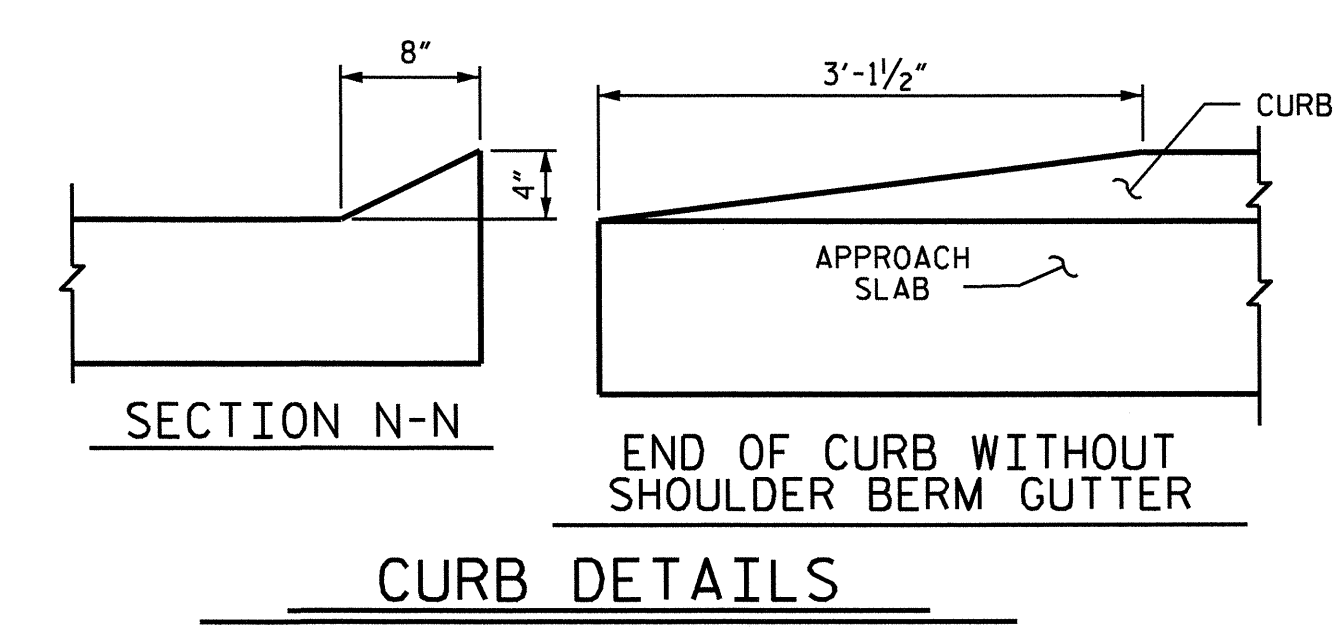
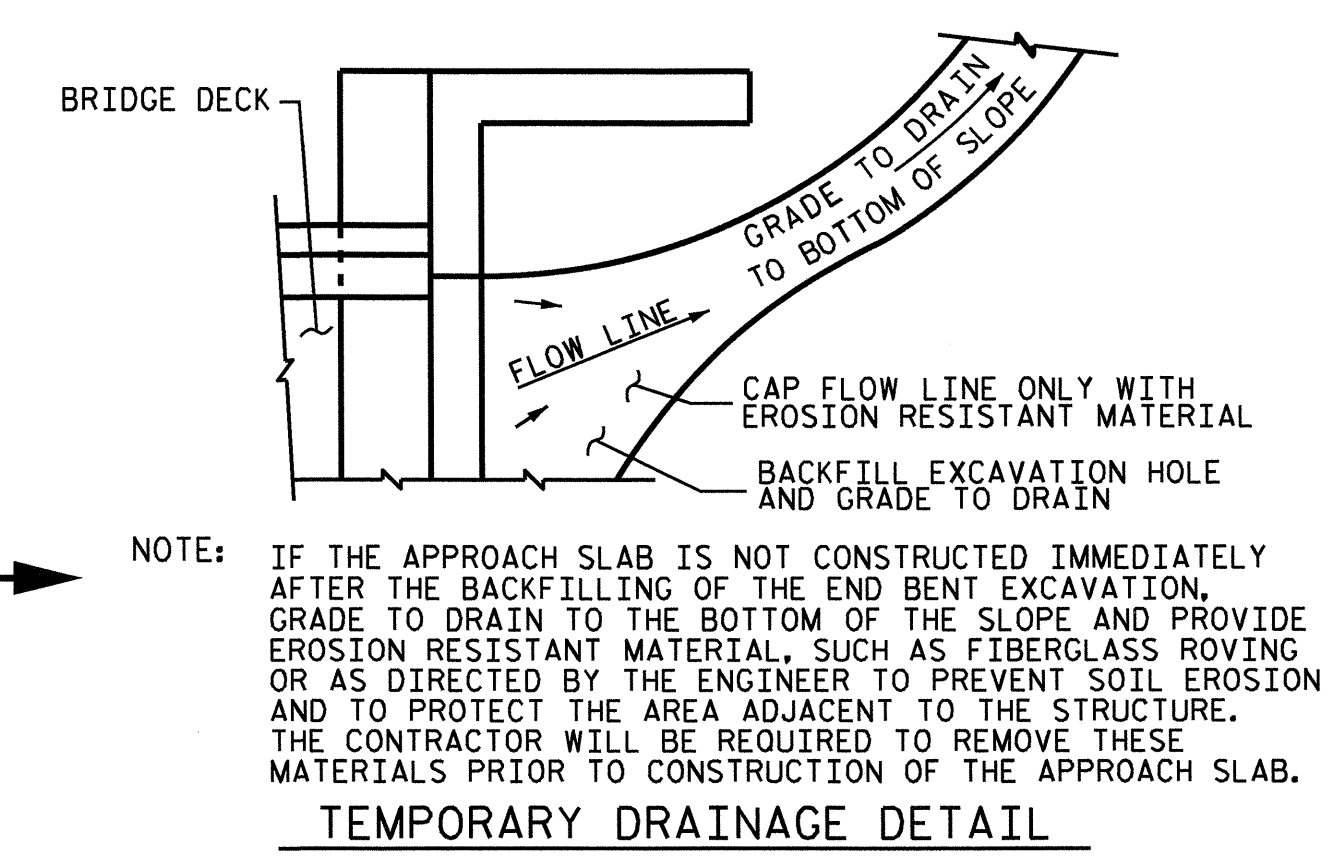
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#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 REQUIRED, PAYMENT FOR APPROACH SLAB GROOVING IS INCLUDED IN THE "GROOVING BRIDGE FLOORS" PAY ITEM.



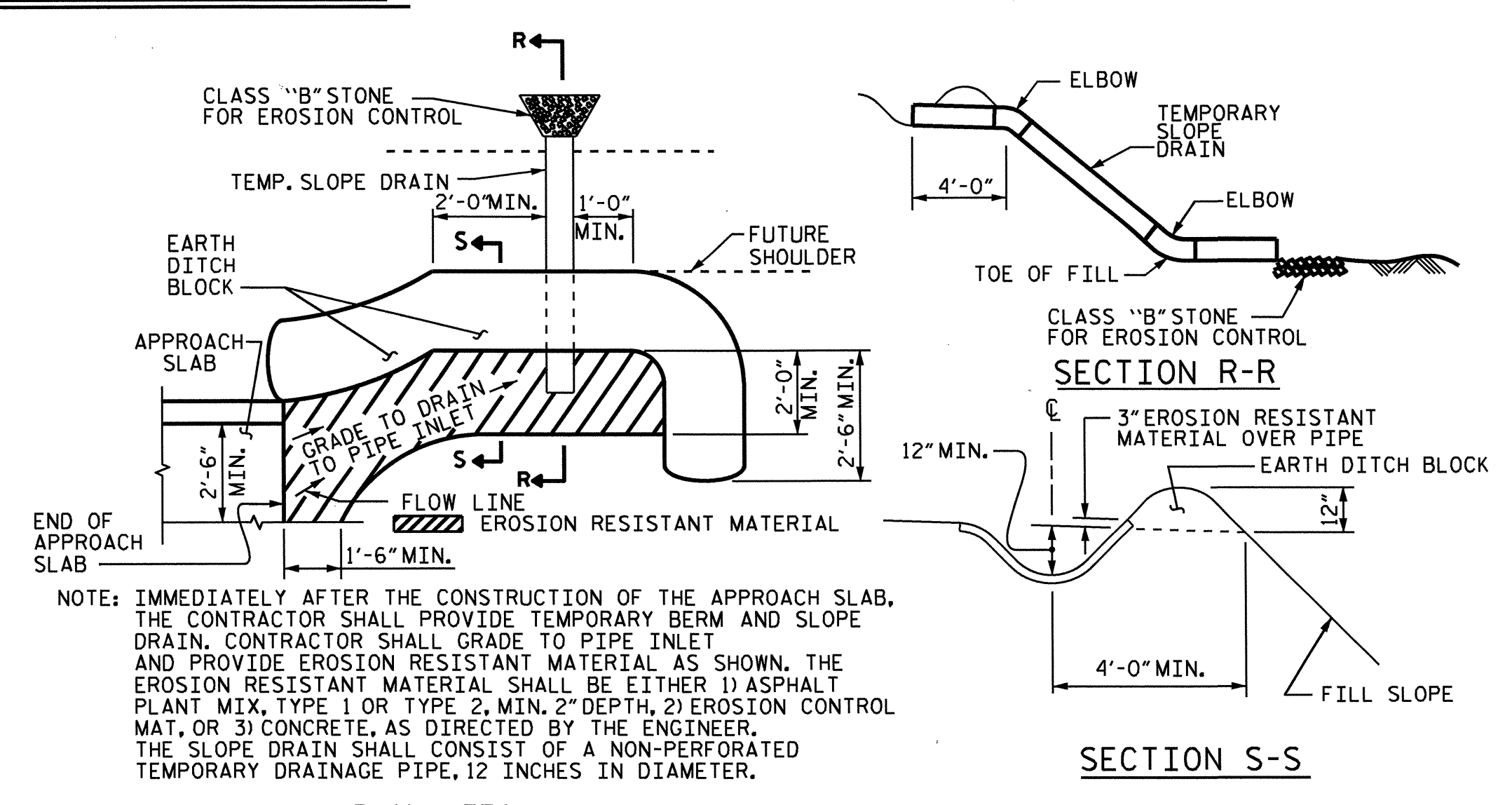
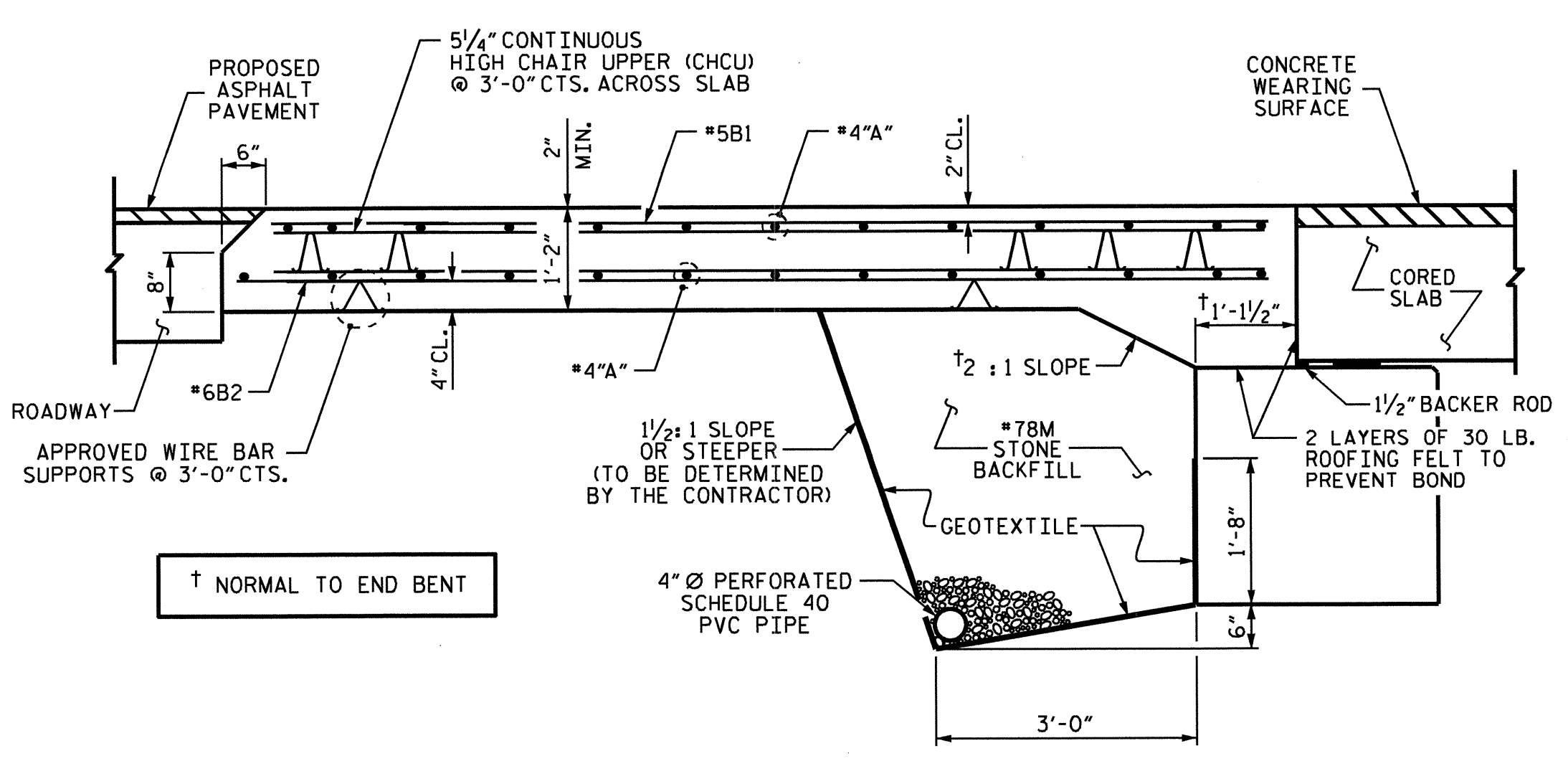
BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	20'-11"	363
A2	26	#4	STR	20'-10"	362
*B1	76	#5	STR	11'-2"	885
B2	76	#6	STR	11'-8"	1332
*B3	1	#5	STR	10'-0"	10
*B4	1	#5	STR	7'-2"	7
*B5	1	#5	STR	4'-4"	5
B6	1	#6	STR	10'-0"	15
B7	1	#6	STR	7'-2"	11
B8	1	#6	STR	4'-4"	7
REINFORCING STEEL					1727 LBS
* EPOXY COATED REINFORCING STEEL					1270 LBS
CLASS AA CONCRETE					24.2 C.Y.

APPROACH SLAB AT EB #2

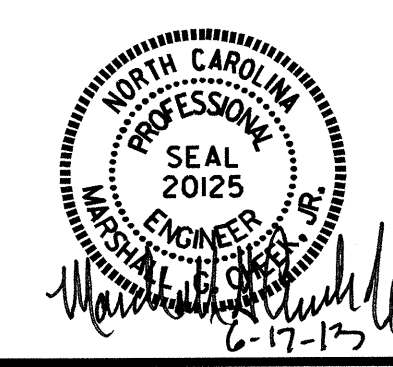
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	19'-11"	346
A2	26	#4	STR	19'-10"	344
*B1	76	#5	STR	11'-2"	885
B2	76	#6	STR	11'-8"	1332
REINFORCING STEEL					1676 LBS
* EPOXY COATED REINFORCING STEEL					1231 LBS
CLASS AA CONCRETE					23.5 C.Y.



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-4734**
 COUNTY **CLAY**
 STATION: **12+75.00 -L-**



DRAWN BY: **M.A. LEBLANC** DATE: **4/13**
 CHECKED BY: **J.R. MCROY** DATE: **5/13**
 DESIGN ENGINEER OF RECORD: **M.A. LEBLANC** DATE: **5/13**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW

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

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

STD. NO. SN