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TIP PROJECT: B-4932

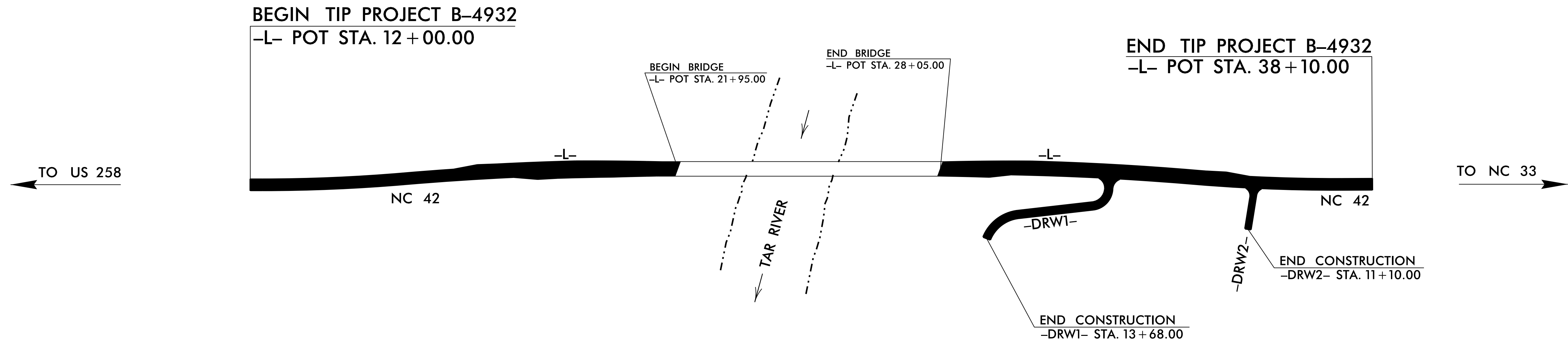
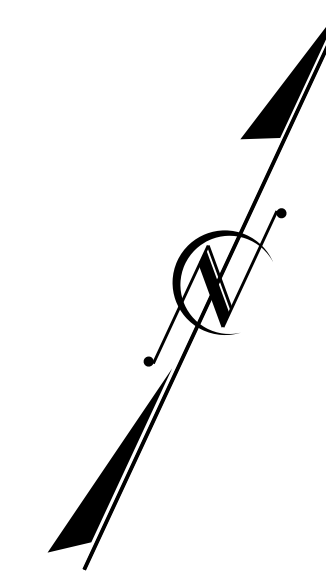
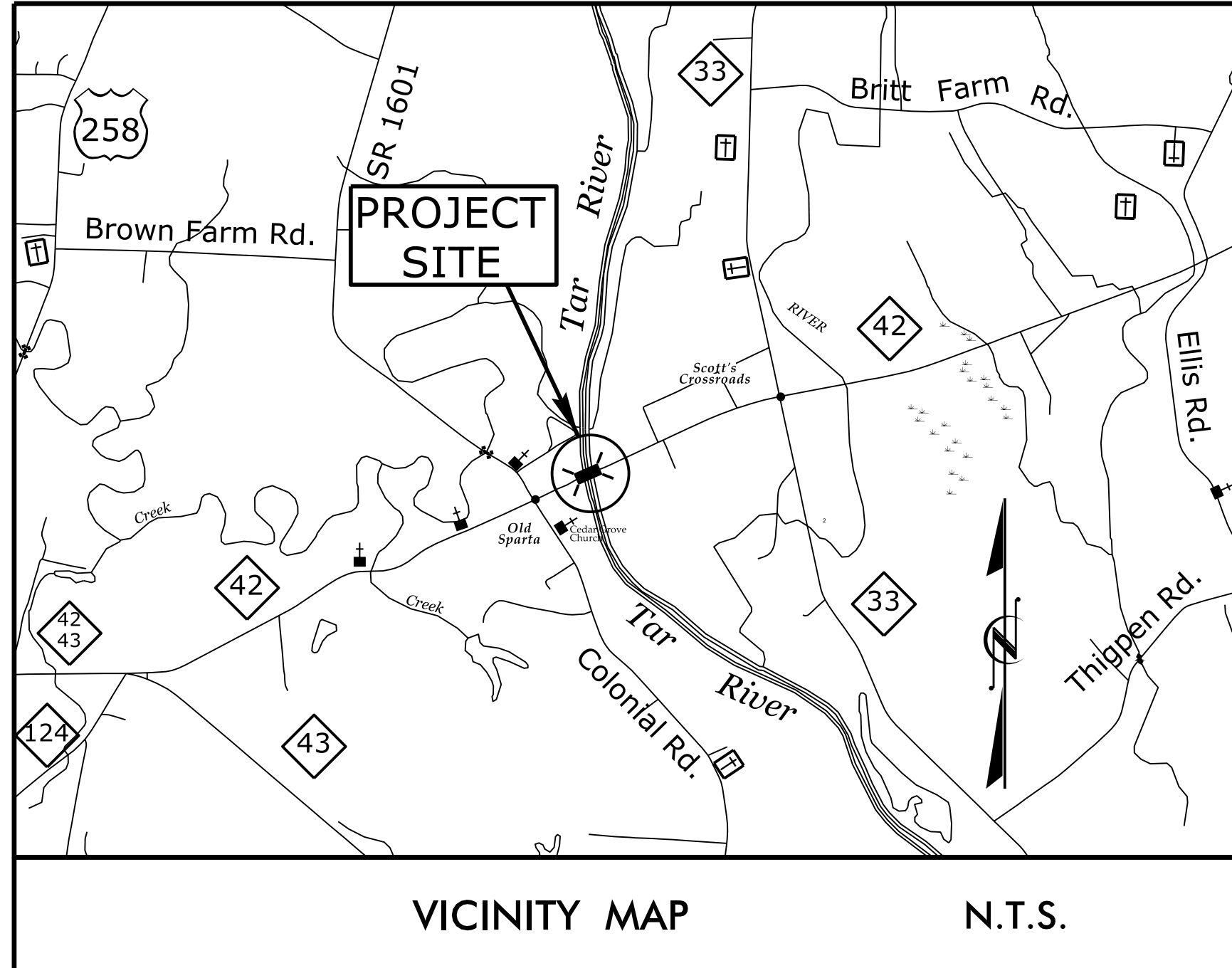
CONTRACT: C203939

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

EDGECOMBE COUNTY

LOCATION: BRIDGE NO. 28 OVER TAR RIVER ON NC 42
TYPE OF WORK: GRADING, PAVING, DRAINAGE,
AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4932		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40137.1.1	BRSTP-0042(19)	P.E.	
40137.2.1	-	RW/UTIL.	
40137.3.1	-	CONST.	



STRUCTURE

DESIGN DATA

ADT 2017 = 2,410
ADT 2037 = 3,180
K = 9 %
D = 60 %
T = 32 % **
* V = 60 MPH
** (TTST 22 %, DUAL 10 %)

FUNC CLASS=MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4932 = 0.378 MILES
LENGTH STRUCTURE TIP PROJECT B-4932 = 0.116 MILES

TOTAL LENGTH TIP PROJECT B-4932 = 0.494 MILES

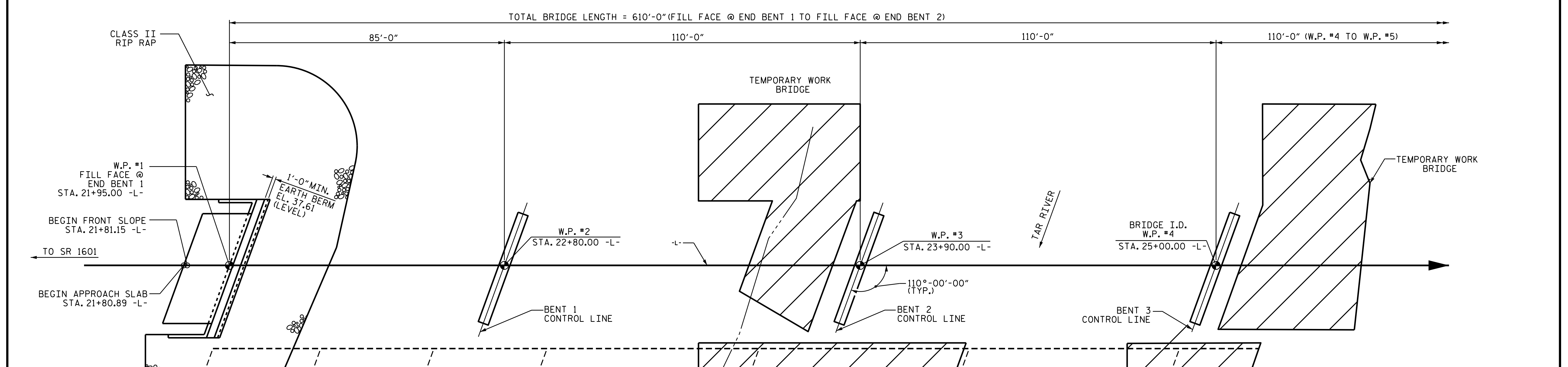
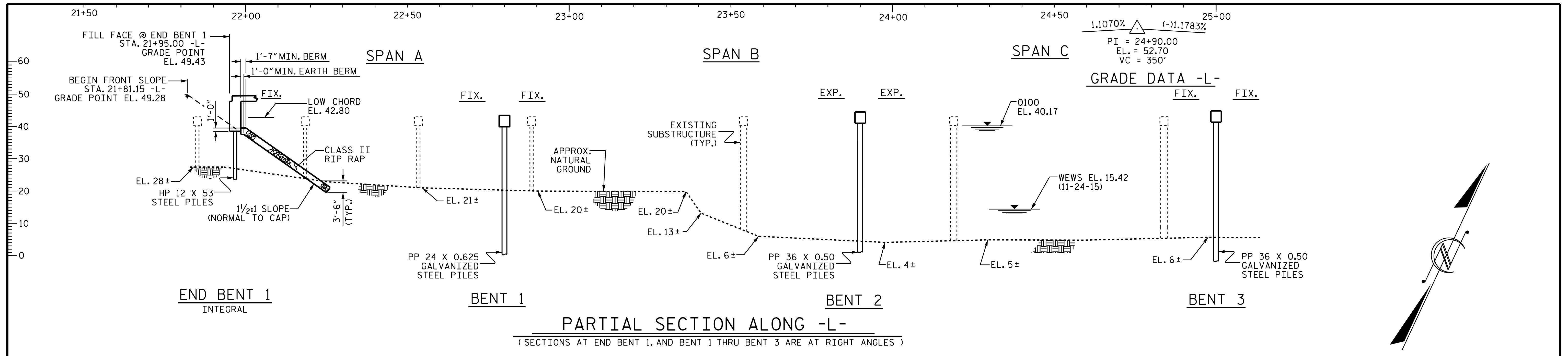
Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

LETTING DATE :
JUNE 19, 2018

G. W. DICKEY, P.E.
PROJECT ENGINEER

A. G. ABRAHA, P.E.
PROJECT DESIGN ENGINEER



PARTIAL PLAN
(PILES ARE NOT SHOWN IN PLAN VIEW FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROFESSIONAL ENGINEER
SEAL 21271
GREGORY W. DICKEY

DocuSigned by:
Greg Dickey
884E468CE5B4B6...
4/6/2018

PROFESSIONAL ENGINEER
SEAL 030024
ASTER G. ABRAMA

DocuSigned by:
Aster Abrama
4985201384F0D...

REVISIONS

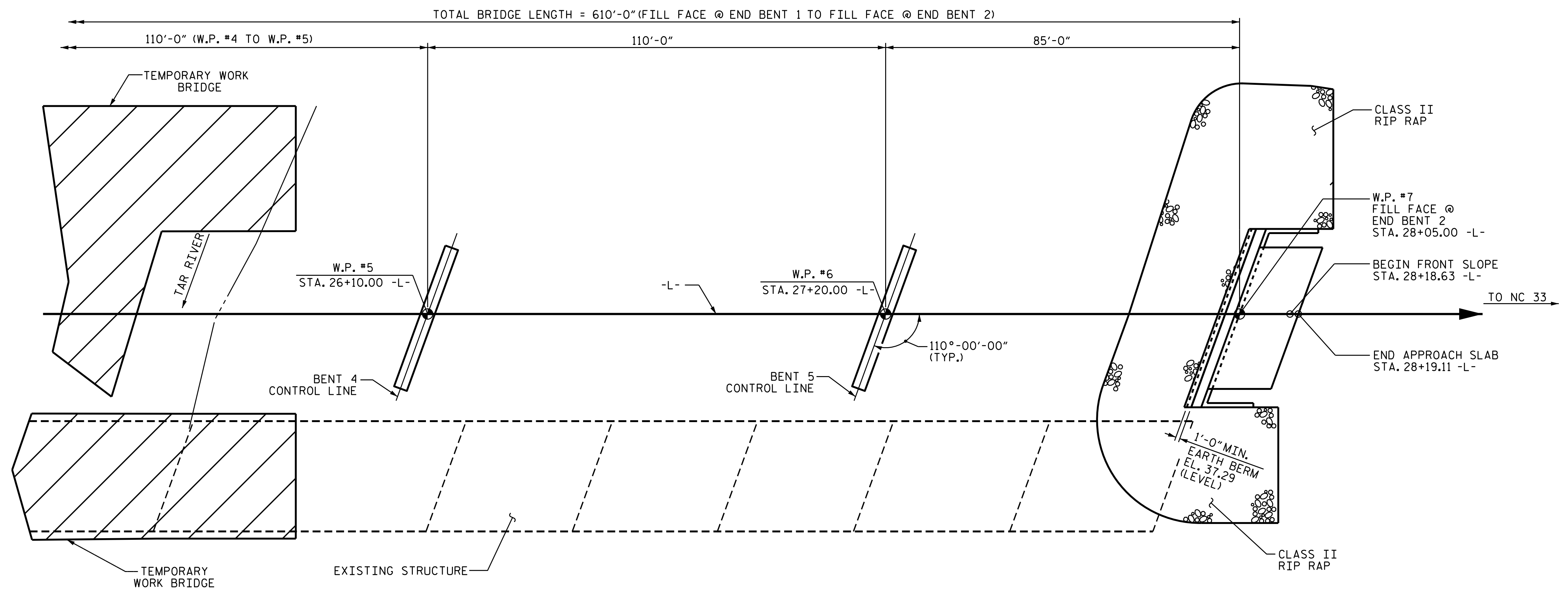
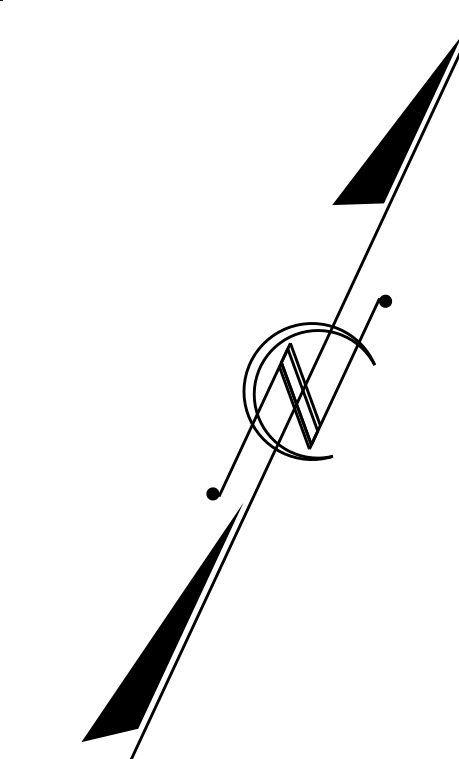
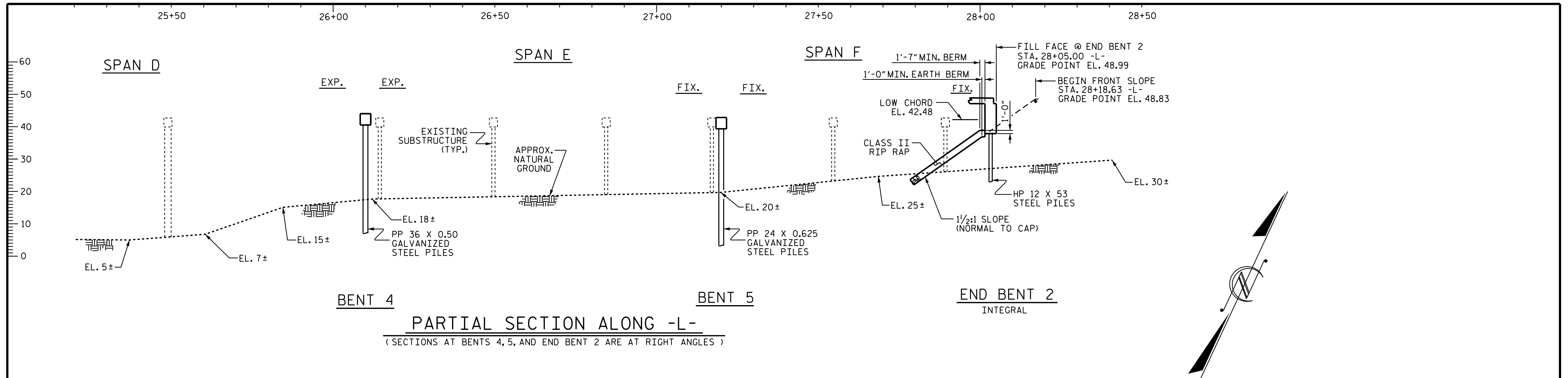
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00-L-
 SHEET 1 OF 4 REPLACE BRIDGE NO. 28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON NC 42
 OVER TAR RIVER BETWEEN
 SR 1601 AND NC 33

DRAWN BY: S. B. WILLIAMS/O. T. NGUYEN DATE: 10/17
 CHECKED BY: M. K. BEARD DATE: 11/9/17
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 12/12/17



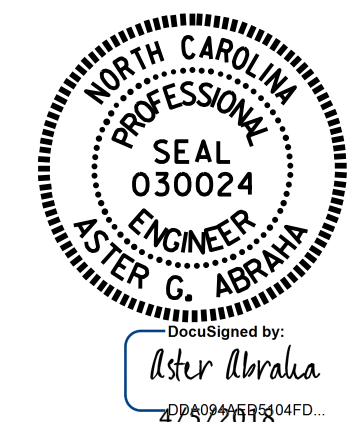
PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

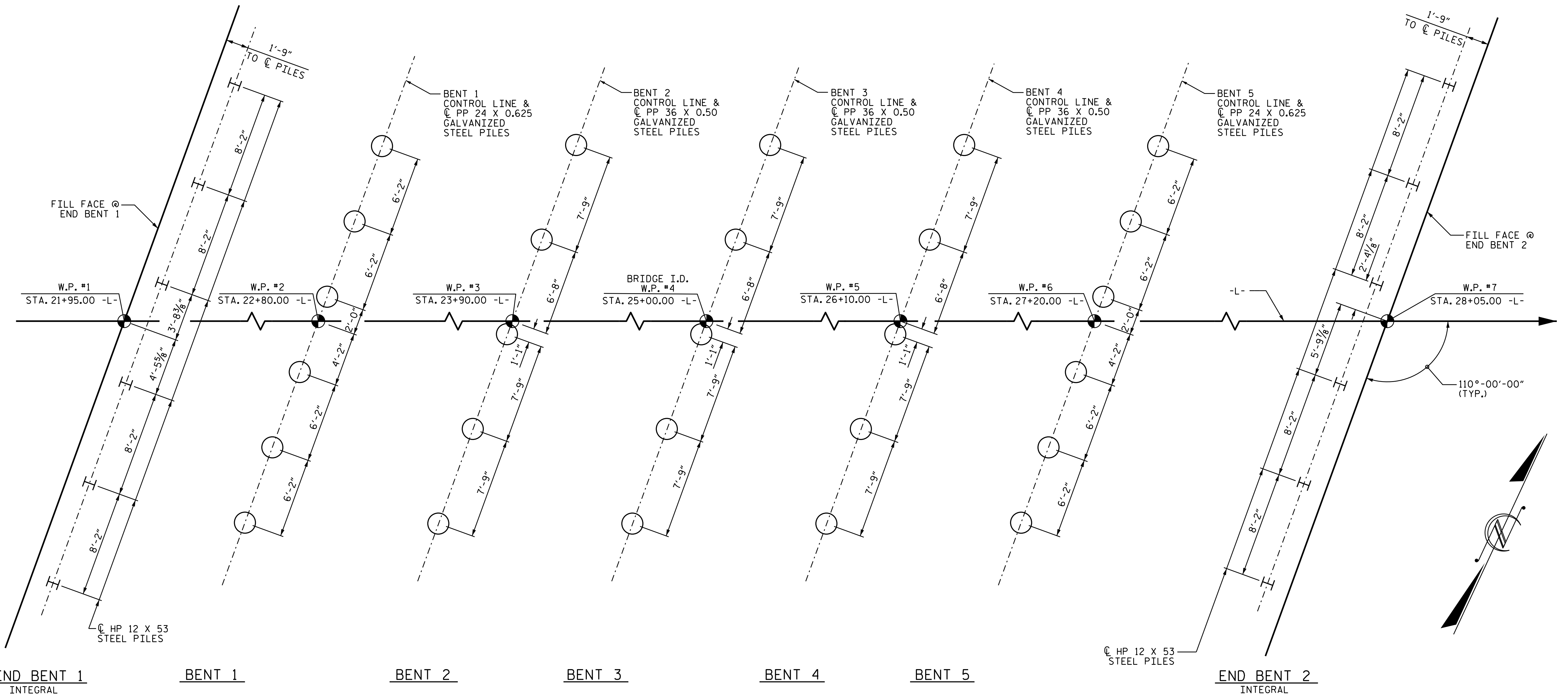
FOR BRIDGE ON NC 42
 OVER TAR RIVER BETWEEN
 SR 1601 AND NC 33



DRAWN BY: S. B. WILLIAMS/O. T. NGUYEN DATE: 10/17
 CHECKED BY: M. K. BEARD DATE: 11/9/17
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 12/12/17

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			46



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO 1 AND END BENT NO 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

PILES AT BENT NO 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 265 TONS PER PILE.

PILES AT BENT NO 2 AND BENT NO 4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 295 TONS PER PILE.

PILES AT BENT NO 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 320 TONS PER PILE.

PILES AT BENT NO 5 ARE DESIGNED FOR A FACTORED RESISTANCE OF 270 TONS PER PILE.

DRIVE PILES AT END BENT NO 1 AND END BENT NO 2 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.

DRIVE PILES AT BENT NO 1 TO A REQUIRED DRIVING RESISTANCE OF 355 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.

DRIVE PILES AT BENT NO 2 AND BENT NO 4 TO A REQUIRED DRIVING RESISTANCE OF 395 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.

DRIVE PILES AT BENT NO 3 TO A REQUIRED DRIVING RESISTANCE OF 430 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.

DRIVE PILES AT BENT NO 5 TO A REQUIRED DRIVING RESISTANCE OF 360 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.

INSTALL PILES AT BENT NO 1 TO A TIP ELEVATION NO HIGHER THAN -25 FT.

INSTALL PILES AT BENT NO 2 TO A TIP ELEVATION NO HIGHER THAN -35 FT.

INSTALL PILES AT BENT NO 3 TO A TIP ELEVATION NO HIGHER THAN -40 FT.

INSTALL PILES AT BENT NO 4 TO A TIP ELEVATION NO HIGHER THAN -25 FT.

INSTALL PILES AT BENT NO 5 TO A TIP ELEVATION NO HIGHER THAN -15 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO 1 IS ELEVATION 14 FT. THE SCOUR CRITICAL ELEVATION FOR BENT NO 2 AND 3 ARE ELEVATION -2 FT. THE SCOUR CRITICAL ELEVATION FOR BENT 4 IS ELEVATION 9 FT. THE SCOUR CRITICAL ELEVATION FOR BENT NO 5 IS ELEVATION 13 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 55 TO 110 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO 1 AND END BENT NO 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 95 TO 180 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO 1, BENT NO 2, BENT NO 3, BENT NO 4, AND BENT NO 5. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING THE PRODUCTION PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT NO 1, BENT NO 2, BENT NO 3, BENT NO 4 OR BENT NO 5. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE PIPE PILES AT BENT NO 1 AND BENT NO 5 SHALL HAVE A WALL THICKNESS OF 5/8 INCH.



DRAWN BY : O. T. NGUYEN DATE : 10/05/17
 CHECKED BY : M. K. BEARD DATE : 11/9/17
 DESIGN ENGINEER OF RECORD : P. K. NEWTON DATE : 12/12/17

05-APR-2018 16:51
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 adbrana

PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00-L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON NC 42
 OVER TAR RIVER BETWEEN
 SR 1601 AND NC 33

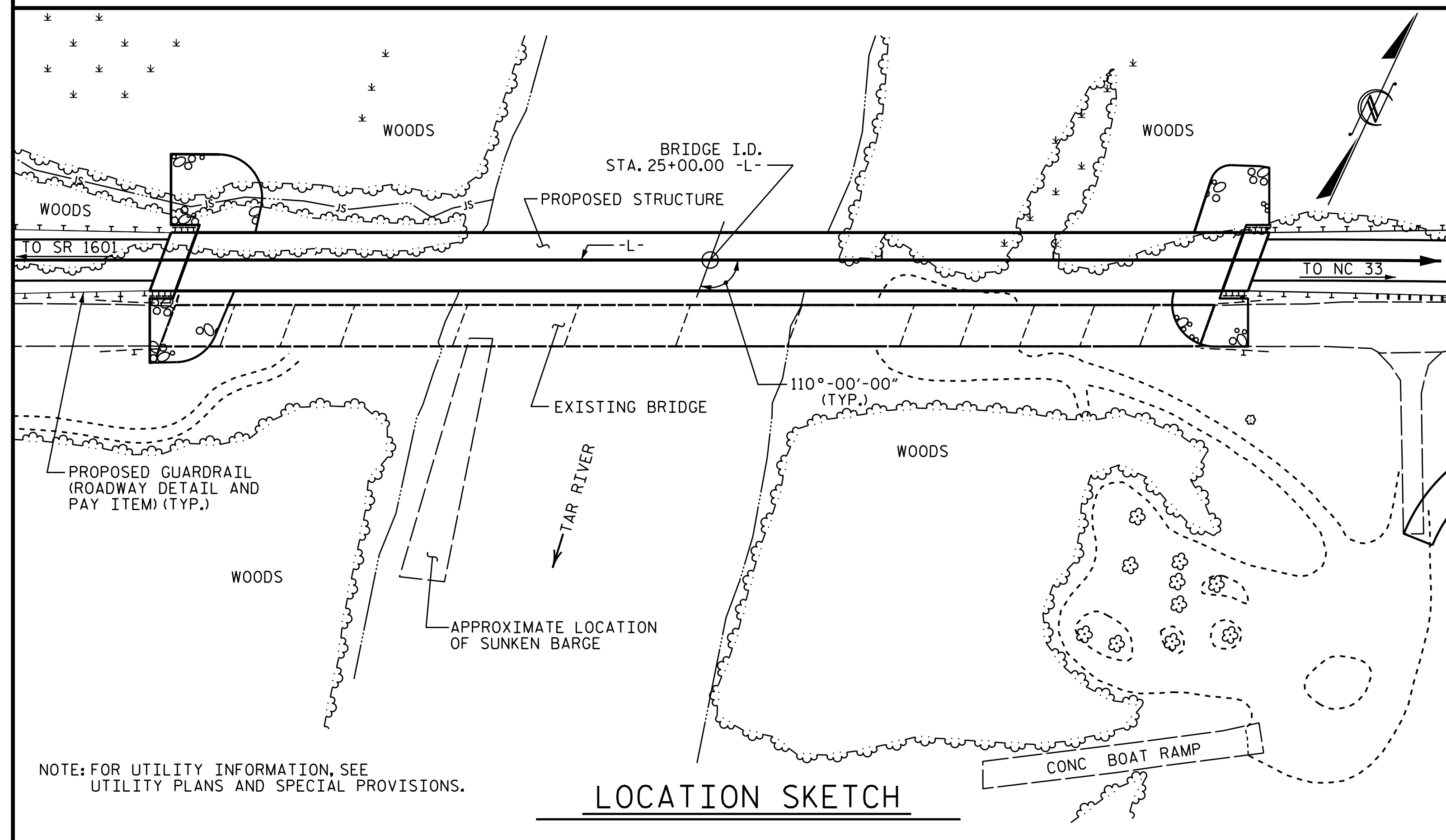
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 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			46

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 24 X 0.625 GALVANIZED STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 36 X 0.50 GALVANIZED STEEL PILES	HP 12 X 53 STEEL PILES	PP 24 X 0.625 GALVANIZED STEEL PILES	PP 36 X 0.50 GALVANIZED STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS				
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EACH	EACH	EACH	NO.	LIN. FT.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SO. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE					22,723	19,636		LUMP SUM		24	2414.1							1216.36				LUMP SUM	LUMP SUM			
END BENT 1									41.3		5488		6		6	360		6					490	545		
BENT 1									22.8		3137		6		6	510		6								
BENT 2									29.3		3693		5				5	600								
BENT 3									29.3		3693		5				5	600								
BENT 4									29.3		3693		5				5	600								
BENT 5									22.8		3137		6		6	510		6								
END BENT 2									39.7		5581		6		6	330		6					390	435		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	2	22,723	19,636	214.5	LUMP SUM	28,422	24	2414.1	12	12	15	12	690	12	1020	15	1800	39	1216.36	880	980	LUMP SUM	LUMP SUM

BM #2: RR SPIKE IN BASE OF 14" GUM, STA. 24+04.50 -L- 35.2" RT EL. 22.03 NAVD 88



NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

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 1.
- 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.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- THE EXISTING STRUCTURE CONSISTS OF 3 @ 35', 1 @ 65'-6", 3 @ 65'-0" (SPAN 5-7 CONTINUOUS), 1 @ 65'-6", 5 @ 35'-0" SPANS WITH A CLEAR ROADWAY WIDTH OF 24'-1" AND CONCRETE DECK ON STEEL I-BEAMS, STEEL H-PILE BENTS WITH CONCRETE PIERS IN CHANNEL AND CONCRETE ABUTMENTS. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- 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 25+00 -L-."
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. 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 SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- FOR INTERIOR BENTS, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 4 OF 4

HYDROGRAPHIC DATA	
DESIGN DISCHARGE	= 42,400 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YR.
DESIGN HIGH WATER ELEVATION	= 38.6
DRAINAGE AREA	= 2,420 SQ. MI.
BASE DISCHARGE (Q100)	= 49,600 CFS
BASE HIGH WATER ELEVATION	= 40.2
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 67,000 CFS
FREQUENCY OF OVERTOPPING FLOOD	= <500 YR.
OVERTOPPING FLOOD ELEVATION	= 40.5

DRAWN BY : O. T. NGUYEN DATE : 10/17
 CHECKED BY : M. K. BEARD DATE : 11/9/17
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE : 12/12/17



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			46

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

LOAD FACTORS:

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

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								
						LIVE-LOAD FACTORS (γ_{LL})	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)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.005	--	1.75	0.808	1.201	A	I	41.01	0.985	1.005	A	I	65.61	0.80	0.808	1.105	A	I	41.01		
	HL-93 (OPERATING)	N/A	--	1.023	--	1.35	0.877	1.522	C	E	53.88	0.926	1.334	C	E	26.94	N/A	0.877	1.023	C	E	53.88		
	HS-20 (INVENTORY)	36.000	2	1.257	45.264	1.75	0.808	1.607	A	I	41.01	0.985	1.257	A	I	65.61	0.80	0.808	1.478	A	I	41.01		
	HS-20 (OPERATING)	36.000	--	1.395	50.215	1.35	0.877	1.934	A	E	41.01	0.924	1.691	A	E	65.61	N/A	0.877	1.395	A	E	41.01		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	3.218	43.437	1.40	0.877	4.301	A	E	41.01	0.924	3.867	A	E	61.51	0.80	0.877	3.218	A	E	41.01	
		SNGARBS2	20.000	--	2.368	47.360	1.40	0.877	3.166	A	E	41.01	0.924	2.759	A	E	61.51	0.80	0.877	2.368	A	E	41.01	
		SNAGRIS2	22.000	--	2.230	49.066	1.40	0.877	2.978	A	E	36.91	0.924	2.561	A	E	65.61	0.80	0.877	2.230	A	E	41.01	
		SNCOTTS3	27.250	--	1.600	43.607	1.40	0.877	2.139	A	E	41.01	0.924	1.931	A	E	65.61	0.80	0.877	1.600	A	E	41.01	
		SNAGGRS4	34.925	--	1.326	46.307	1.40	0.877	1.772	A	E	41.01	0.924	1.608	A	E	65.61	0.80	0.877	1.326	A	E	41.01	
		SNS5A	35.550	--	1.297	46.121	1.40	0.877	1.734	A	E	41.01	0.924	1.628	A	E	65.61	0.80	0.877	1.297	A	E	41.01	
		SNS6A	39.950	--	1.186	47.365	1.40	0.877	1.585	A	E	41.01	0.924	1.485	A	E	65.61	0.80	0.877	1.186	A	E	41.01	
		SNS7B	42.000	--	1.129	47.413	1.40	0.877	1.509	A	E	41.01	0.924	1.459	A	E	65.61	0.80	0.877	1.129	A	E	41.01	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.444	47.664	1.40	0.877	1.931	A	E	41.01	0.924	1.768	A	E	65.61	0.80	0.877	1.444	A	E	41.01	
		TNT4A	33.075	--	1.449	47.941	1.40	0.877	1.938	A	E	41.01	0.924	1.723	A	E	65.61	0.80	0.877	1.449	A	E	41.01	
		TNT6A	41.600	--	1.181	49.115	1.40	0.877	1.578	A	E	41.01	0.924	1.554	A	E	65.61	0.80	0.877	1.181	A	E	41.01	
		TNT7A	42.000	--	1.184	49.735	1.40	0.877	1.583	A	E	41.01	0.924	1.523	A	E	65.61	0.80	0.877	1.184	A	E	41.01	
		TNT7B	42.000	--	1.219	51.206	1.40	0.877	1.630	A	E	41.01	0.924	1.425	A	E	65.61	0.80	0.877	1.219	A	E	41.01	
		TNAGRIT4	43.000	--	1.164	50.059	1.40	0.877	1.556	A	E	41.01	0.924	1.379	A	E	65.61	0.80	0.877	1.164	A	E	41.01	
TNAGT5A	45.000	--	1.100	49.487	1.40	0.877	1.470	A	E	41.01	0.924	1.371	A	E	65.61	0.80	0.877	1.100	A	E	41.01			
TNAGT5B	45.000	3	1.088	48.970	1.40	0.877	1.455	A	E	41.01	0.924	1.312	A	E	65.61	0.80	0.877	1.088	A	E	41.01			

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)

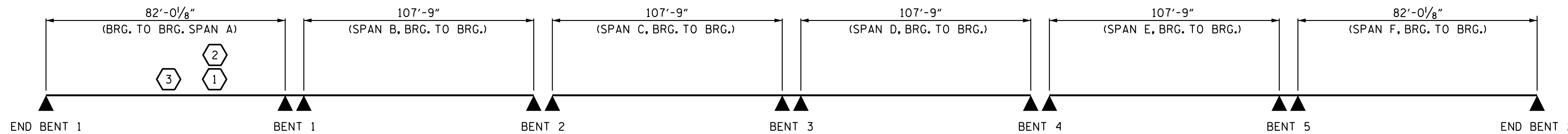
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



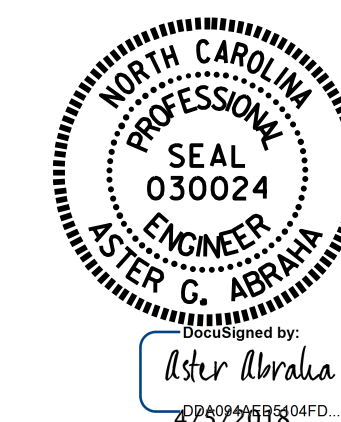
PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00 -L-

LRFR SUMMARY

ASSEMBLED BY : M.K. BEARD	DATE : 11/17
CHECKED BY : A. G. ABRAHA	DATE : 12/12/17
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS 46
2			4			



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)

NOTES

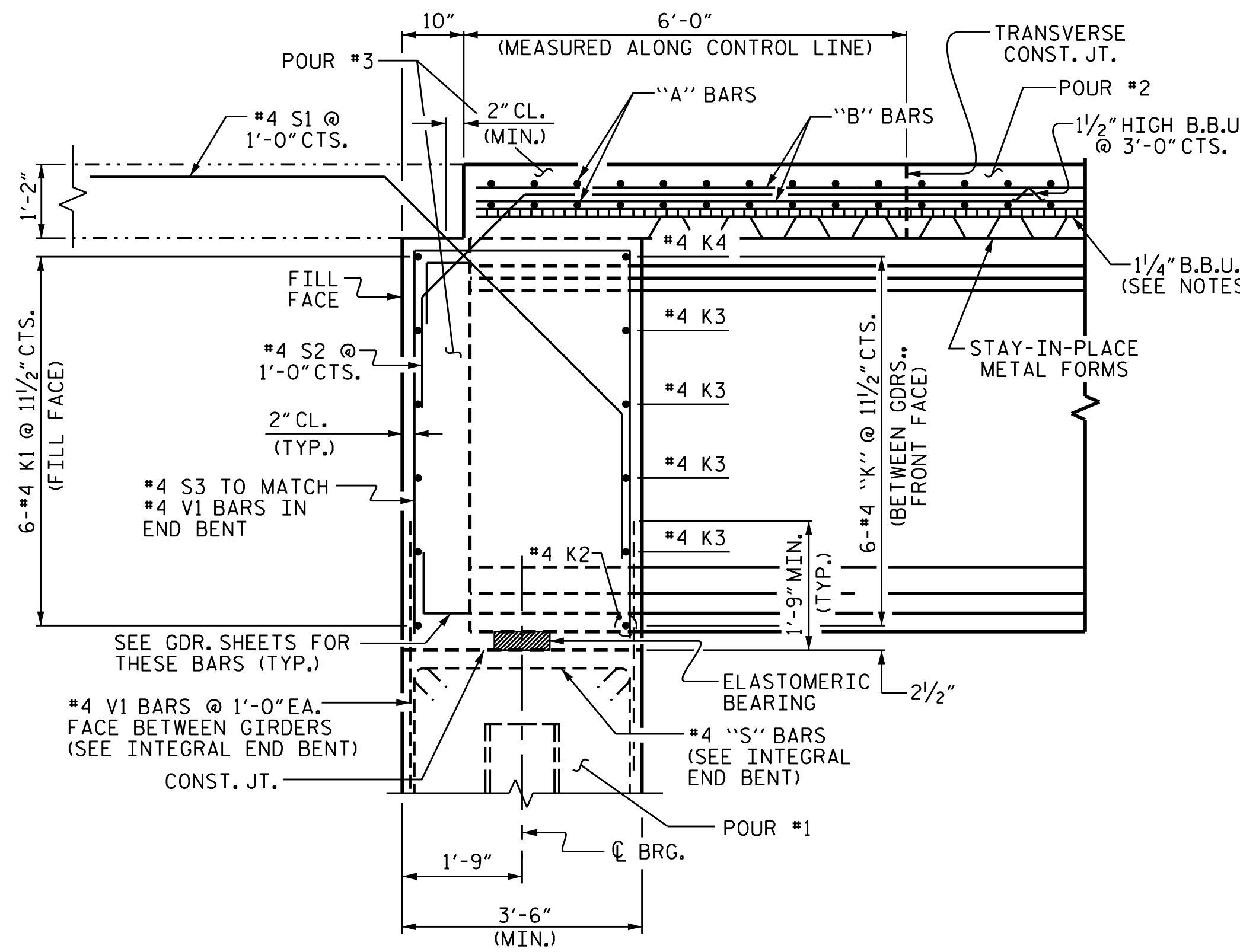
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

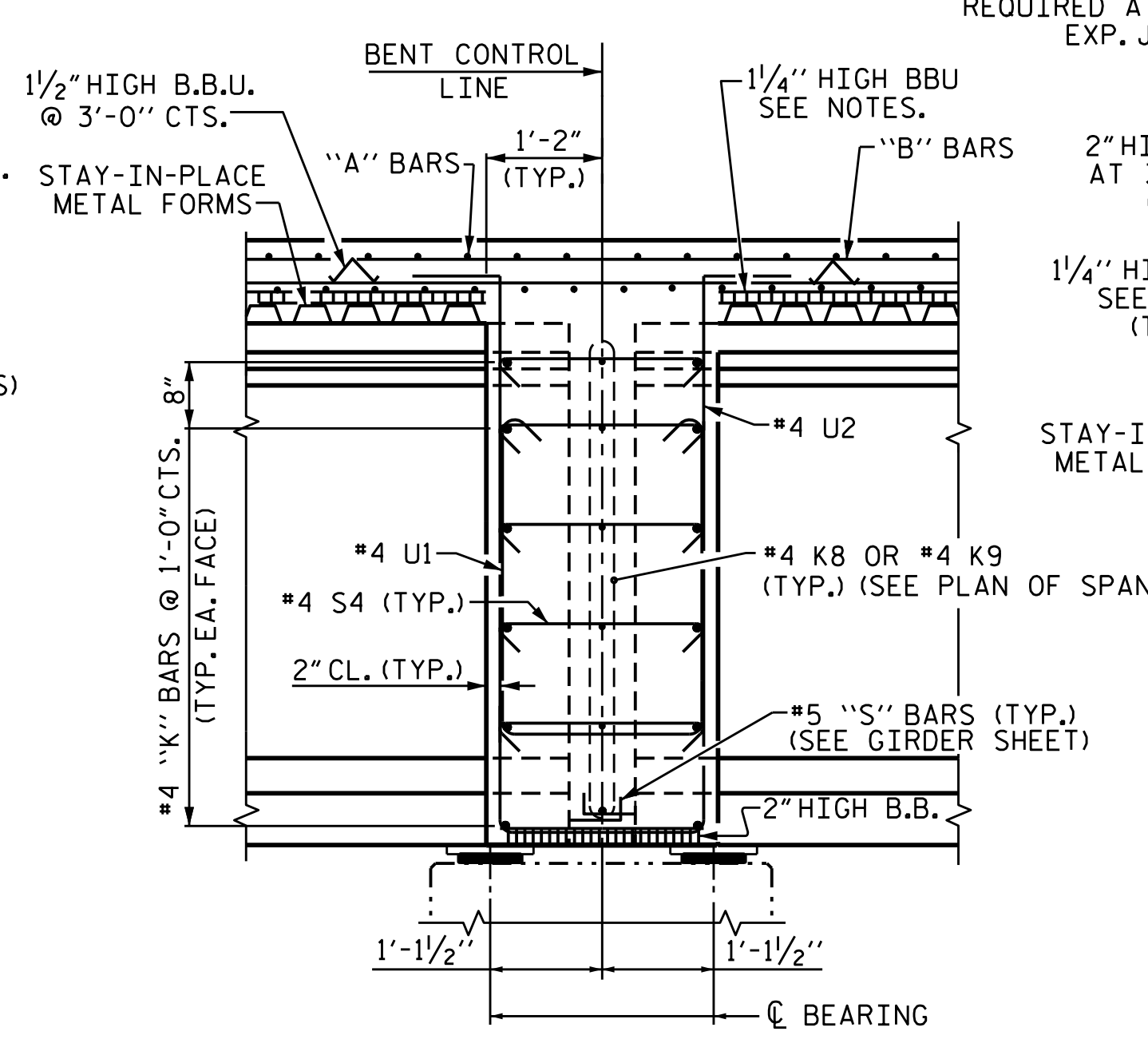
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.

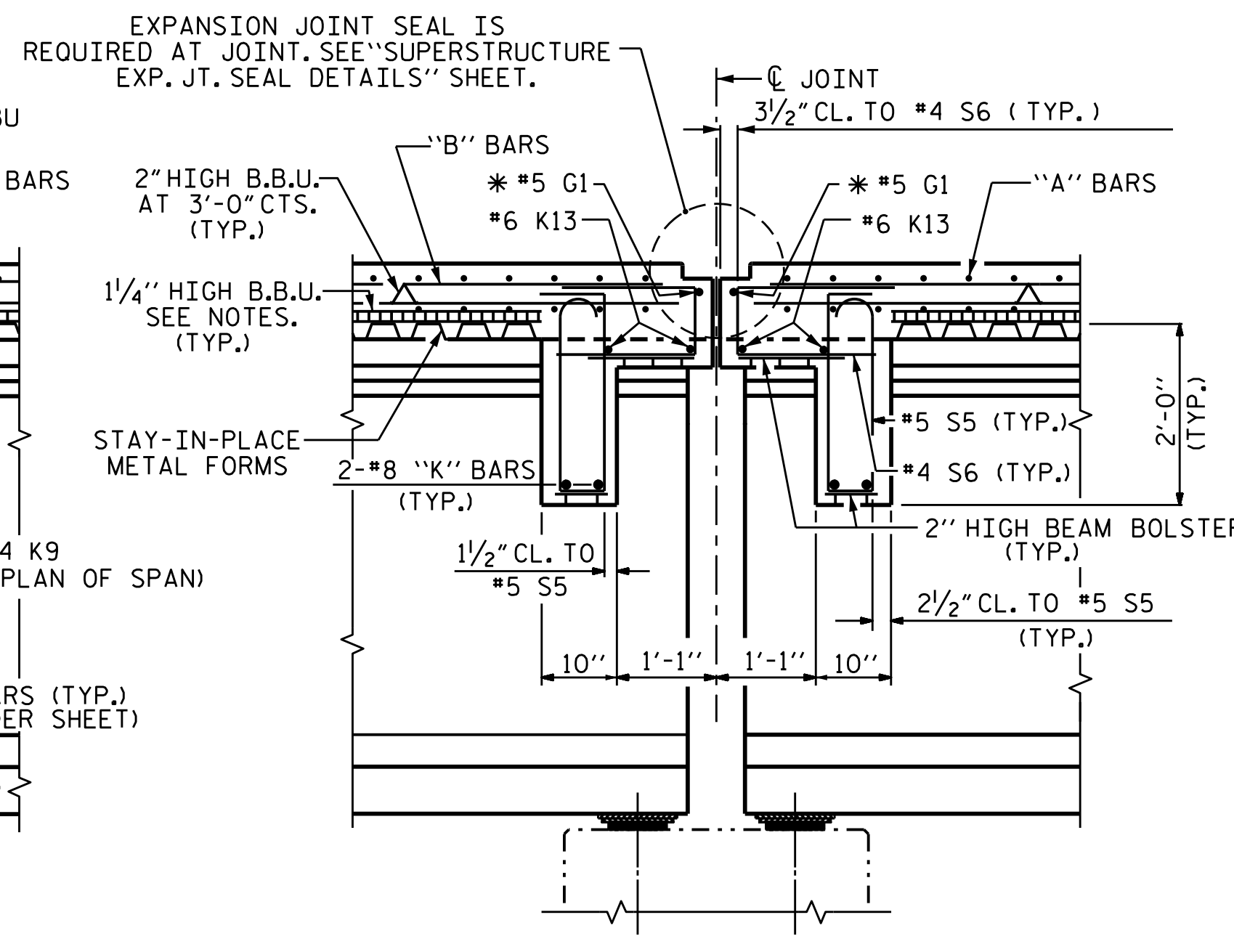
THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



SECTION A-A
INTEGRAL END BENTS

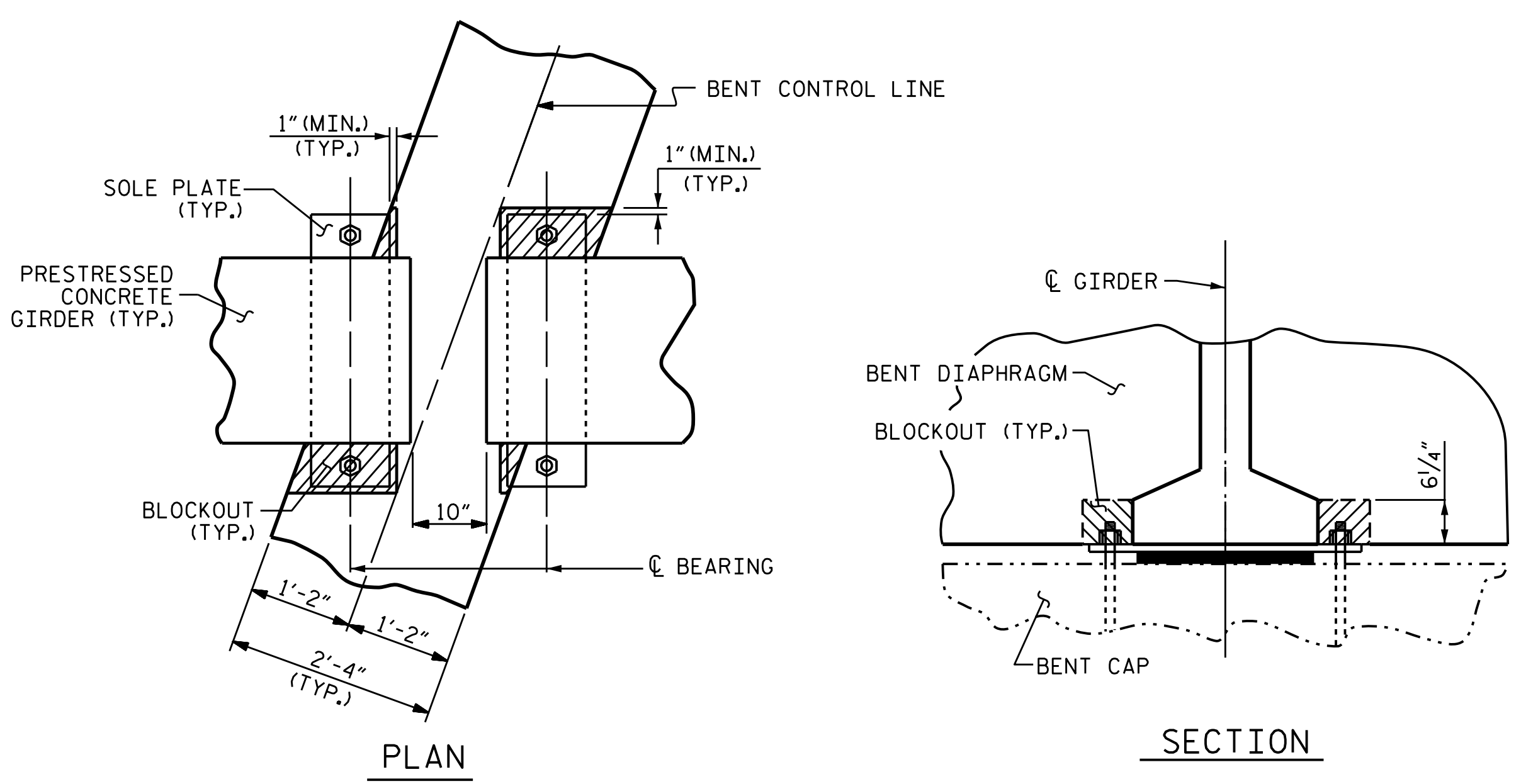


SECTION B-B
BENTS 1, 3, & 5

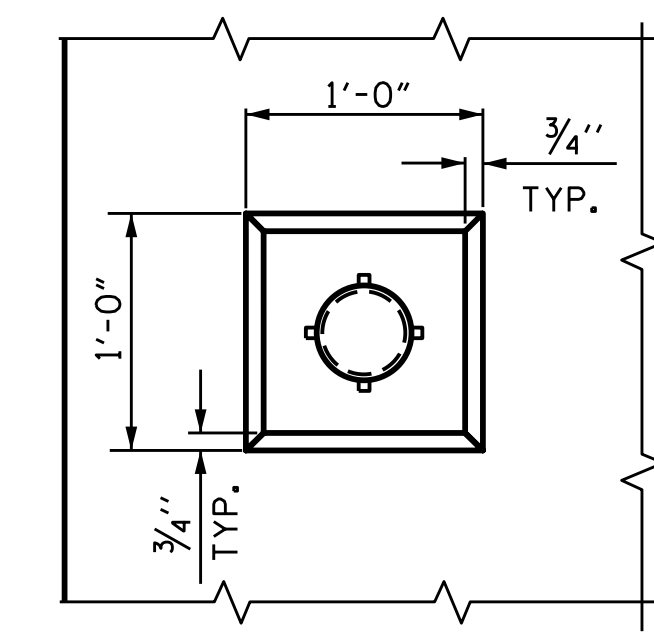


SECTION C-C

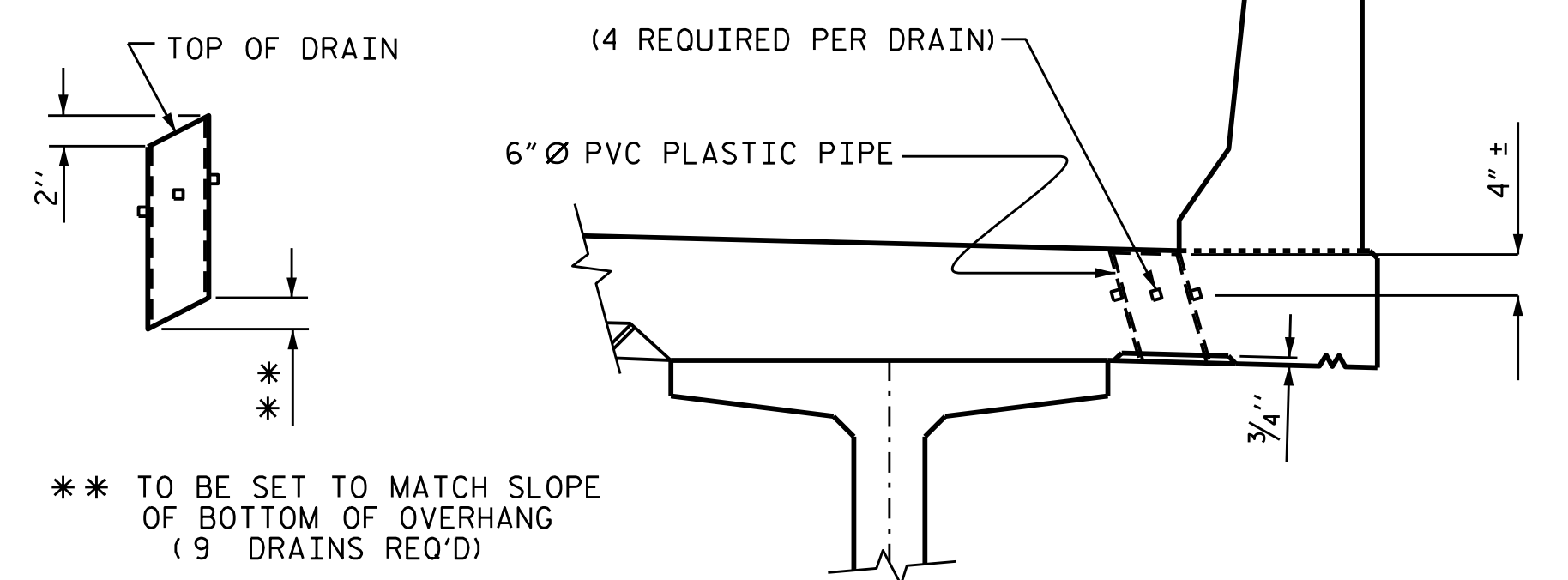
BENTS 2 & 4
* #5G BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



BENT DIAPHRAGM BLOCK-OUT DETAIL



PLAN OF RECESS



PIPE DETAIL

TOP OF FLOOR DRAINS TO BE SET 3/8" BELOW SURFACE OF SLAB.
4 - 1/2" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

DRAIN DETAILS

PROJECT NO. B-4932
EDGEcombe COUNTY
STATION: 25+00.00 -L-

SHEET 2 OF 2

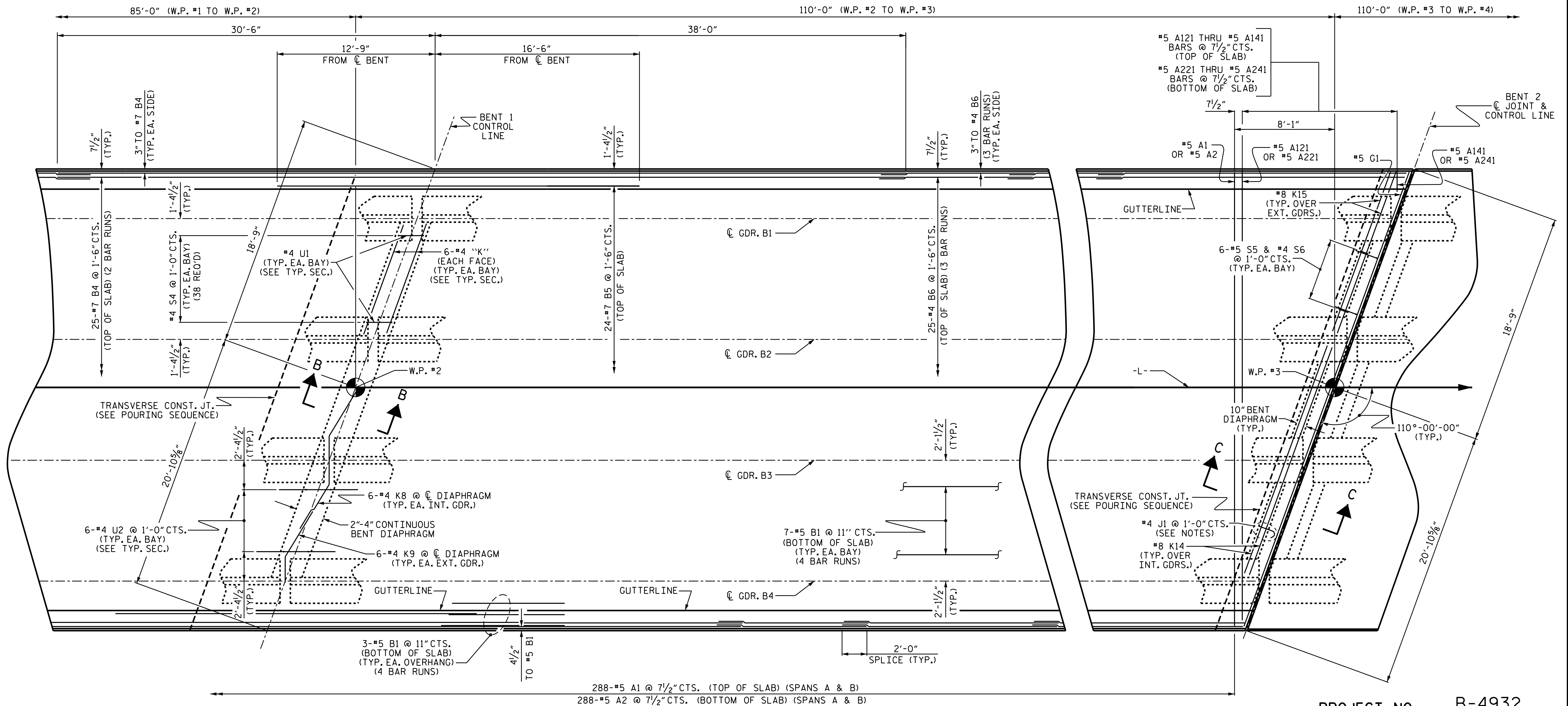


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

DRAWN BY : S. B. WILLIAMS DATE : 10-2016
CHECKED BY : M. K. BEARD/ S. WANCE DATE : 01/14/2018
DESIGN ENGINEER OF RECORD : P. K. NEWTON DATE : 02/11/17

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
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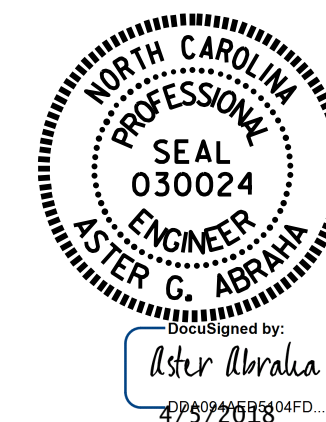
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			46



PLAN OF SPAN "B"

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 2 OF 6

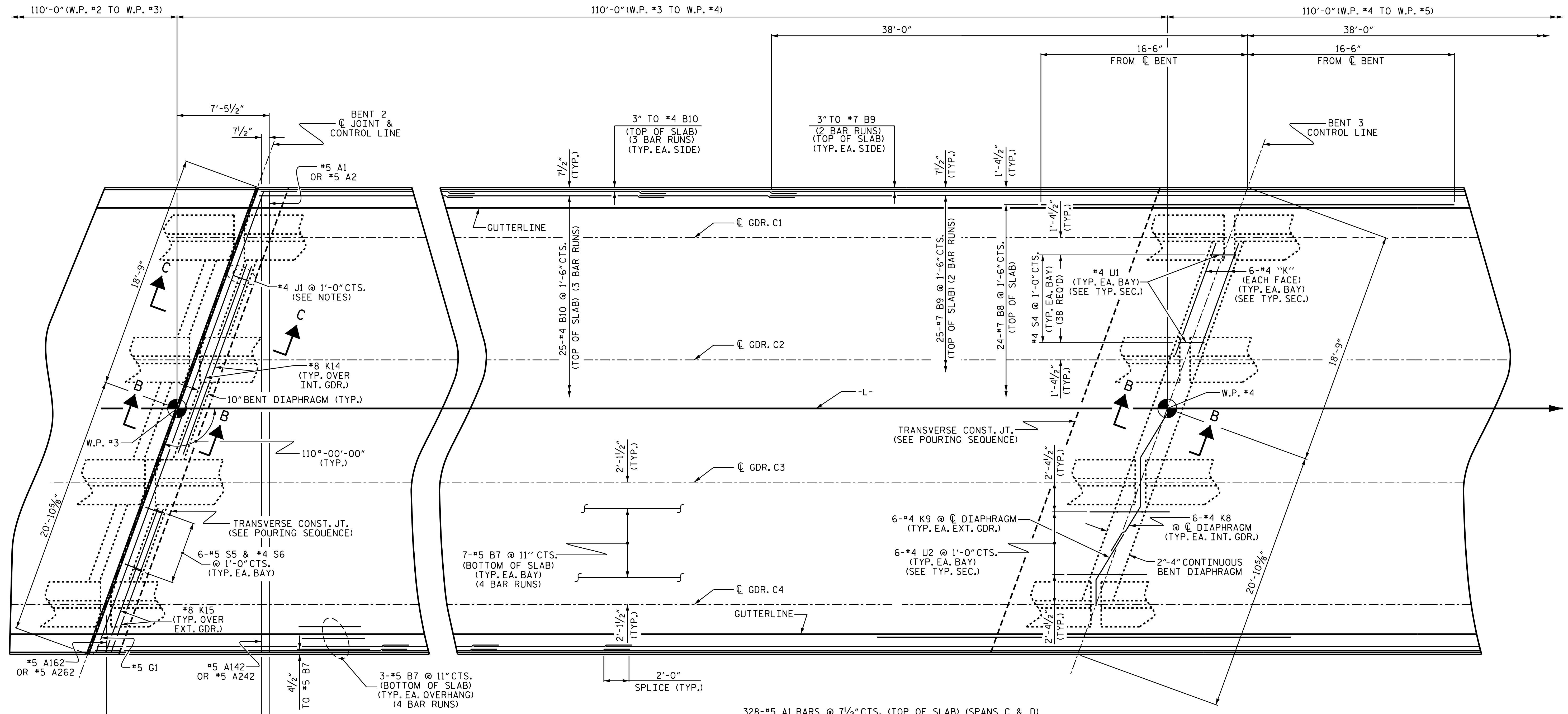


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS

DRAWN BY : S. B. WILLIAMS DATE : 6-2017
 CHECKED BY : M. K. BEARD/ S. WANCE DATE : 01/14/2018
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE : 12-11-17

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			46



#5 A142 THRU #5 A162
BARS @ 7 1/2" CTS.
(TOP OF SLAB)

#5 A242 THRU #5 A262
BARS @ 7 1/2" CTS.
(BOTTOM OF SLAB)

328-#5 A1 BARS @ 7 1/2" CTS. (TOP OF SLAB) (SPANS C & D)

328-#5 A2 BARS @ 7 1/2" CTS. (BOTTOM OF SLAB) (SPANS C & D)

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 3 OF 6



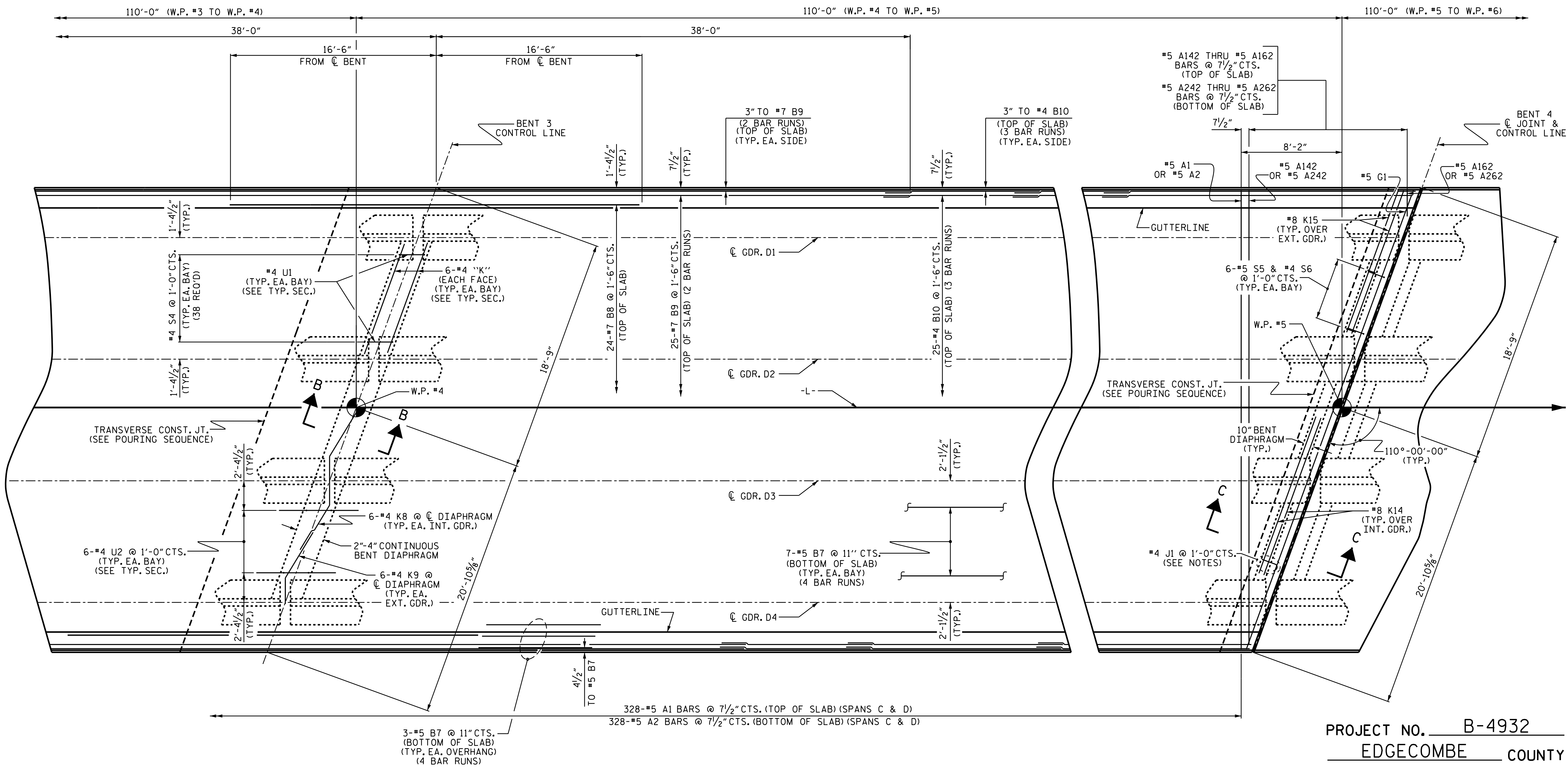
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPANS

DRAWN BY : S. B. WILLIAMS DATE : 6-2017
 CHECKED BY : M. K. BEARD/ S. WANCE DATE : 01/14/2018
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE : 12-11-17

DOCUMENT NOT CONSIDERED
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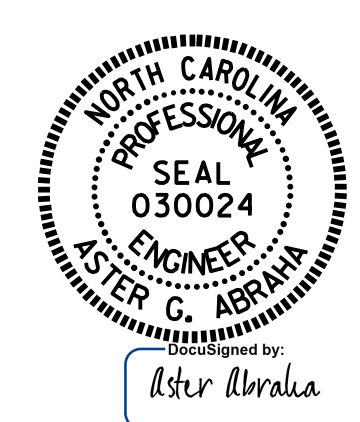
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			46



PLAN OF SPAN "D"

PROJECT NO. B-4932
EDGECOMBE COUNTY
STATION: 25+00.00 -L-

SHEET 4 OF 6



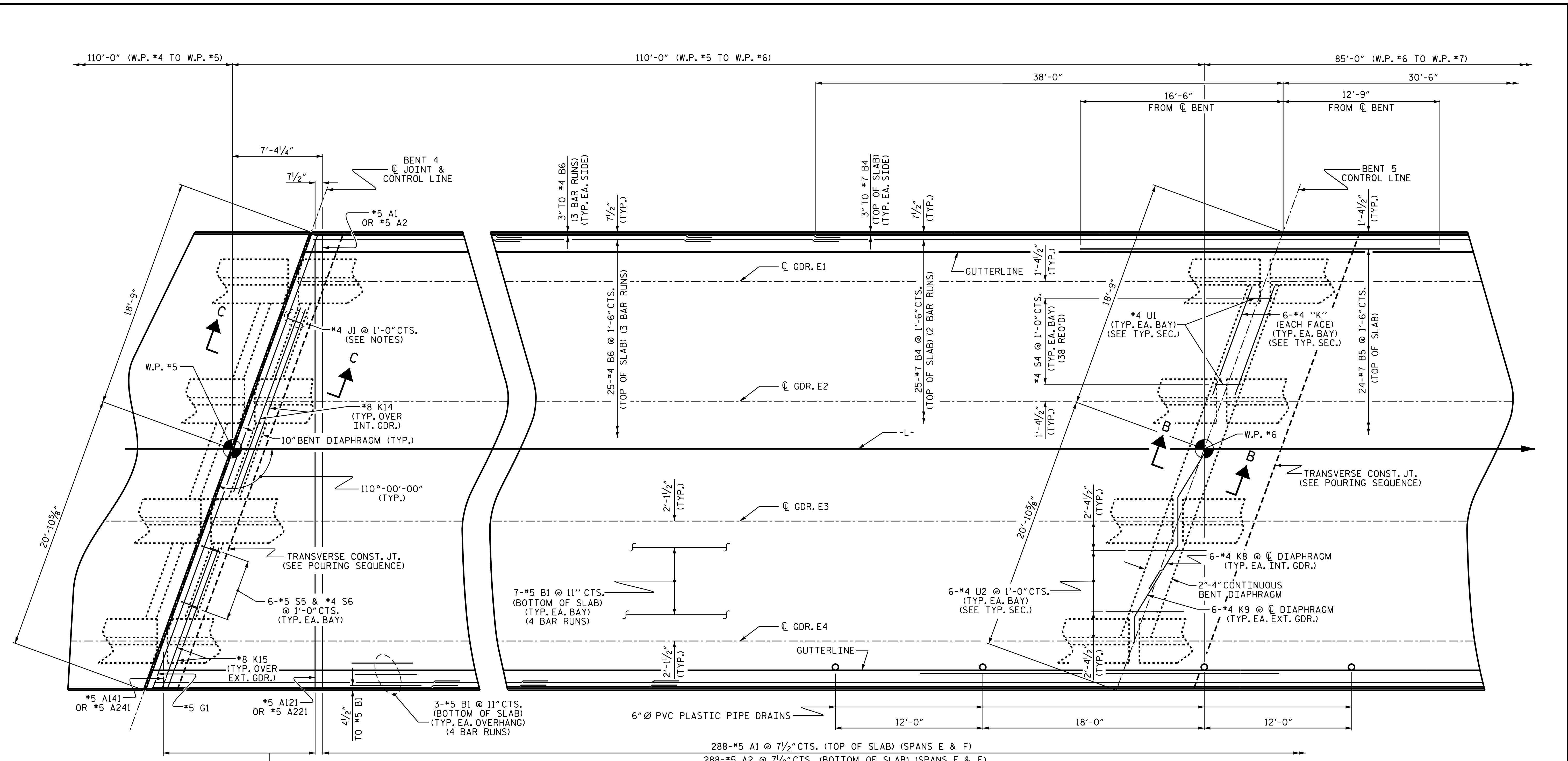
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPANS

DRAWN BY: S. B. WILLIAMS DATE: 6-2017
CHECKED BY: M. K. BEARD/ S. WANCE DATE: 01/14/2018
DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 12-11-17

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
1			3			TOTAL SHEETS	46
2			4				

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PLAN OF SPAN "E"

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 5 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

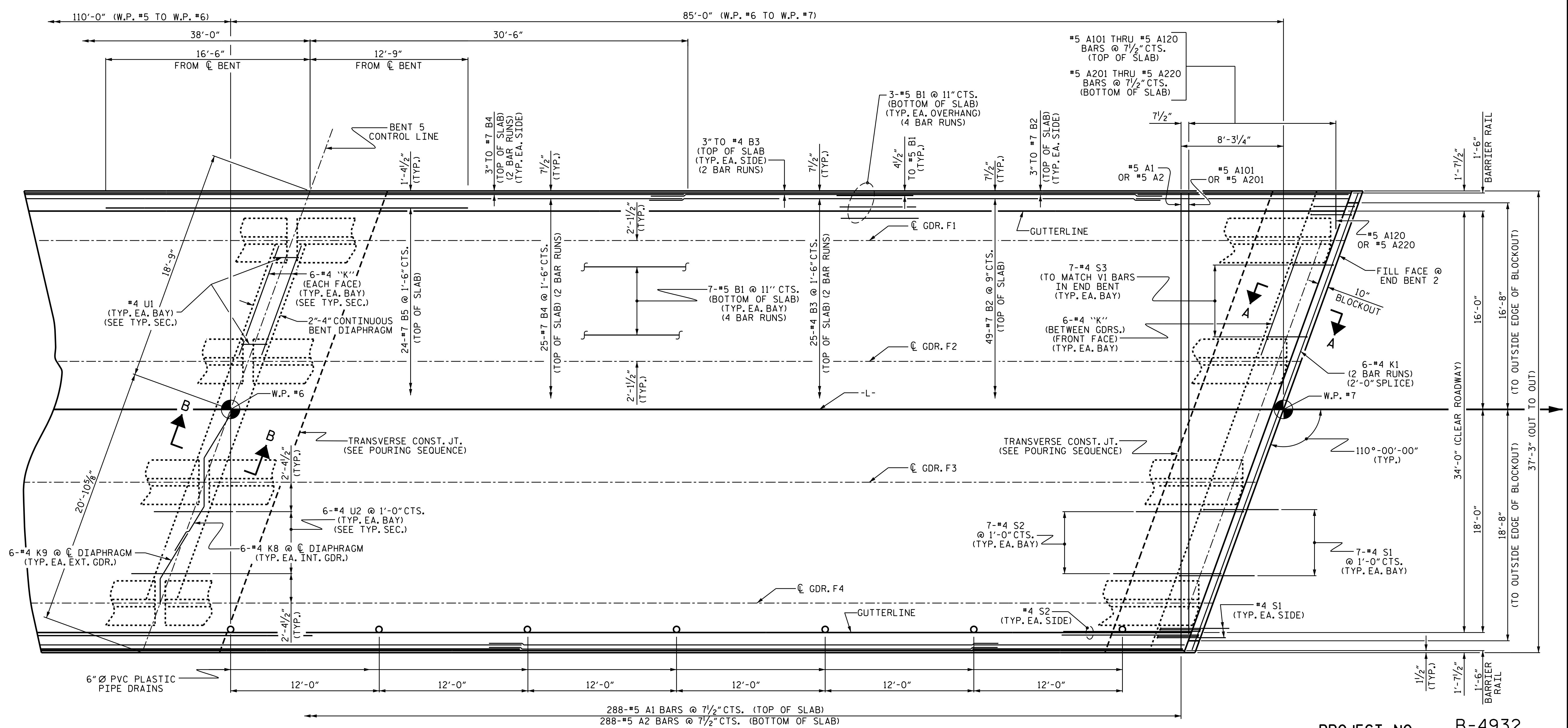
SUPERSTRUCTURE
 PLAN OF SPANS

DRAWN BY : S. B. WILLIAMS DATE : 6-2017
 CHECKED BY : M. K. BEARD/ S. WANCE DATE : 01/14/2018
 DESIGN ENGINEER OF RECORD : P. K. NEWTON DATE : 12-11-17

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
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PLAN OF SPAN F

PROJECT NO. B-4932
 EDGECOMBE COUNTY
 STATION: 25+00.00 -L-
 SHEET 6 OF 6



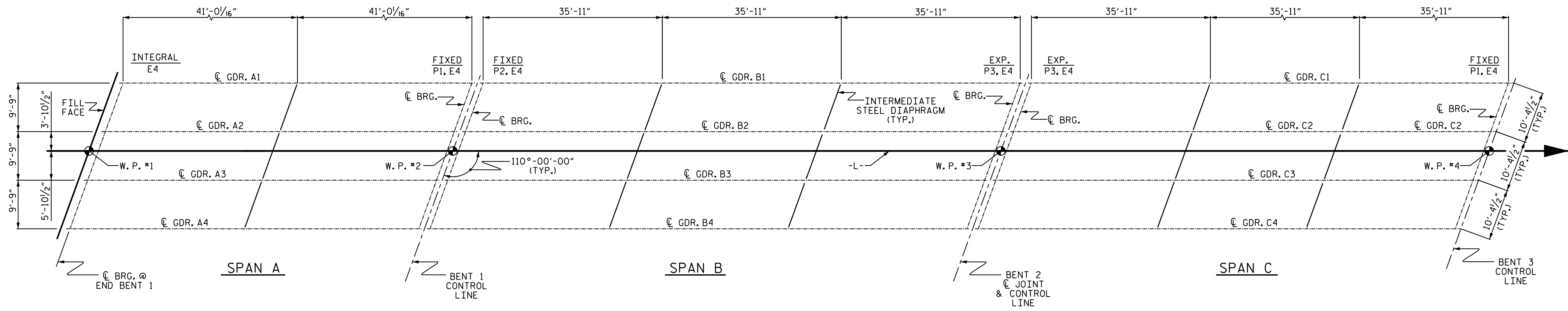
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS

DRAWN BY : S. B. WILLIAMS DATE : 6-2017
 CHECKED BY : M. K. BEARD / S. WANCE DATE : 01/14/2018
 DESIGN ENGINEER OF RECORD : P. K. NEWTON DATE : 12-11-17

DOCUMENT NOT CONSIDERED
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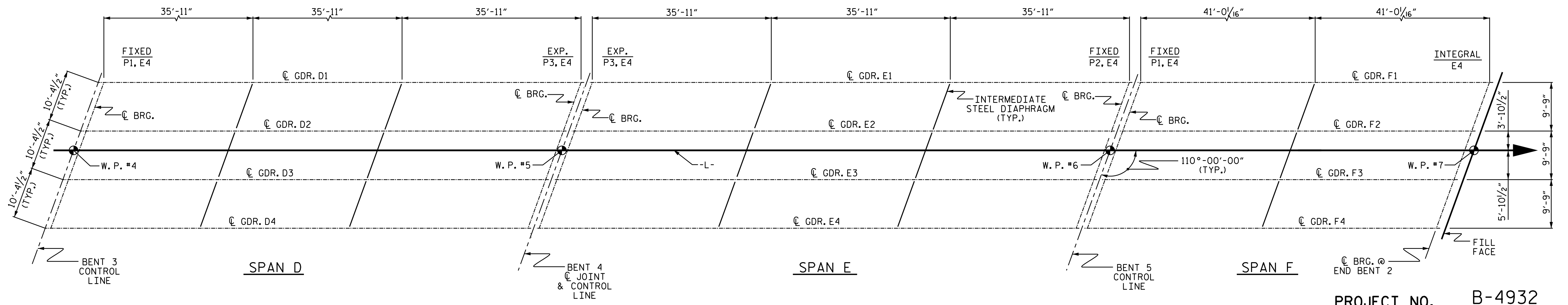
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2			4			TOTAL SHEETS 46

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FRAMING PLAN SPANS A THRU C

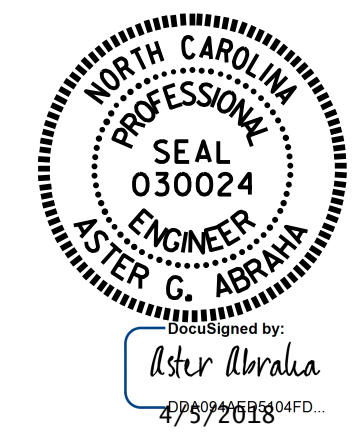
FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.



FRAMING PLAN SPANS D THRU F

FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00 -L-



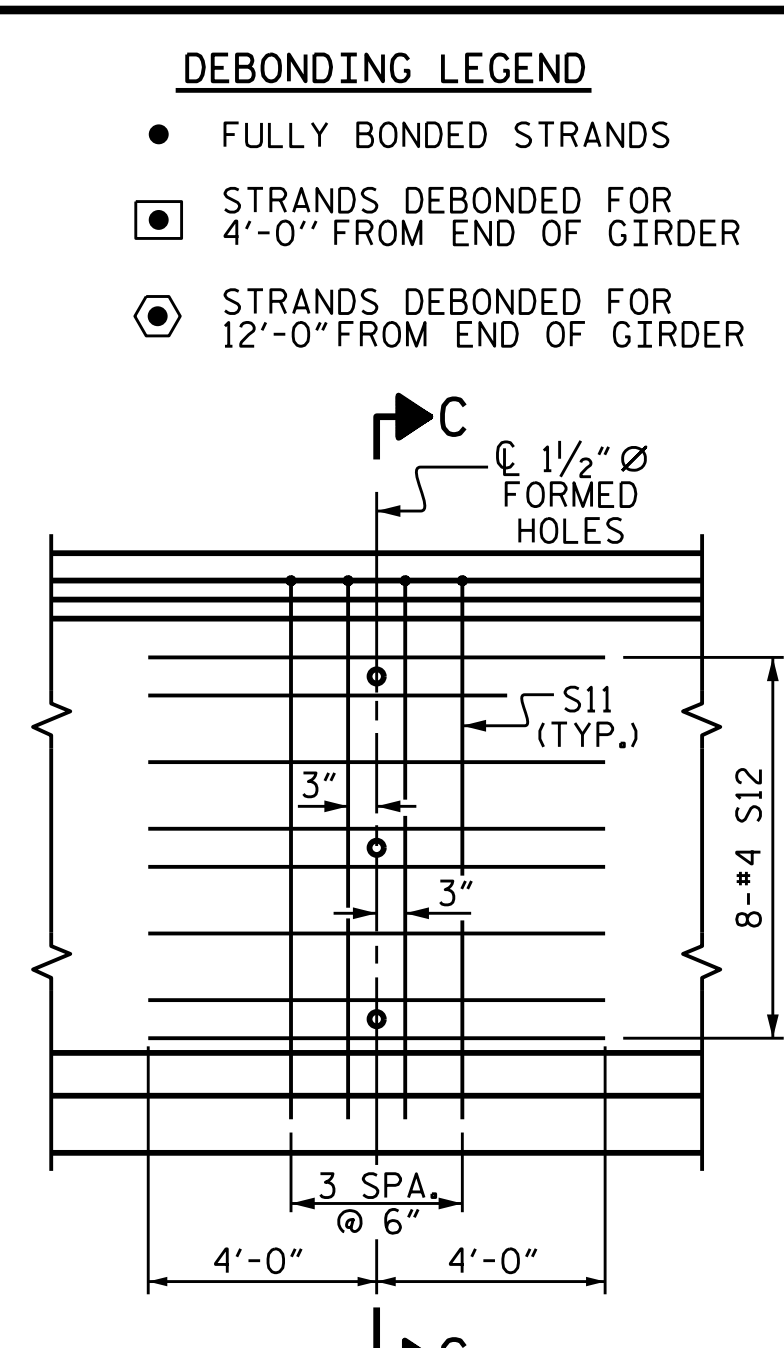
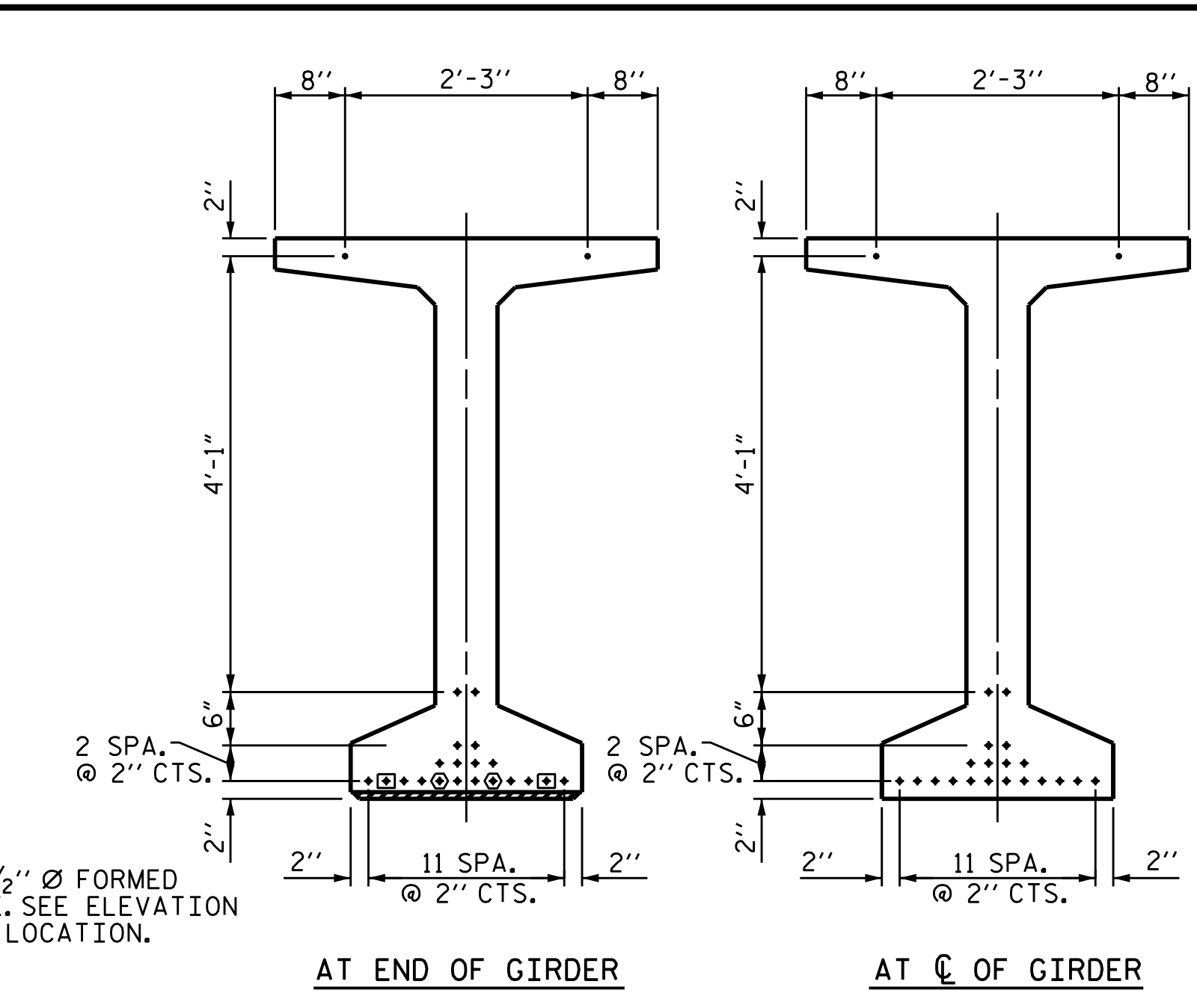
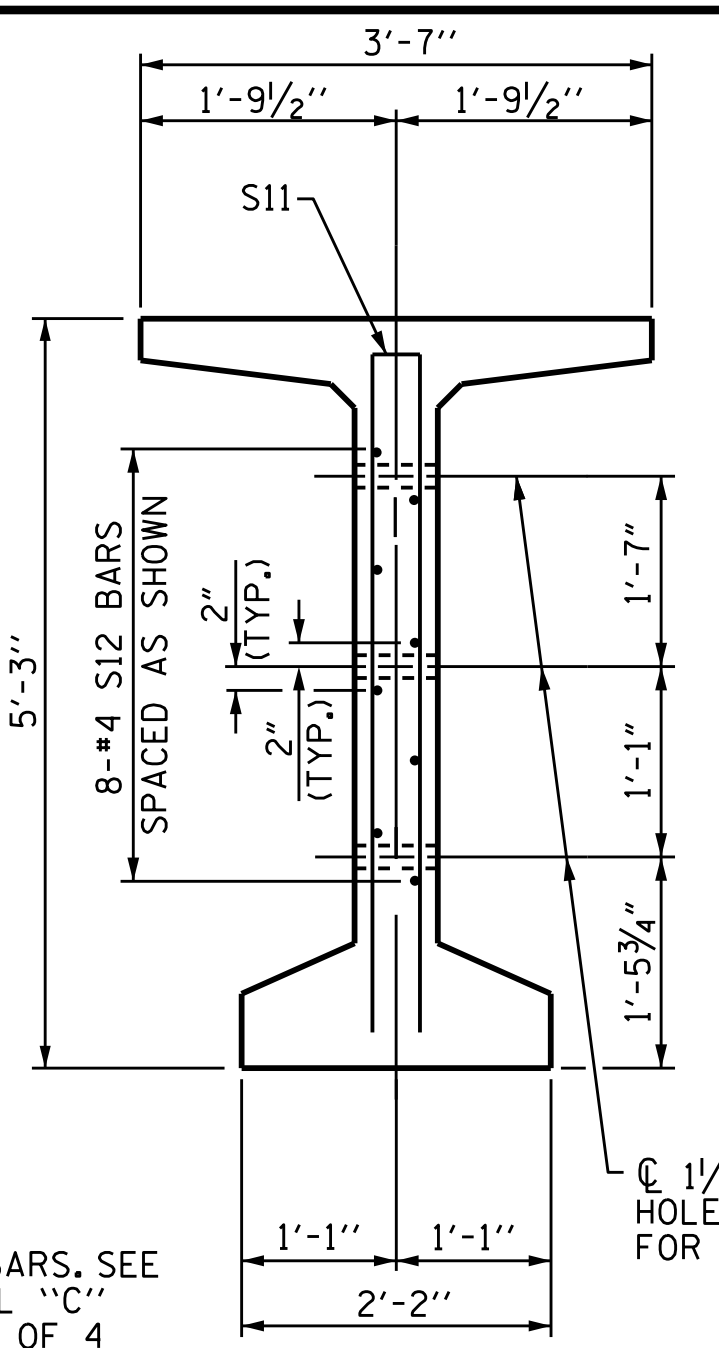
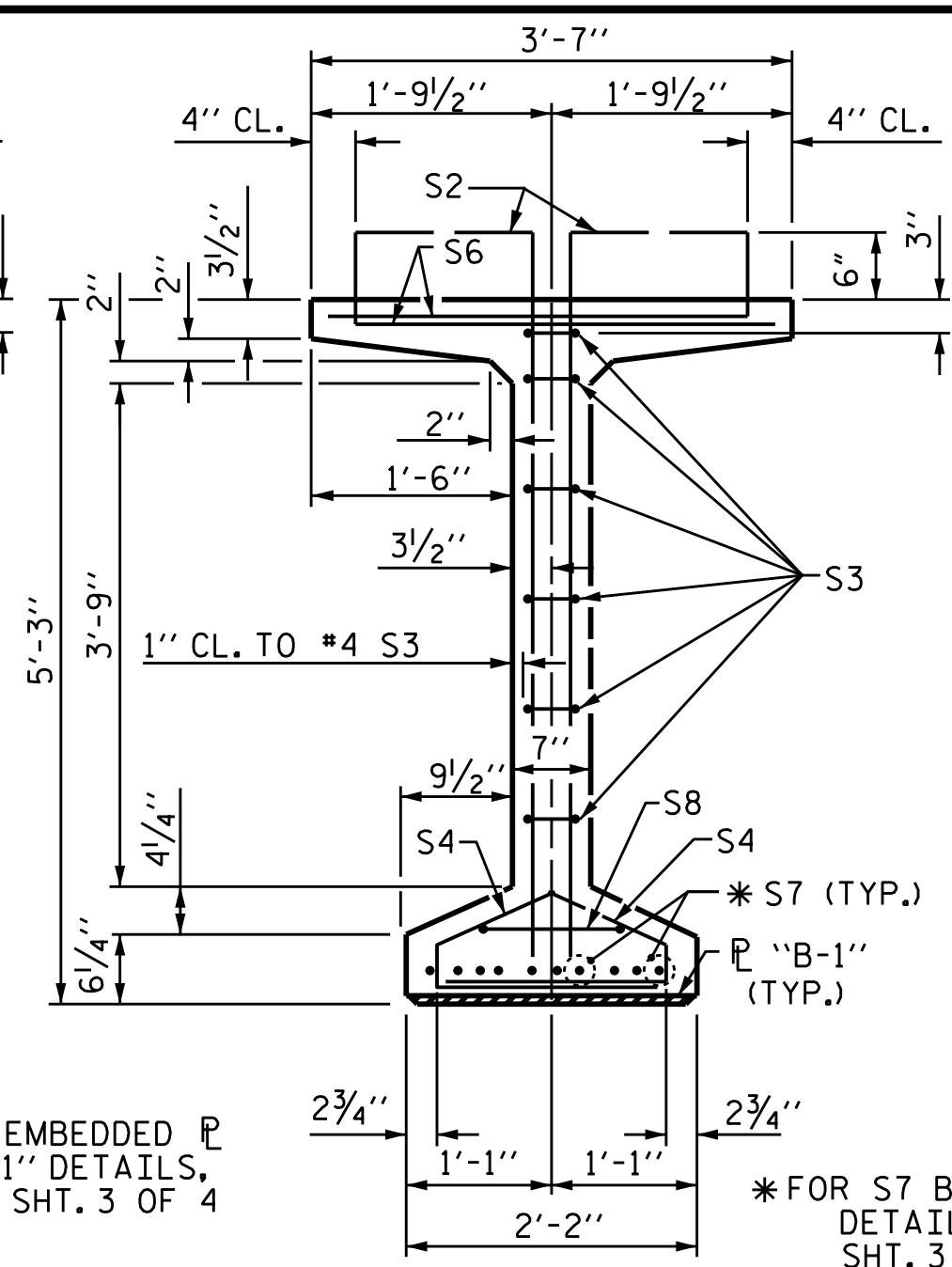
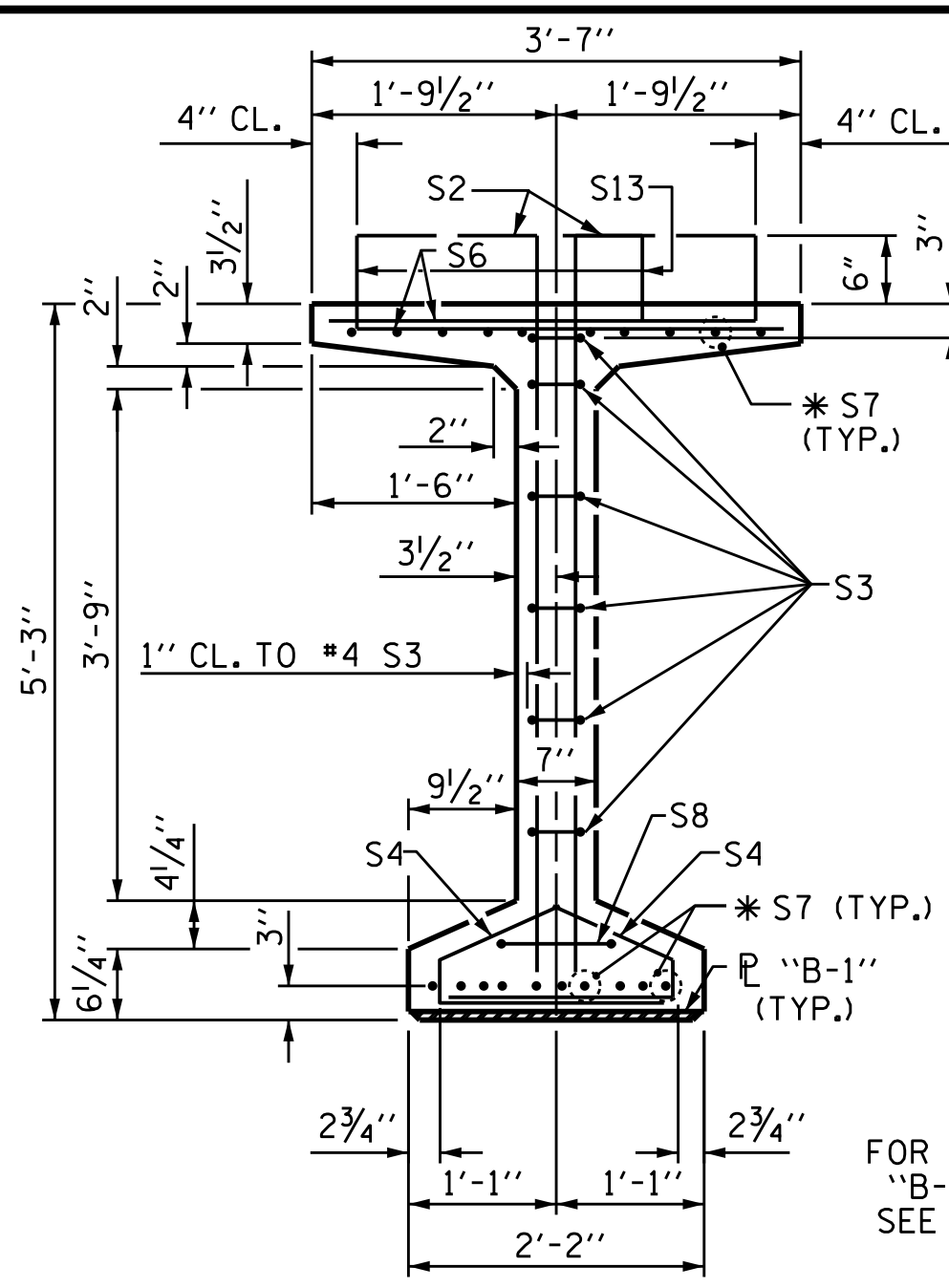
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FRAMING PLAN

DRAWN BY: S. B. WILLIAMS DATE: 11-17
 CHECKED BY: S. WANCE DATE: 12/12/17
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 12/12/17

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-14
2			4			46

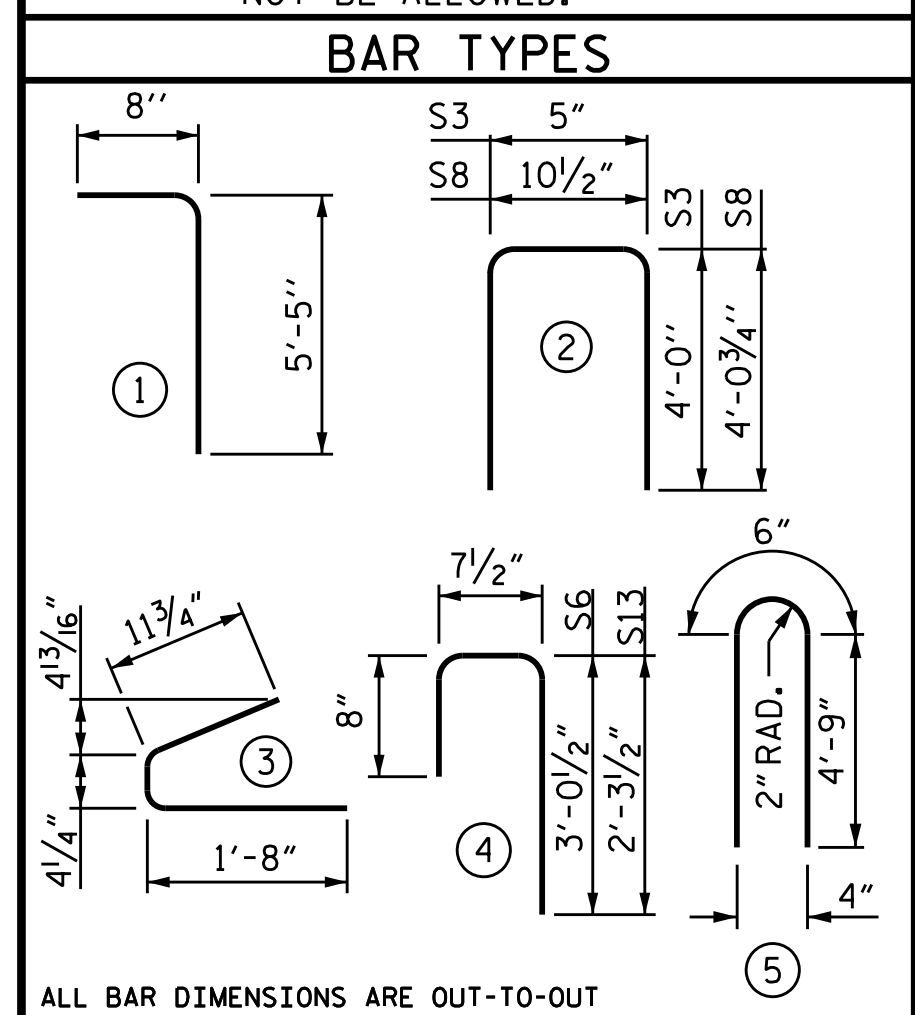


- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - ◐ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

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

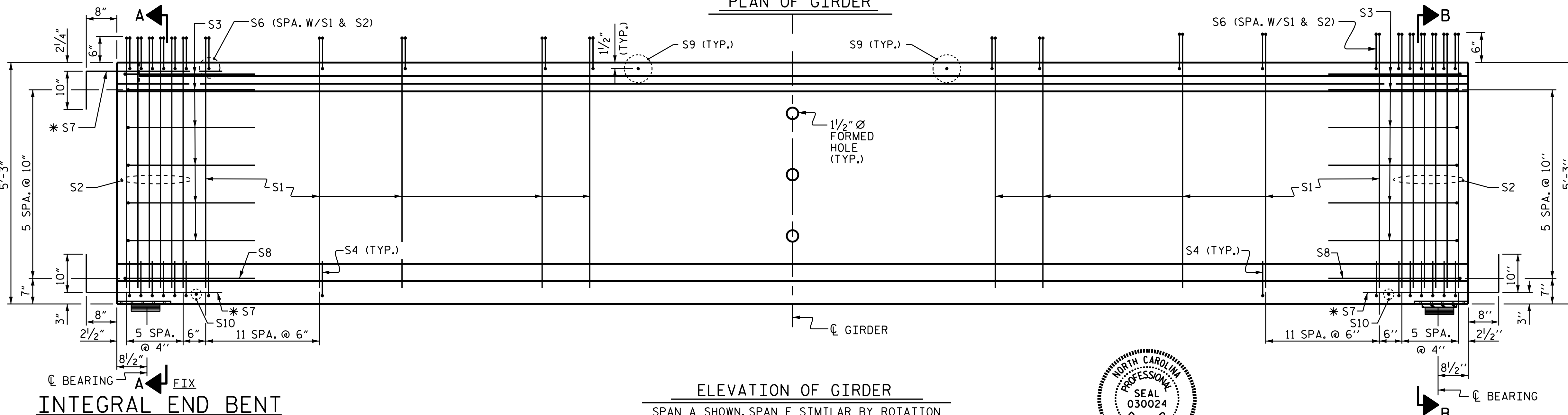
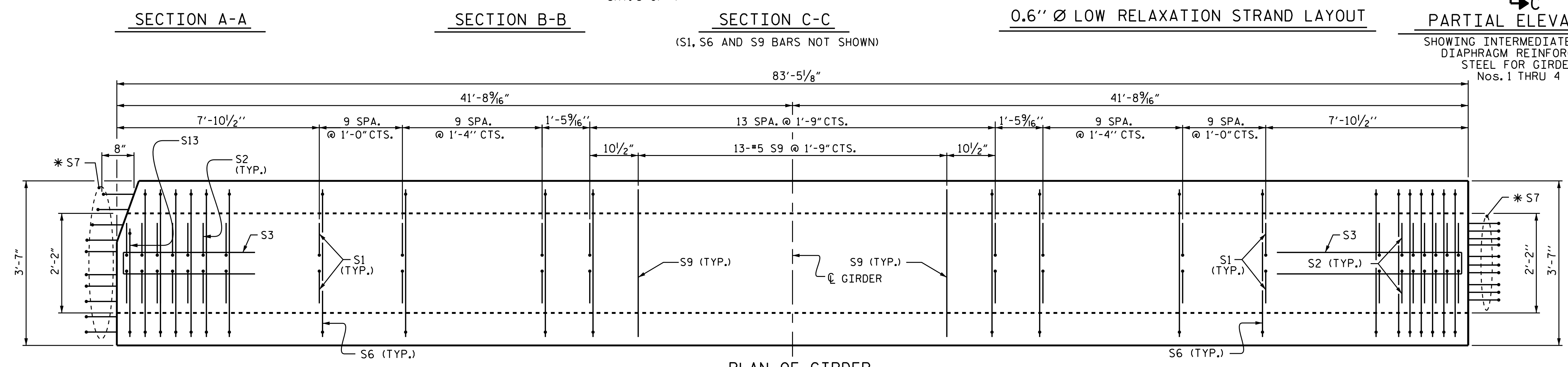
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	148	#4	1	6'-1"	601
S2	24	#5	1	6'-1"	152
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S6	170	#5	4	4'-4"	768
*S7	30	#5	STR	3'-8"	115
S8	2	#5	2	9'-0"	19
S9	13	#5	STR	3'-3"	44
S10	2	#3	STR	1'-10"	1
S11	4	#5	5	10'-0"	42
S12	8	#4	STR	8'-0"	43
S13	2	#5	4	3'-7"	7

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	5500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	2003	16.5	22

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
8	83'-5 1/8"	667.4'

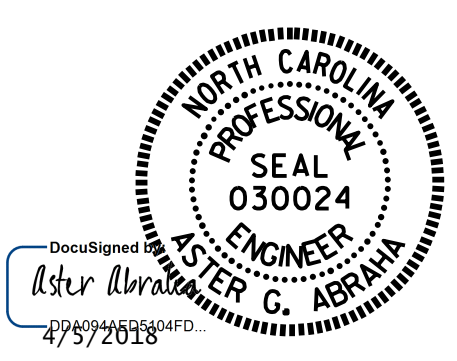


INTEGRAL END BENT

ASSEMBLED BY: M. AHMED DATE: 11-07-17
 CHECKED BY: S. WANCE DATE: 11-27-17

DRAWN BY: EEM 2/6/97 REV. 10/17/00 RWW/LES
 CHECKED BY: VAP 2/6/97 REV. 5/1/06R TLA/GM
 REV. 10/1/11 MAA/GM

DESIGN ENGINEER OF RECORD:
 KOREY NEWTON, P.E. DATE: 12/12/17



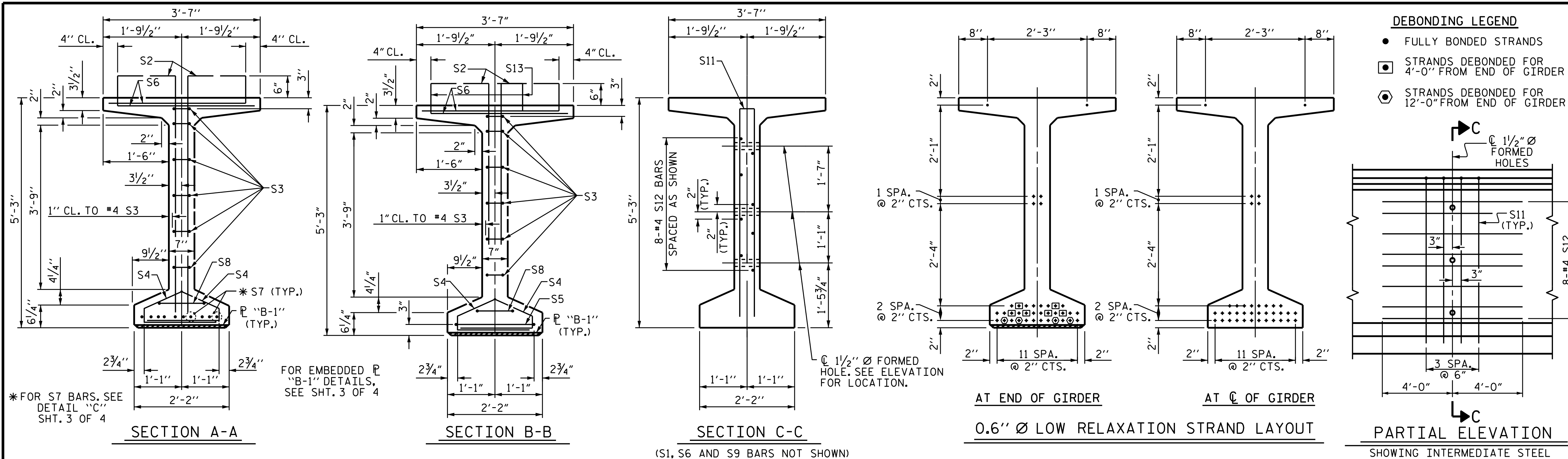
PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 SPAN A & F

REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 46
2			4			



DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◉ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

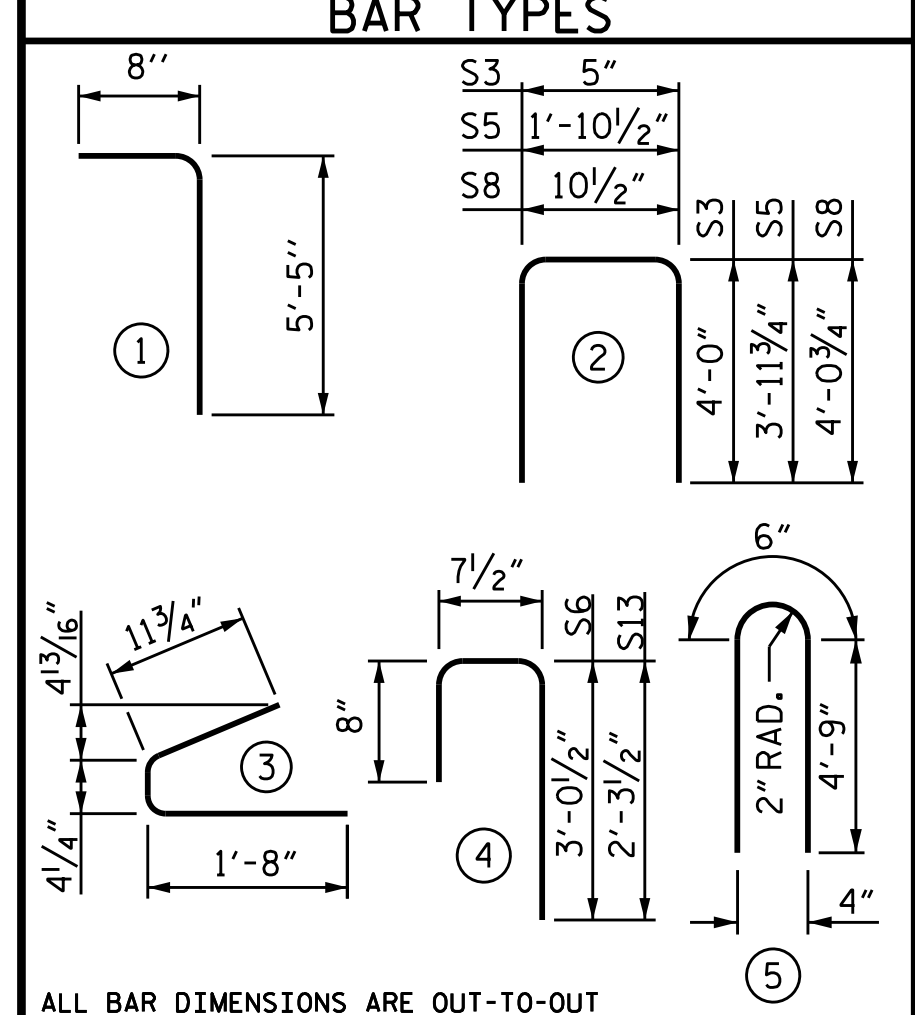
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	190	#4	1	6'-1"	772
S2	24	#5	1	6'-1"	152
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S5	1	#5	2	9'-10"	10
S6	212	#5	4	4'-4"	958
*S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	10	#5	STR	3'-3"	34
S10	1	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	2	#5	4	3'-7"	7

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

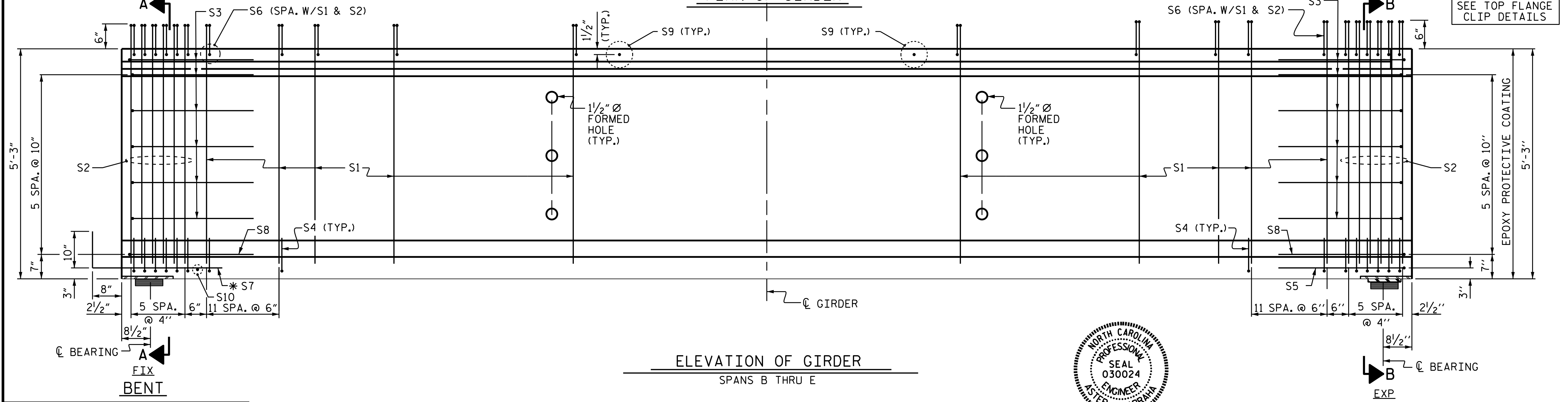
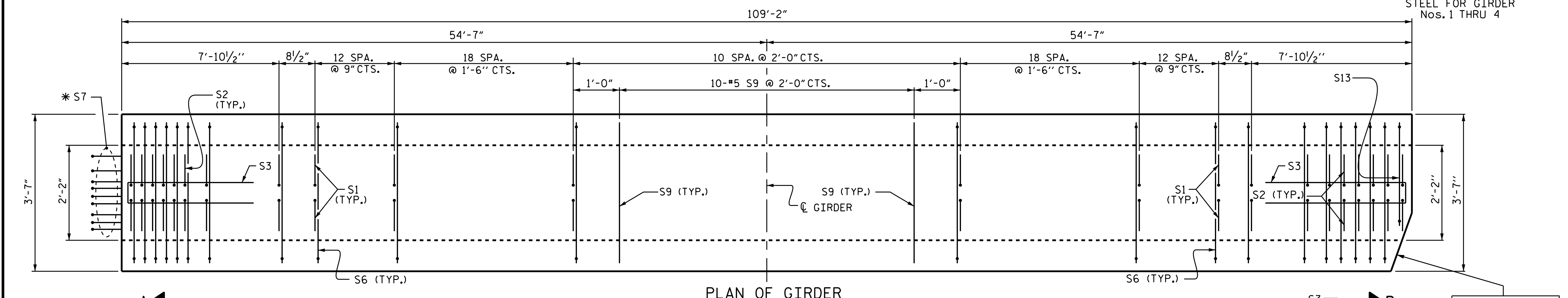


QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	8500 PSI CONCRETE		0.6" Ø L. R. STRANDS
	LB.	C.Y.	
	2371	21.6	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
16	109'-2"	1746.7'



PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00 -L-

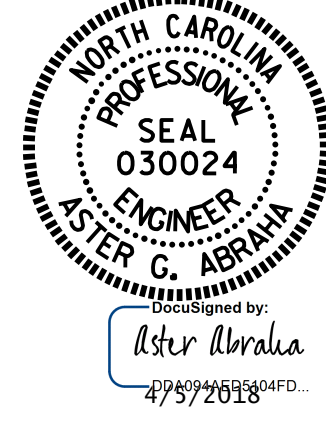
SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 SPAN B THRU E

ASSEMBLED BY: M. AHMED DATE: 11-07-17
 CHECKED BY: S. WANCE DATE: 11-27-17

DESIGN ENGINEER OF RECORD:
 KOREY NEWTON, P.E. DATE: 12/12/17



REVISIONS

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

SHEET NO. S-16
 TOTAL SHEETS 46

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 SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4100 PSI. FOR SPAN A OR F AND NOT LESS THAN 6900 PSI FOR SPAN B THRU E.

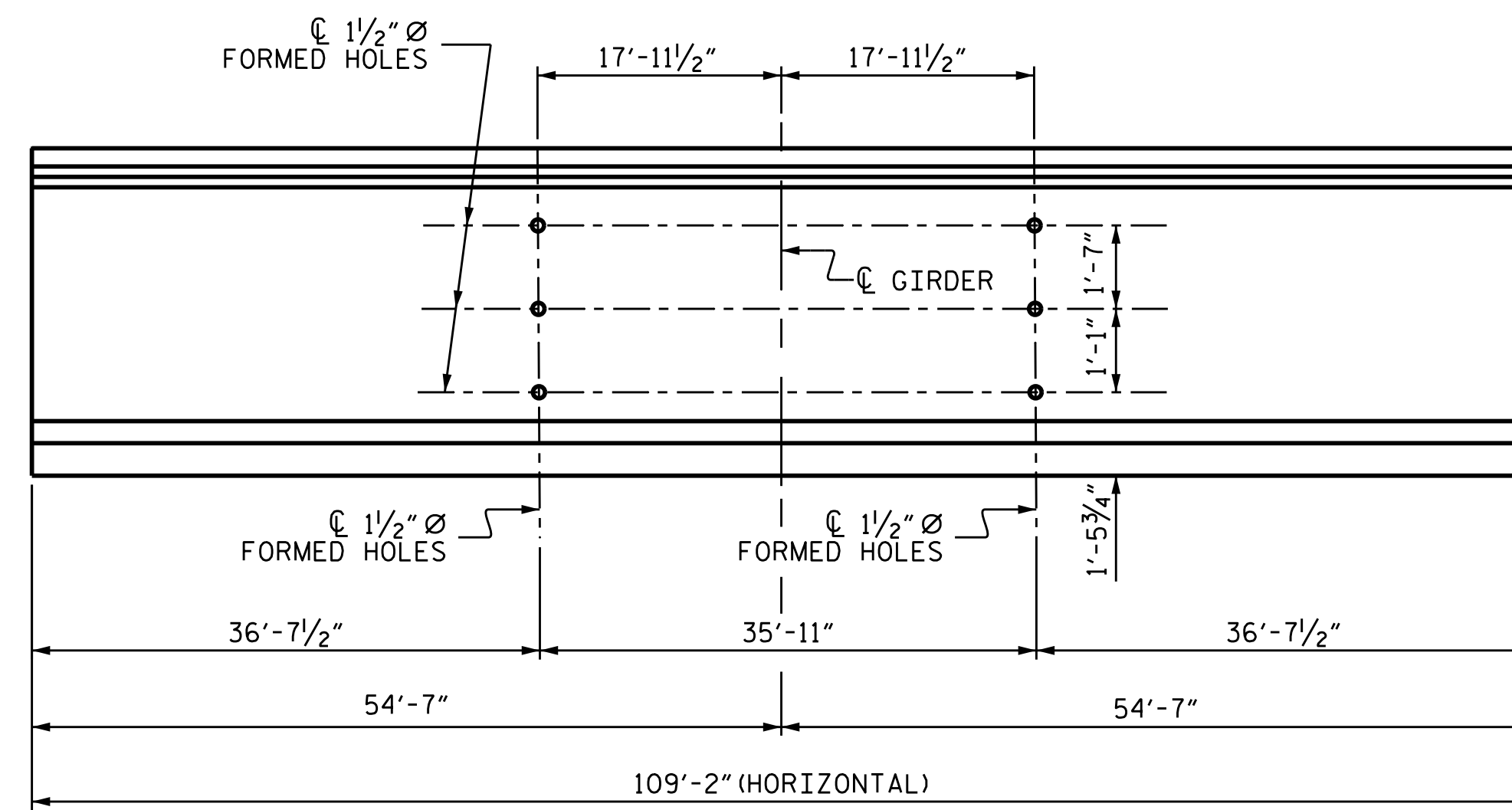
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

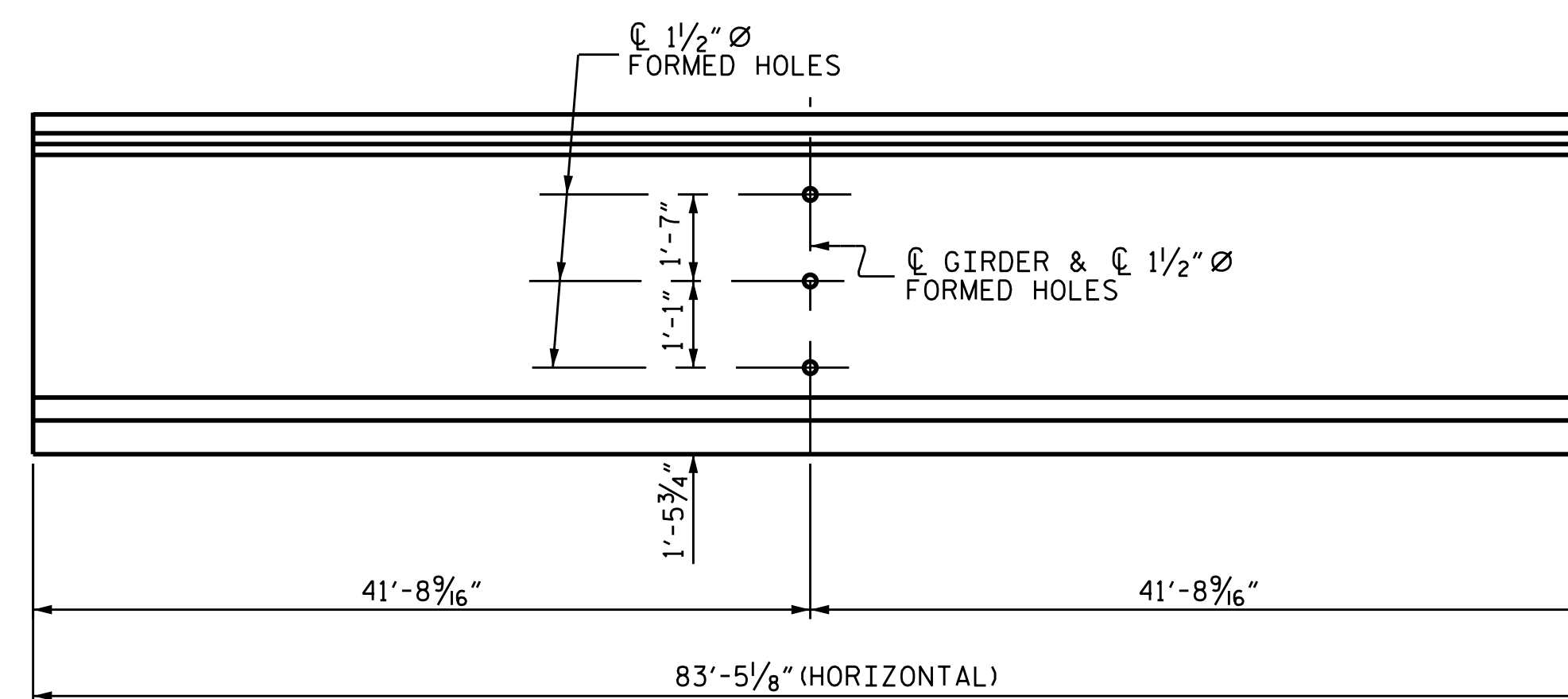
WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

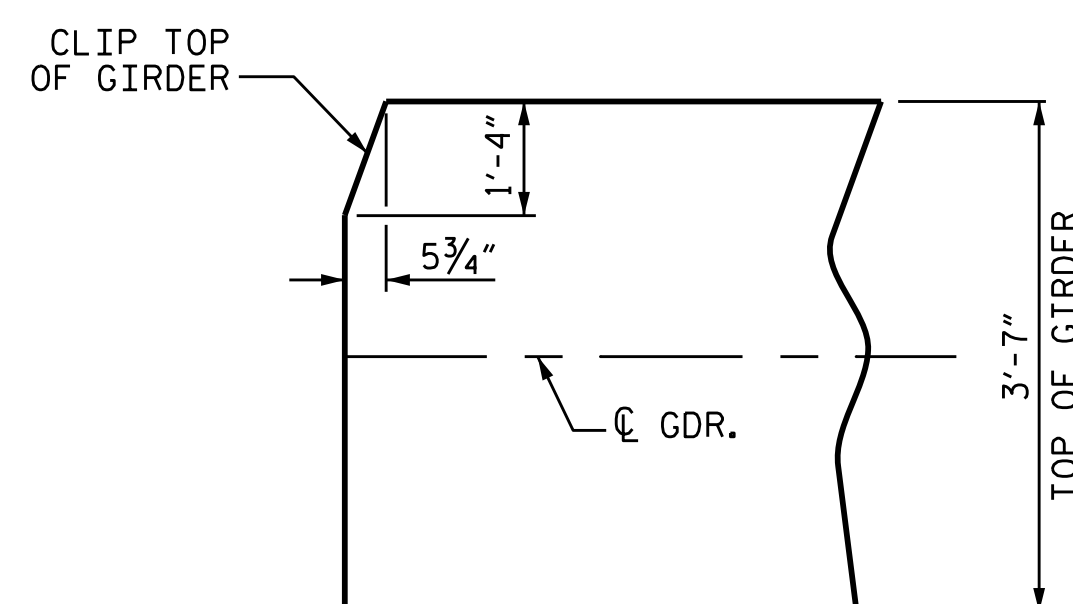


SPANS B THRU E



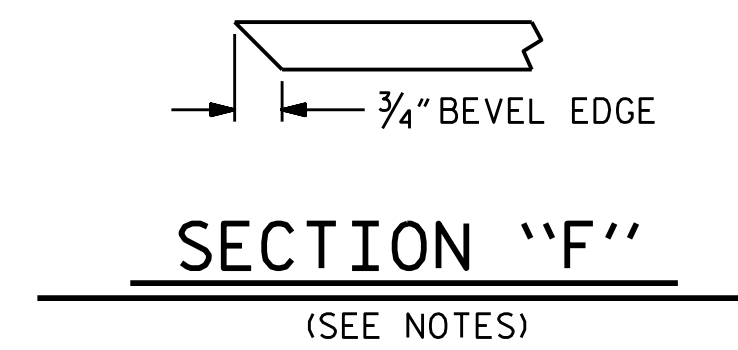
SPAN A & F

BOLT HOLE PLACEMENT DETAILS



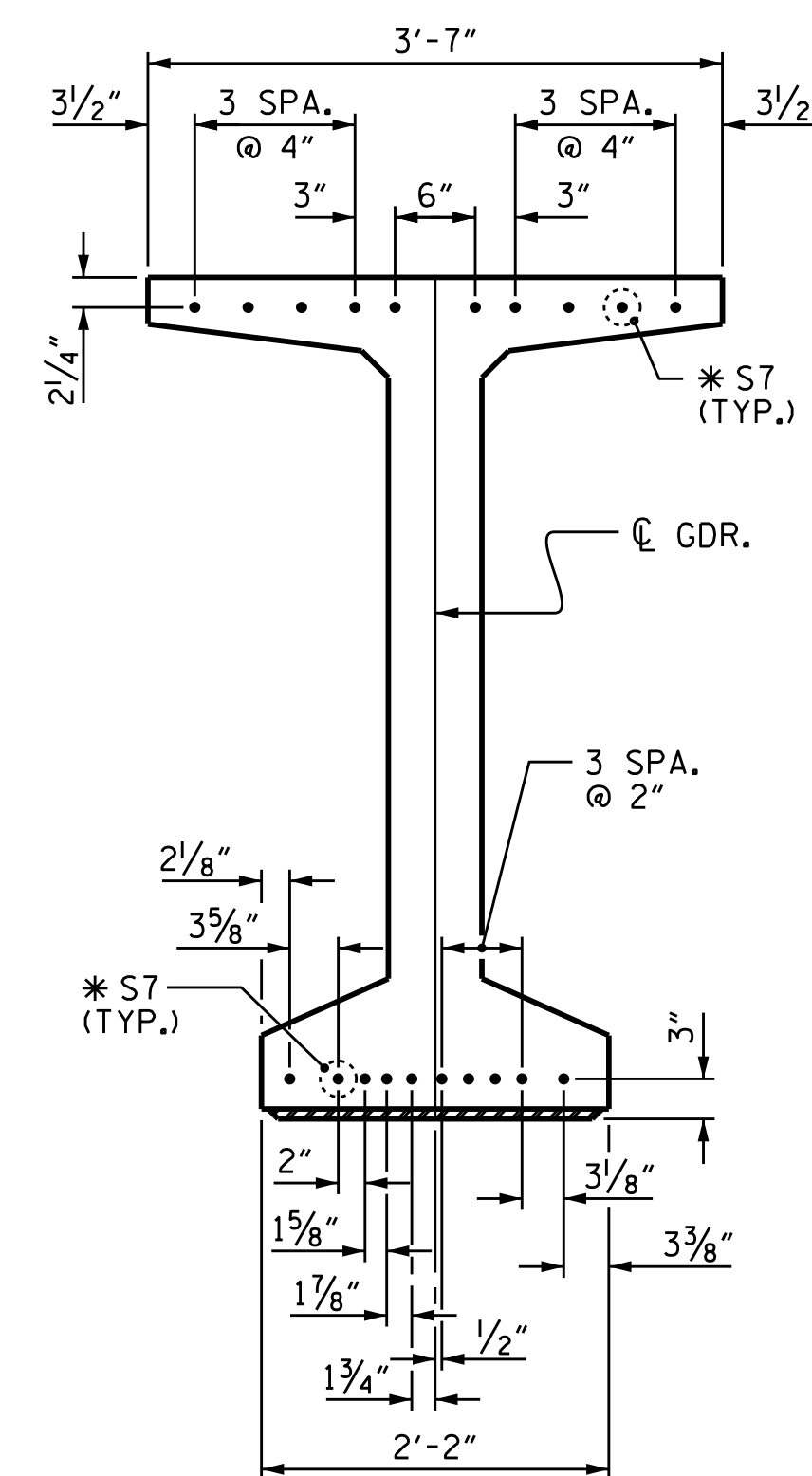
TOP FLANGE CLIP DETAILS

END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION TYP. FOR BEAM ENDS AT BENT 2 & 4. (EXPANSION JOINTS)

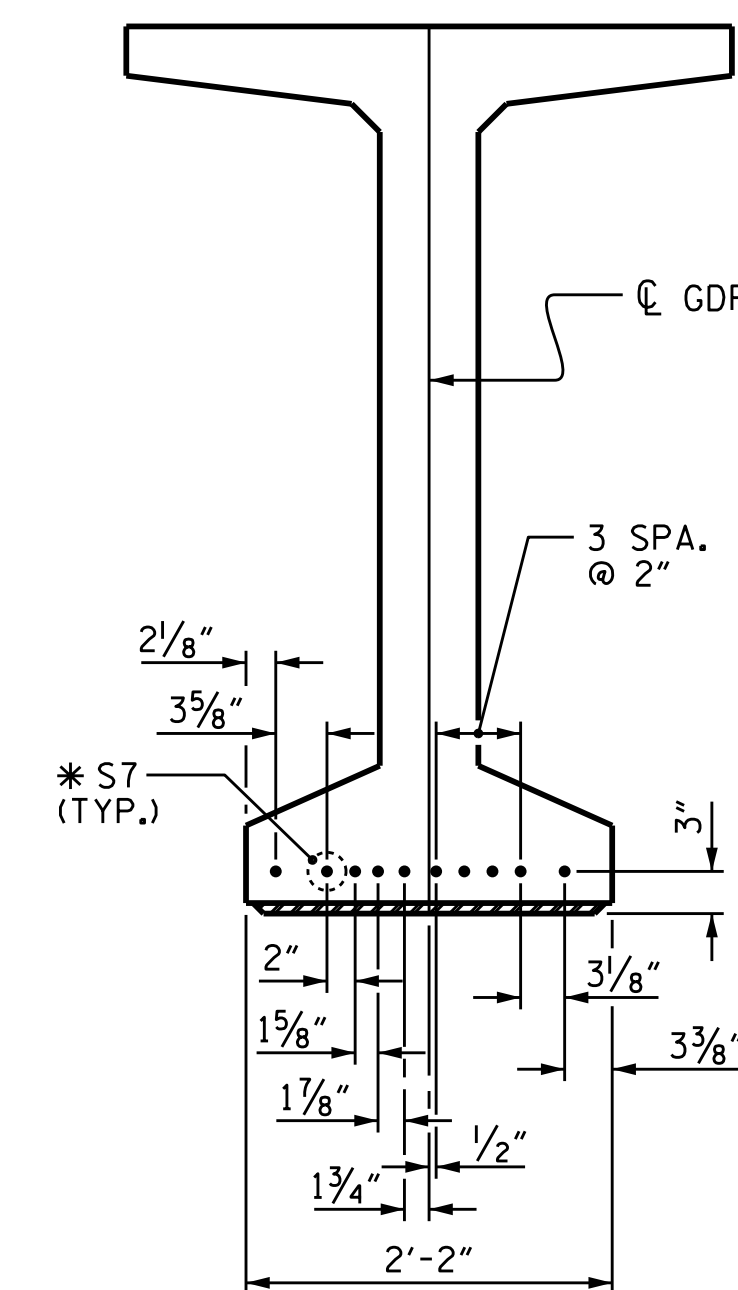


EMBEDDED PLATE "B-1" DETAILS

(2 REQ'D PER GIRDER)

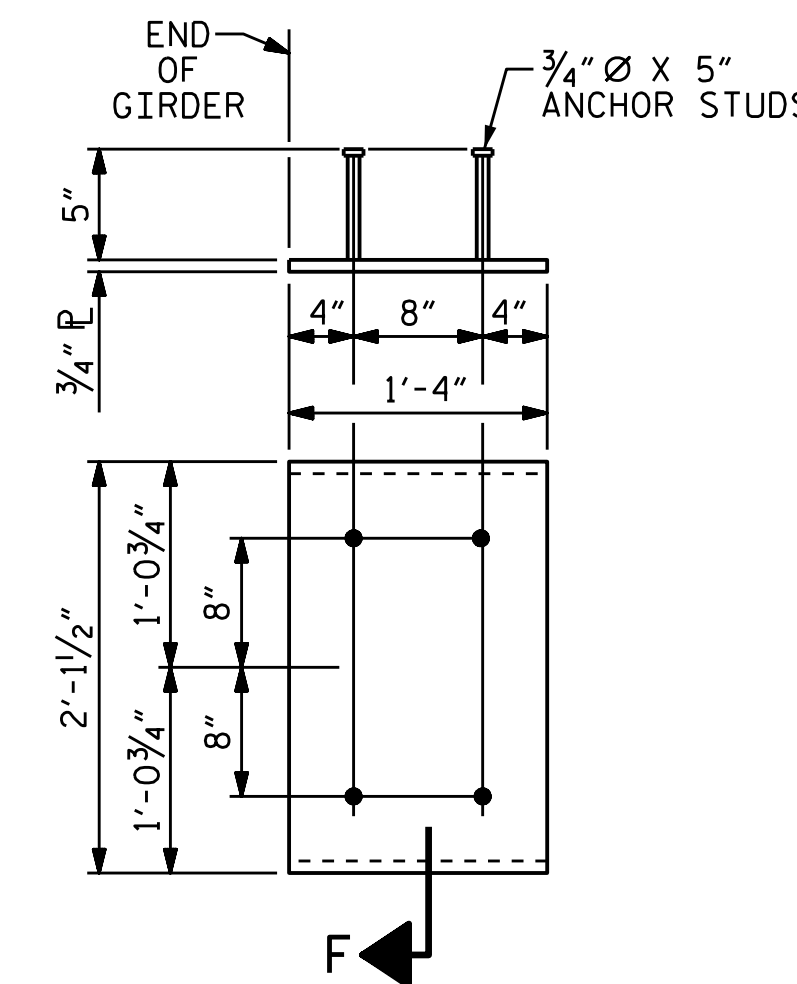


AT END BENT END



AT FIXED BENT END

DETAIL "C"



PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 3 OF 4

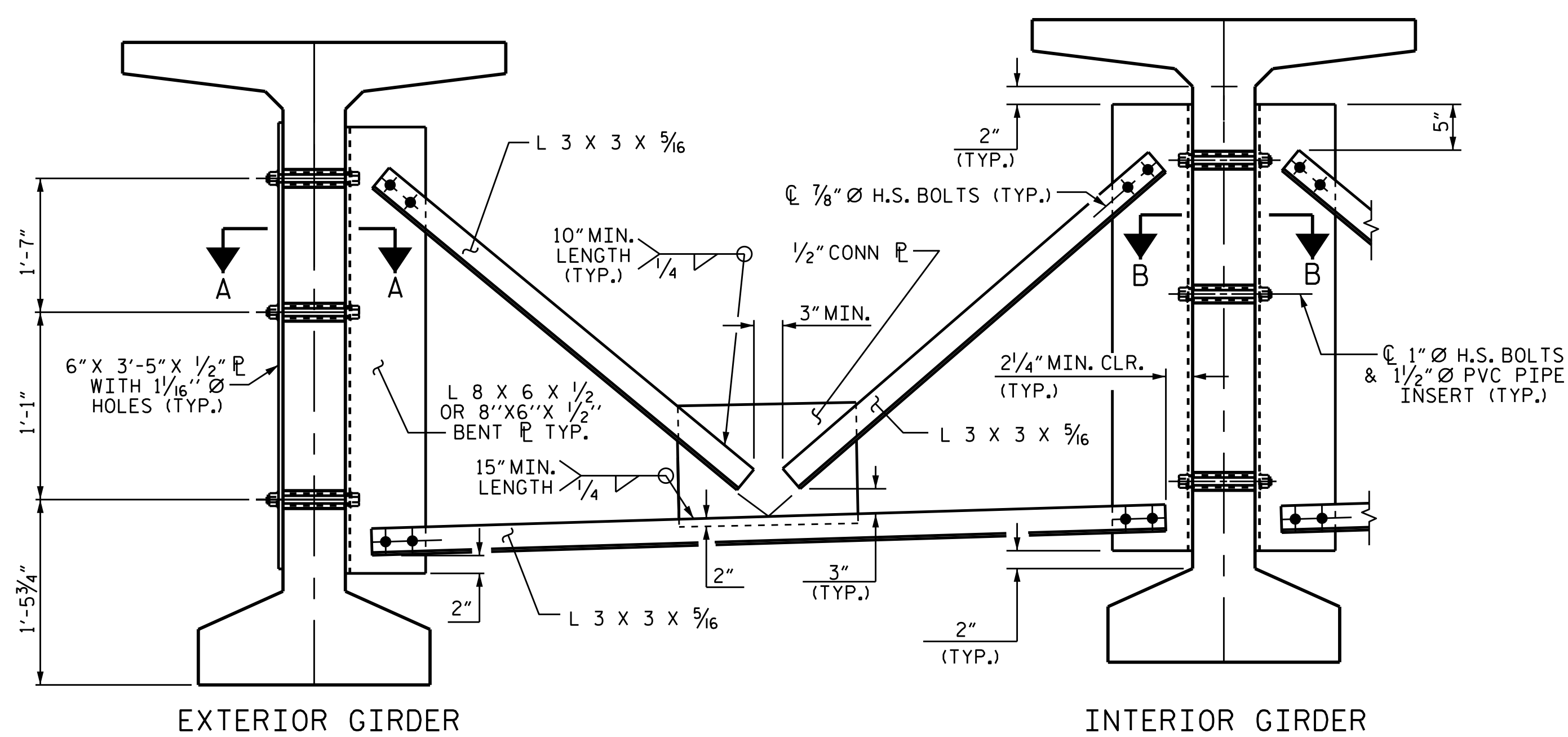
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS

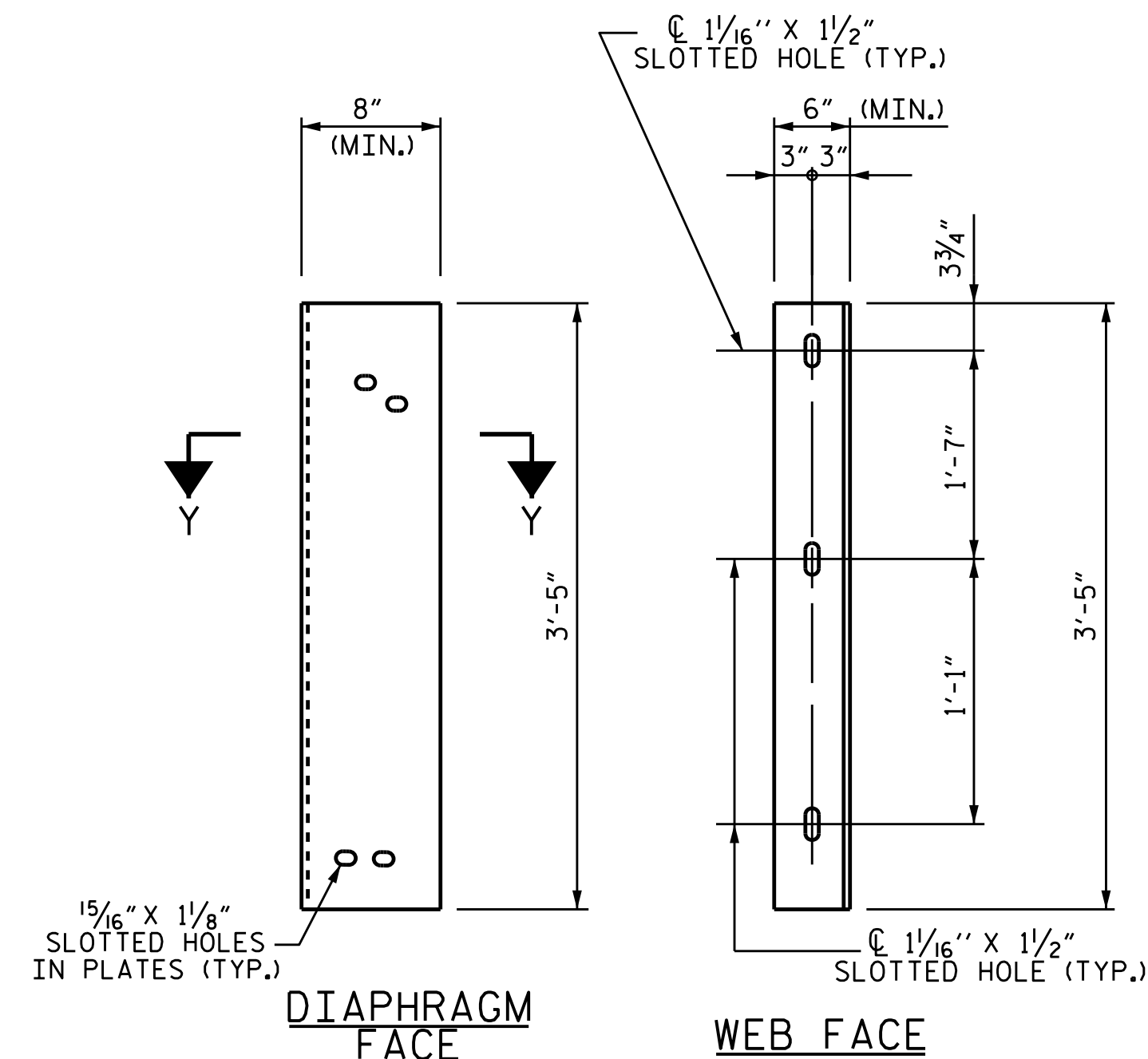
ASSEMBLED BY :	M. AHMED	DATE :	11-9-17
CHECKED BY :	S. WANCE	DATE :	11-27-17
DRAWN BY :	ELR 11/91	REV. 1/15	MAA/TMC
CHECKED BY :	GRP 11/91	REV. 2/15	MAA/TMC
		REV. 12/17	MAA/THC

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	
1			3			TOTAL SHEETS	
2			4			46	



PART SECTION AT INTERMEDIATE DIAPHRAGM



STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM. THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

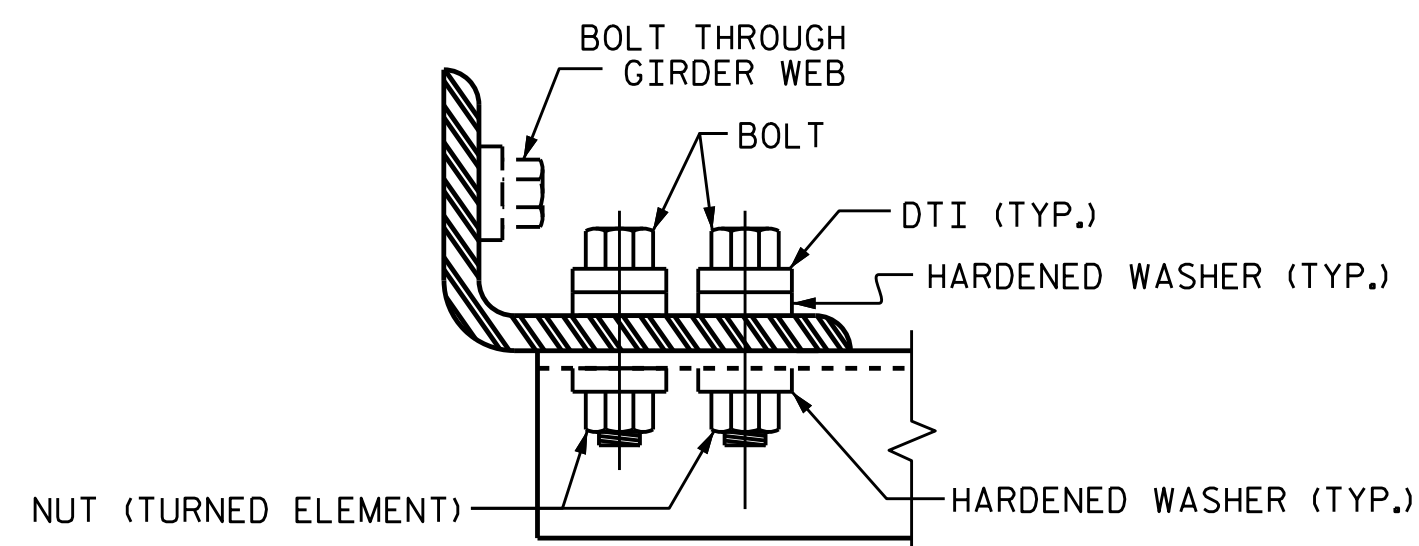
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

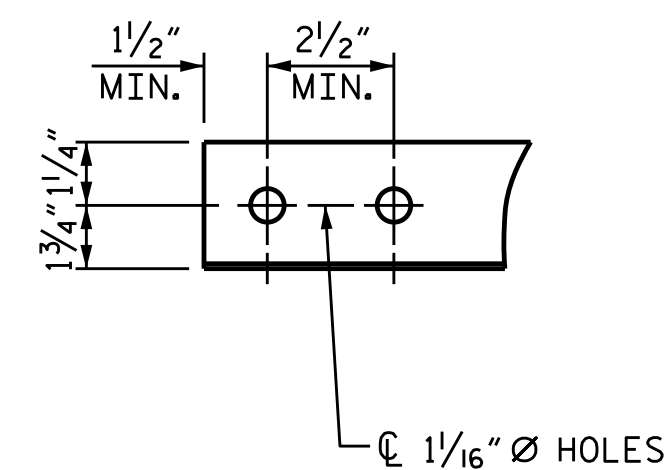
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

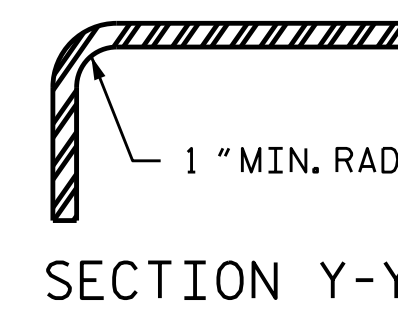
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



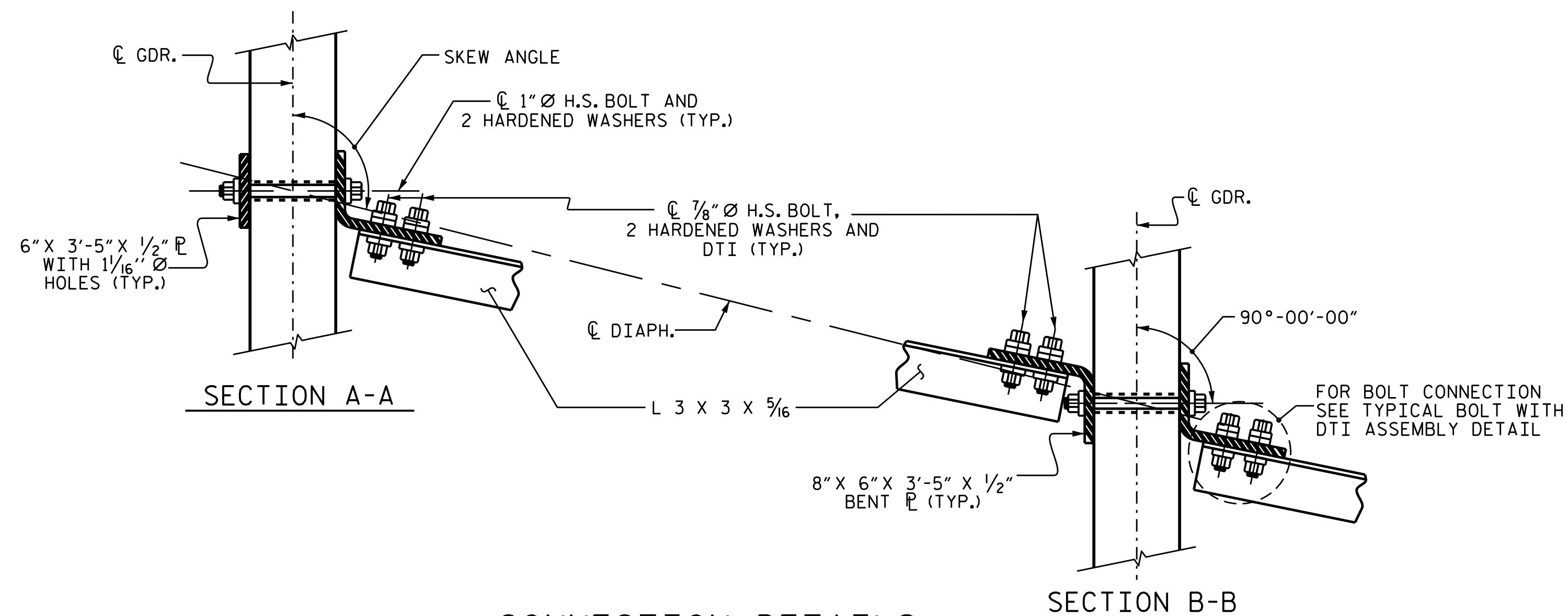
BOLT WITH DTI ASSEMBLY DETAIL



ANGLE END
(L 3 x 3 x 5/16)



CONNECTOR PLATE DETAIL



CONNECTION DETAILS

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR 63"
 MODIFIED BULB TEE
 PRESTRESSED CONCRETE
 GIRDERS

ASSEMBLED BY : M. AHMED	DATE : 1-31-18
CHECKED BY : S. WANCE	DATE : 1-31-18
DRAWN BY : RWW 11/09	REV. 10/11/11
CHECKED BY : GM 11/09	REV. 12/17
MAA/GM	MAA/THC

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS 46
2			4			

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

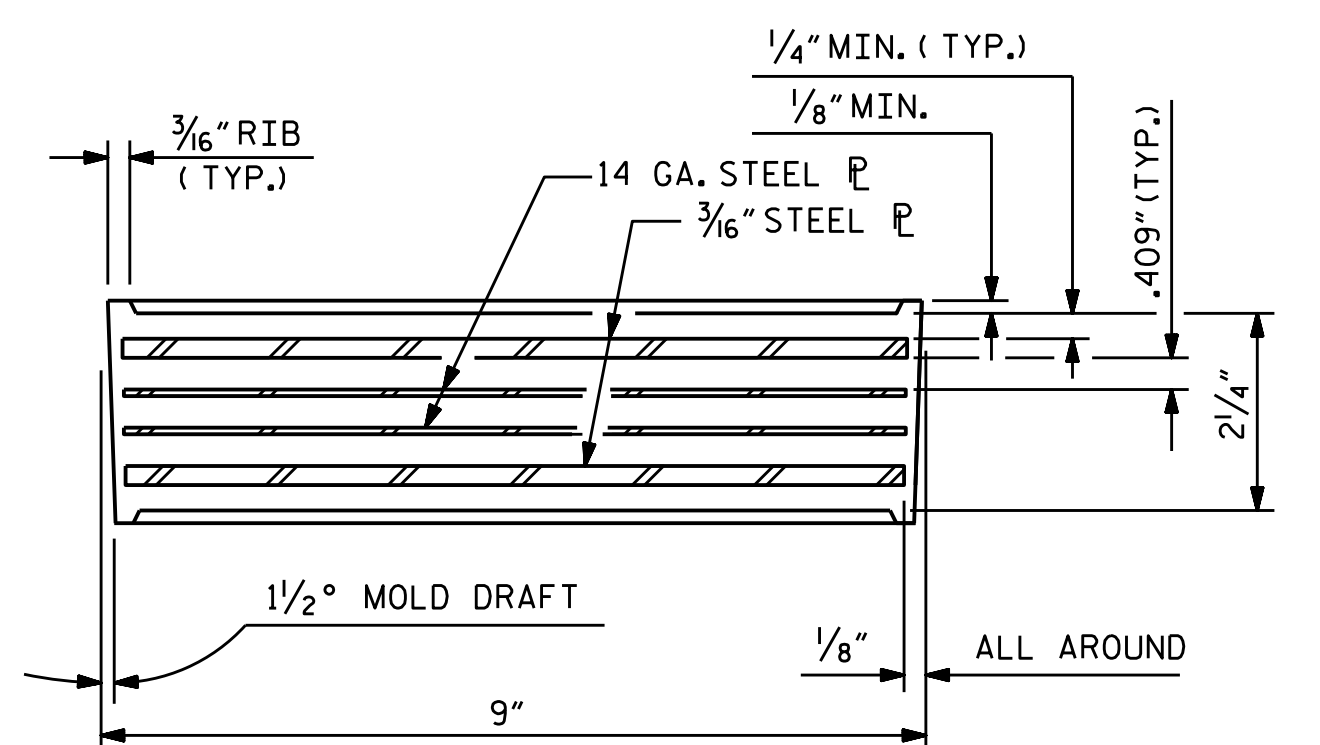
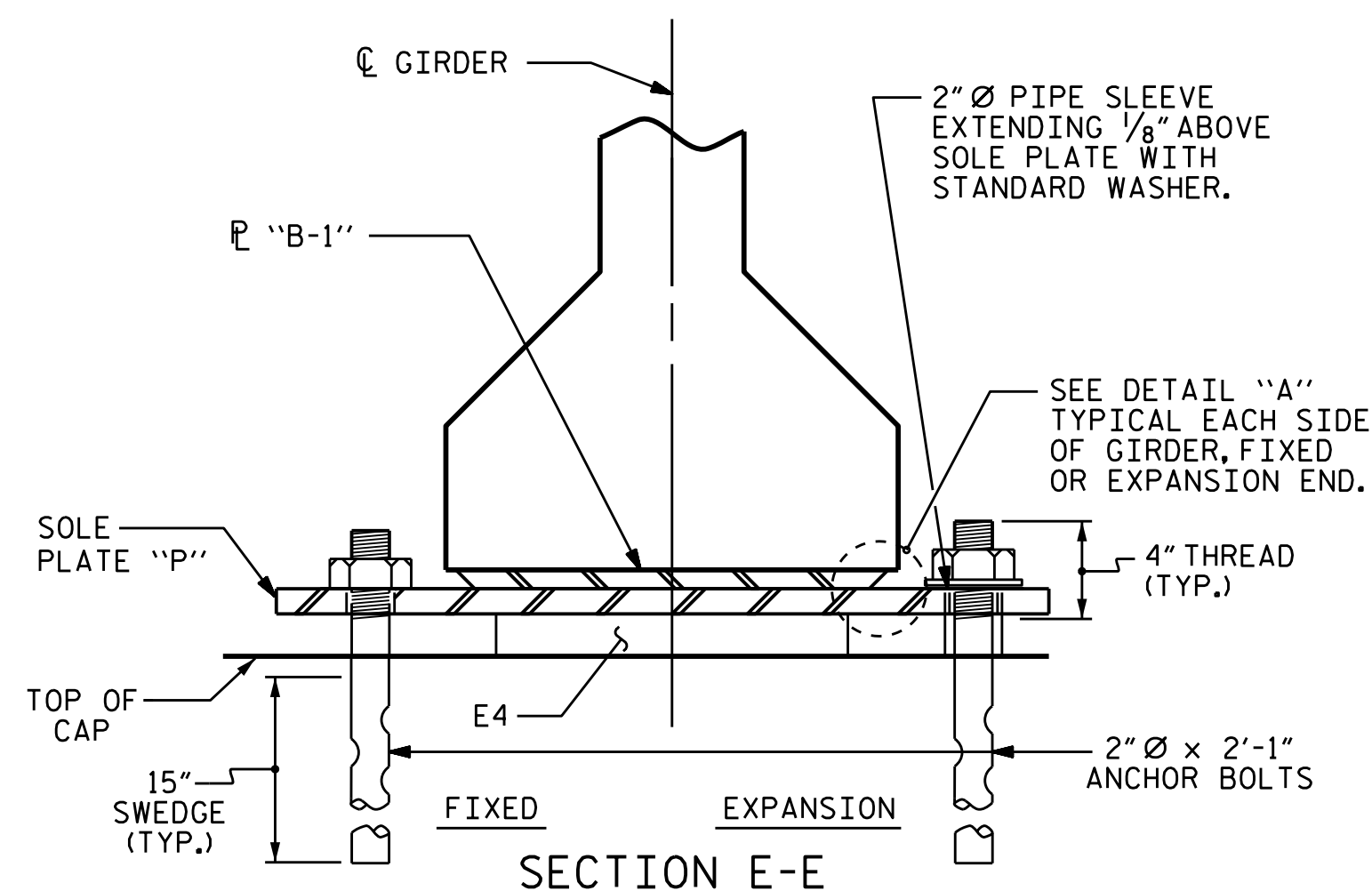
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

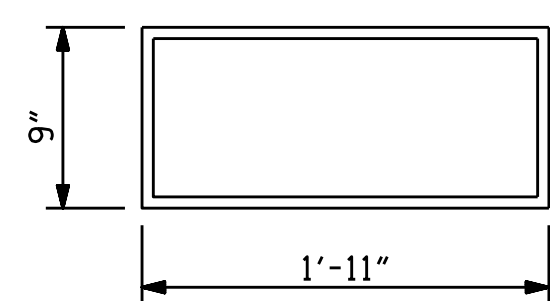
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



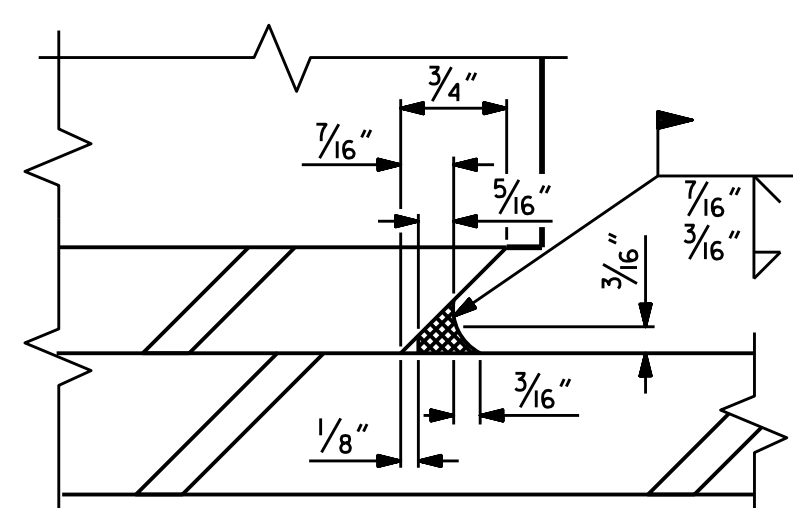
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E4 (48 REQ'D)

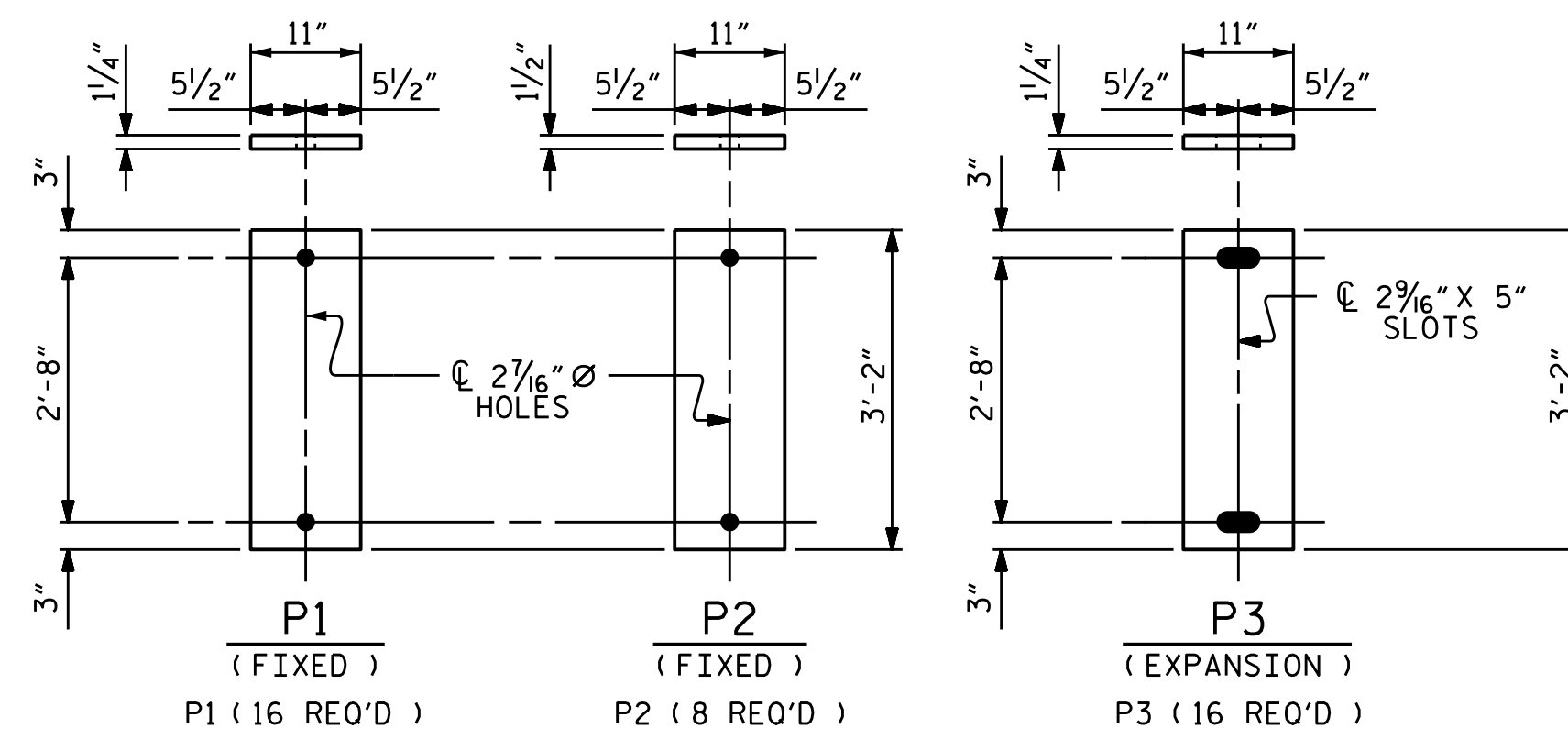
PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

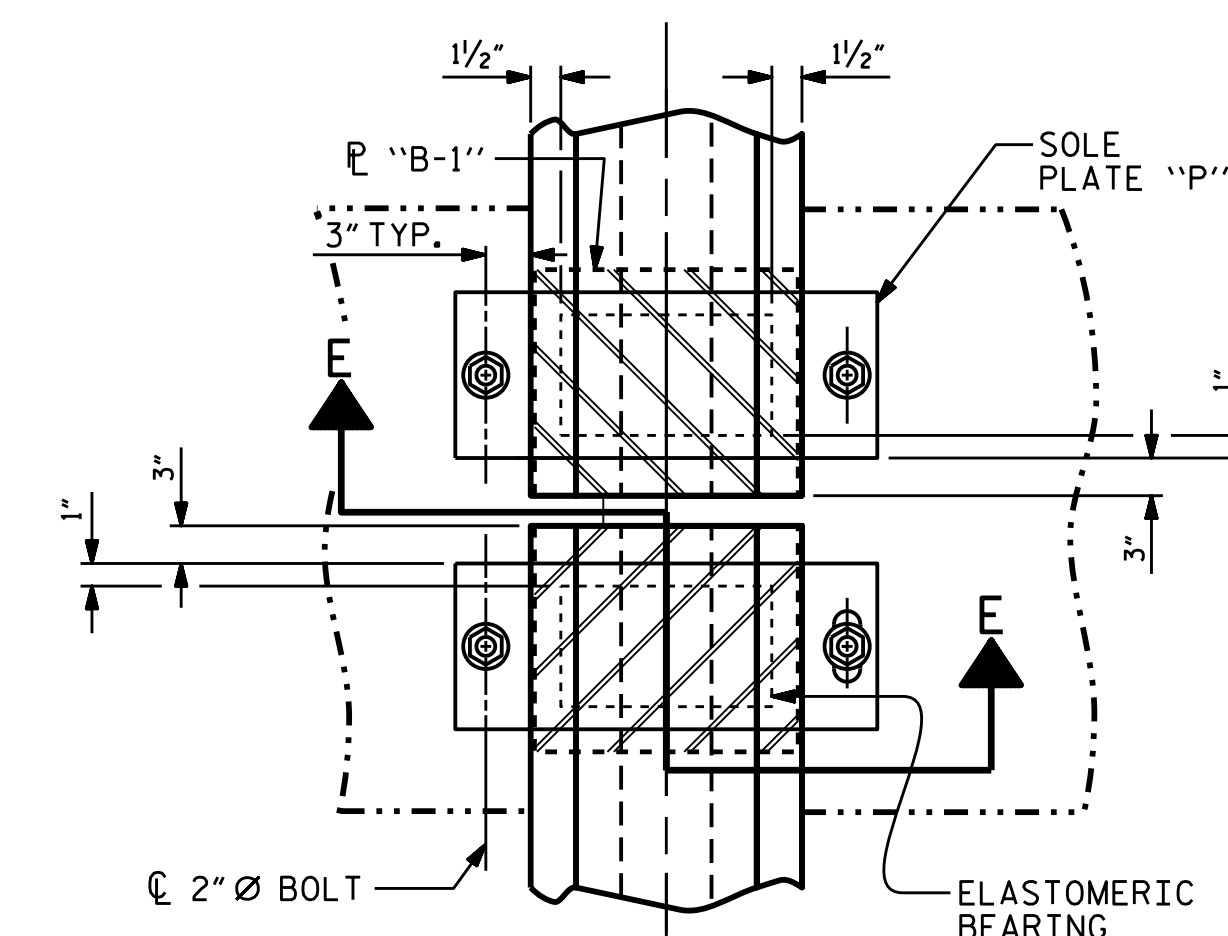


DETAIL "A"

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	365 k



SOLE PLATE DETAILS ("P")



TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)

TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)

PROJECT NO. B-4932
 EDGECOMBE COUNTY
 STATION: 25+00.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
ELASTOMERIC BEARING
DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE

ASSEMBLED BY : M.K. BEARD	DATE : 11/17
CHECKED BY : S. WANCE	DATE : 12/12/17
DRAWN BY : EEM 2/97	REV. 6/13 AAC/MAA
CHECKED BY : VAP 2/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	46
1			3			46
2			4			

DEAD LOAD DEFLECTION TABLE FOR SPANS "A" & "F"											
0.6" Ø LOW RELAXATION	GIRDERS 1 THRU 4										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.043	0.081	0.111	0.130	0.137	0.130	0.111	0.081	0.043	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.020	0.038	0.052	0.061	0.064	0.061	0.052	0.038	0.020	0
FINAL CAMBER ↑	0	1/4"	1/2"	11/16"	13/16"	7/8"	13/16"	11/16"	1/2"	1/4"	0

* INCLUDES FUTURE WEARING SURFACE
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT
 "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR SPANS "B" THRU "E"																					
0.6" Ø LOW RELAXATION	GIRDERS 1 THRU 4																				
20TH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.041	0.081	0.119	0.154	0.185	0.211	0.232	0.247	0.256	0.259	0.256	0.247	0.232	0.211	0.185	0.154	0.119	0.081	0.041	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.027	0.055	0.080	0.102	0.122	0.143	0.154	0.164	0.174	0.176	0.174	0.164	0.154	0.143	0.122	0.102	0.080	0.055	0.027	0
FINAL CAMBER ↑	0	3/16"	5/16"	1/2"	5/8"	3/4"	13/16"	15/16"	1"	1"	1"	1"	1"	15/16"	13/16"	3/4"	5/8"	1/2"	5/16"	3/16"	0

* INCLUDES FUTURE WEARING SURFACE
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT
 "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00 -L-

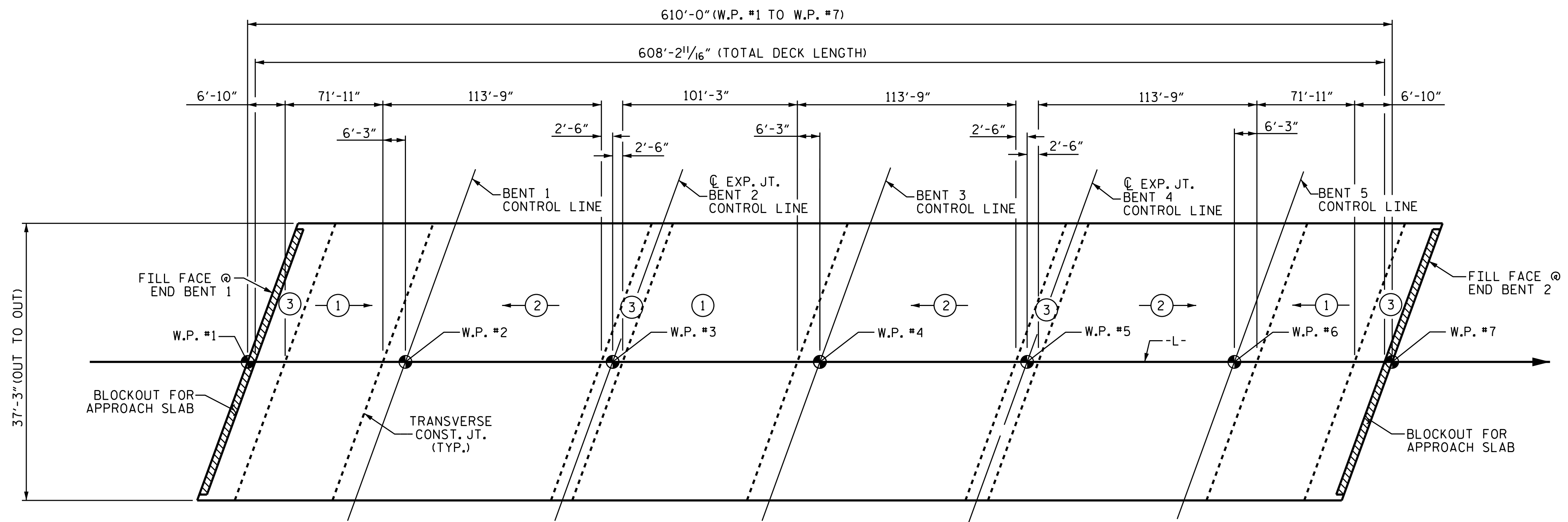


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 DEFLECTION TABLE

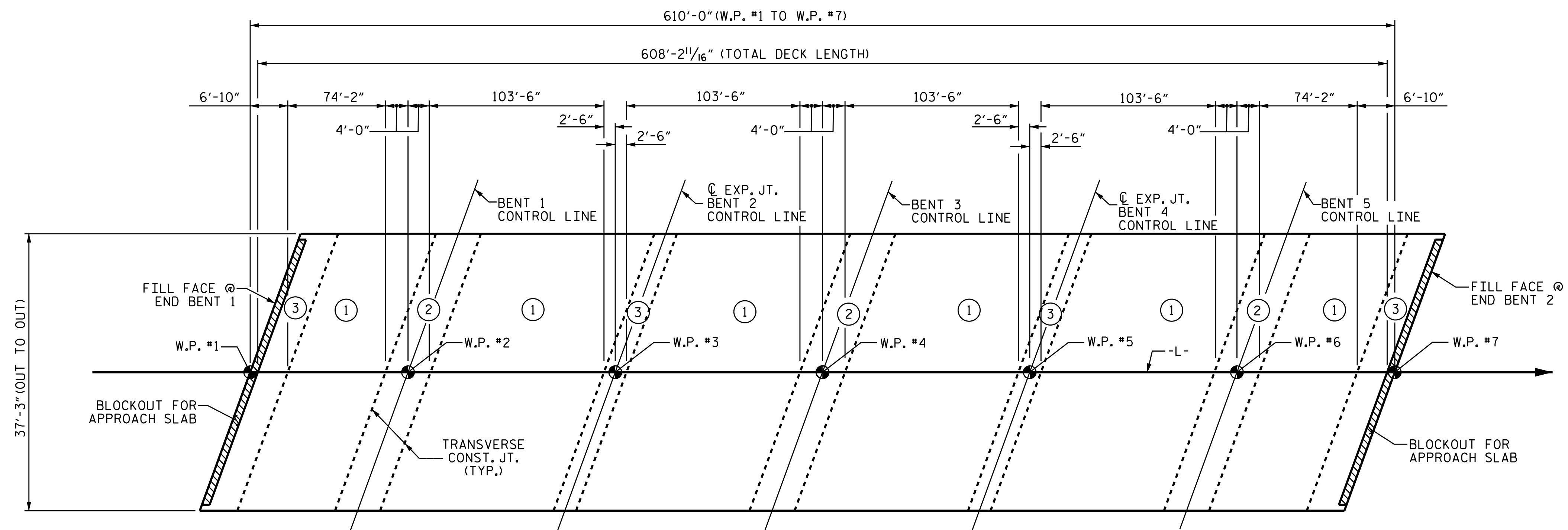
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS 46
2			4			

ASSEMBLED BY : M. AHMED	DATE : 12-6-17
CHECKED BY : ASTER ABRAHA, P.E.	DATE : 12-11-17
DESIGN ENGINEER OF RECORD: A. IGHWAIR	DATE : 12-11-17
DRAWN BY : ELR 11/91	REV. 7/10/01RR LES/RDR
CHECKED BY : GRP 11/91	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM



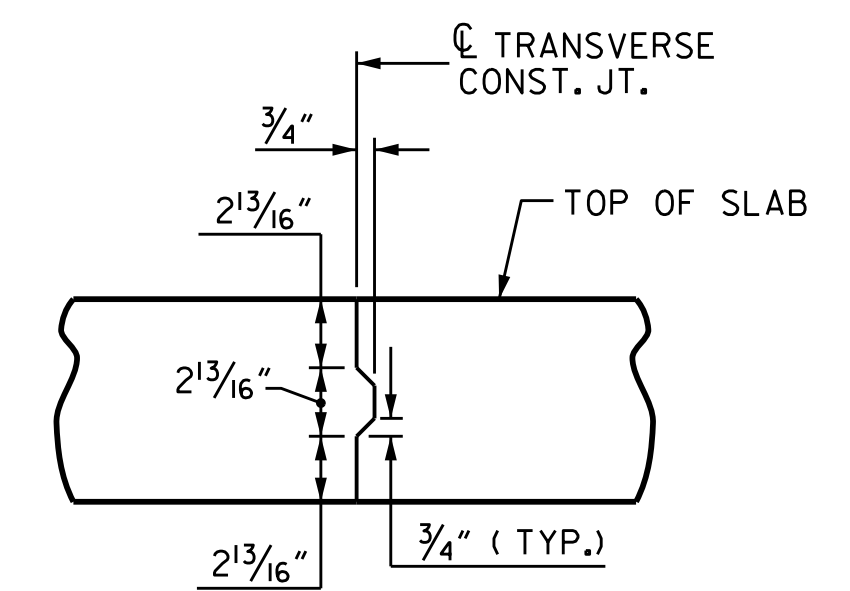
POURING SEQUENCE

① = INDICATES POUR NUMBER AND DIRECTION OF POUR



OPTIONAL POURING SEQUENCE

POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POUR 1 REACH A MINIMUM OF 3000 PSI.



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 POUR SEQUENCE

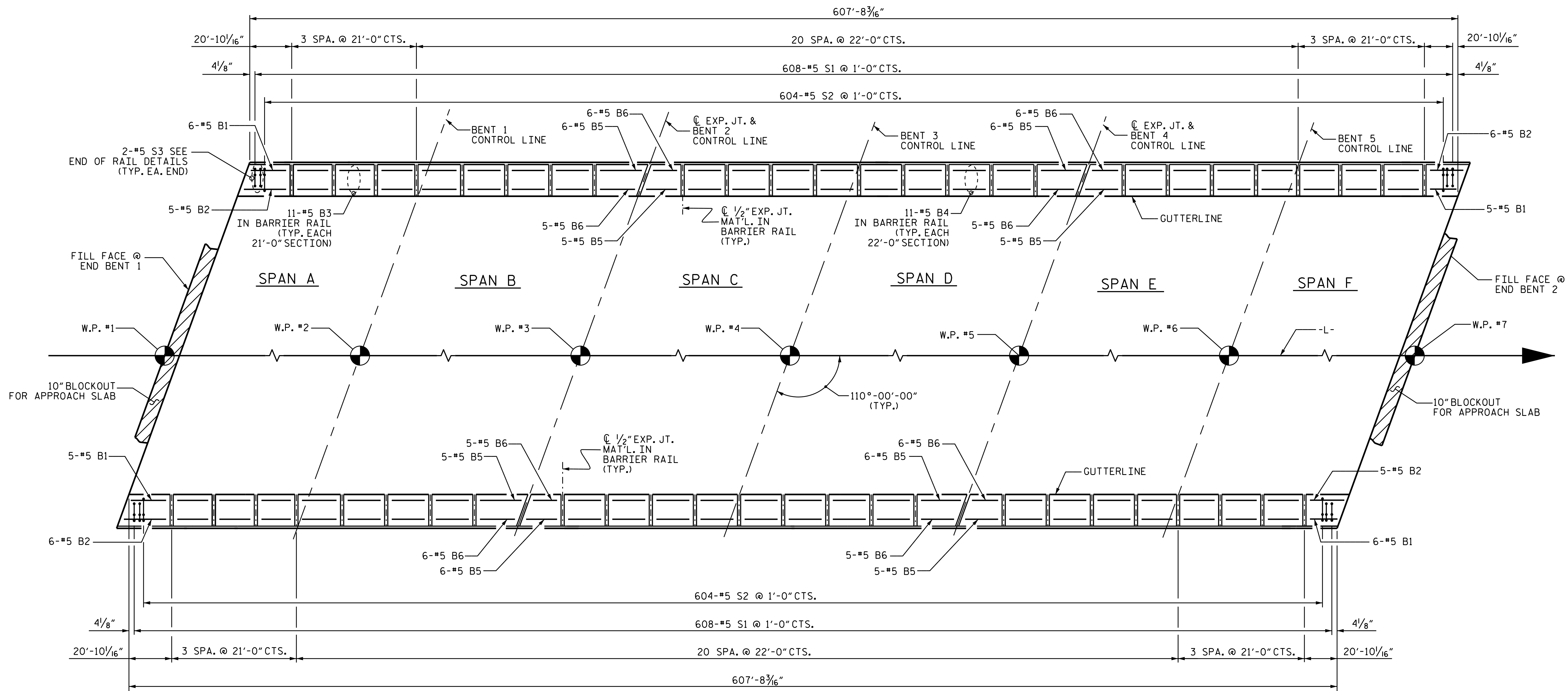
DRAWN BY :	O. T. NGUYEN	DATE :	12/12/17
CHECKED BY :	A. G. ABRAHA	DATE :	12/12/17
DESIGN ENGINEER OF RECORD :	P. K. NEWTON	DATE :	12/12/17

05-APR-2018 16:51
 R:\S\Structures\Plans\Final Plans\SUPERSTRUCTURE\B4932.SMU. BM. 320028.dgn
 cabr.dwg

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 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21	
1			3			TOTAL SHEETS	46
2			4				

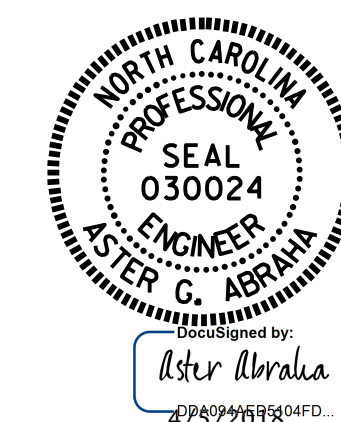
STD. NO. BOM1



PLAN OF CONCRETE BARRIER RAIL

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 CONCRETE
 BARRIER RAIL

ASSEMBLED BY : O. T. NGUYEN	DATE : 12/6/17
CHECKED BY : M. M. AHMED	DATE : 12/12/17
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/GM

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS 46
2			4			

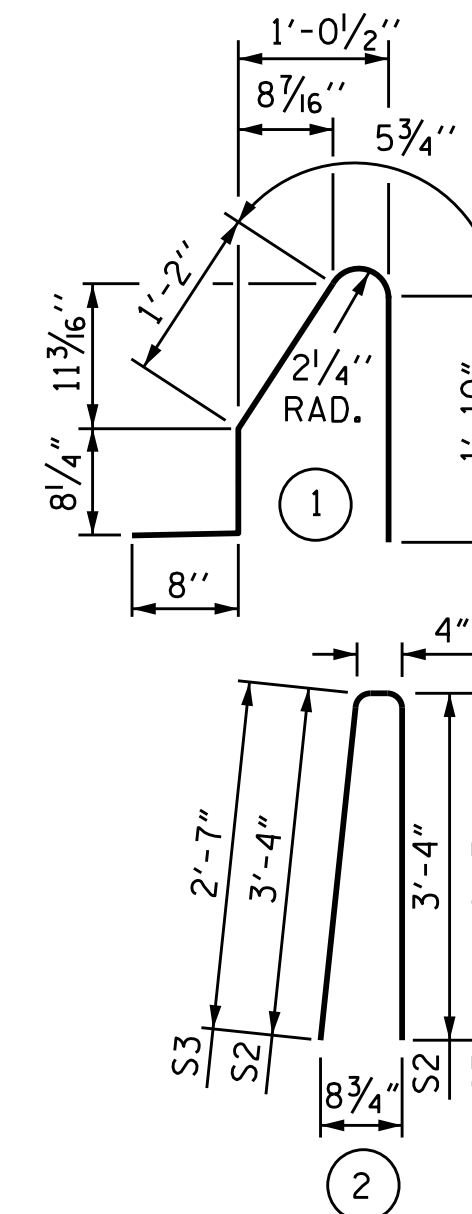
NOTES

THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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. THE 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.

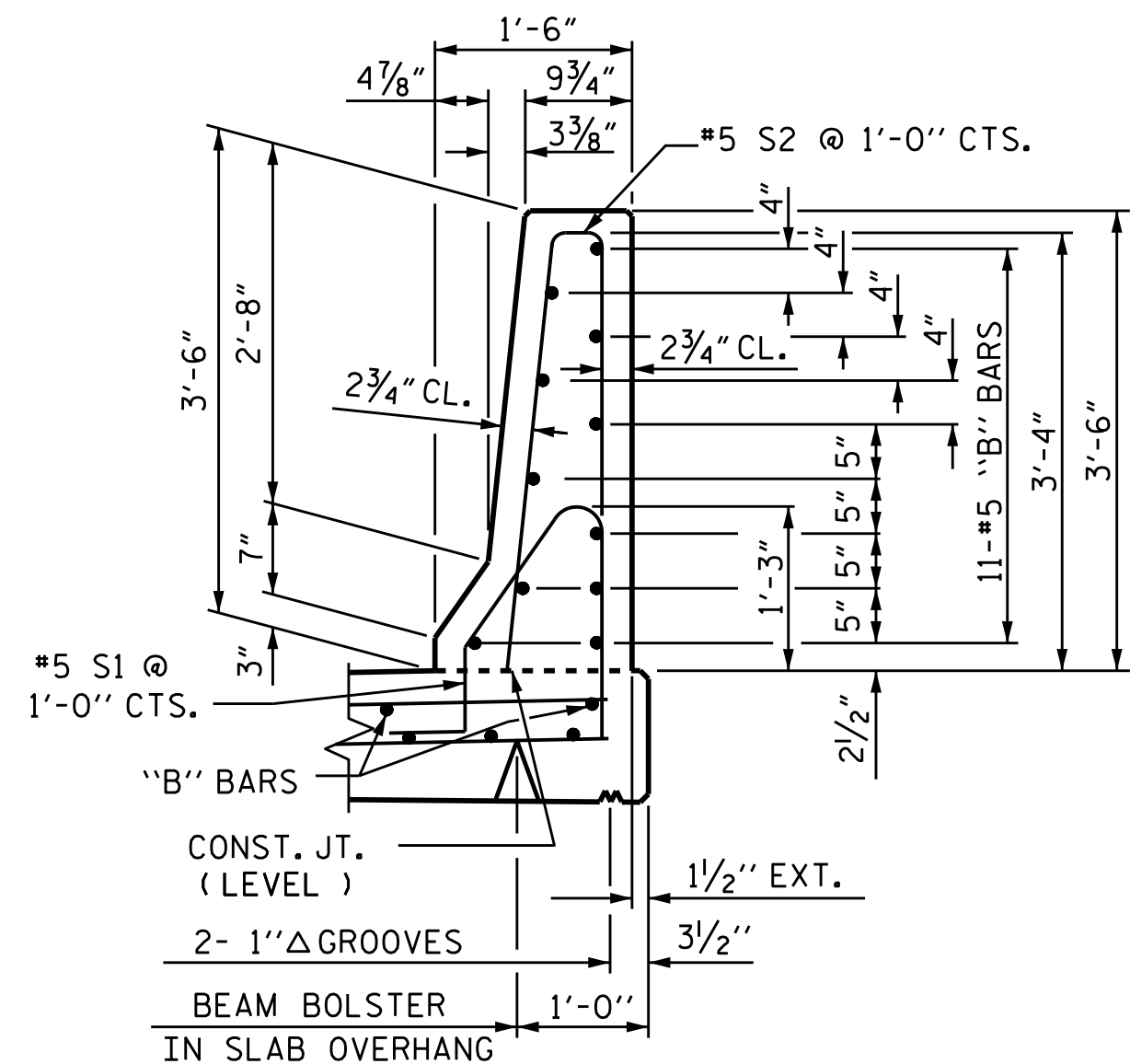
BAR TYPES



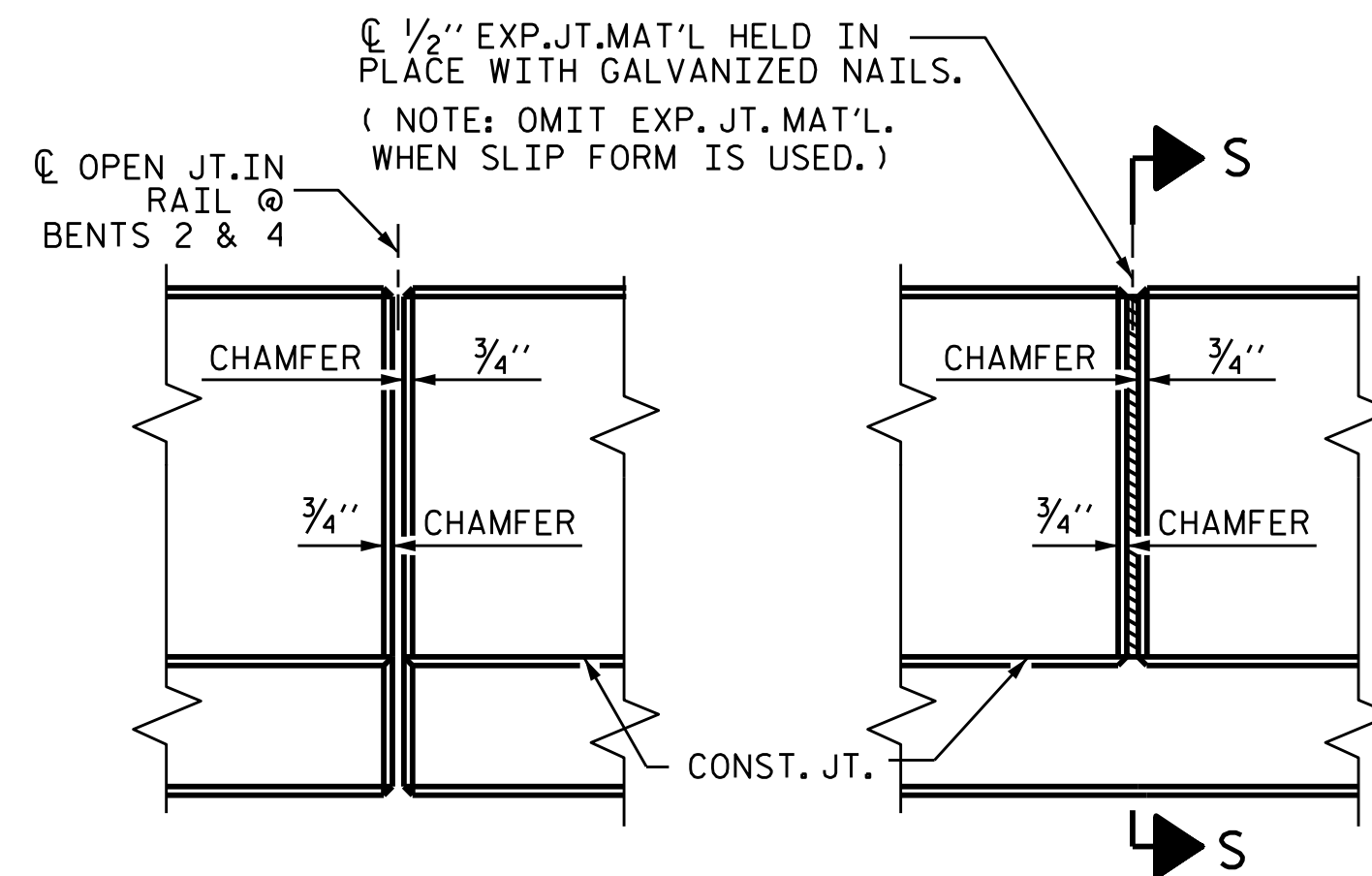
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

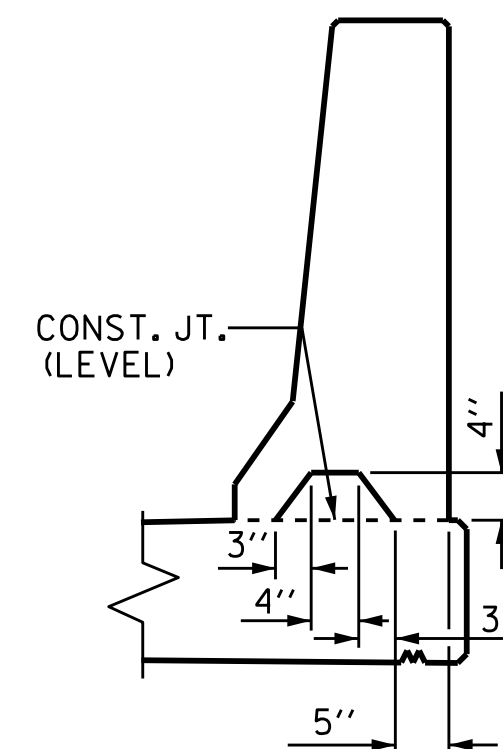
FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	1216	#5	1	4'-10"	6130
* S2	1208	#5	2	7'-0"	8820
* S3	8	#5	2	5'-6"	46
* B1	22	#5	STR	20'-6"	470
* B2	22	#5	STR	20'-11"	480
* B3	132	#5	STR	20'-7"	2834
* B4	440	#5	STR	21'-7"	9905
* B5	44	#5	STR	21'-8"	994
* B6	44	#5	STR	21'-4"	979
* EPOXY COATED REINFORCING STEEL					30,658 LBS.
CLASS AA CONCRETE					165.24 CU. YDS
CONCRETE BARRIER RAIL					1,215.36 LIN. FT.



SECTION THRU RAIL



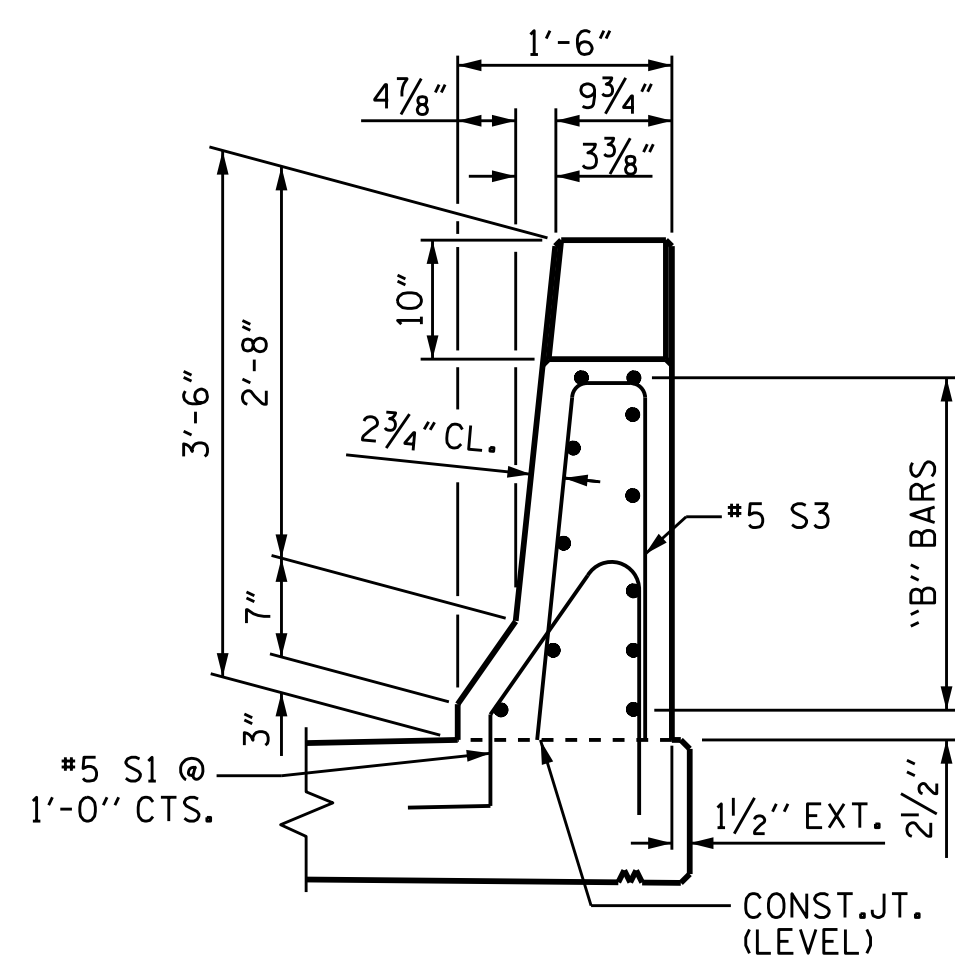
ELEVATION AT EXPANSION JOINTS



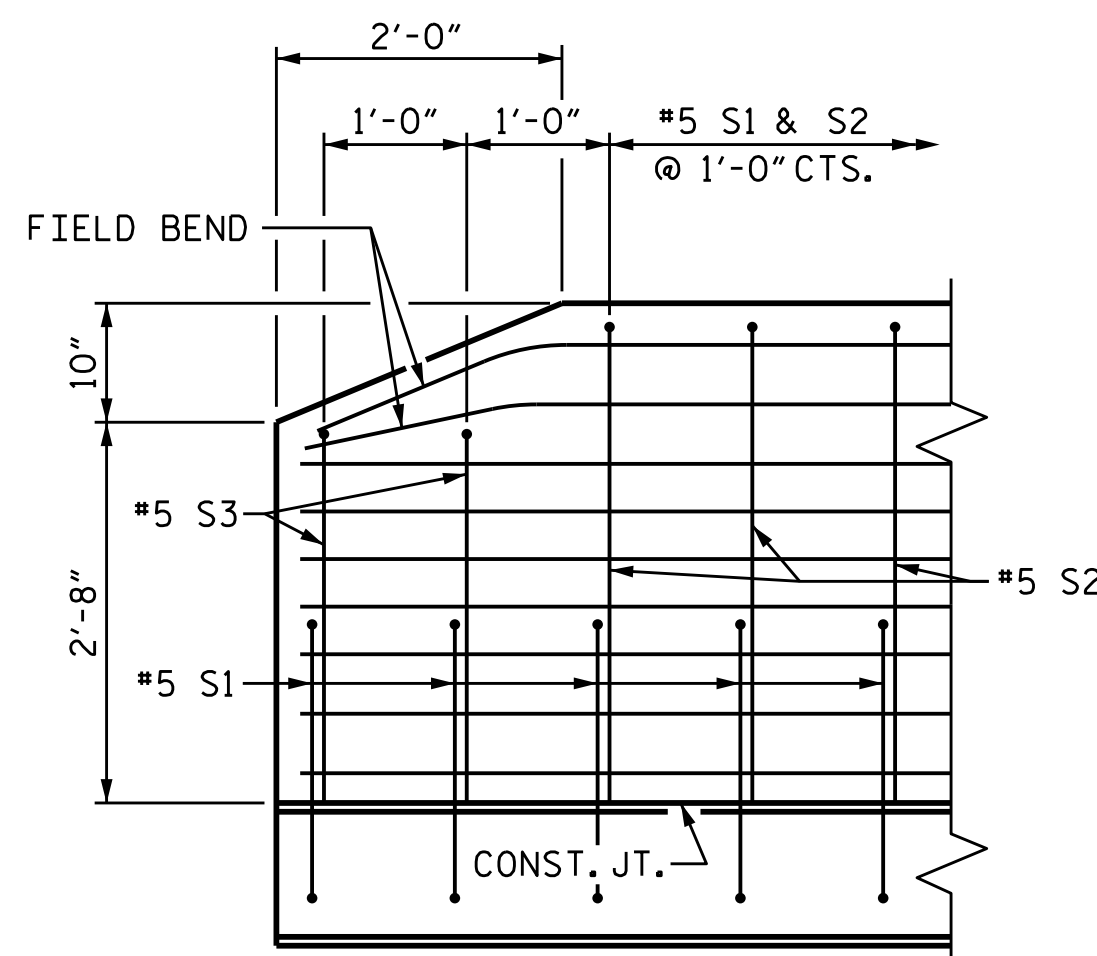
SECTION S-S

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

BARRIER RAIL DETAILS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 CONCRETE
 BARRIER RAIL

ASSEMBLED BY :	O. T. NGUYEN	DATE :	12/12/17
CHECKED BY :	M. M. AHMED	DATE :	12/12/17
DRAWN BY :	ARB 5/87	REV. 7/12	MAA/GM
CHECKED BY :	SJD 9/87	REV. 6/13	MAA/GM
		REV. 12/17	MAA/GM

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS 46
2			4			

NOTES

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

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.)

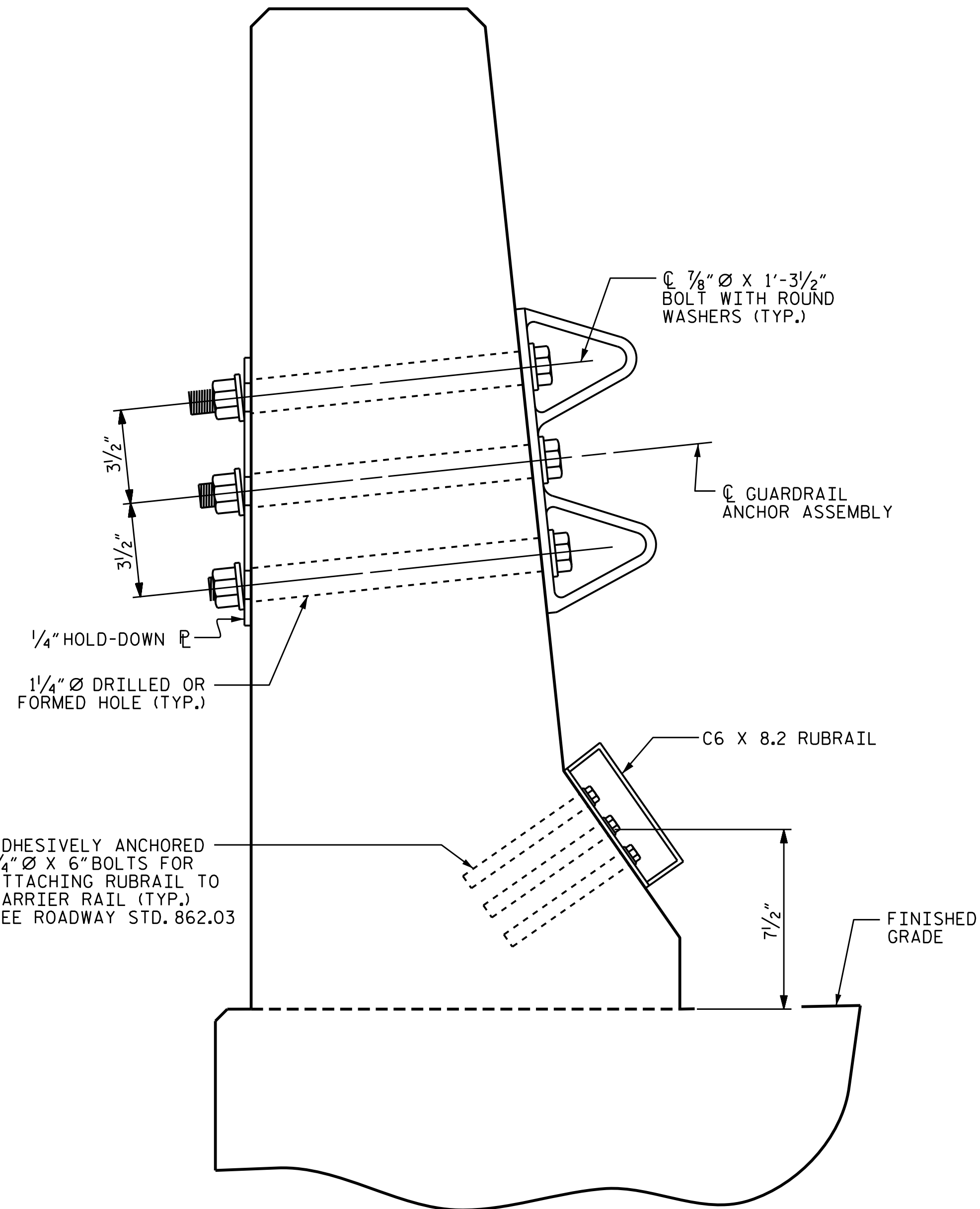
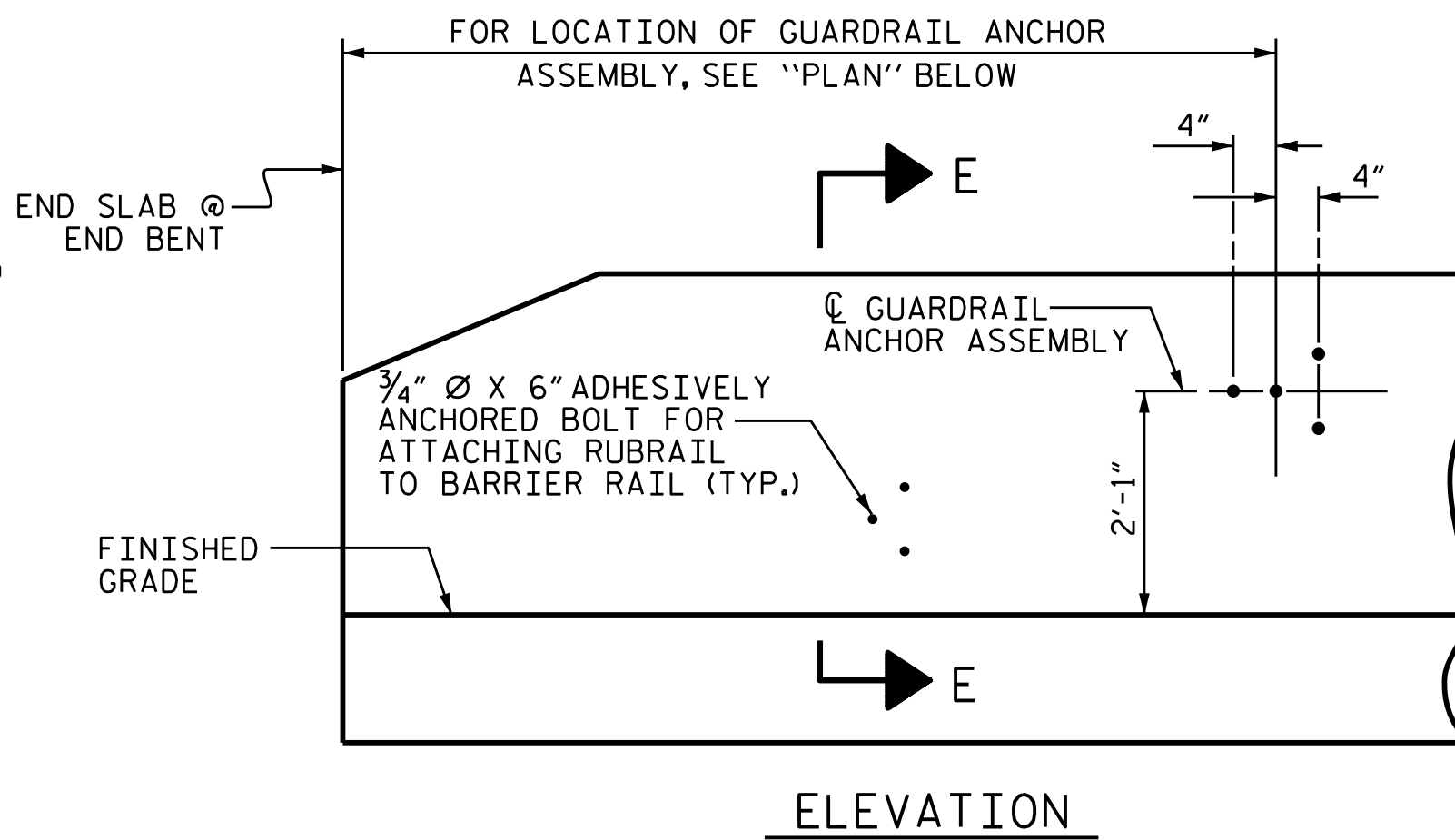
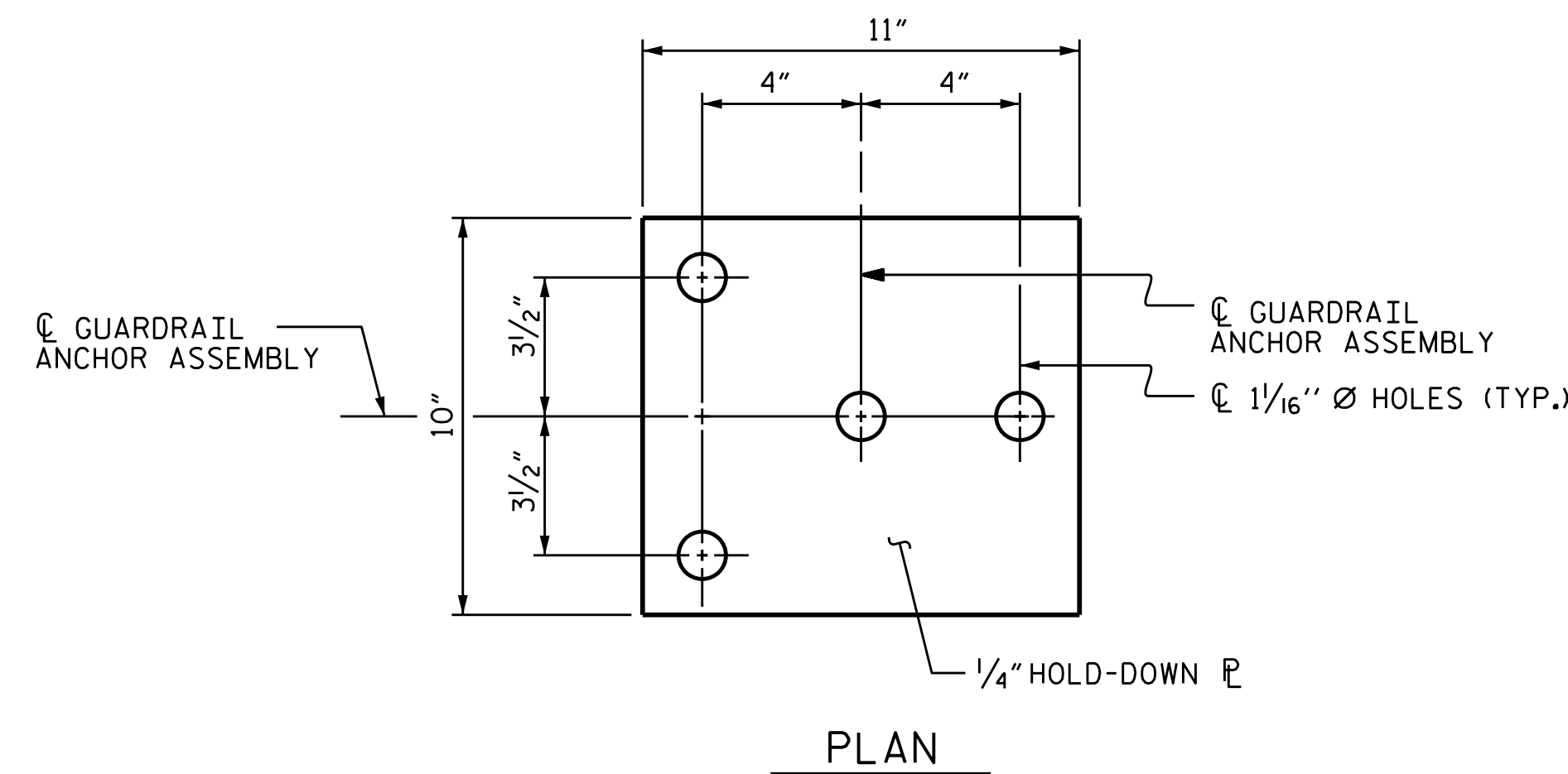
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

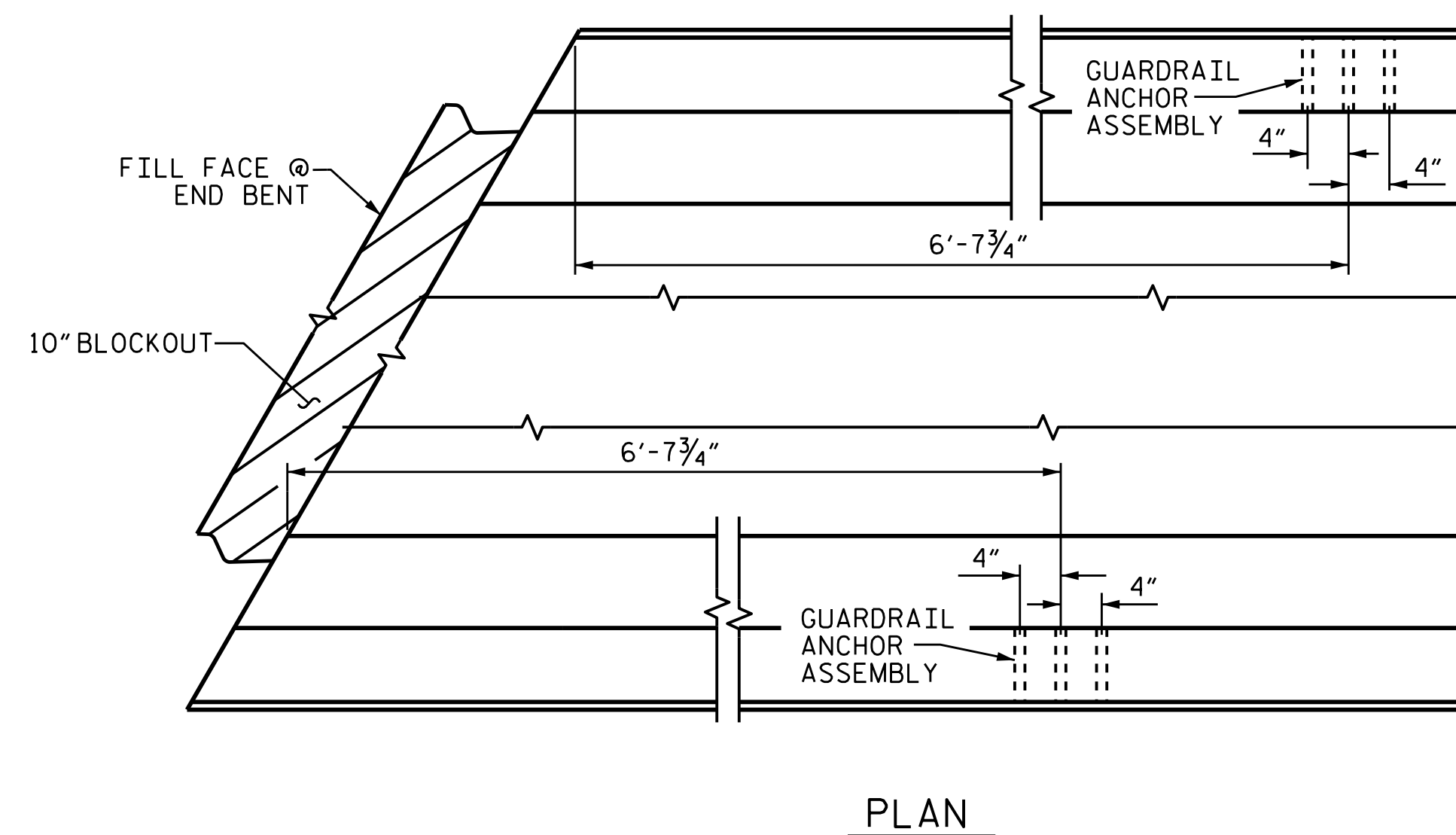
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4932
EDGECOMBE COUNTY
STATION: 25+00.00 -L-

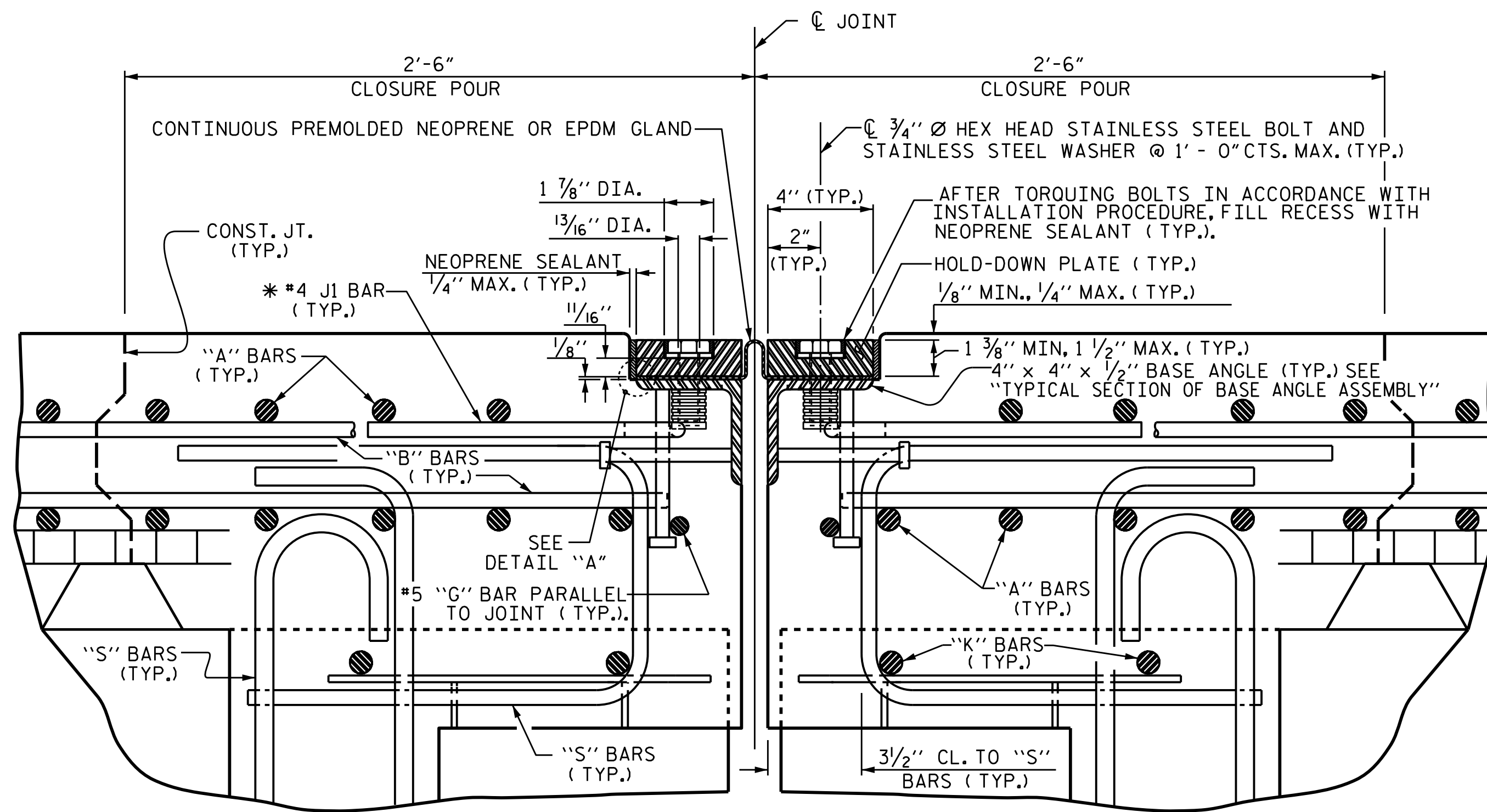


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

ASSEMBLED BY :	O. T. NGUYEN	DATE :	12/6/17
CHECKED BY :	M. M. AHMED	DATE :	12/12/17
DRAWN BY :	TLA 5/06	REV. 7/12	MAA/GM
CHECKED BY :	GM 5/06	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS 46
2			4			



EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

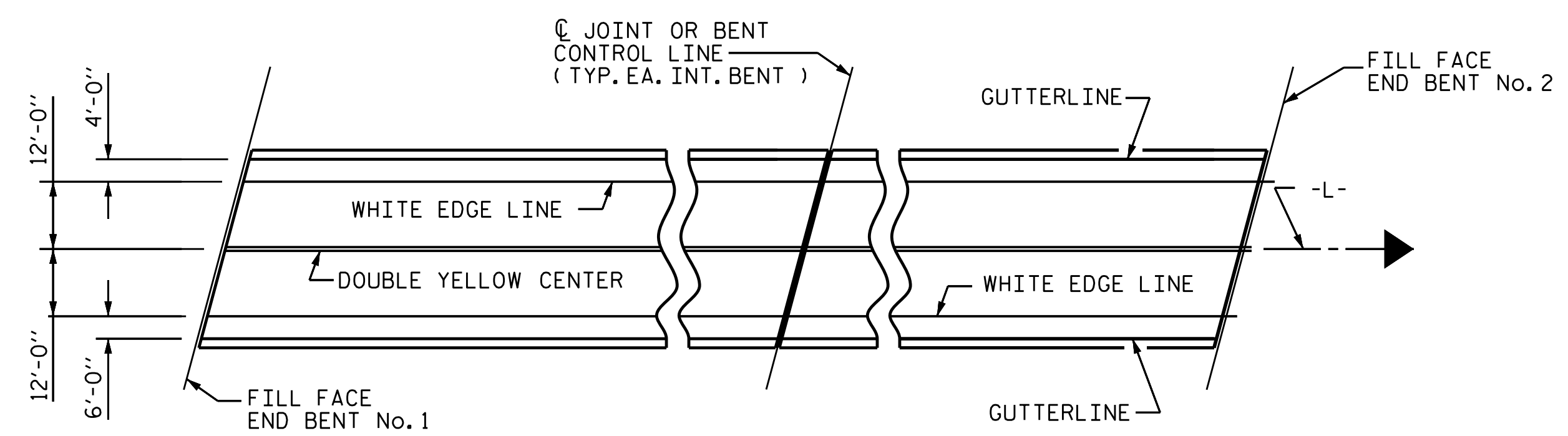
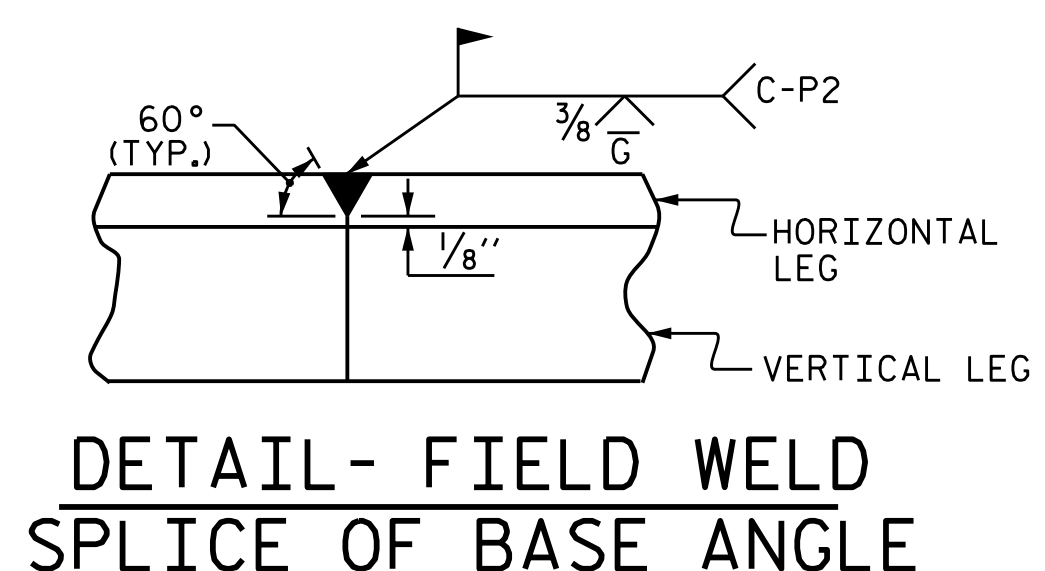
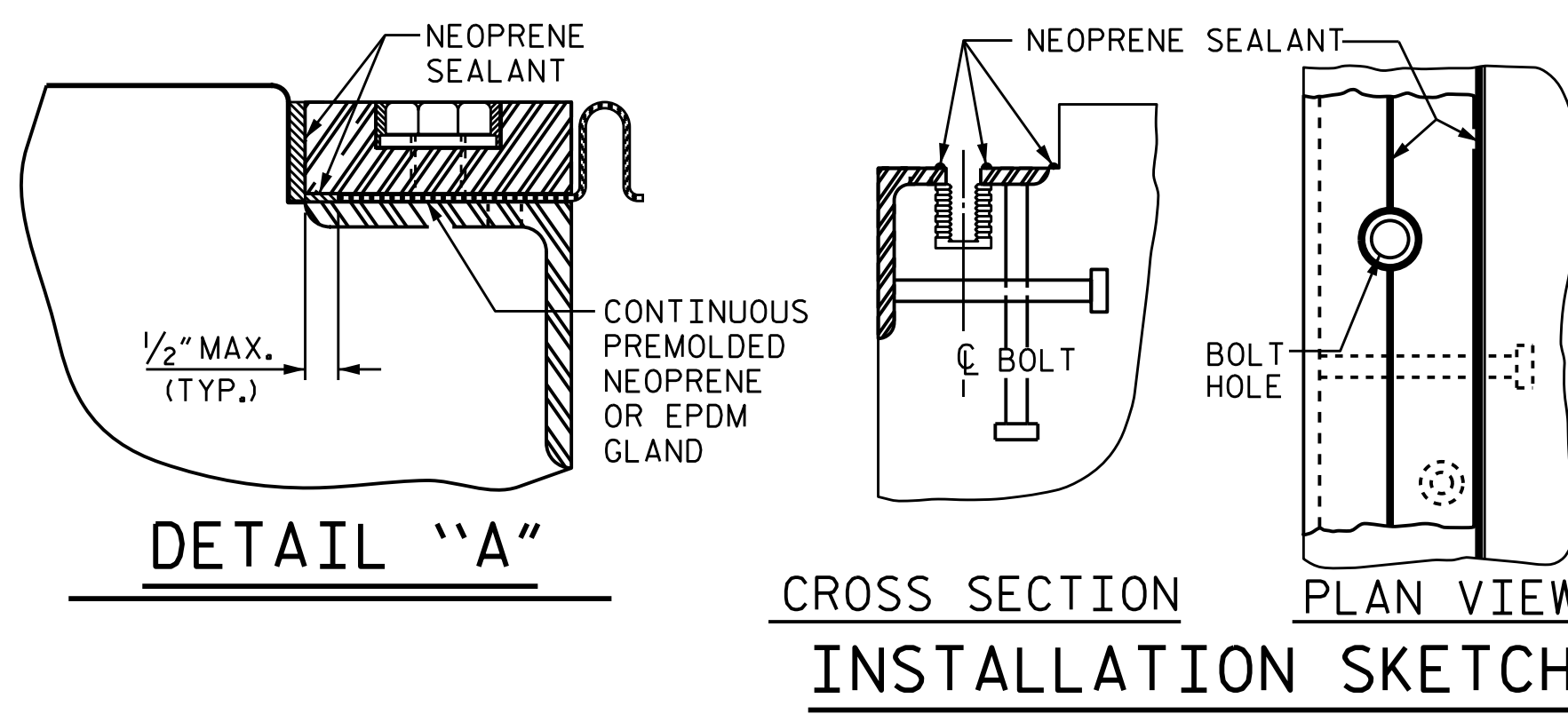
* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

INSTALLATION PROCEDURE

1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4 1/8" TO 4 1/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE 3/4" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X 1/2" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED 1/8" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

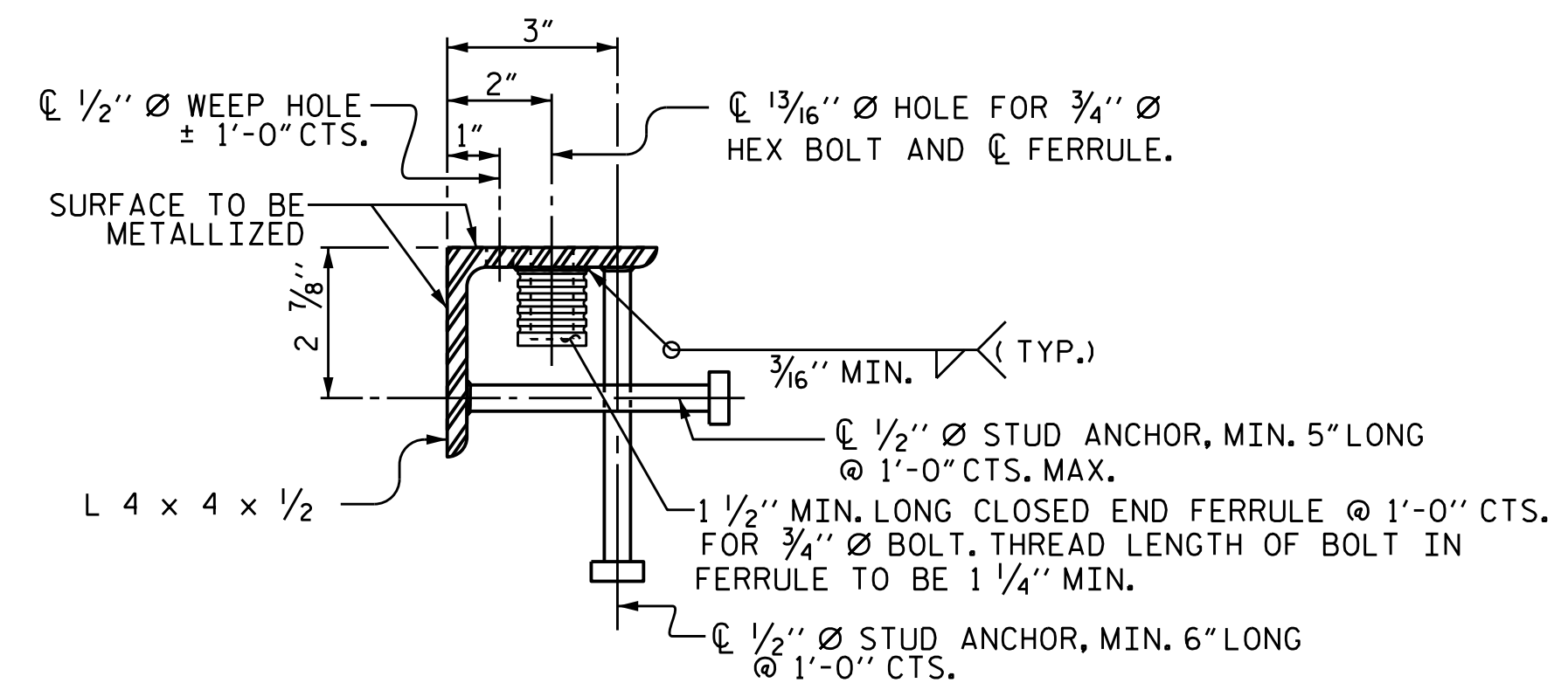
GENERAL NOTES

1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MIN.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED. SEE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
7. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE GROUND SMOOTH AND COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
8. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
9. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
10. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

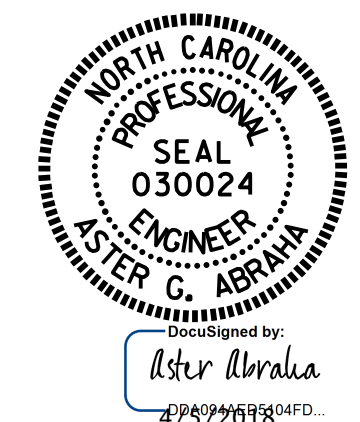


PAVEMENT MARKING ALIGNMENT SKETCH

MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
2	110°	1 1/8"	2 1/4"	1 5/16"	1 5/16"
4	110°	1 1/8"	2 1/4"	1 5/16"	1 5/16"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY



PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

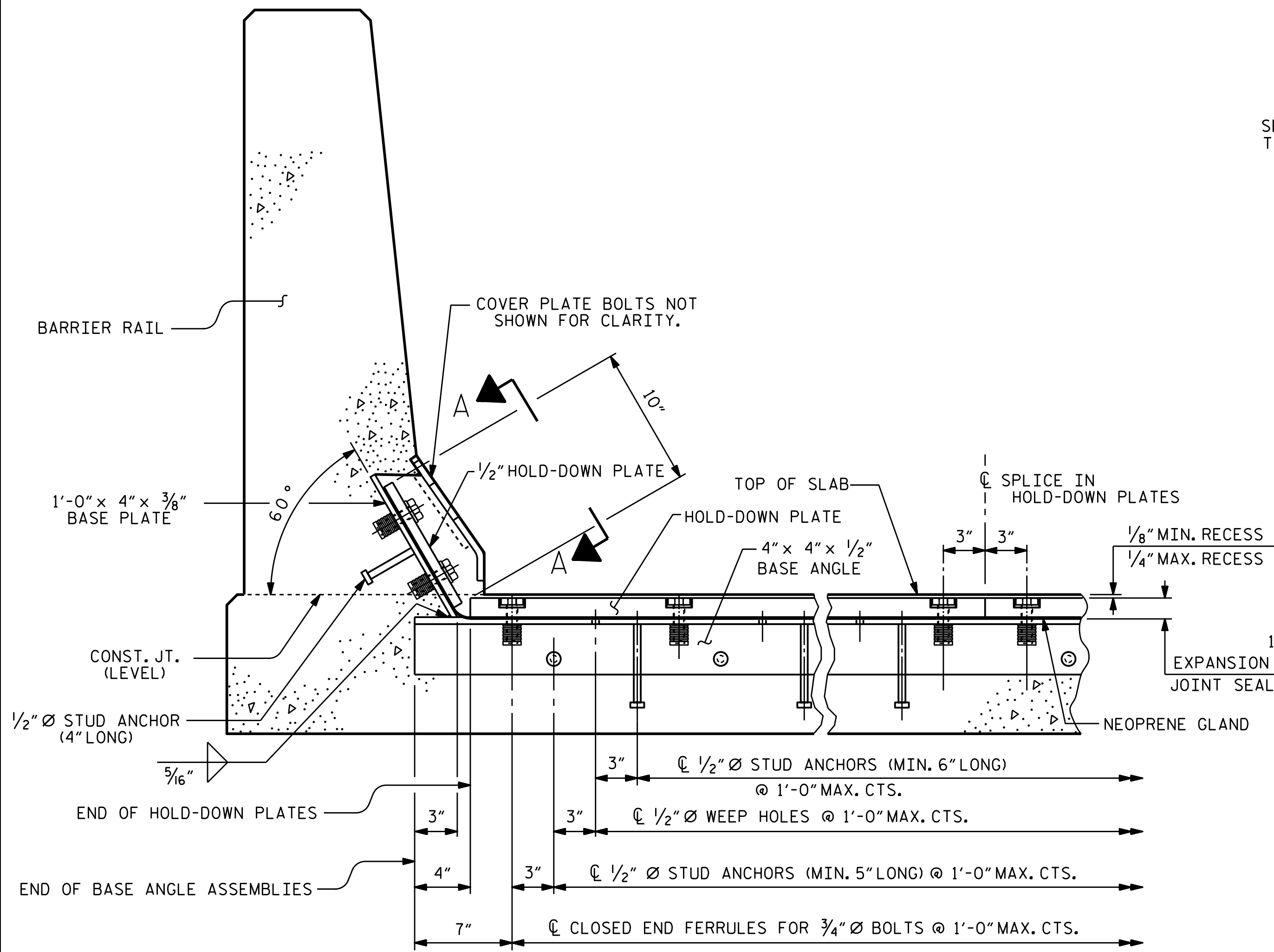
SHEET 1 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 EXPANSION JOINT
 SEAL DETAILS

ASSEMBLED BY : S. B. WILLIAMS DATE : 11/17
 CHECKED BY : S. WANCE DATE : 11/17
 DRAWN BY : REK 9/87 REV. 5/1/06R TLA/GM
 CHECKED BY : CRK 10/87 REV. 10/1/11 MAA/GM
 REV. 12/17 MAA/THC

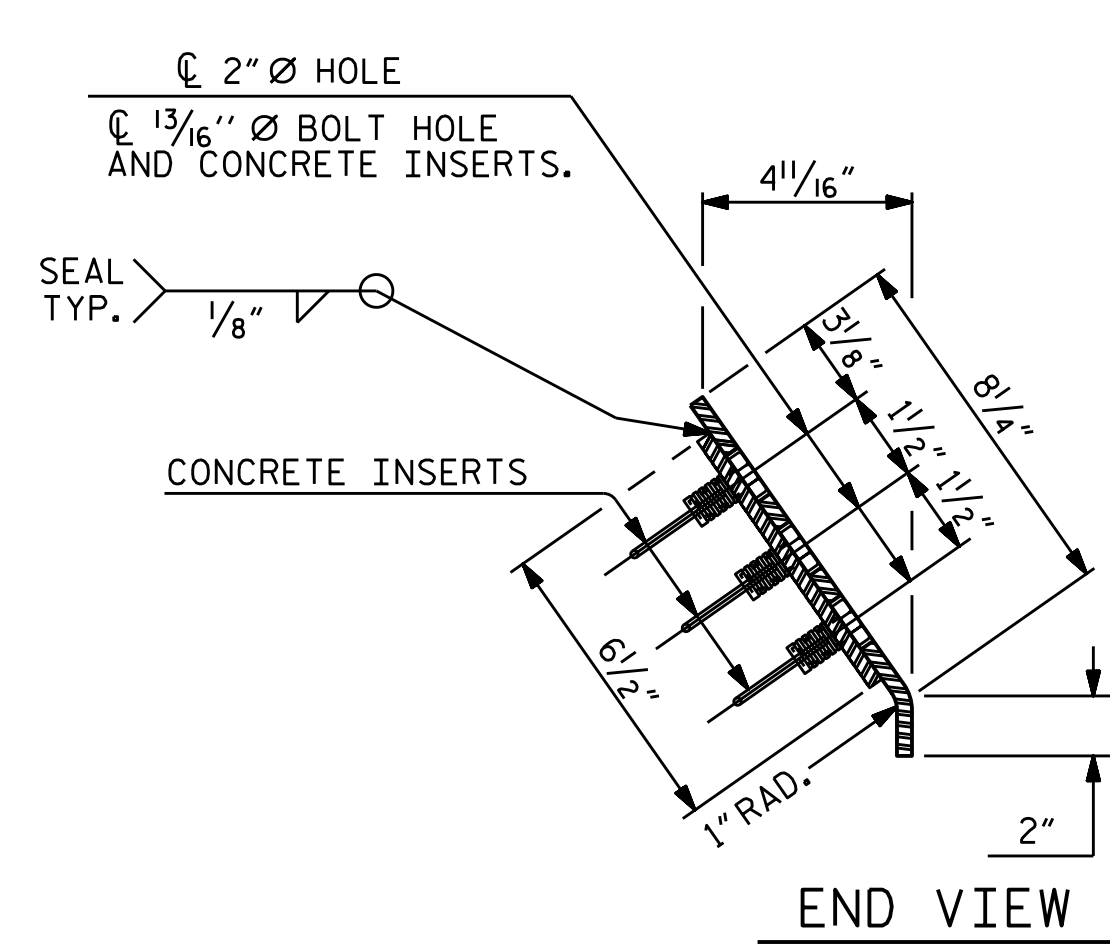
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

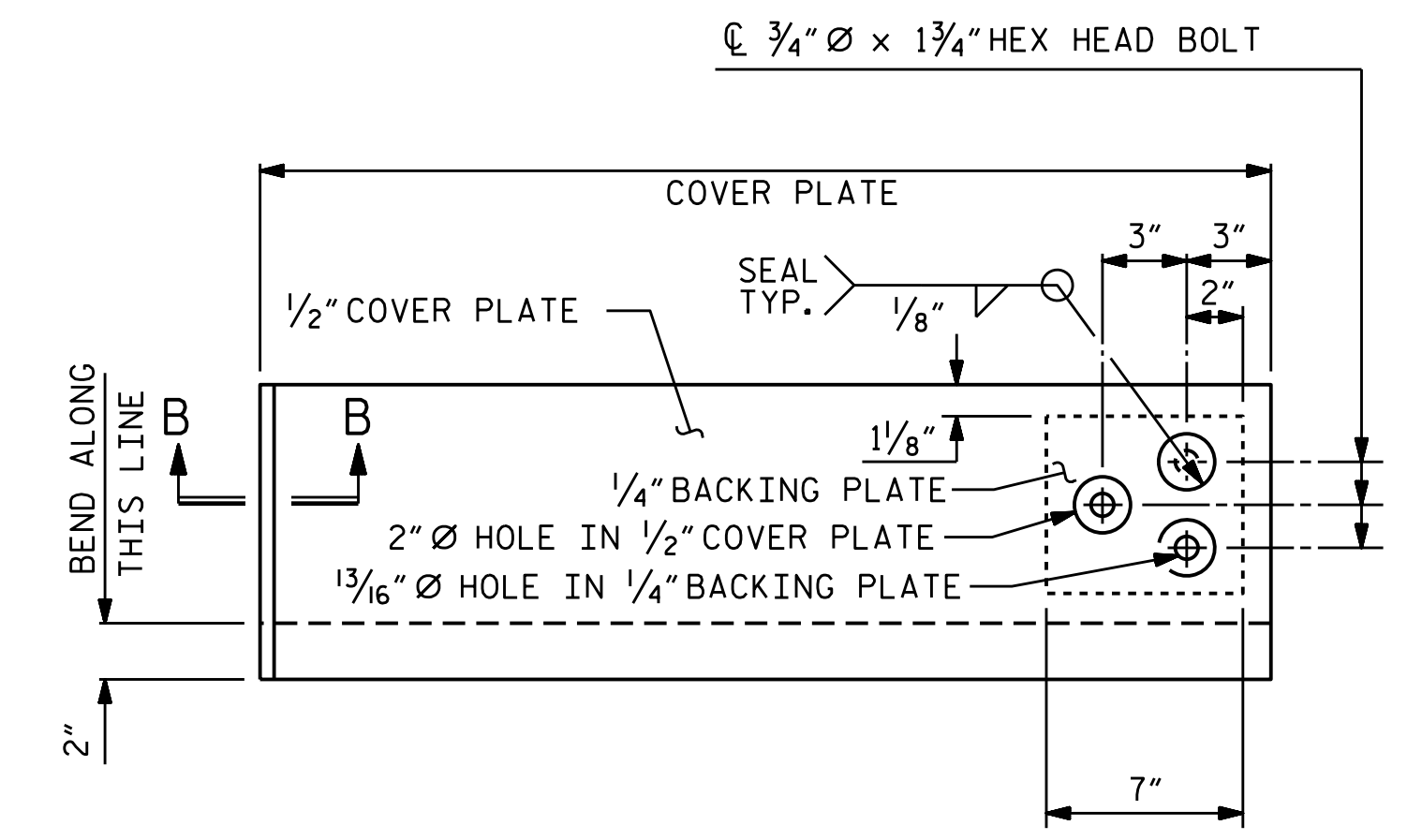
SHEET NO. S-25
 TOTAL SHEETS 46



SECTION THRU RAIL NORMAL TO JOINT

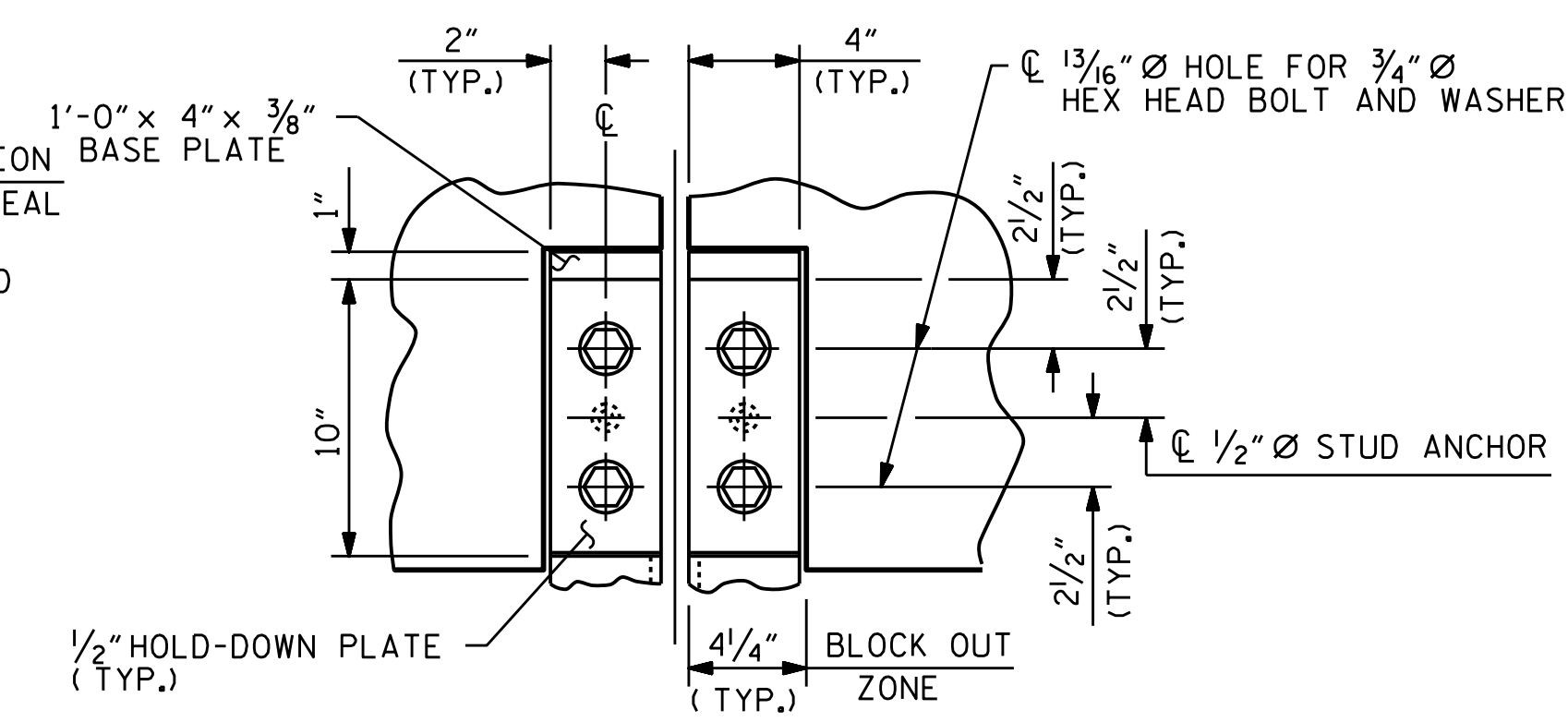


END VIEW

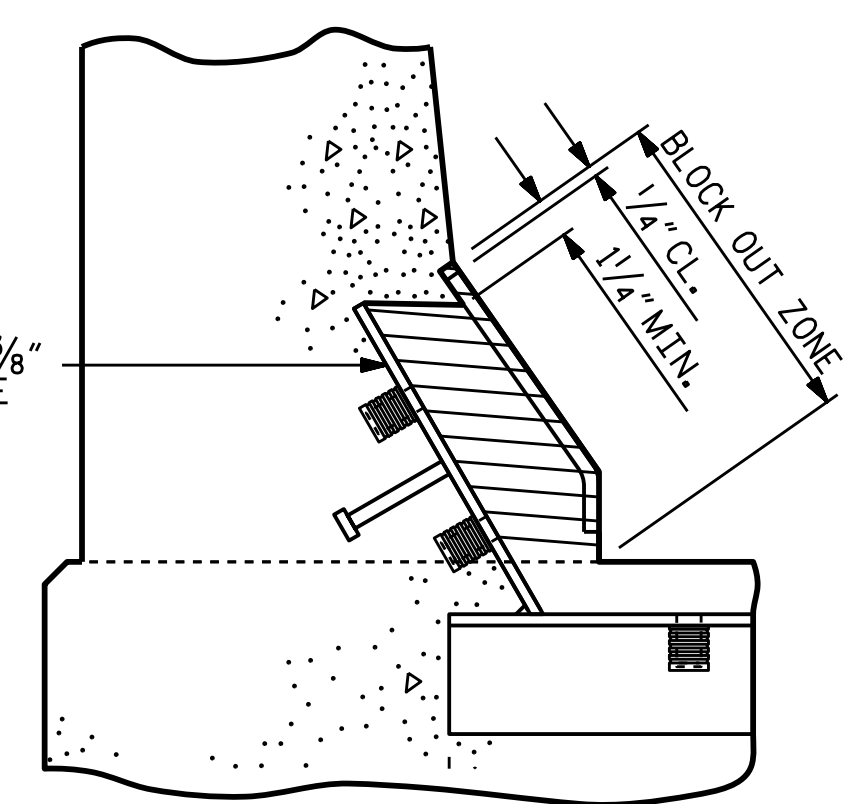


TYPE II - ELEVATION VIEW

COVER PLATE DETAILS

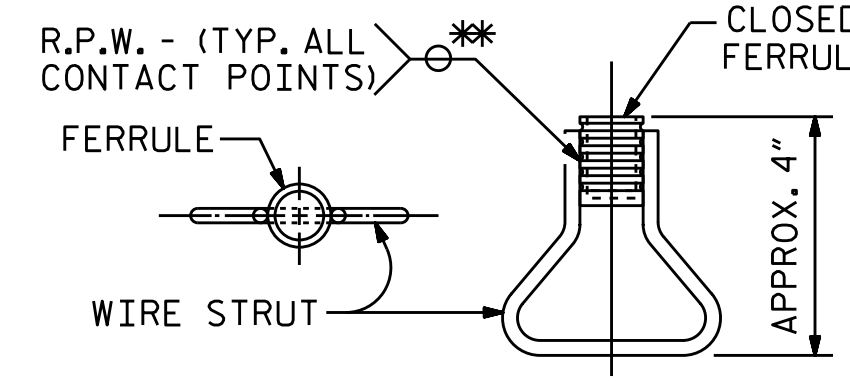


SECTION A - A



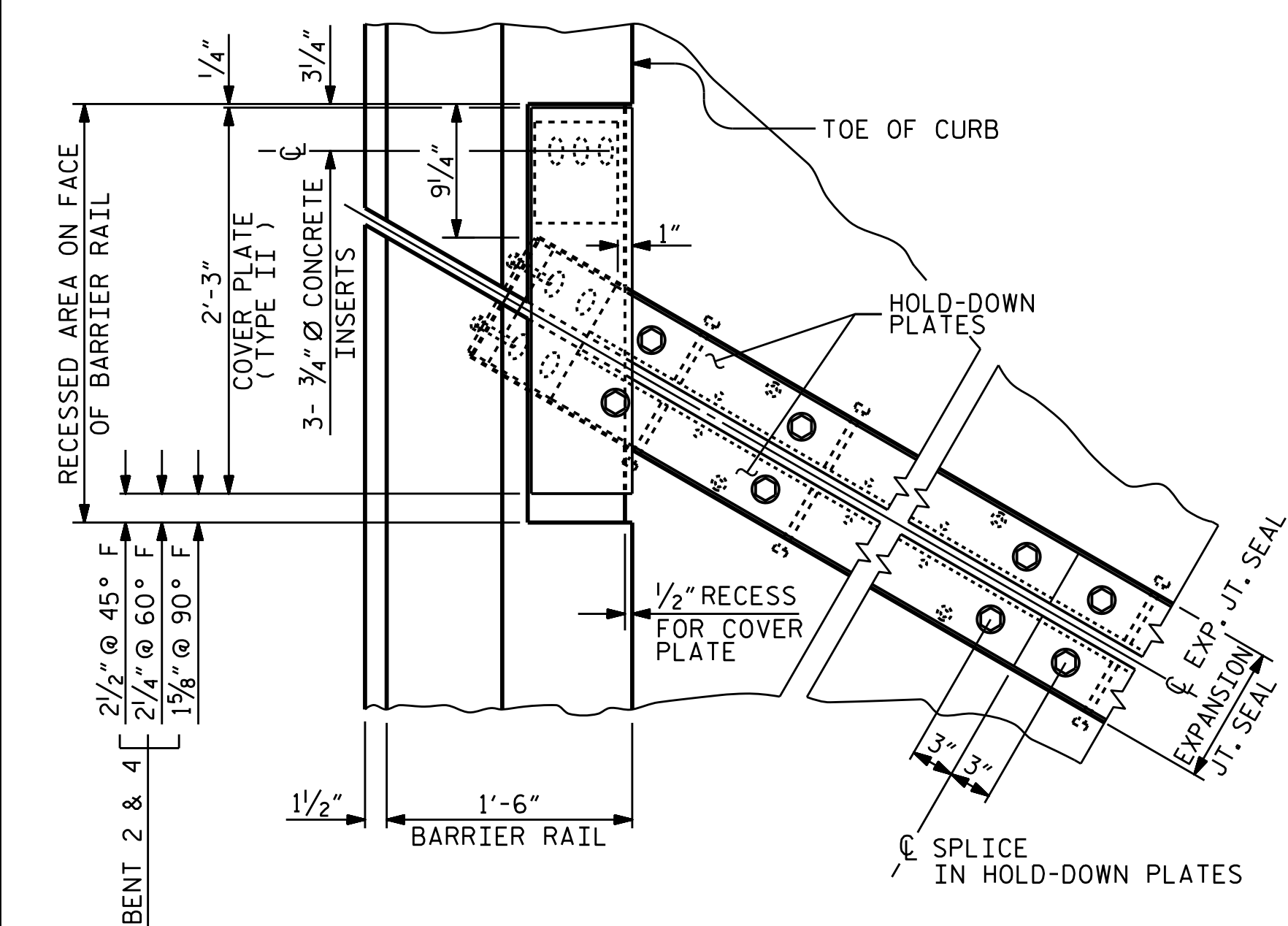
BLOCK OUT DETAIL

SEE "SECTION A - A" FOR OTHER DETAILS.



CONCRETE INSERT

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



PLAN OF EXPANSION JOINT SEAL

PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 EXPANSION JOINT
 SEAL DETAILS
 FOR BARRIER RAIL

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26	
1			3			TOTAL SHEETS	
2			4			46	

ASSEMBLED BY : S.B. WILLIAMS	DATE : 10/2016
CHECKED BY : S. WANCE	DATE : 11/2017
DRAWN BY : REK 9/87	REV. 7/12 MAA/GM
CHECKED BY : CRK 10/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

REINFORCING BAR SCHEDULE

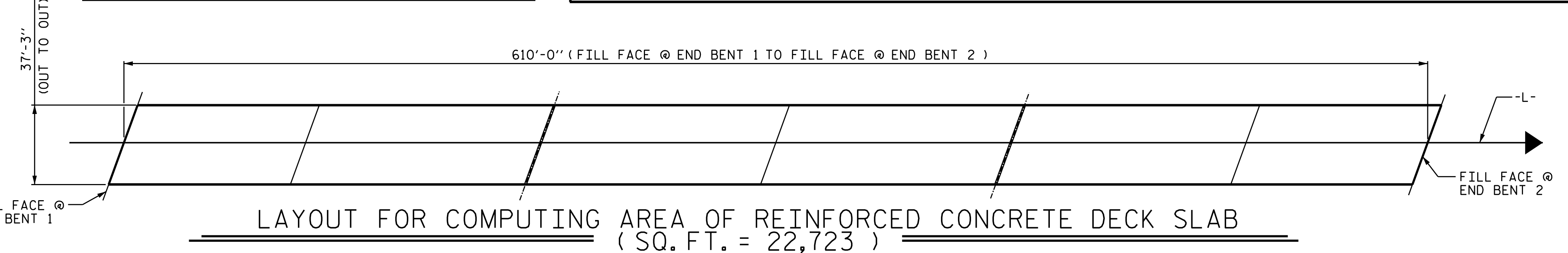
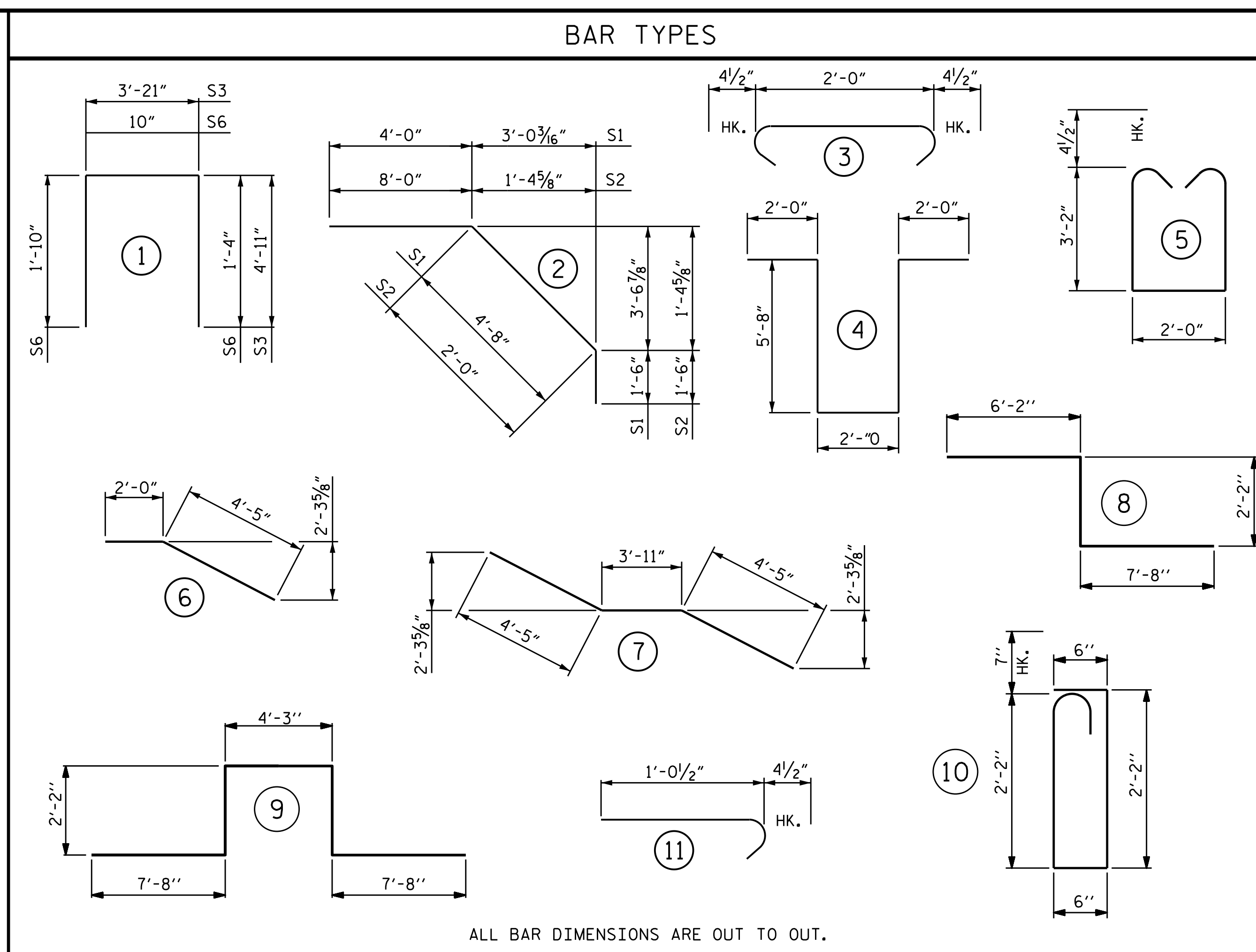
SPANS "A-B" & "E-F"					
BAR No.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	288	#5	STR.	36'-11"	11089
A2	288	#5	STR.	36'-11"	11089
* A101	2	#5	STR.	35'-6"	74
* A102	2	#5	STR.	33'-9"	70
* A103	2	#5	STR.	32'-1"	67
* A104	2	#5	STR.	30'-4"	63
* A105	2	#5	STR.	28'-8"	60
* A106	2	#5	STR.	26'-11"	56
* A107	2	#5	STR.	25'-2"	53
* A108	2	#5	STR.	23'-6"	49
* A109	2	#5	STR.	21'-9"	45
* A110	2	#5	STR.	20'-1"	42
* A111	2	#5	STR.	18'-4"	38
* A112	2	#5	STR.	16'-7"	35
* A113	2	#5	STR.	14'-11"	31
* A114	2	#5	STR.	13'-2"	27
* A115	2	#5	STR.	11'-6"	24
* A116	2	#5	STR.	9'-9"	20
* A117	2	#5	STR.	8'-0"	17
* A118	2	#5	STR.	6'-4"	13
* A119	2	#5	STR.	4'-7"	10
* A120	2	#5	STR.	2'-11"	6
* A121	2	#5	STR.	36'-3"	76
* A122	2	#5	STR.	34'-6"	72
* A123	2	#5	STR.	32'-9"	68
* A124	2	#5	STR.	31'-1"	65
* A125	2	#5	STR.	29'-4"	61
* A126	2	#5	STR.	27'-8"	58
* A127	2	#5	STR.	25'-11"	54
* A128	2	#5	STR.	24'-2"	50
* A129	2	#5	STR.	22'-6"	47
* A130	2	#5	STR.	20'-9"	43
* A131	2	#5	STR.	19'-1"	40
* A132	2	#5	STR.	17'-4"	36
* A133	2	#5	STR.	15'-7"	33
* A134	2	#5	STR.	13'-11"	29
* A135	2	#5	STR.	12'-2"	25
* A136	2	#5	STR.	10'-6"	22
* A137	2	#5	STR.	8'-9"	18
* A138	2	#5	STR.	7'-0"	15
* A139	2	#5	STR.	5'-4"	11
* A140	2	#5	STR.	3'-7"	7
* A141	2	#5	STR.	1'-10"	4
A201	2	#5	STR.	35'-6"	74
A202	2	#5	STR.	33'-9"	70
A203	2	#5	STR.	32'-1"	67
A204	2	#5	STR.	30'-4"	63
A205	2	#5	STR.	28'-8"	60
A206	2	#5	STR.	26'-11"	56
A207	2	#5	STR.	25'-2"	53
A208	2	#5	STR.	23'-6"	49
A209	2	#5	STR.	21'-9"	45
A210	2	#5	STR.	20'-1"	42
A211	2	#5	STR.	18'-4"	38
A212	2	#5	STR.	16'-7"	35
A213	2	#5	STR.	14'-11"	31
A214	2	#5	STR.	13'-2"	27
A215	2	#5	STR.	11'-6"	24
A216	2	#5	STR.	9'-9"	20
A217	2	#5	STR.	8'-0"	17
A218	2	#5	STR.	6'-4"	13
A219	2	#5	STR.	4'-7"	10
A220	2	#5	STR.	2'-11"	6
A221	2	#5	STR.	36'-3"	76
A222	2	#5	STR.	34'-6"	72
A223	2	#5	STR.	32'-9"	68
A224	2	#5	STR.	31'-1"	65
A225	2	#5	STR.	29'-4"	61
A226	2	#5	STR.	27'-8"	58
A227	2	#5	STR.	25'-11"	54
A228	2	#5	STR.	24'-2"	50
A229	2	#5	STR.	22'-6"	47
A230	2	#5	STR.	20'-9"	43
A231	2	#5	STR.	19'-1"	40
A232	2	#5	STR.	17'-4"	36
A233	2	#5	STR.	15'-7"	33
A234	2	#5	STR.	13'-11"	29
A235	2	#5	STR.	12'-2"	25
A236	2	#5	STR.	10'-6"	22
A237	2	#5	STR.	8'-9"	18
A238	2	#5	STR.	7'-0"	15
A239	2	#5	STR.	5'-4"	11
A240	2	#5	STR.	3'-7"	7
A241	2	#5	STR.	1'-10"	4
B1	216	#5	STR.	50'-0"	11264
* B2	102	#7	STR.	17'-0"	3544
* B3	108	#4	STR.	20'-6"	1479
* B4	108	#7	STR.	36'-11"	8149
* B5	48	#7	STR.	29'-3"	2870
* B6	162	#4	STR.	25'-10"	2796
* G1	2	#5	STR.	39'-3"	82

SPANS "A-B" & "E-F"					
BAR No.	SIZE	TYPE	LENGTH	WEIGHT	
* J1	74	#4	11	1'-5"	71
K1	24	#4	STR.	20'-8"	331
K2	6	#4	STR.	7'-6"	30
K3	24	#4	STR.	9'-4"	150
K4	6	#4	STR.	6'-2"	25
K5	4	#4	STR.	2'-7"	7
K6	16	#4	STR.	3'-4"	36
K7	4	#4	STR.	1'-10"	5
K8	24	#4	7	12'-9"	204
K9	24	#4	6	6'-5"	103
K10	12	#4	STR.	6'-3"	50
K11	48	#4	STR.	9'-4"	299
K12	12	#4	STR.	6'-0"	48
K13	12	#6	STR.	6'-2"	111
* K14	8	#8	9	23'-11"	511
* K15	8	#8	8	16'-0"	342
S1	50	#4	2	10'-2"	340
* S2	50	#4	11	1'-6"	384
S3	50	#4	1	13'-0"	434
S4	228	#4	3	2'-9"	419
S5	36	#5	10	5'-11"	222
* S6	36	#4	1	4'-0"	96
U1	12	#4	5	9'-1"	73
* U2	36	#4	4	17'-3"	415
REINFORCING STEEL					26,534 LBS.
* EPOXY COATED REINFORCING STEEL					33,802 LBS.

SPANS "C-D"					
BAR No.	SIZE	TYPE	LENGTH	WEIGHT	
K5	6	#4	STR.	6'-3"	25
K6	24	#4	STR.	9'-4"	150
K7	6	#4	STR.	6'-0"	24
K8	12	#4	7	12'-9"	102
K9	12	#4	6	6'-5"	52
K13	12	#6	STR.	6'-2"	111
* K14	8	#8	9	23'-11"	511
* K15	8	#8	8	16'-0"	342
S4	114	#4	3	2'-9"	209
S5	36	#5	10	5'-11"	222
* S6	36	#4	1	4'-0"	96
U1	6	#4	5	9'-1"	36
* U2	18	#4	4	17'-3"	207
REINFORCING STEEL					20,751 LBS.
* EPOXY COATED REINFORCING STEEL					23,686 LBS.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



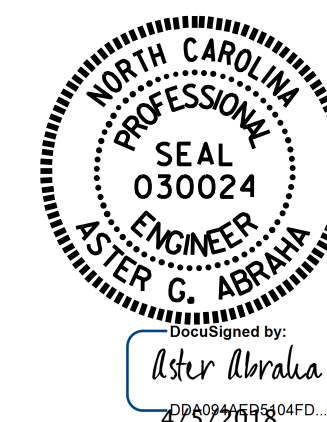
CLASS AA CONCRETE BREAKDOWN

POUR #1	
SPAN A	87.0 CU. YDS.
SPAN C	122.6 CU. YDS.
SPAN F	87.0 CU. YDS.
TOTAL	296.6 CU. YDS.
POUR #2	
SPAN B	151.2 CU. YDS.
SPAN D	151.2 CU. YDS.
SPAN E	151.2 CU. YDS.
TOTAL	453.6 CU. YDS.
POUR #3	
END BENT 1	32.9 CU. YDS.
BENT 2	8.3 CU. YDS.
BENT 4	8.3 CU. YDS.
END BENT 2	32.9 CU. YDS.
TOTAL	82.4 CU. YDS.

GROOVING BRIDGE FLOORS

APPROACH SLABS	873 SQ.FT.
BRIDGE DECK	18,763 SQ.FT.
TOTAL	19,636 SQ.FT.

PROJECT NO. B-4932
 EDGEcombe COUNTY
 STATION: 25+00.00 -L-



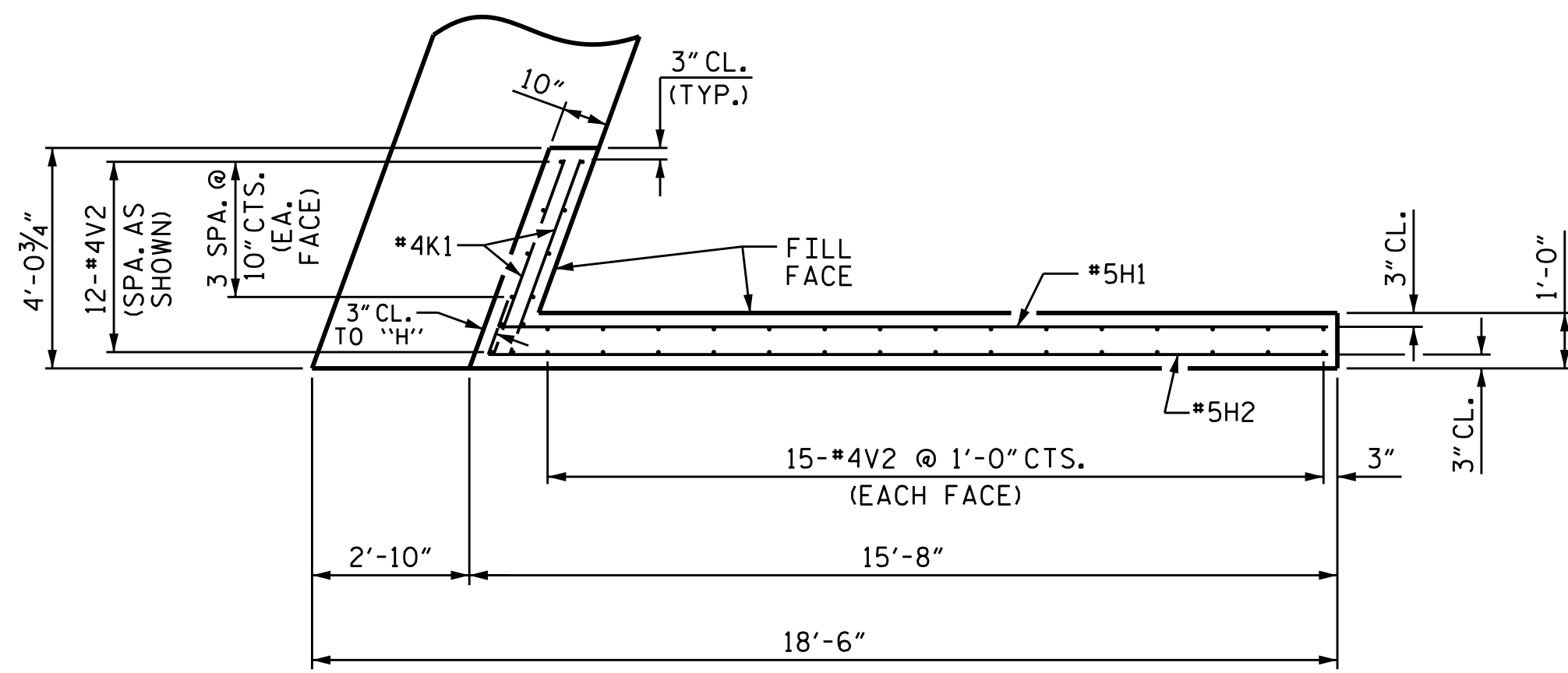
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BILL OF MATERIAL

DRAWN BY: S.B. WILLIAMS DATE: 6-2017
 CHECKED BY: M.K. BEARD/ S. WANCE DATE: 01/14/2018
 DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE: 12/11/17

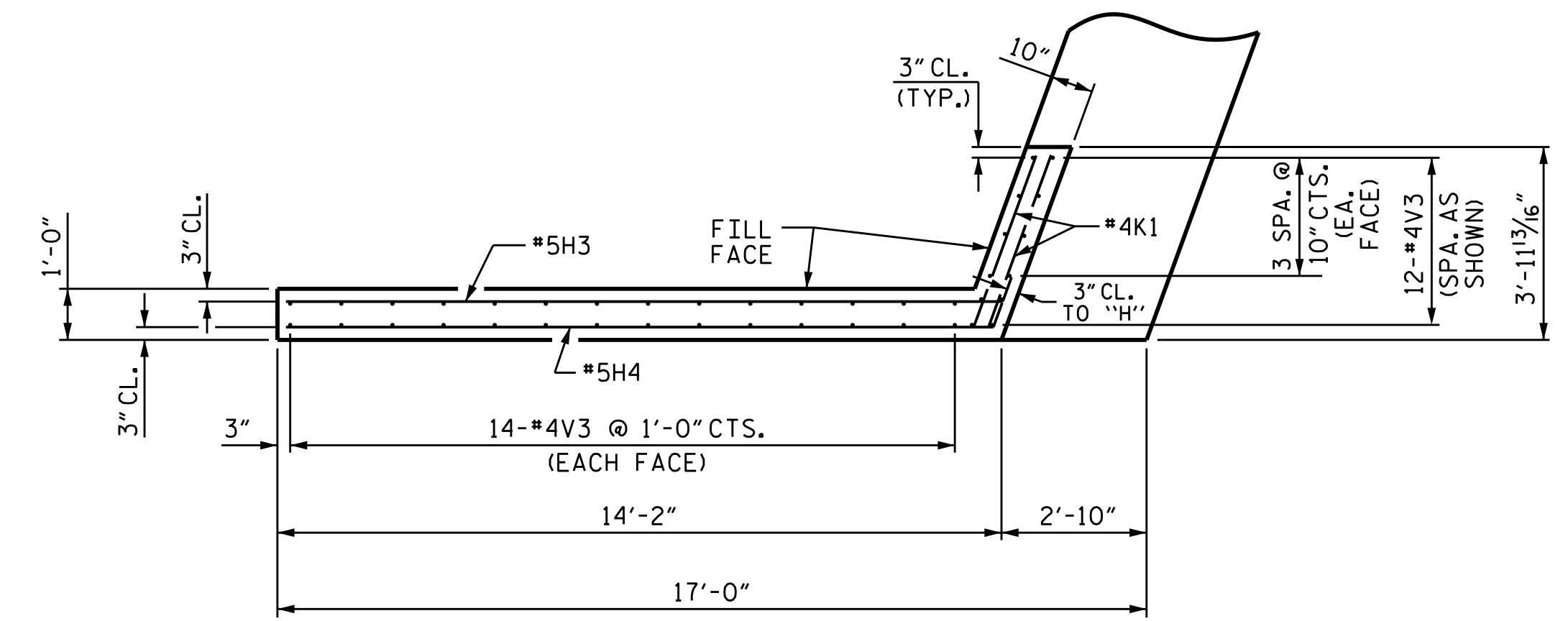
FOR LOCATION OF POURS, SEE "POUR SEQUENCE" SHEET

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

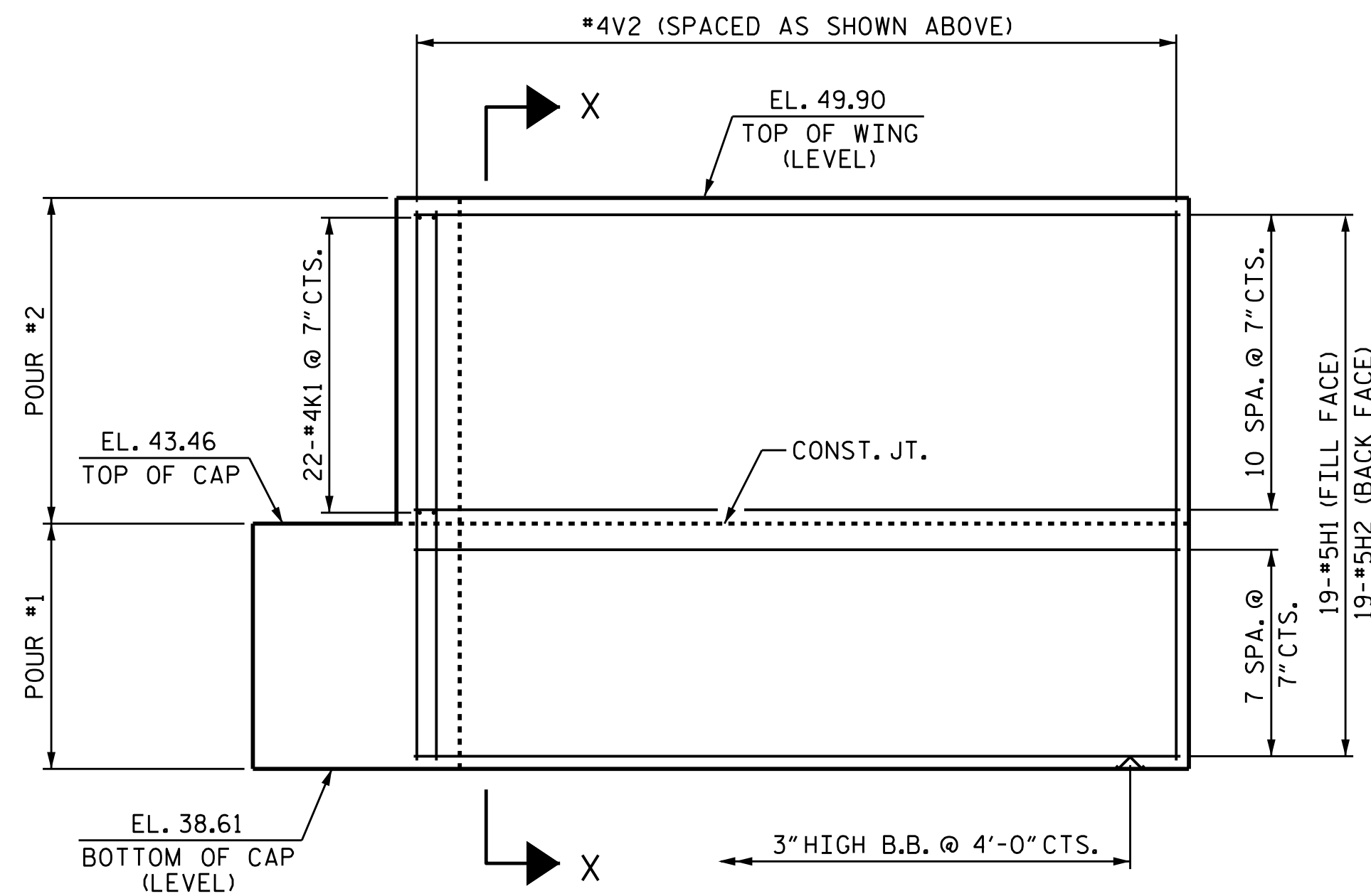
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-27
2			4			46



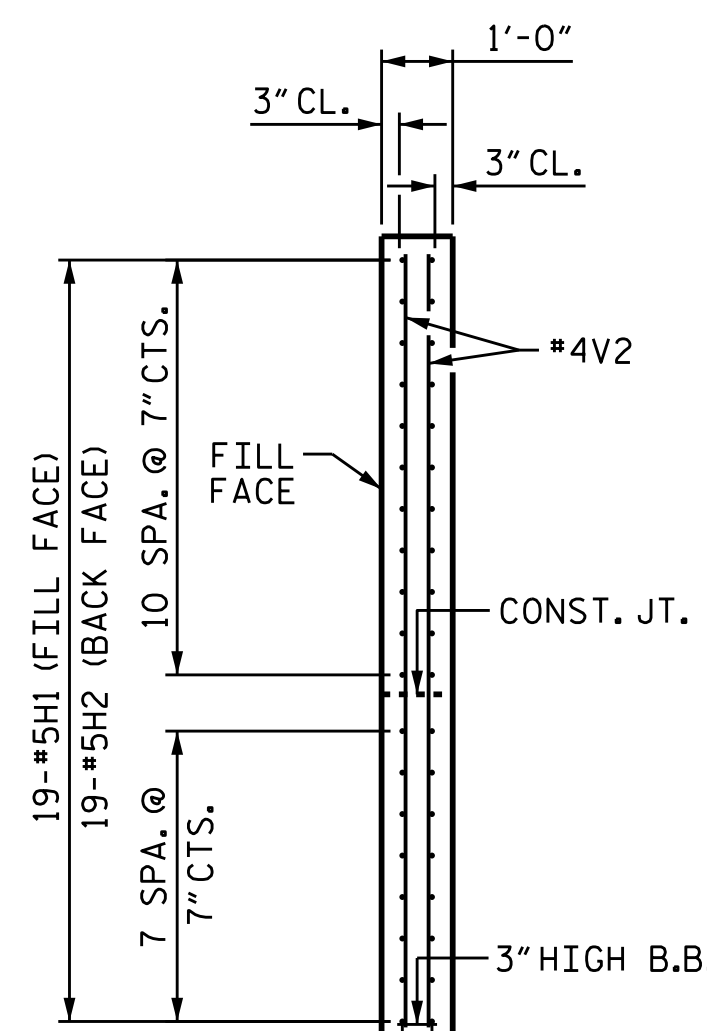
PLAN OF WING W1



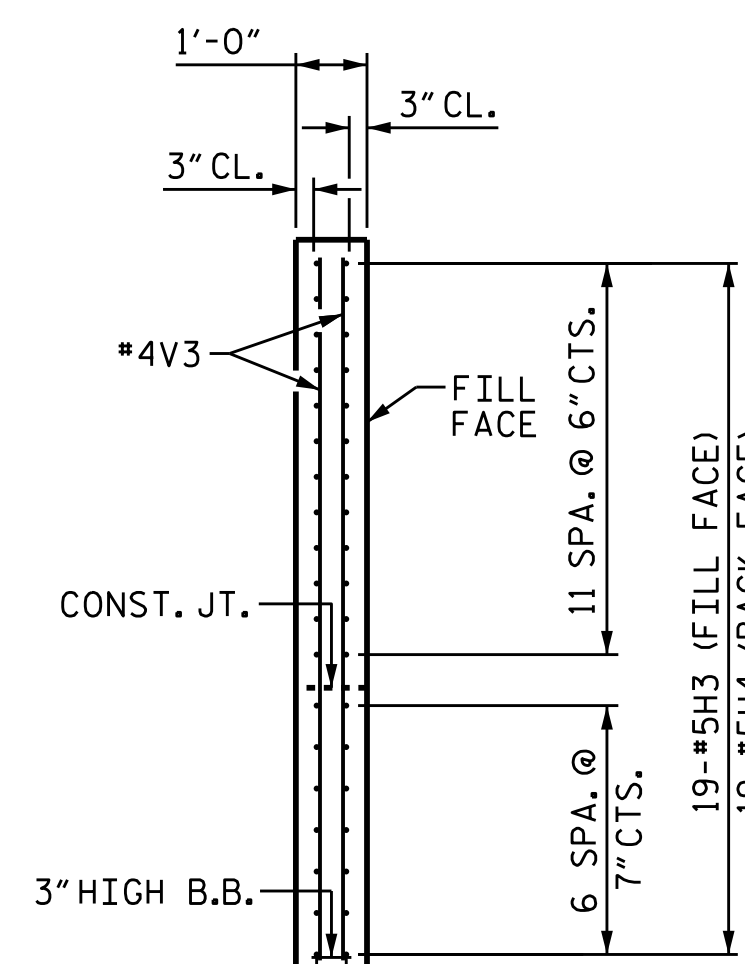
PLAN OF WING W2



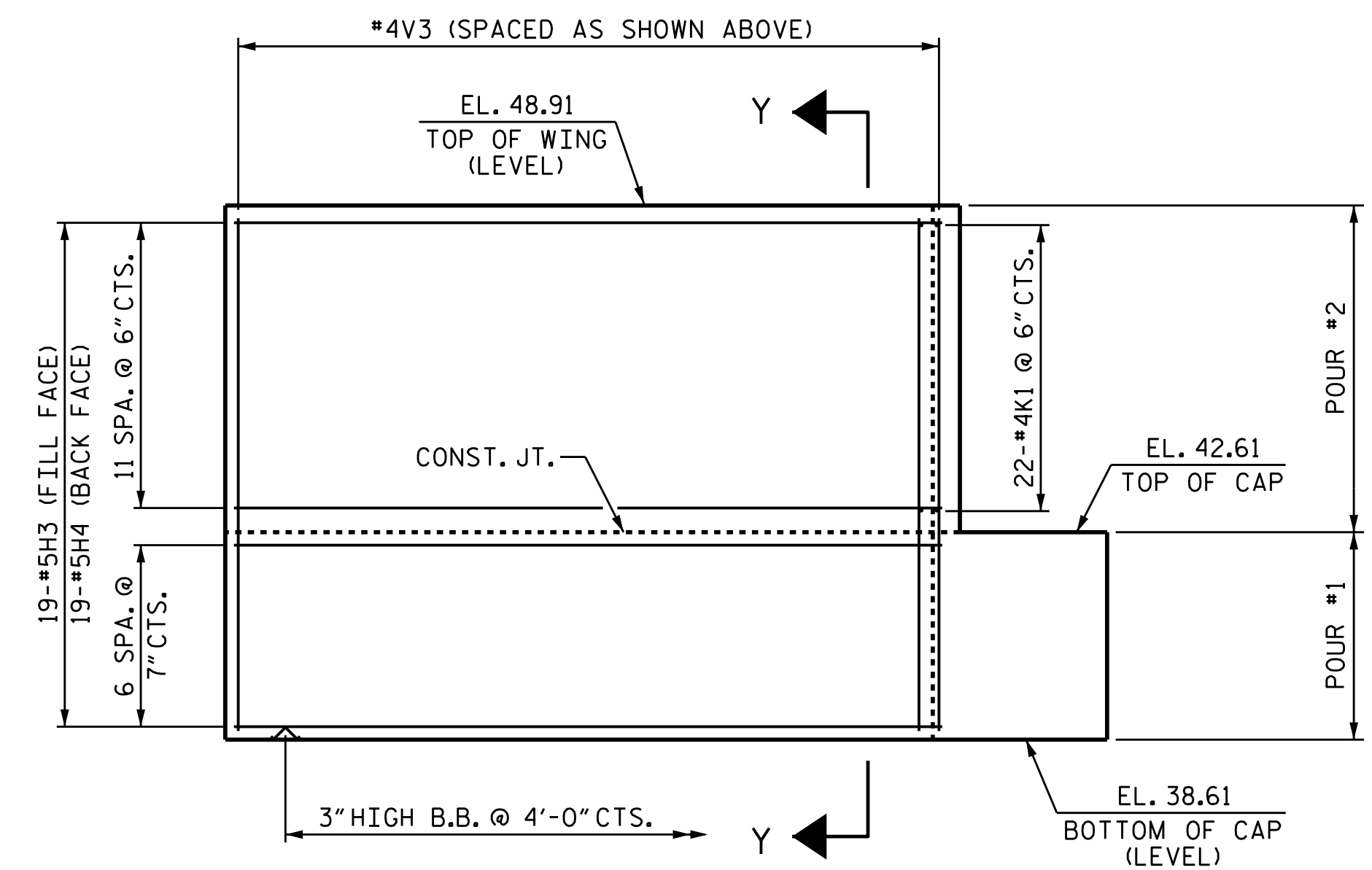
ELEVAION OF WING W1



SECTION X-X



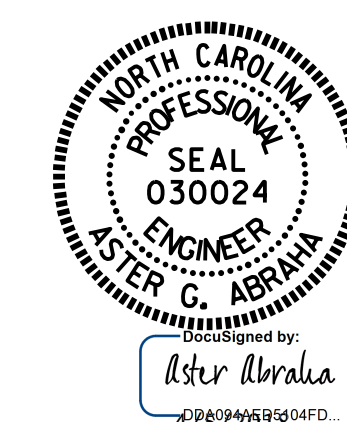
SECTION Y-Y



ELEVAION OF WING W2

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 2 OF 3

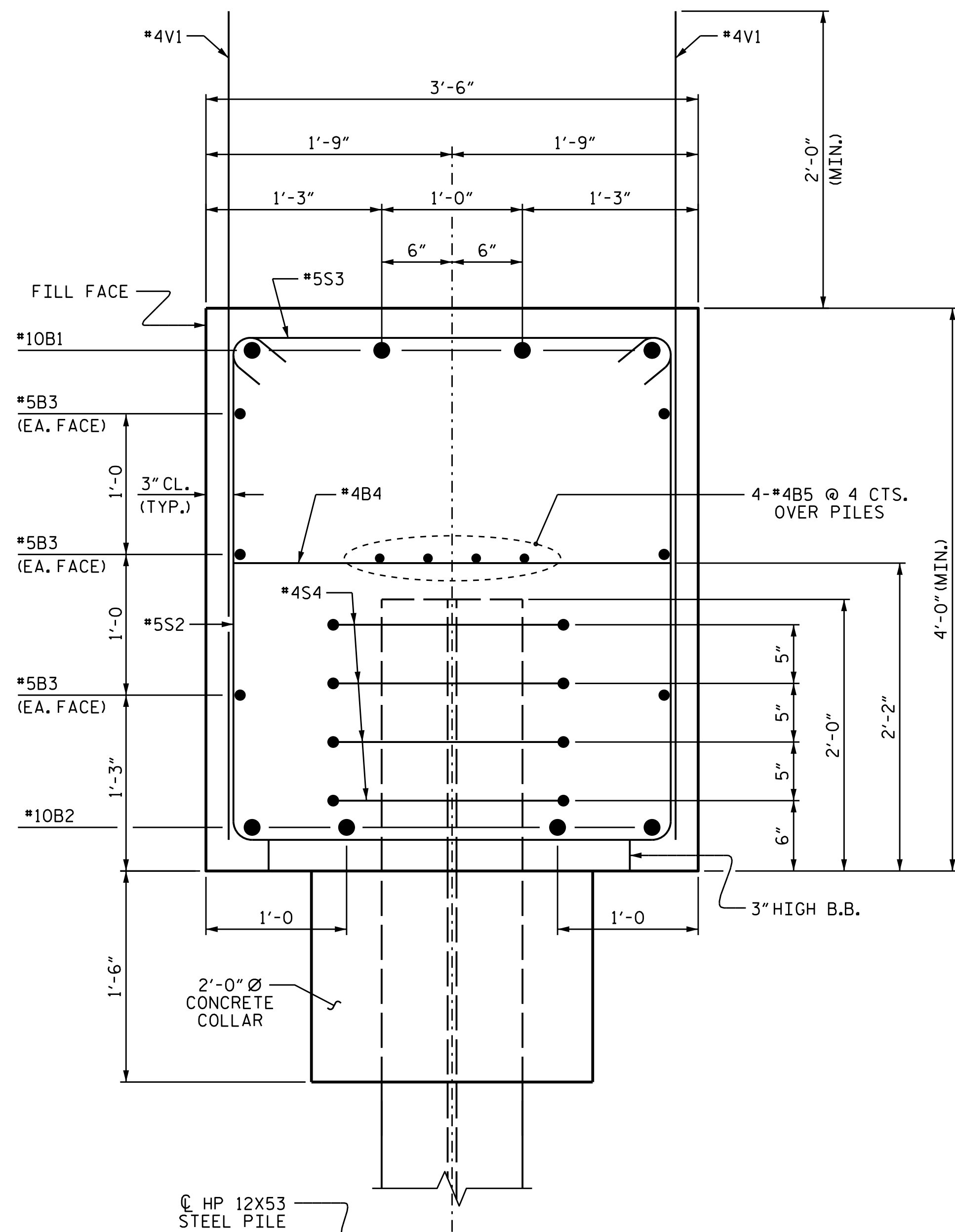


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 (INTEGRAL)

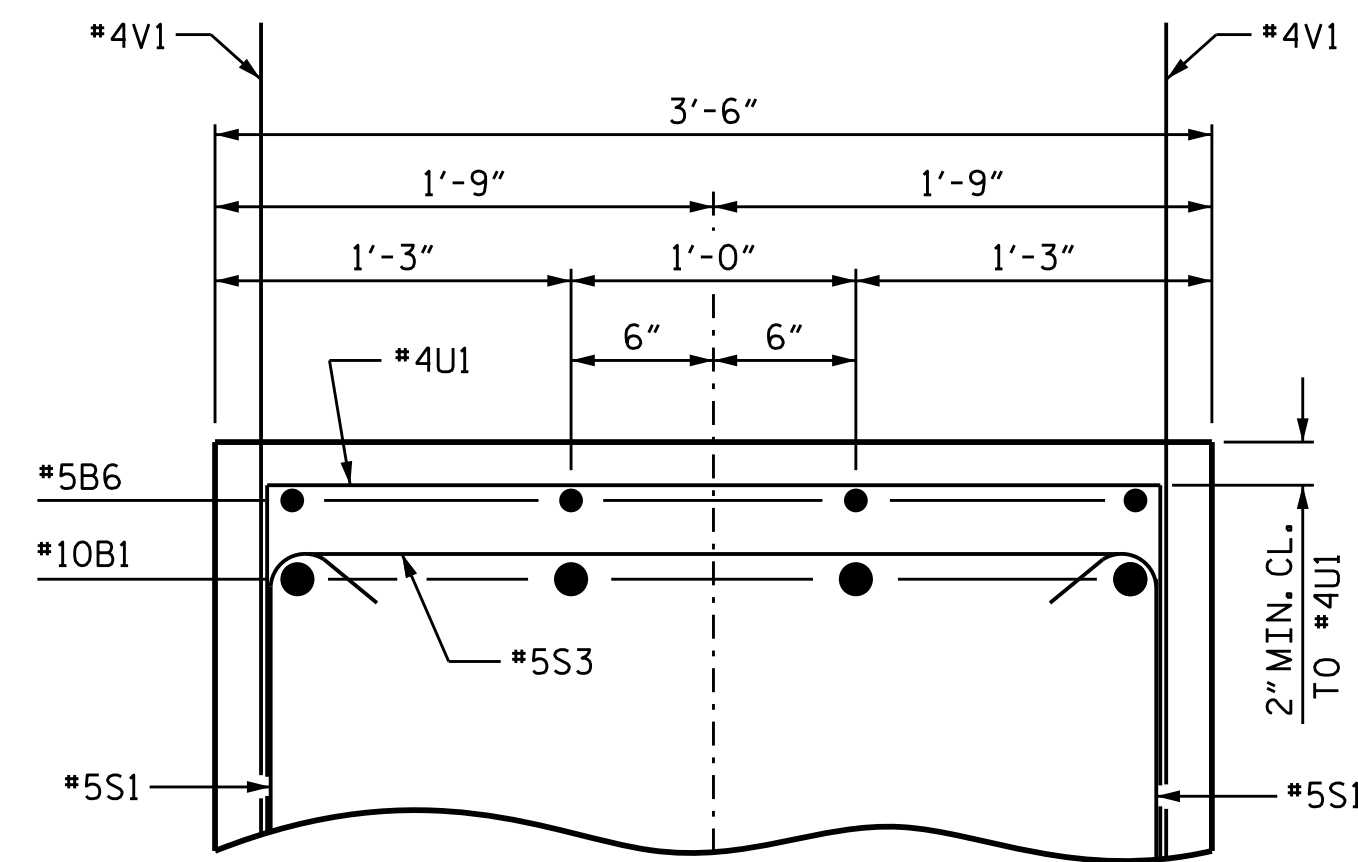
DRAWN BY : M.K. BEARD DATE : 07/17
 CHECKED BY : S. WANCE DATE : 11/17
 DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE : 12/17

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

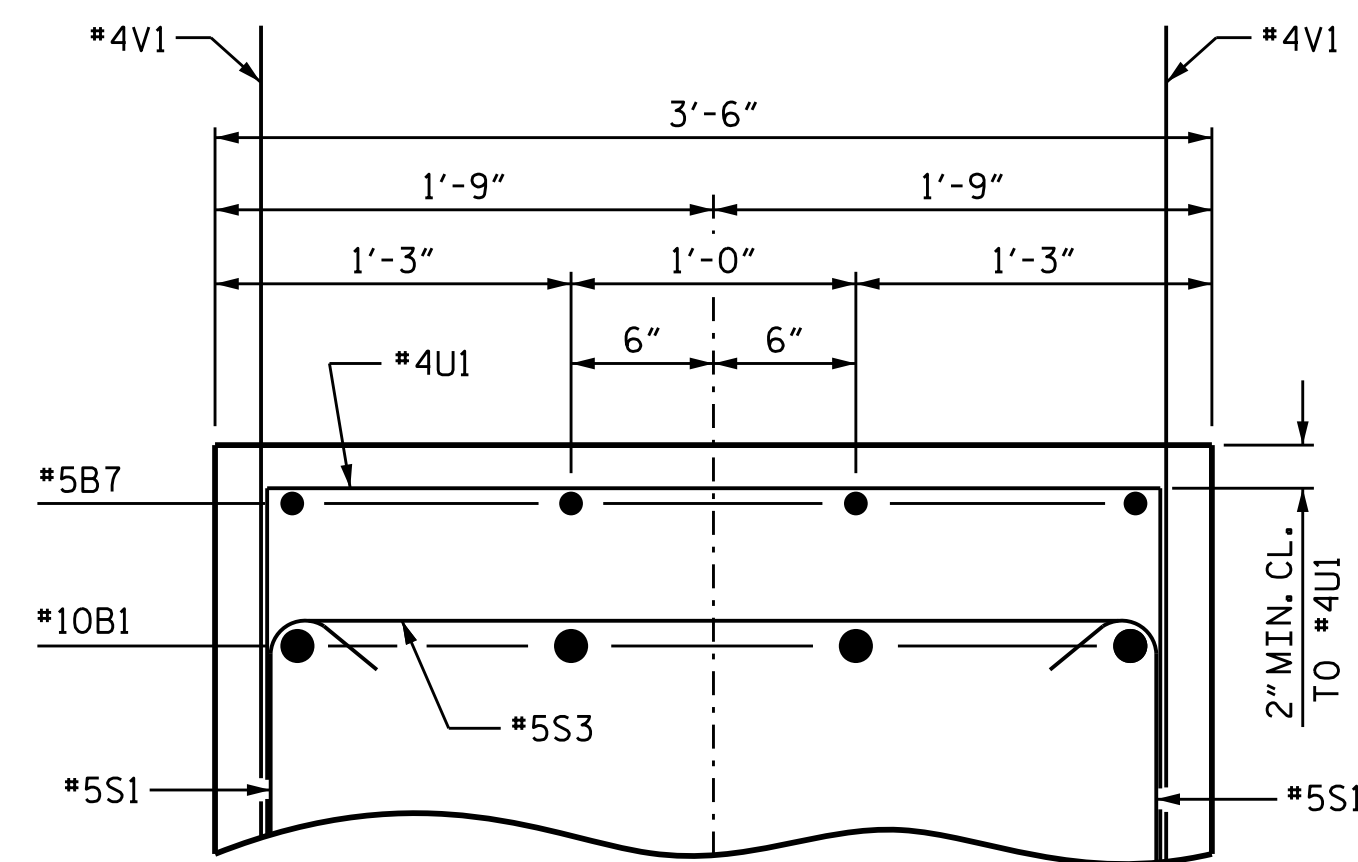
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			46



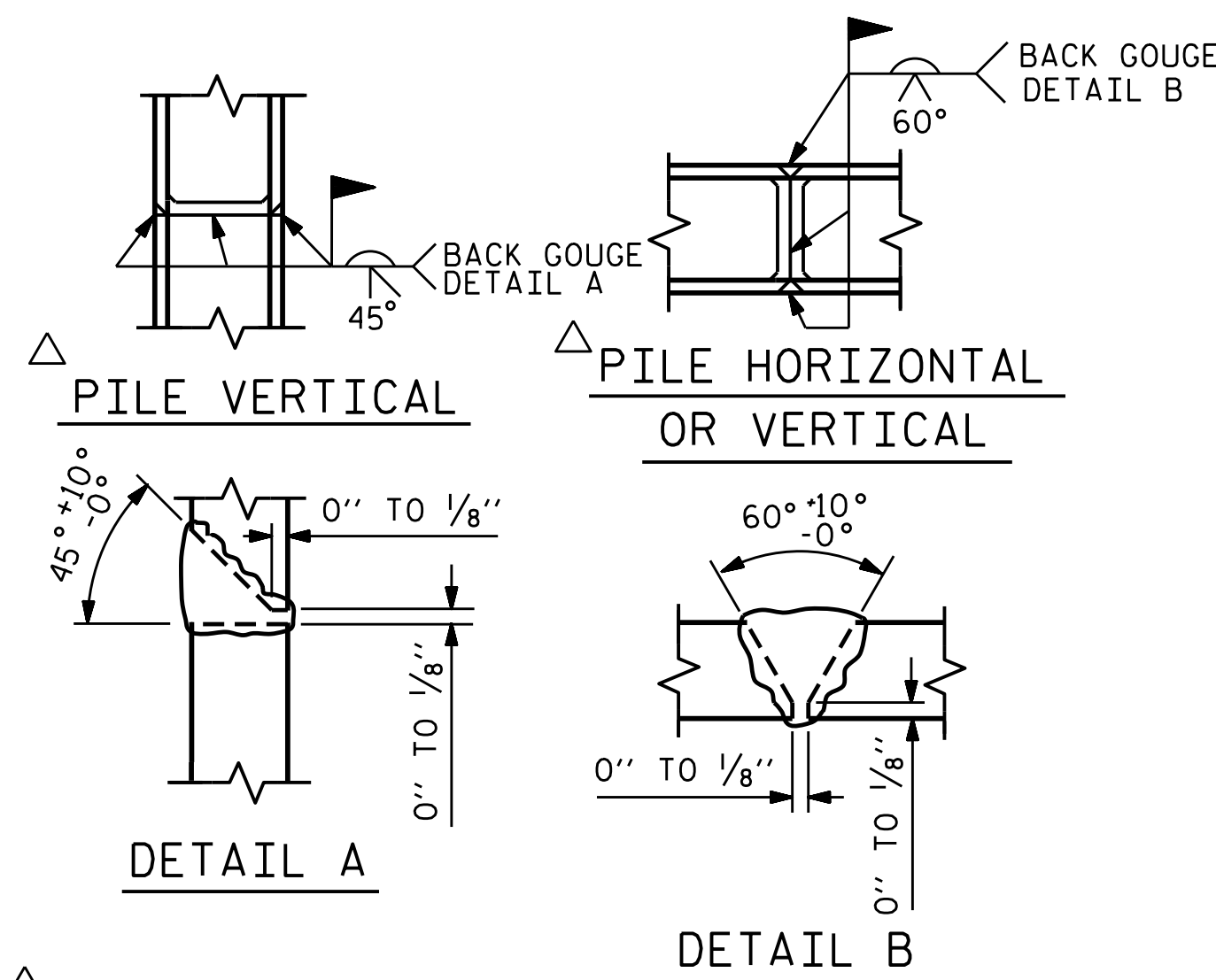
SECTION A-A



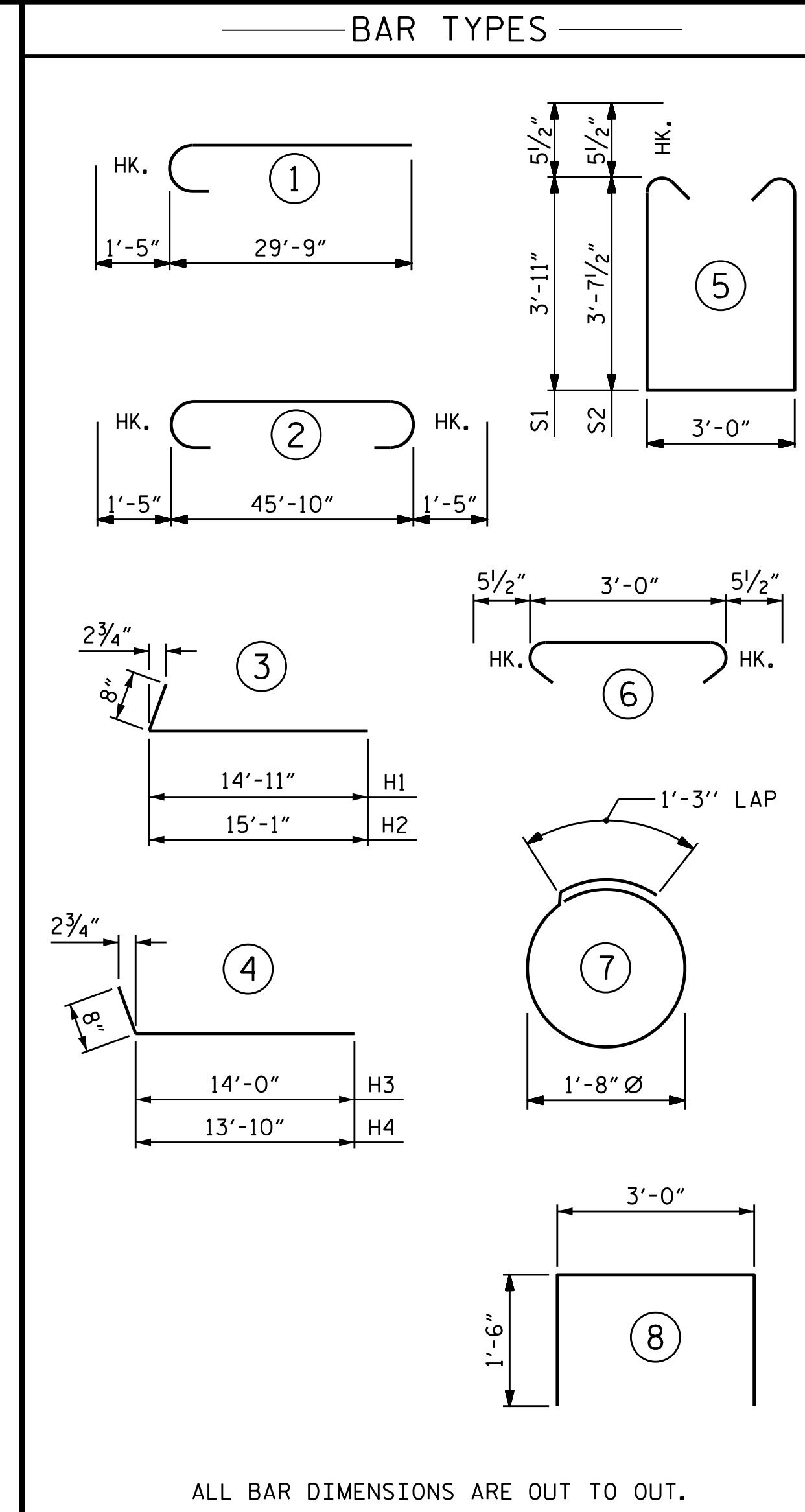
SECTION B-B



SECTION C-C



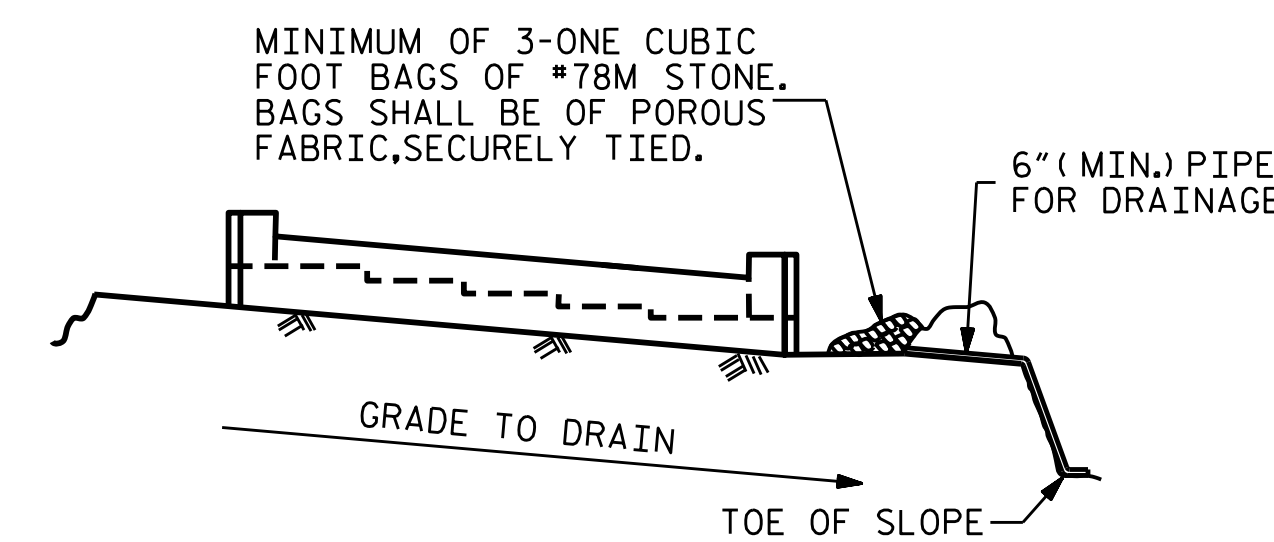
POSITION OF PILE DURING WELDING.
PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#8	1	31'-2"	1073
B2	#4	2	48'-8"	838
B3	#5	STR	45'-10"	287
B4	#4	STR	3'-2"	25
B5	#4	STR	24'-6"	131
B6	#4	STR	10'-5"	28
B7	#4	STR	7'-10"	21
H1	#5	3	15'-7"	309
H2	#5	3	15'-9"	312
H3	#5	4	14'-8"	291
H4	#5	4	14'-6"	287
K1	#4	STR	3'-10"	112
S1	#5	5	11'-9"	233
S2	#5	5	11'-2"	326
S3	#5	6	3'-11"	192
S4	#4	7	6'-6"	104
U1	#4	8	6'-0"	156
V1	#4	STR	5'-10"	195
V2	#4	STR	10'-10"	304
V3	#4	STR	9'-10"	269
REINFORCING STEEL				5,488 LBS.
CLASS A CONCRETE BREAKDOWN				
POUR #1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS)				31.5 C.Y.
POUR #2 (UPPER PART OF WINGS)				8.5 C.Y.
CLASS A CONCRETE TOTAL				40.0 C.Y.
HP 12X53 STEEL PILES				
No. 6				360 LIN. FT.
PILE REDRIVES				6 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES				No. 6



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 DETEIORATED AND LOST THEIR EFFECTIVENESS.

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

TEMPORARY DRAINAGE AT END BENT



PROJECT NO. B-4932
EDGEcombe COUNTY
STATION: 25+00.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1
(INTEGRAL)

DRAWN BY: M.K. BEARD DATE: 7/17
CHECKED BY: S. WANCE DATE: 11/17
DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE: 12/17

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30	
1			3			TOTAL SHEETS 46	
2			4				

NOTES

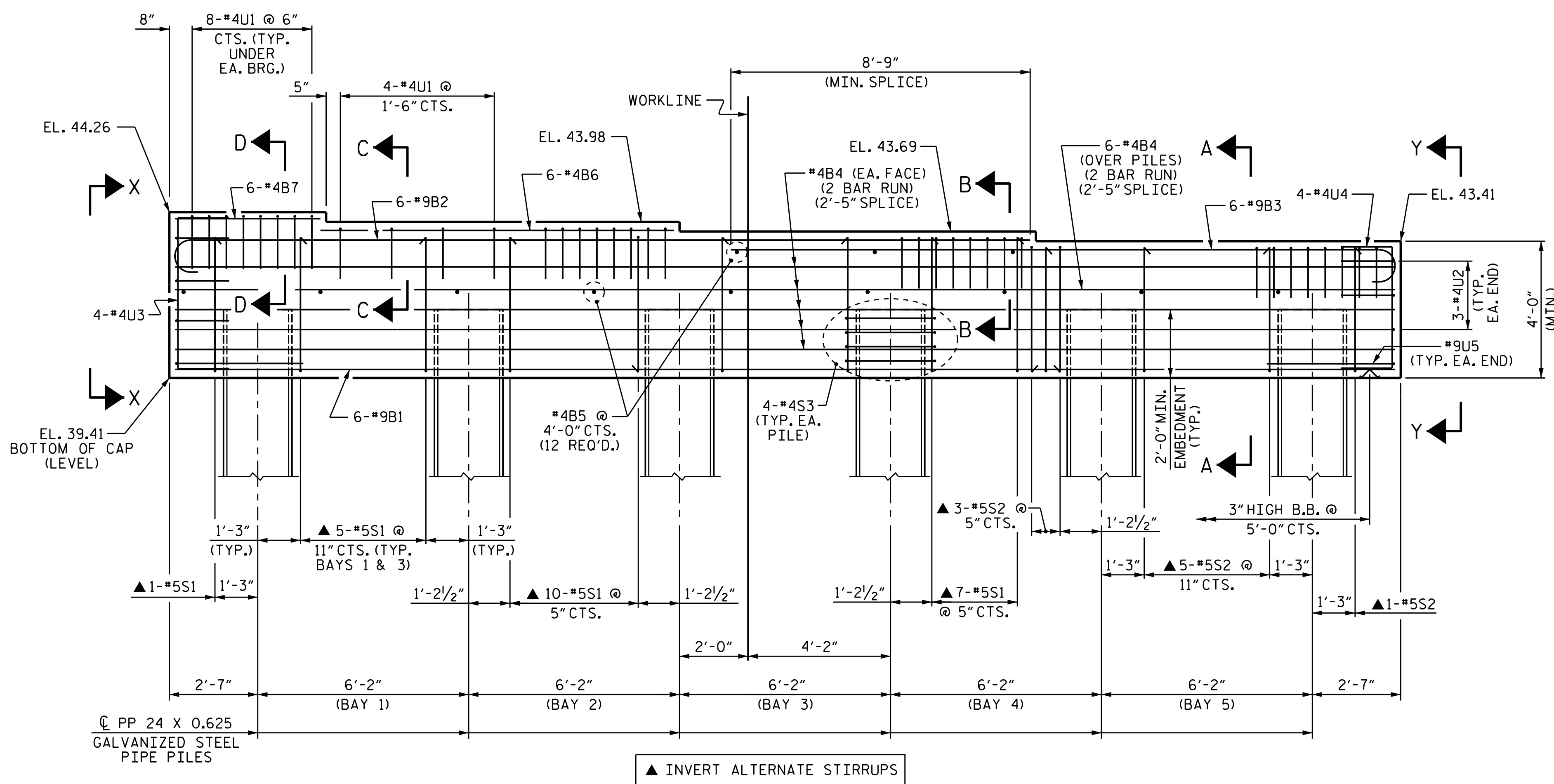
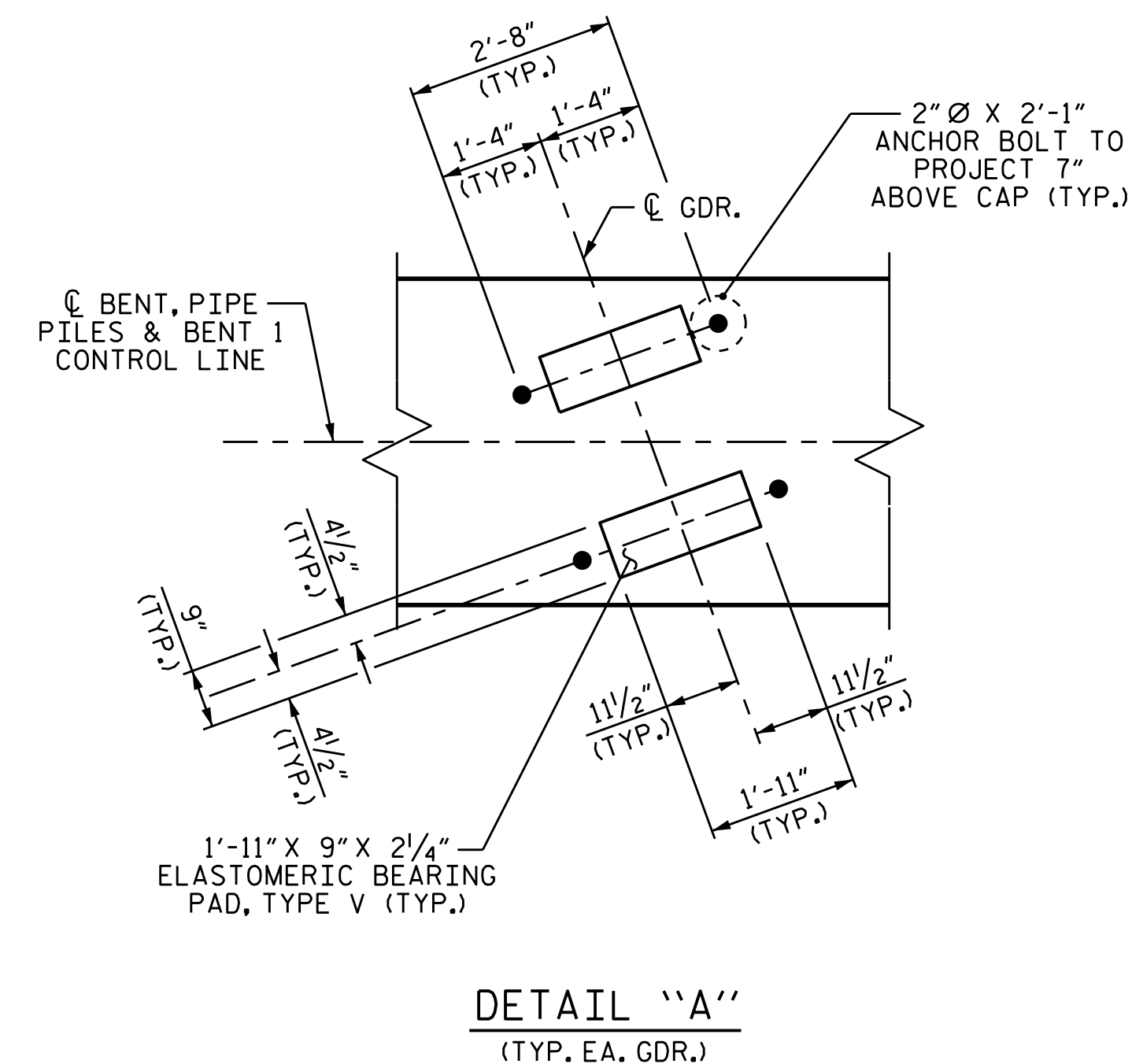
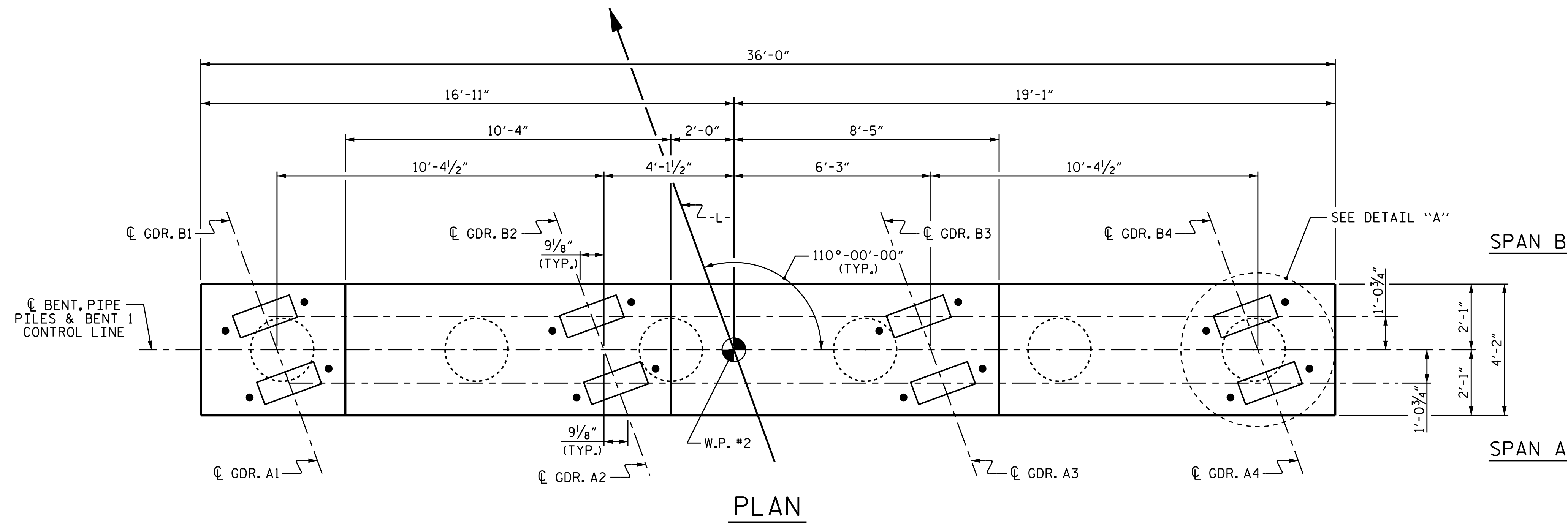
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

"U" BARS IN END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.

FOR PIPE PILE SPLICE DETAIL, SEE "24" Ø STEEL PIPE PILE" SHEET.

FOR ADDITIONAL REINFORCING STEEL IN PP 24 X 0.625 GALVANIZED STEEL PIPE PILES, SEE 24" STEEL PIPE PILE SHEET.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 46.0 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



ELEVATION

PROJECT NO. B-4932
 EDGEcombe COUNTY
 STATION: 25+00.00 -L-
 SHEET 1 OF 2

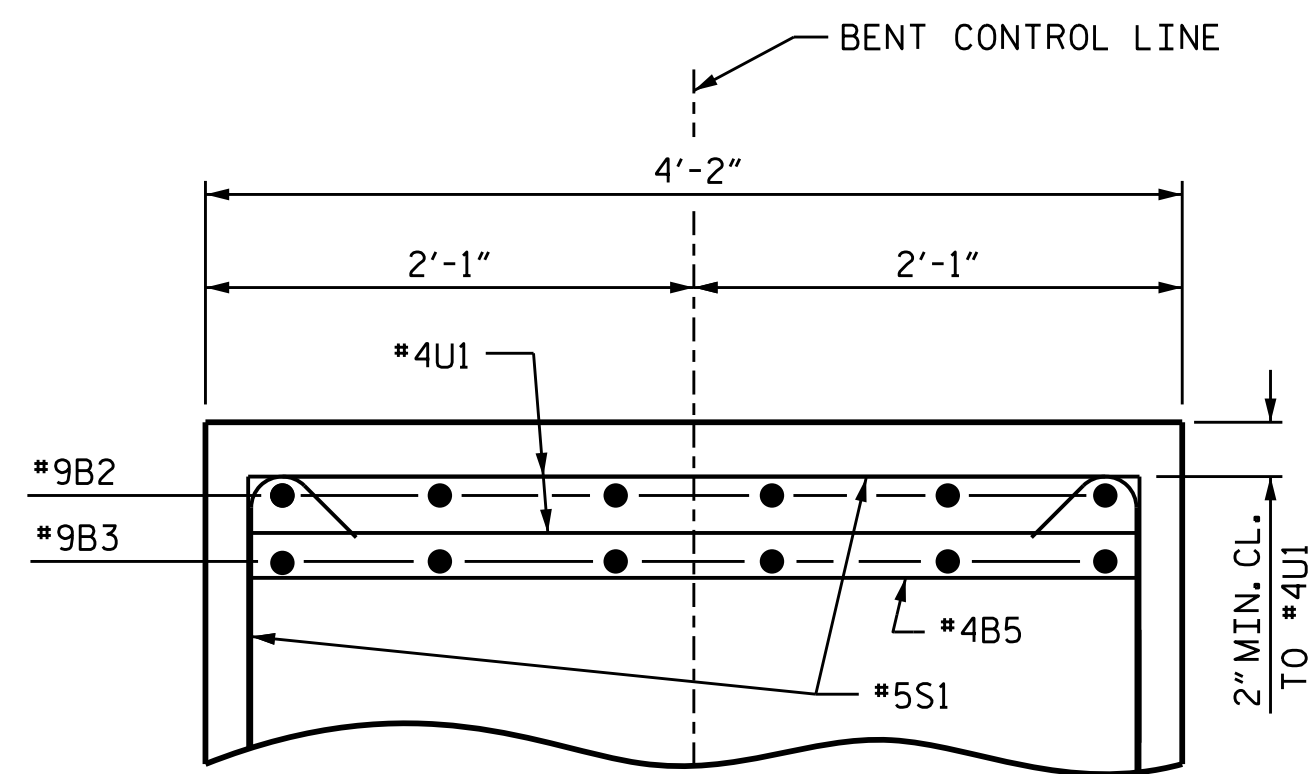


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

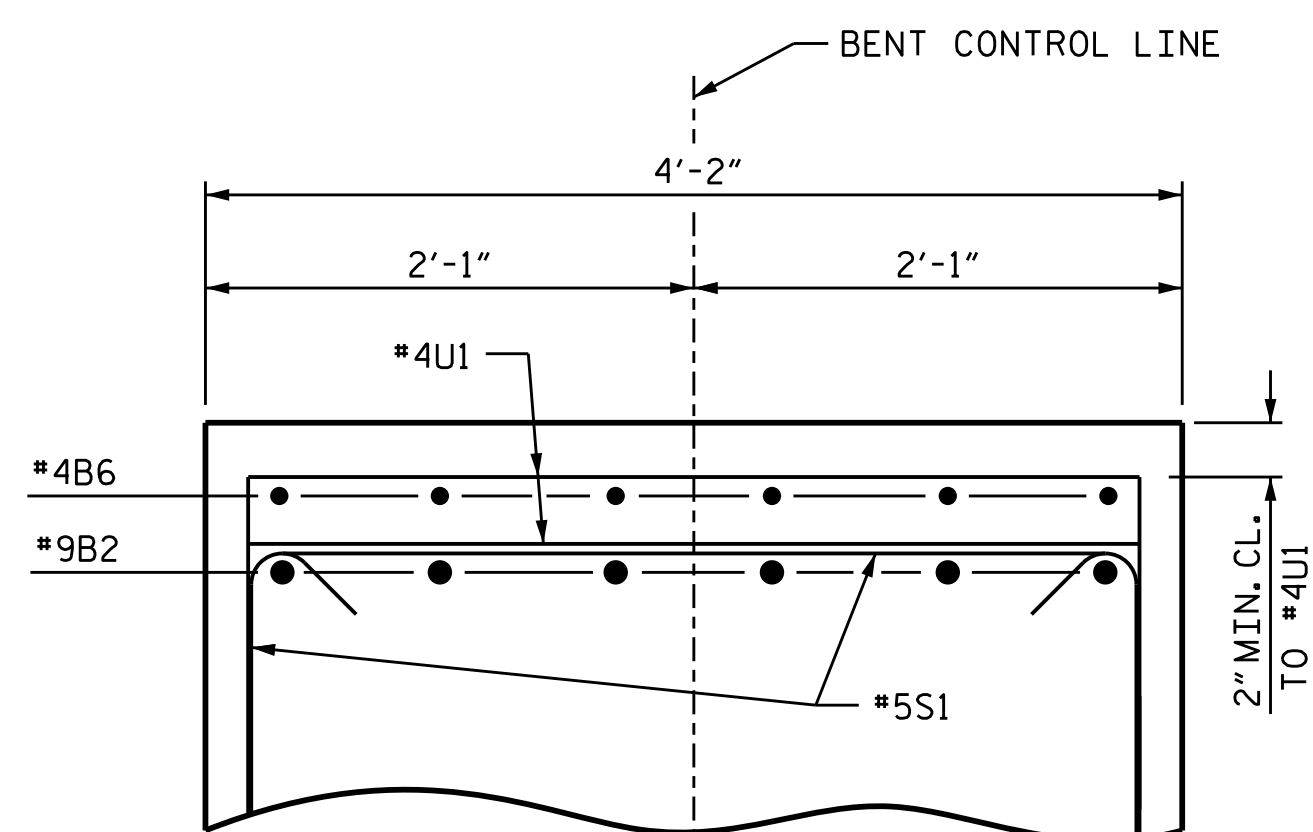
DRAWN BY : M.K. BEARD DATE : 07/17
 CHECKED BY : M. AHMED DATE : 11/17
 DESIGN ENGINEER OF RECORD : K.P. NEWTON DATE : 12/17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

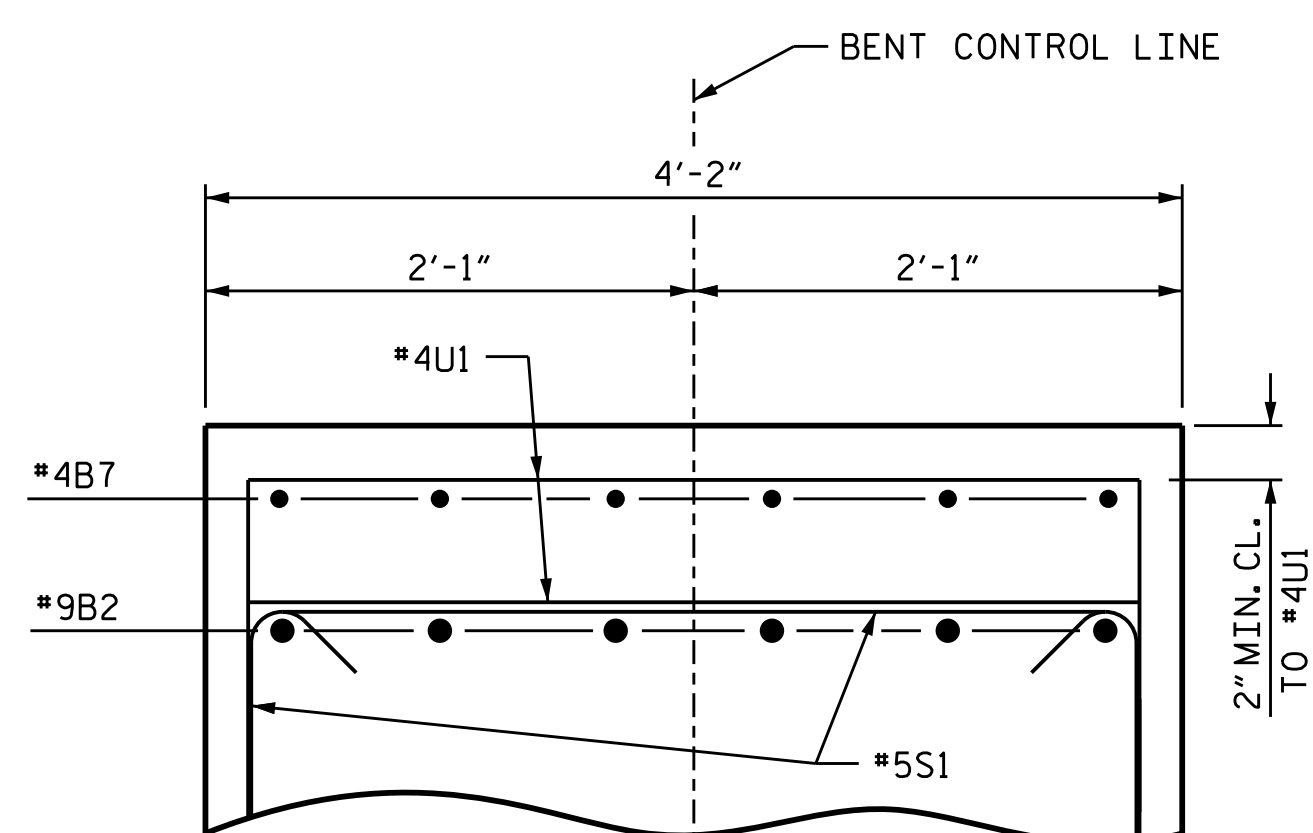
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31	
1			3			TOTAL SHEETS	
2			4			46	



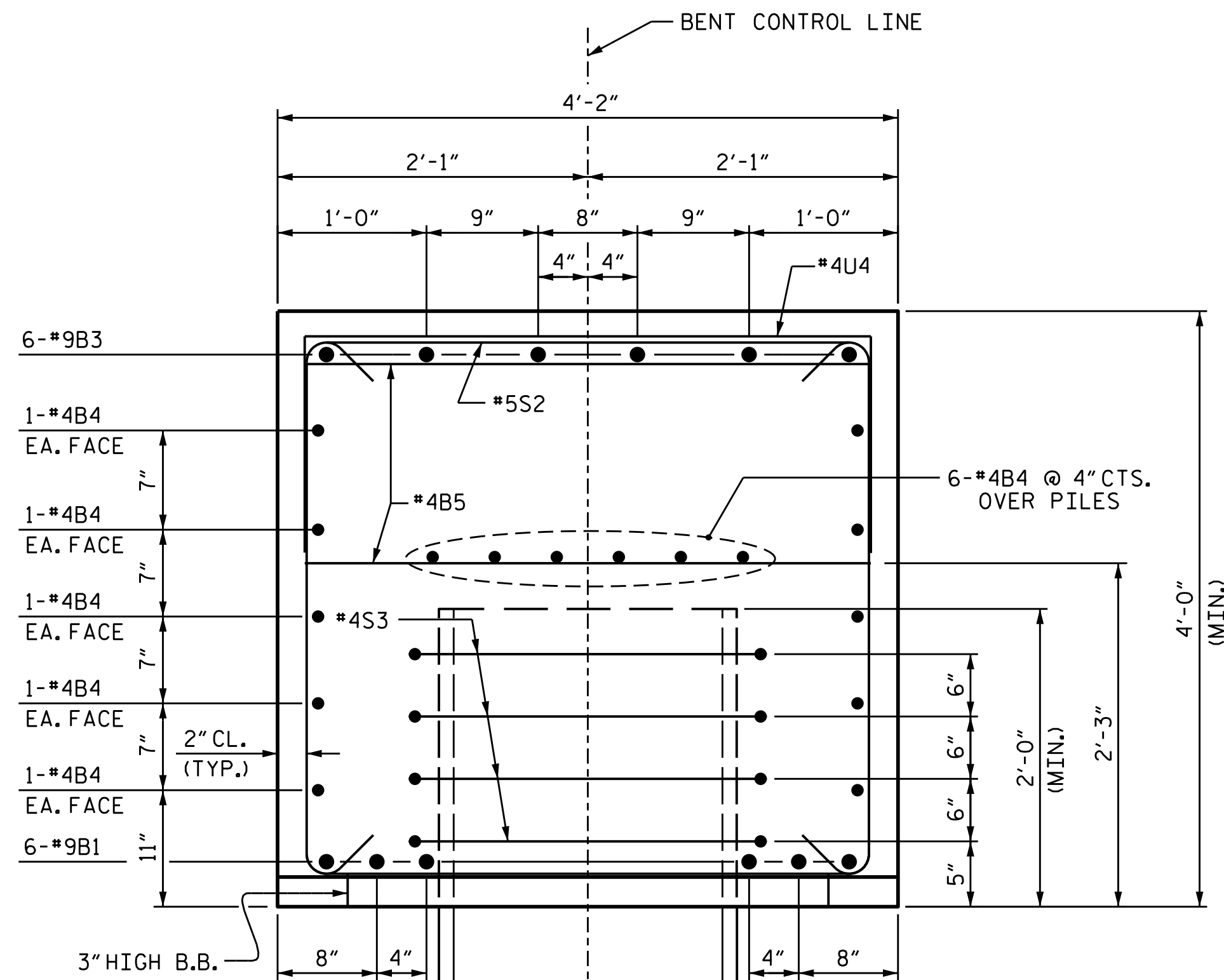
SECTION B-B



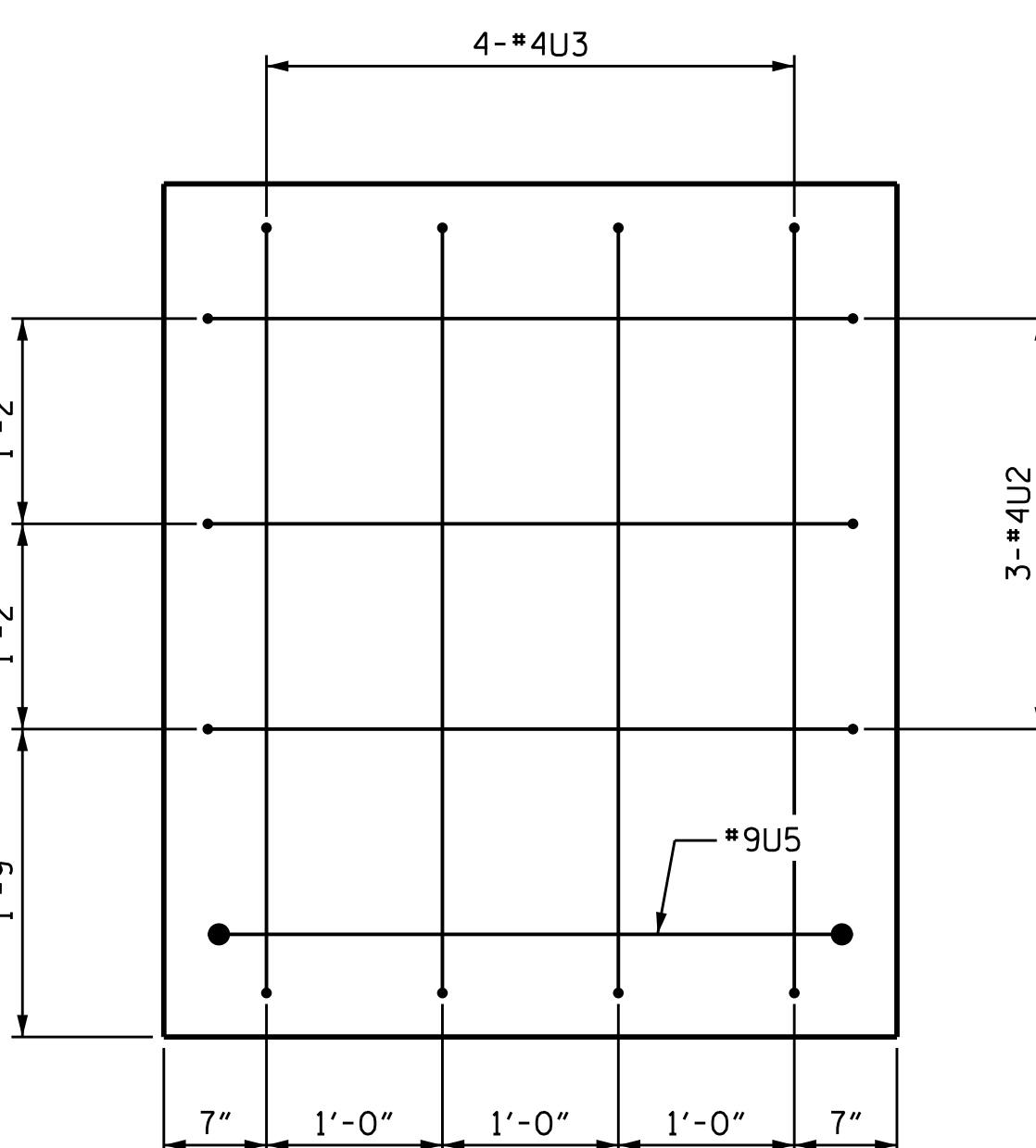
SECTION C-C



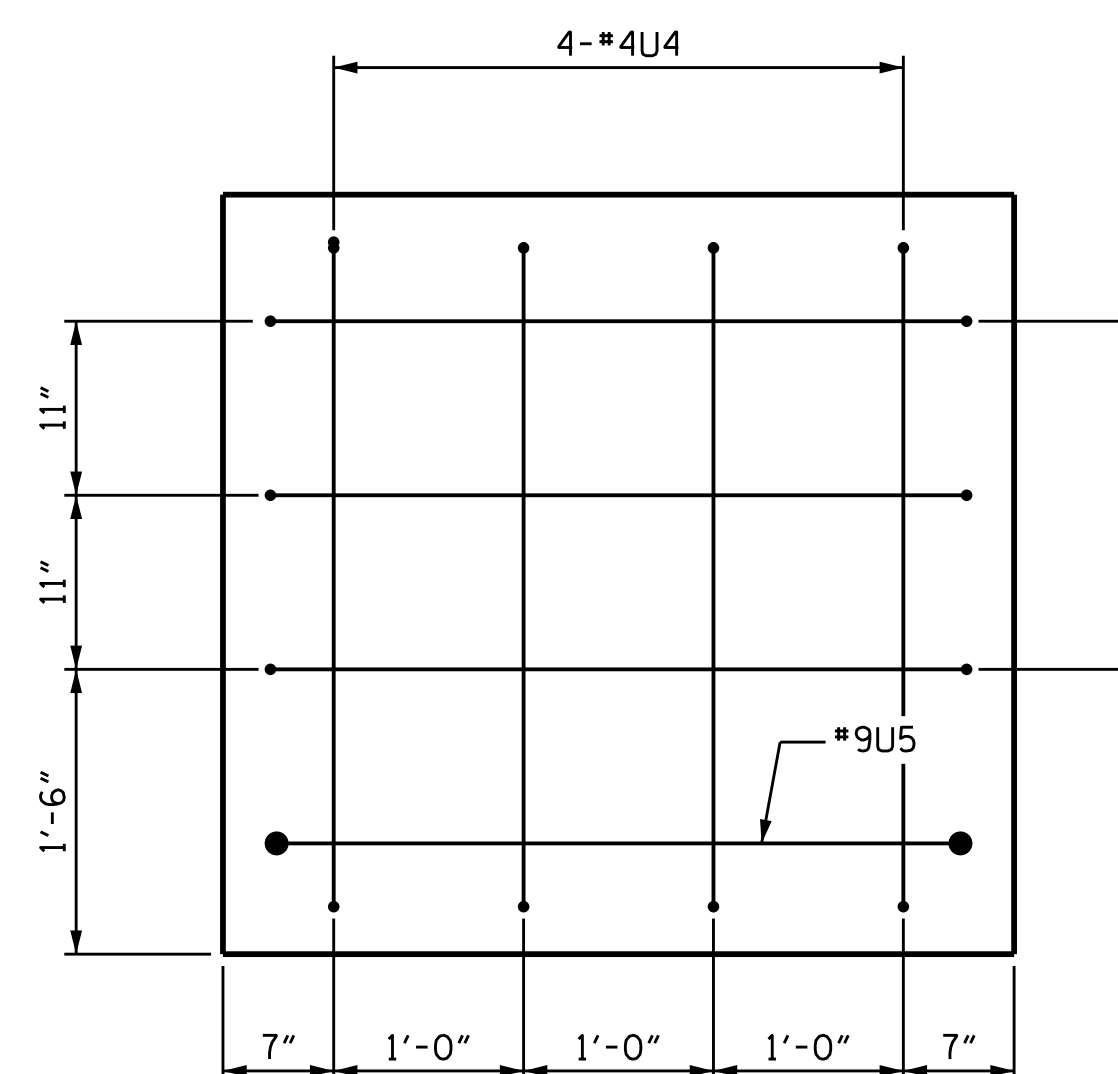
SECTION D-D



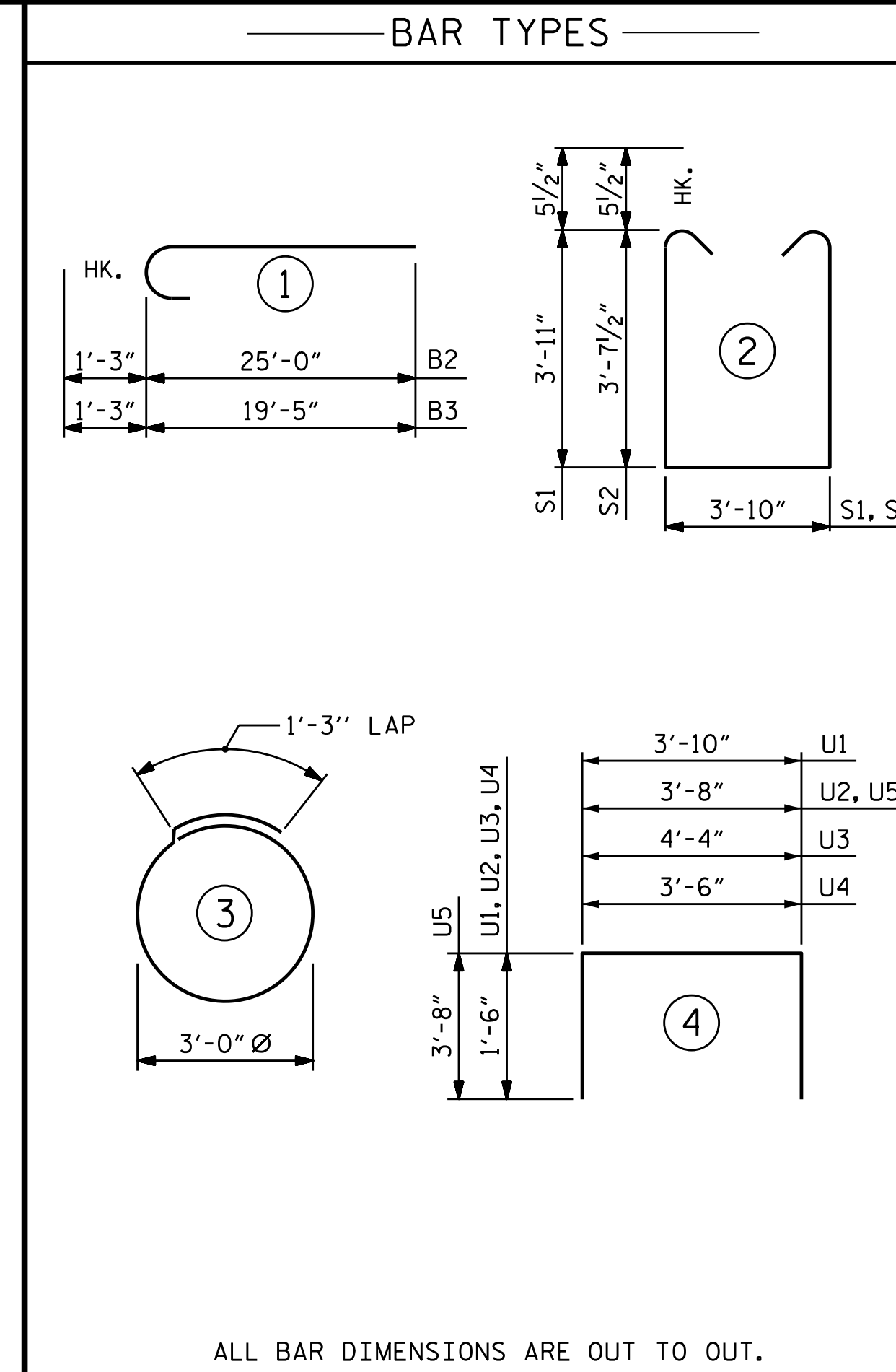
SECTION A-A



SECTION X-X



SECTION Y-Y



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	STR	35'-8"	728
B2	6	#9	1	26'-3"	536
B3	6	#9	1	20'-8"	422
B4	32	#4	STR	19'-1"	408
B5	12	#4	STR	3'-10"	31
B6	6	#4	STR	10'-4"	41
B7	6	#4	STR	4'-3"	17

S1	28	#5	2	12'-7"	367
S2	9	#5	2	12'-0"	113
S3	24	#4	3	10'-8"	171

U1	36	#4	4	6'-10"	164
U2	6	#4	4	6'-8"	27
U3	4	#4	4	7'-4"	20
U4	4	#4	4	6'-6"	17
U5	2	#9	4	11'-0"	75

REINFORCING STEEL 3,137 LBS.

CLASS A CONCRETE

POUR #1 CAP ▲ 21.9 C.Y.
TOTAL CLASS A CONCRETE ▲ 21.9 C.Y.

PP 24 x 0.625 GALVANIZED STEEL PIPE PILES

No. 6 510 LIN. FT.

PILE REDRIVES 6 EA.

PILE DRIVING EQUIPMENT SETUP FOR HP 24 X 0.625 GALVANIZED STEEL PILES 6 EA.

▲ CONCRETE DISPLACED BY THE PP 24 x 0.625 GALVANIZED STEEL PIPE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY OF CLASS 'A' CONCRETE FOR THE BENT CAP.

PROJECT NO. B-4932

EDGEcombe COUNTY

STATION: 25+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1



DRAWN BY: M.K. BEARD DATE: 7/17
CHECKED BY: M. AHMED DATE: 11/17
DESIGN ENGINEER OF RECORD: K.P. NEWTON DATE: 12/17

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS 46
2			4			

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

"U" BARS IN END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.

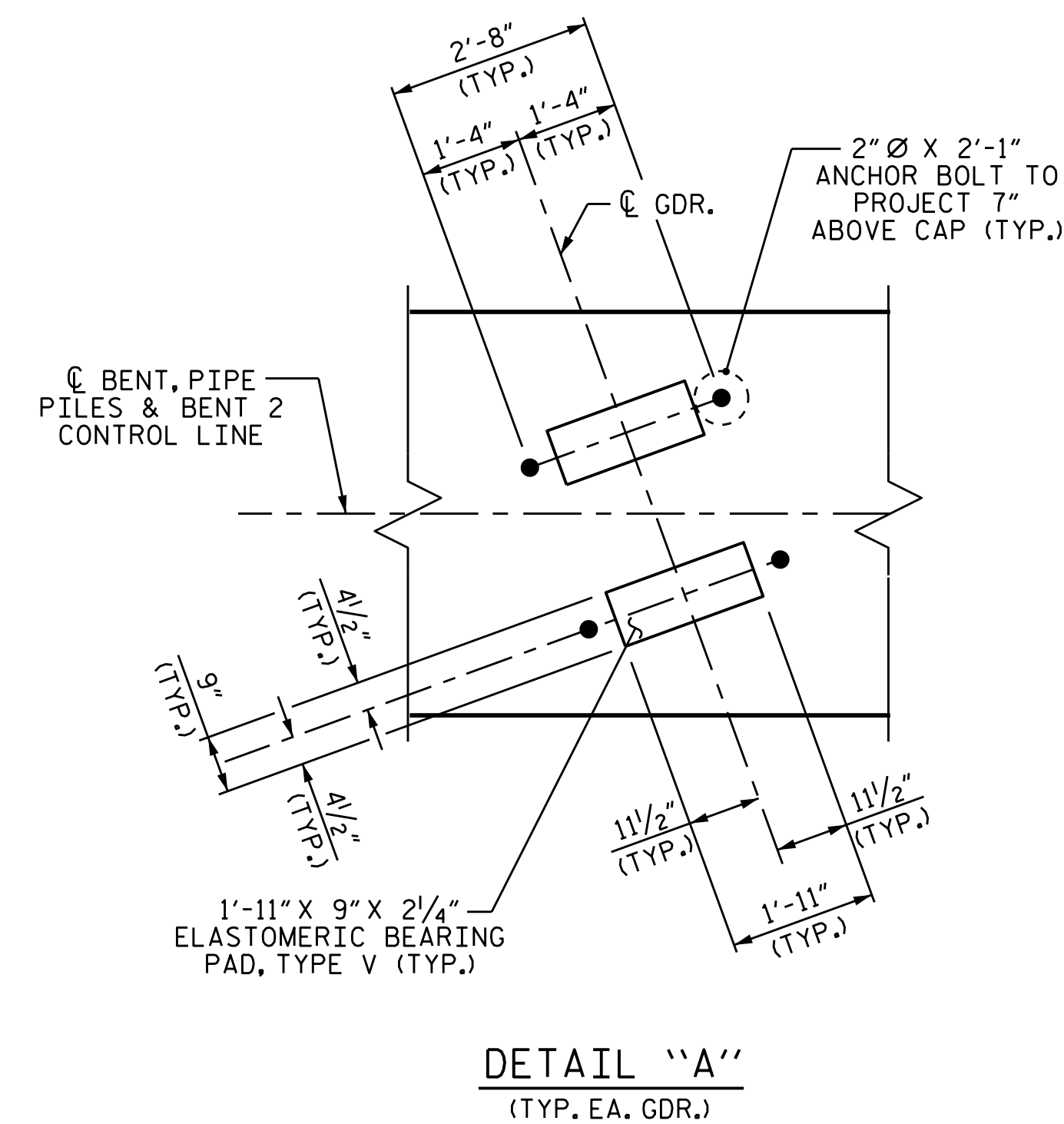
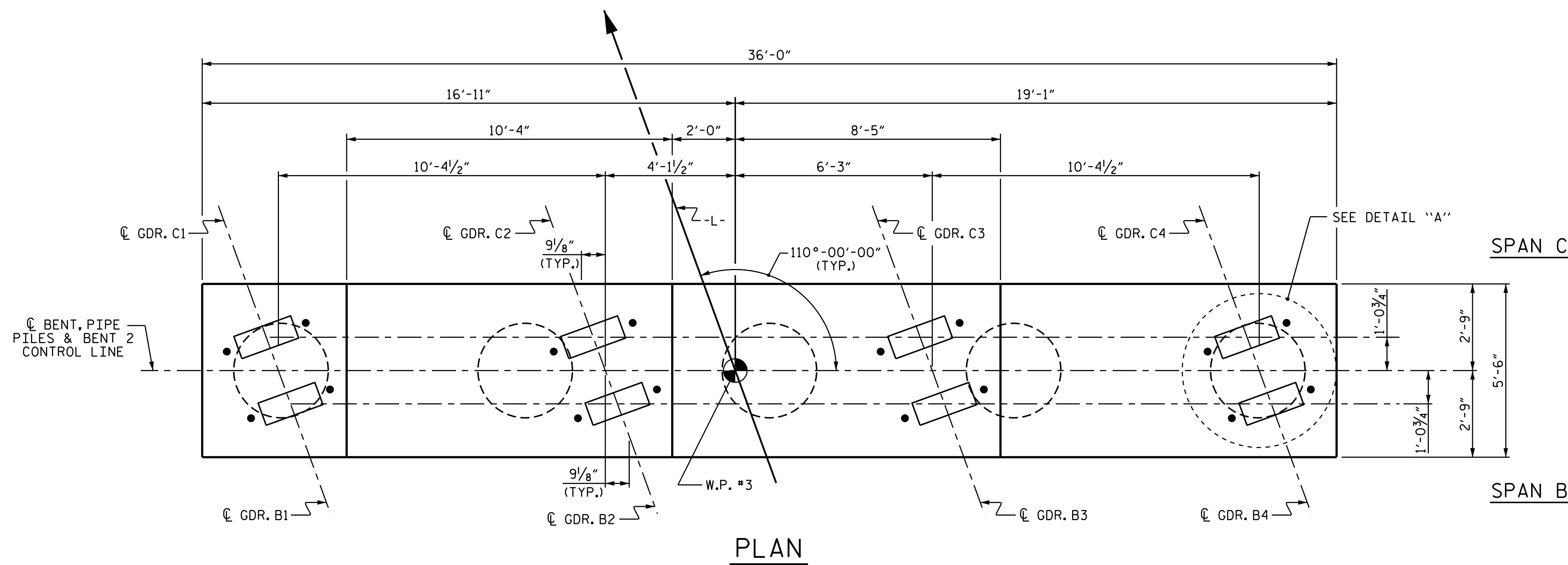
FOR PIPE PILE SPLICE DETAIL, SEE "36" Ø STEEL PIPE PILE SHEET.

FOR ADDITIONAL REINFORCING STEEL IN PP 36 X 0.50 GALVANIZED STEEL PIPE PILES, SEE 36" STEEL PIPE PILE SHEET.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 63.0 FEET GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

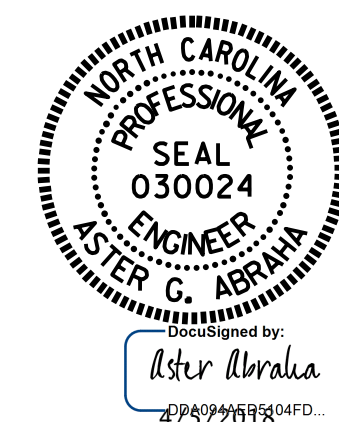
THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

AN EPOXY COATING SHALL BE APPLIED TO THE TOP OF THE CAP IN ACCORDANCE WITH SECTION 420-18 OF THE STANDARD SPECIFICATIONS.



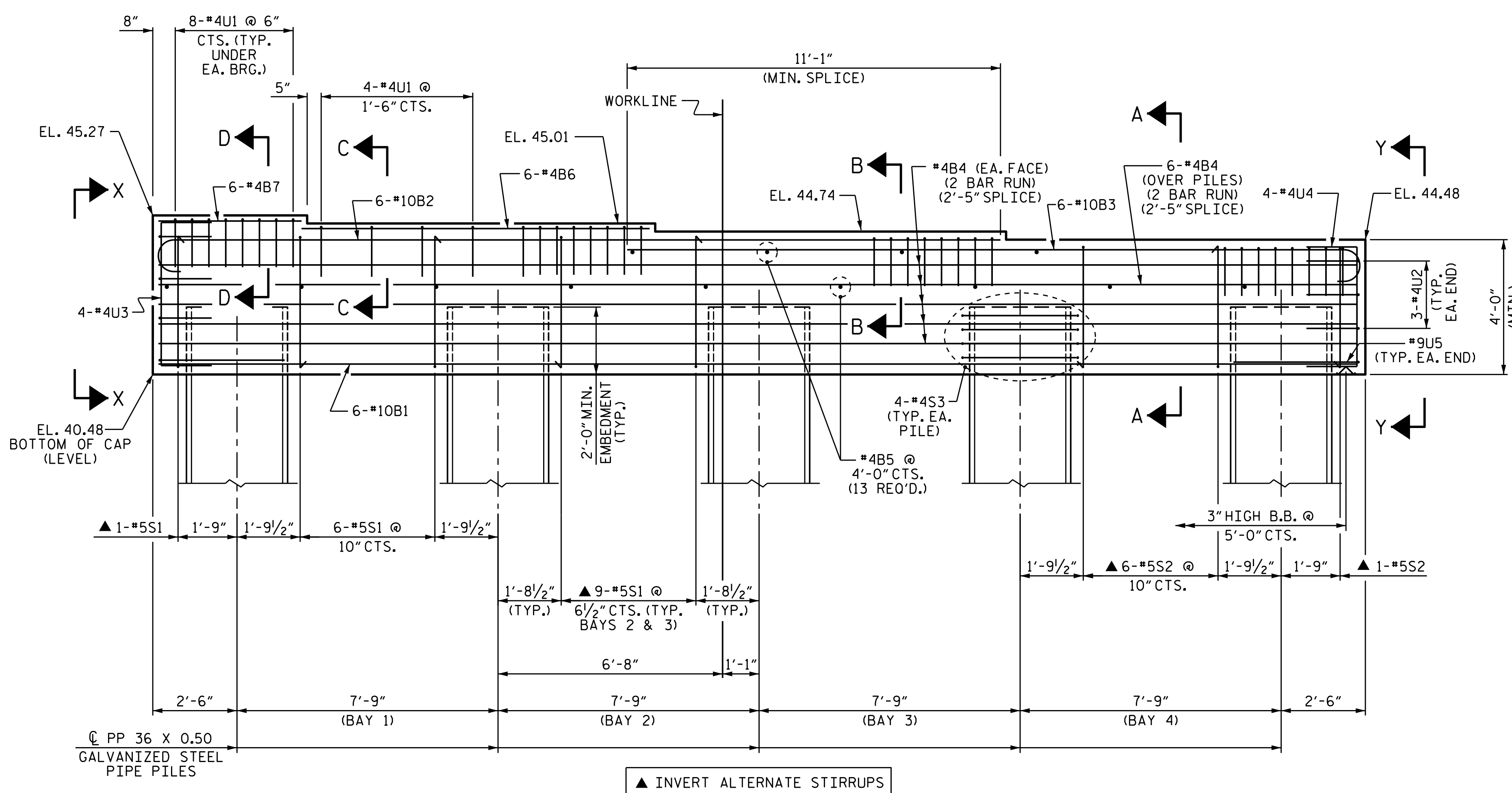
PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00 -L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2



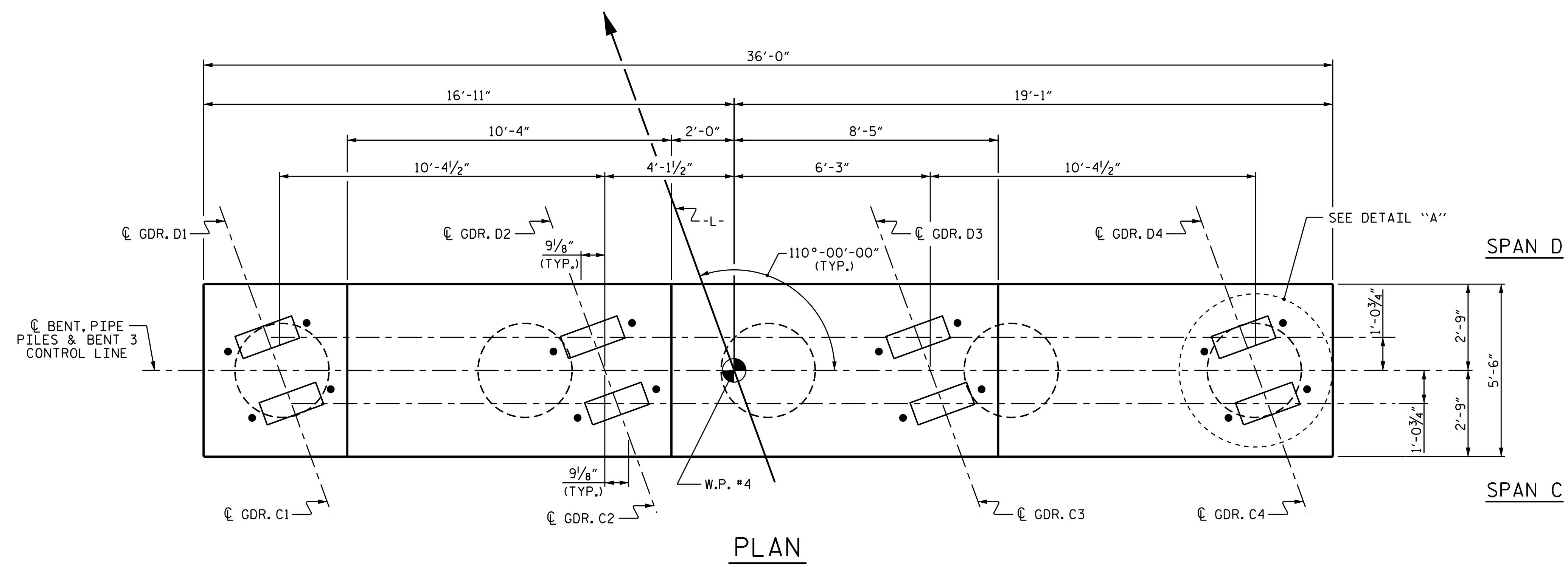
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			46

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



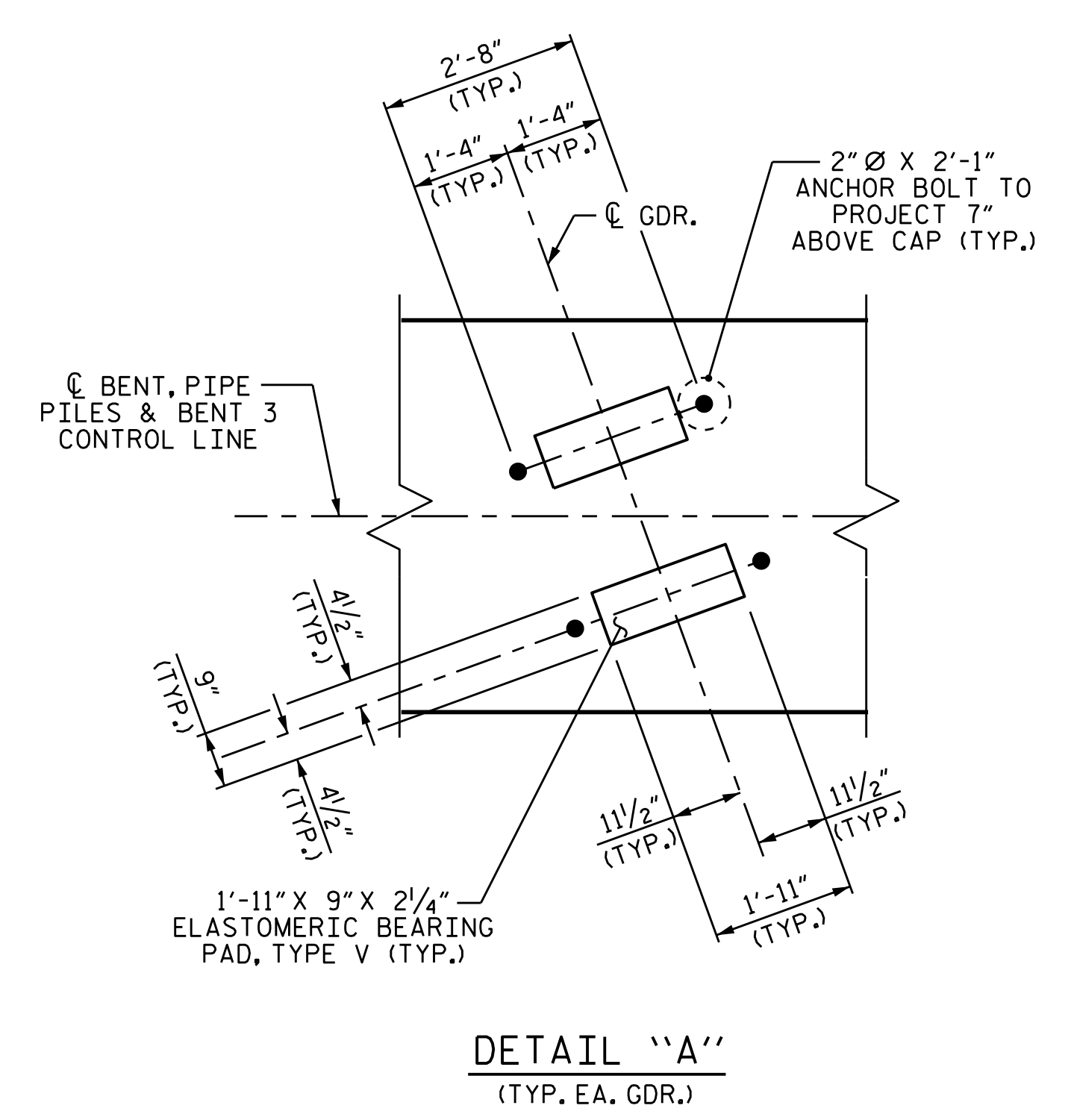
ELEVATION

DRAWN BY : M.K. BEARD DATE : 07/17
 CHECKED BY : M. AHMED DATE : 11/17
 DESIGN ENGINEER OF RECORD: K.P. NEWTON DATE : 12/17

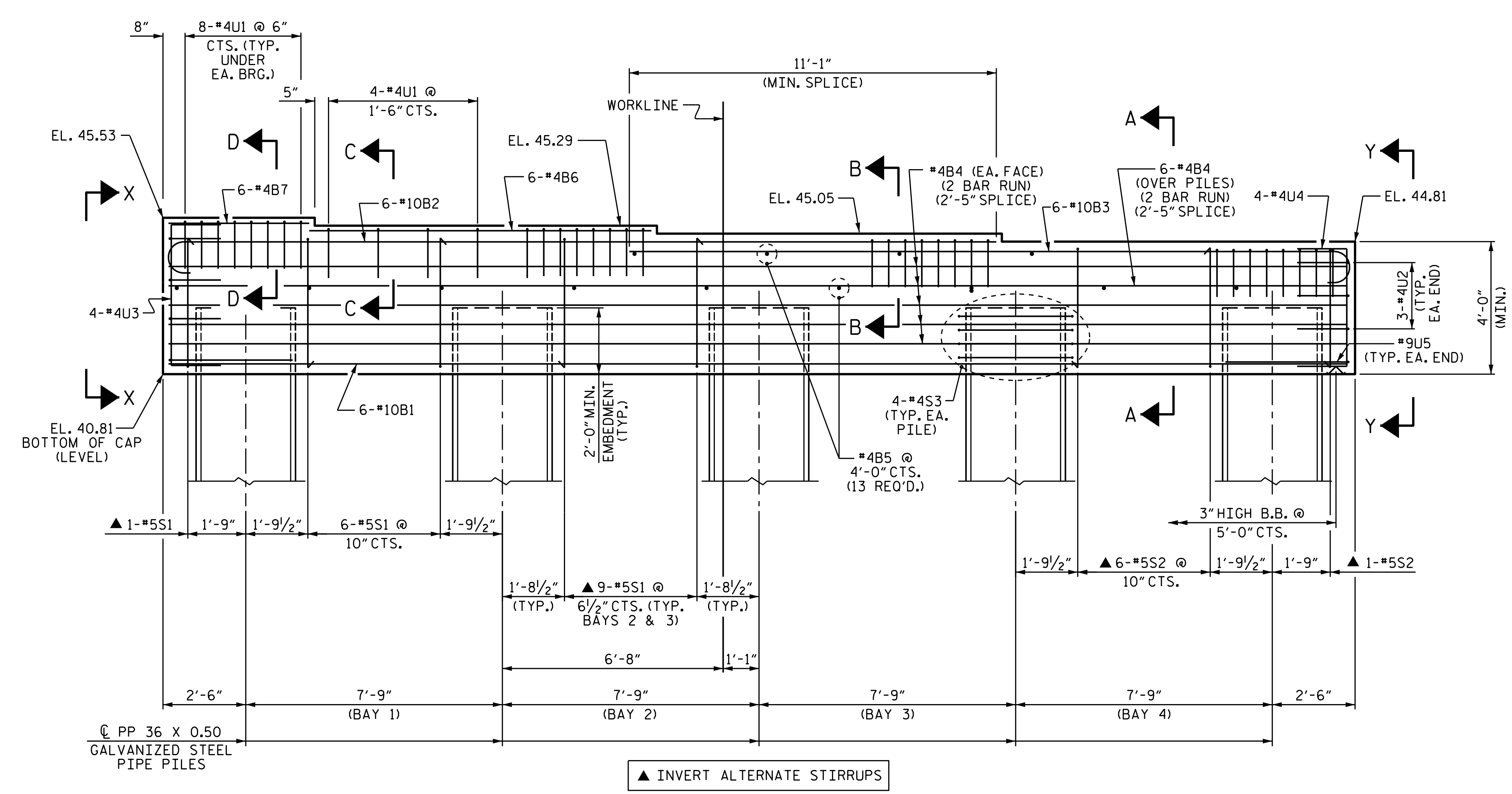


PLAN

NOTES
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 "U" BARS IN END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.
 FOR PIPE PILE SPLICE DETAIL, SEE "36" Ø STEEL PIPE PILE" SHEET.
 FOR ADDITIONAL REINFORCING STEEL IN PP 36 X 0.50 GALVANIZED STEEL PIPE PILES, SEE 36" STEEL PIPE PILE SHEET.
 GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 63.0 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"
 (TYP. EA. GDR.)



ELEVATION

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 3



DRAWN BY : M.K. BEARD DATE : 07/17
 CHECKED BY : M. AHMED DATE : 11/17
 DESIGN ENGINEER OF RECORD: K.P. NEWTON DATE : 12/17

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS 46
2			4			

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

"U" BARS IN END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.

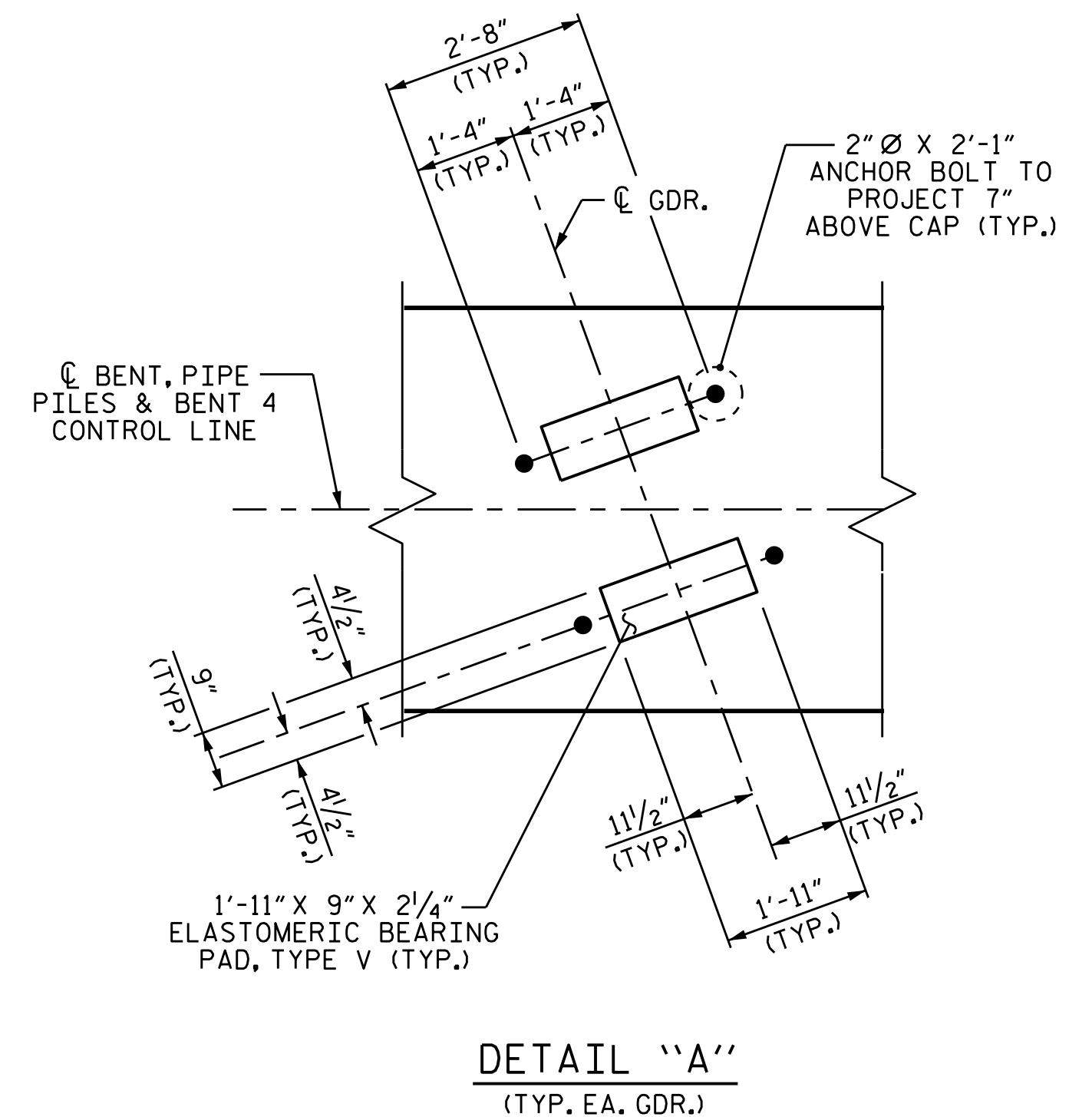
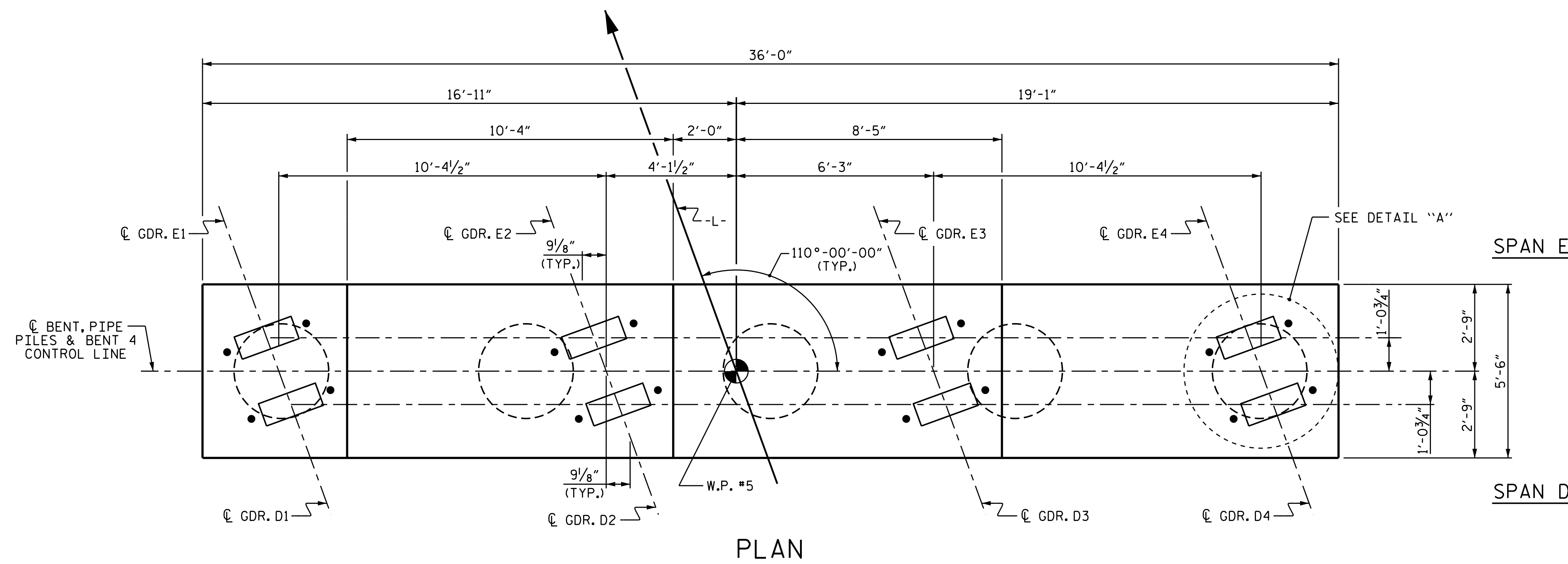
FOR PIPE PILE SPLICE DETAIL, SEE "36" Ø STEEL PIPE PILE" SHEET.

FOR ADDITIONAL REINFORCING STEEL IN PP 36 X 0.50 GALVANIZED STEEL PIPE PILES, SEE 36" STEEL PIPE PILE SHEET.

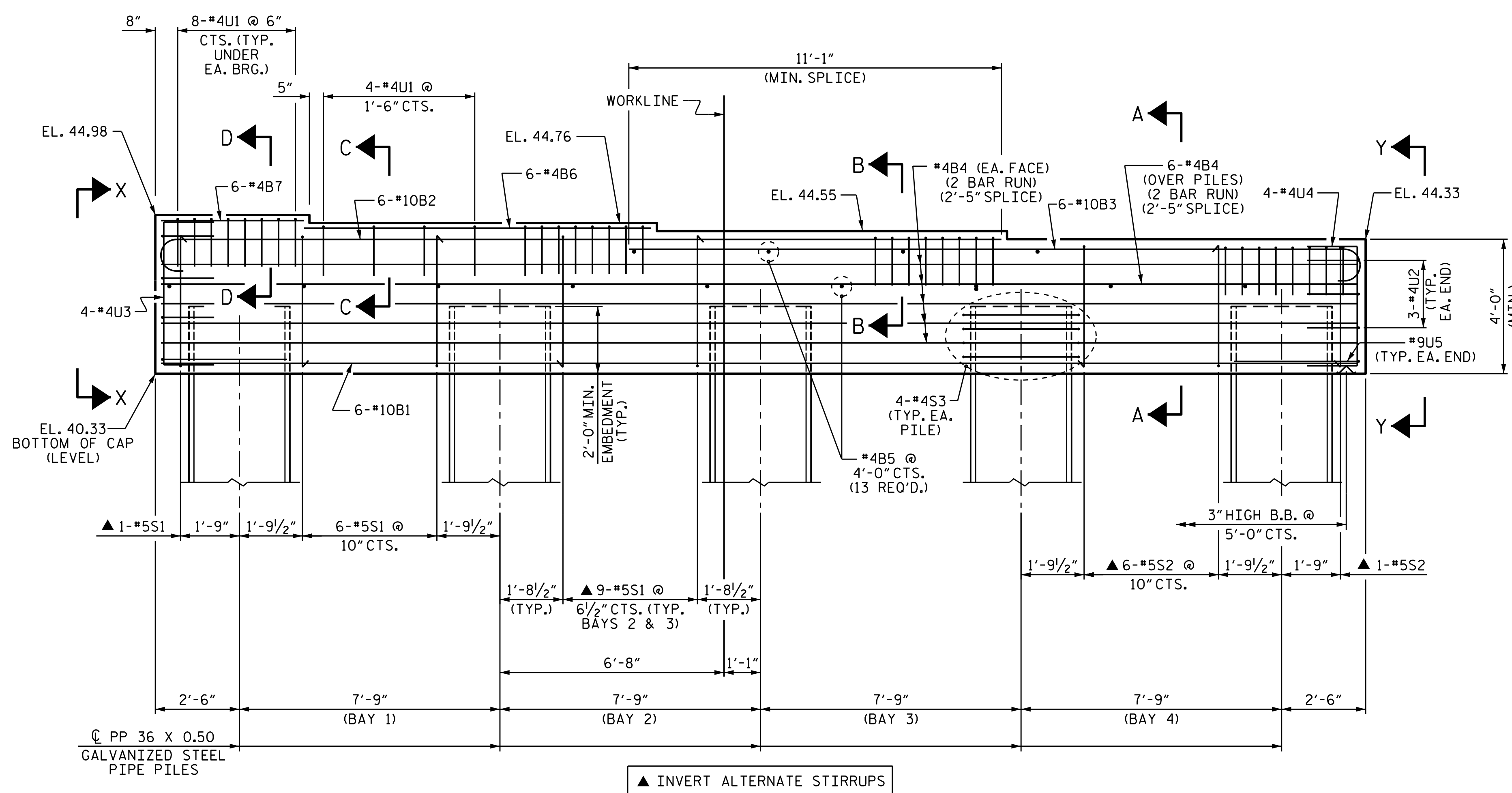
GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 51.0 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

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

AN EPOXY COATING SHALL BE APPLIED TO THE TOP OF THE CAP IN ACCORDANCE WITH SECTION 420-18 OF THE SPECIFICATIONS.



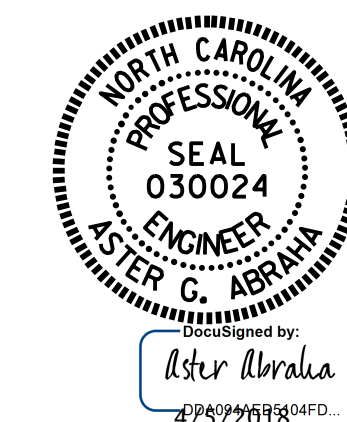
DETAIL "A"
(TYP. EA. GDR.)



ELEVATION

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

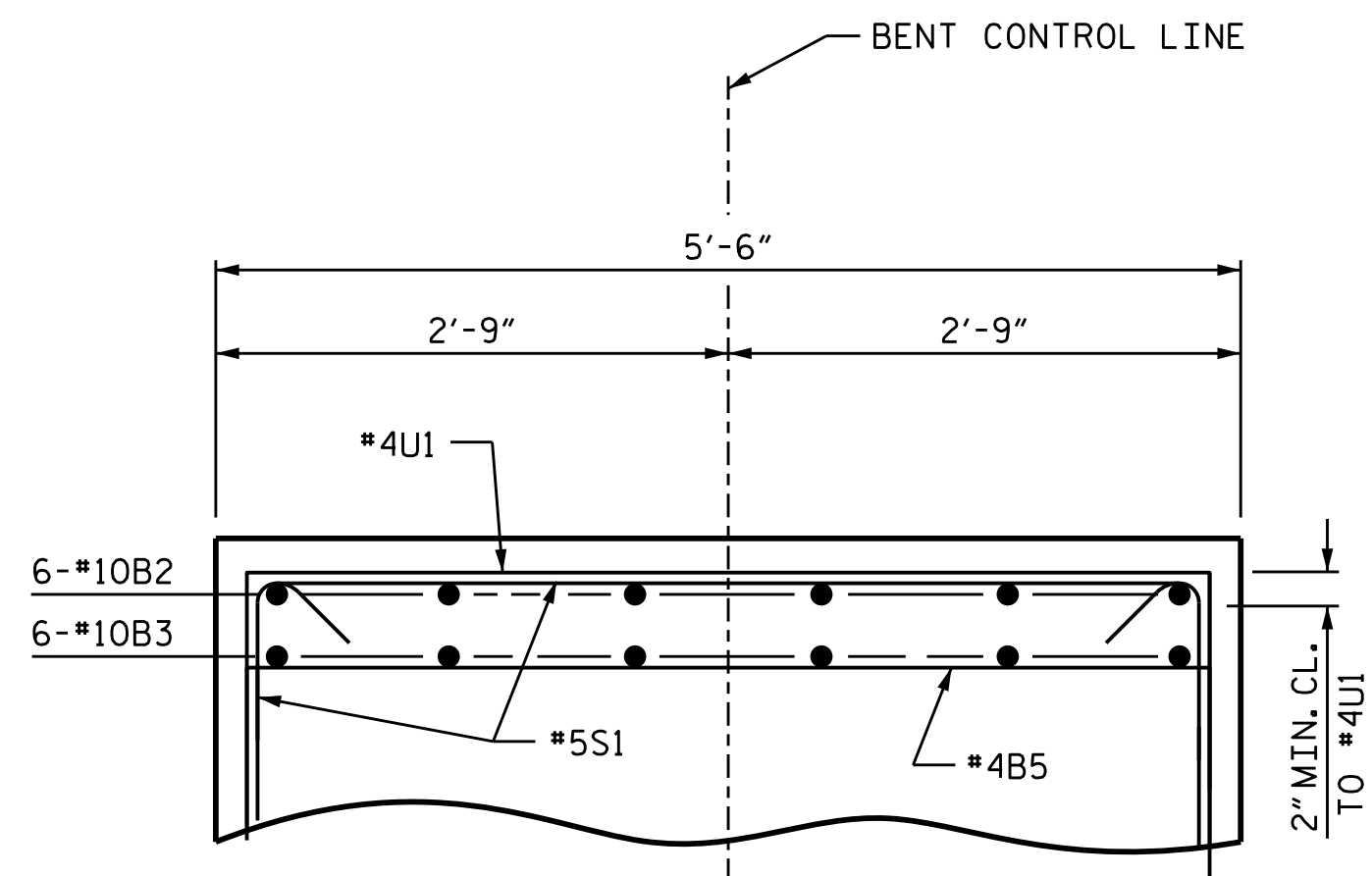
SHEET 3 OF 4



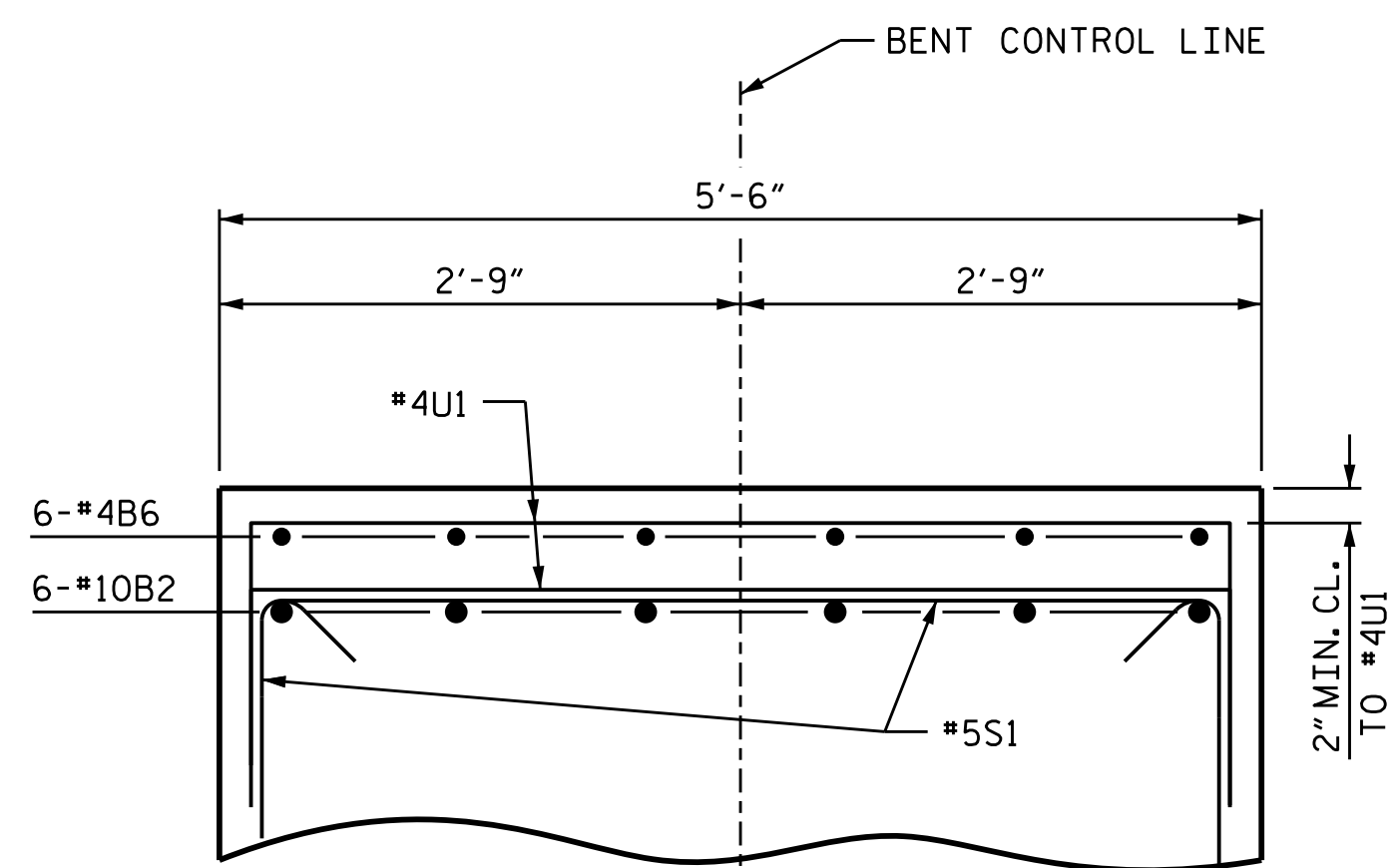
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
SUBSTRUCTURE						S-35
BENT 4						TOTAL SHEETS
						46
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-35
2			4			

DRAWN BY : M.K. BEARD DATE : 07/17
 CHECKED BY : M. AHMED DATE : 11/17
 DESIGN ENGINEER OF RECORD: K.P. NEWTON DATE : 12/17

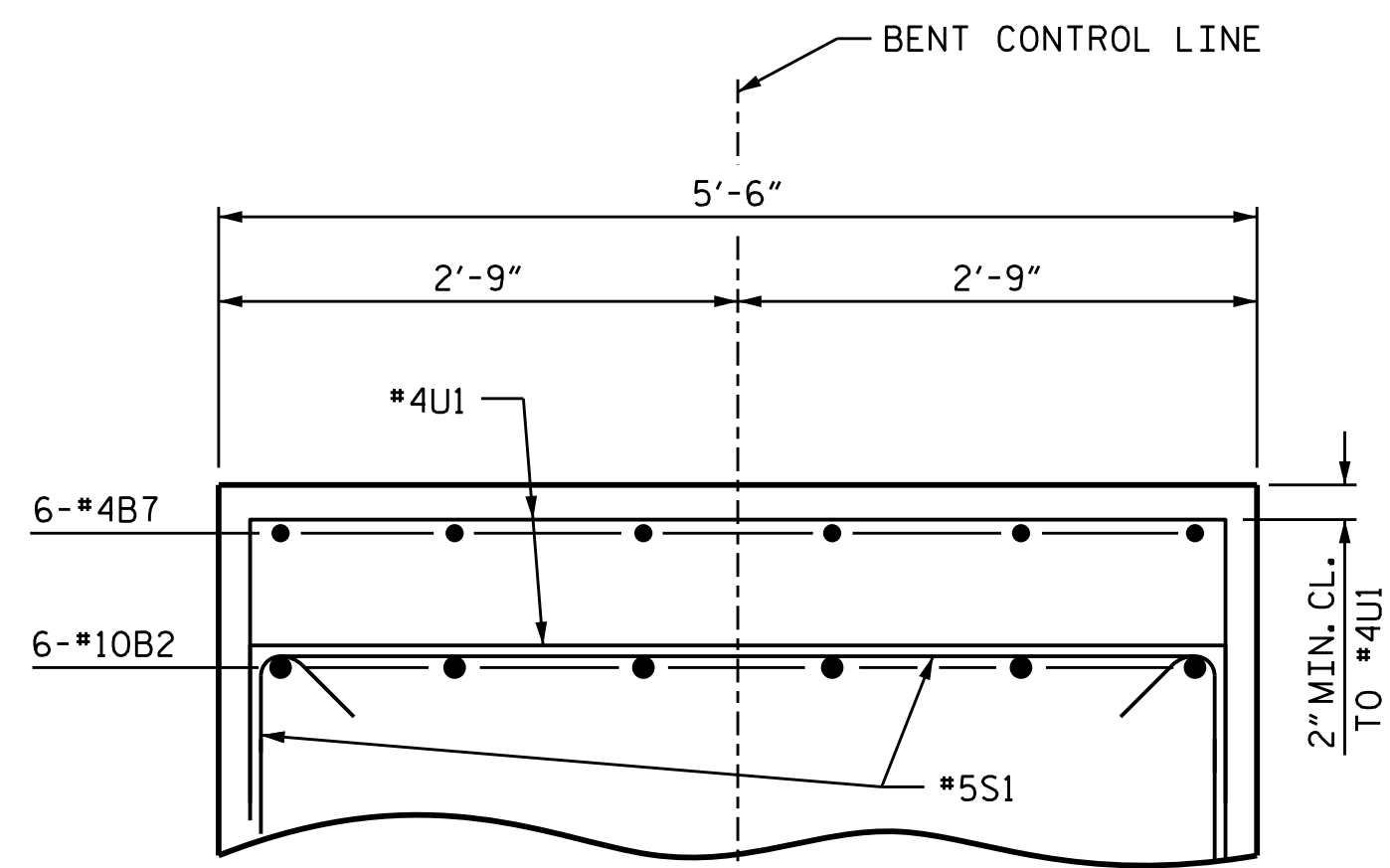
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



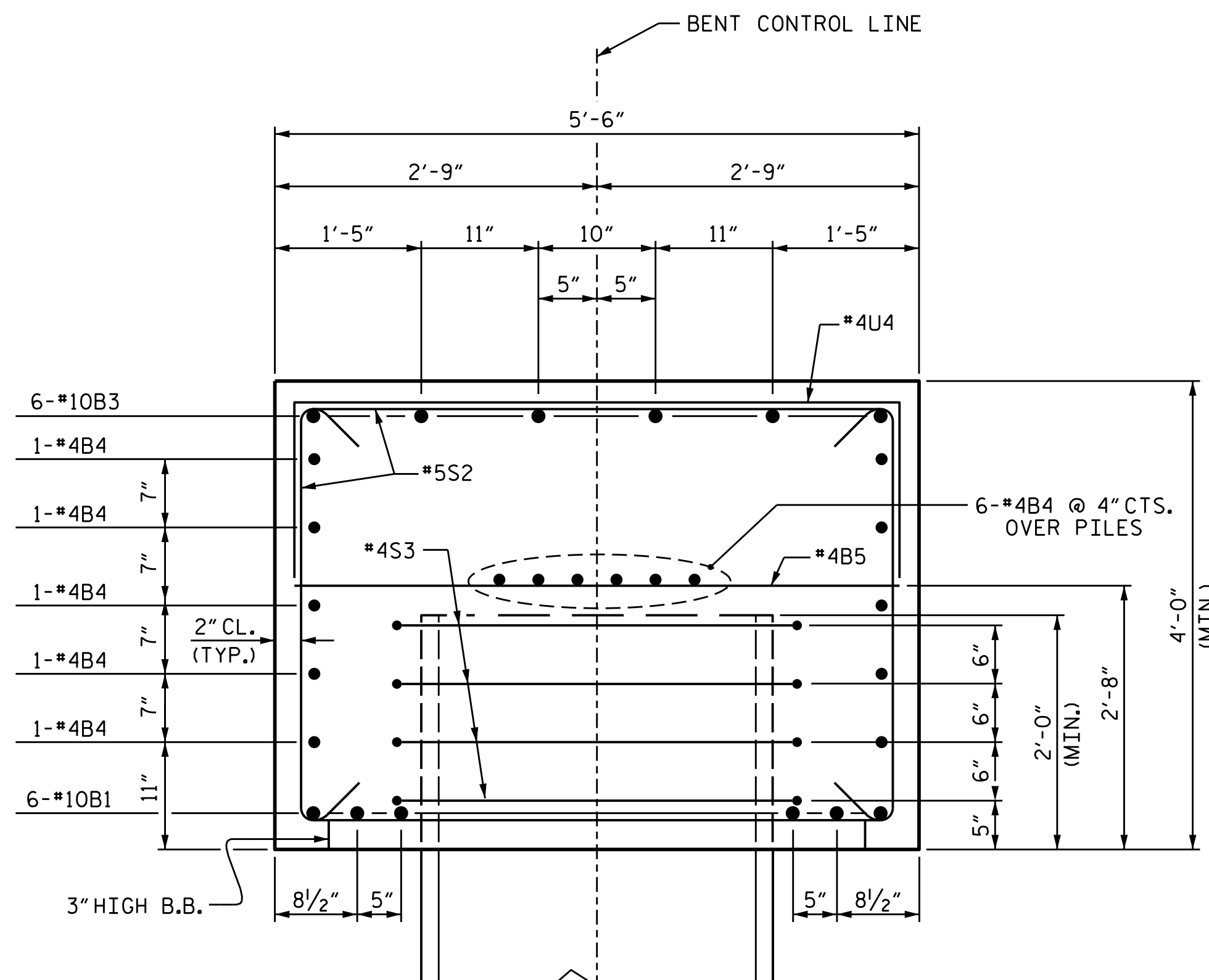
SECTION B-B



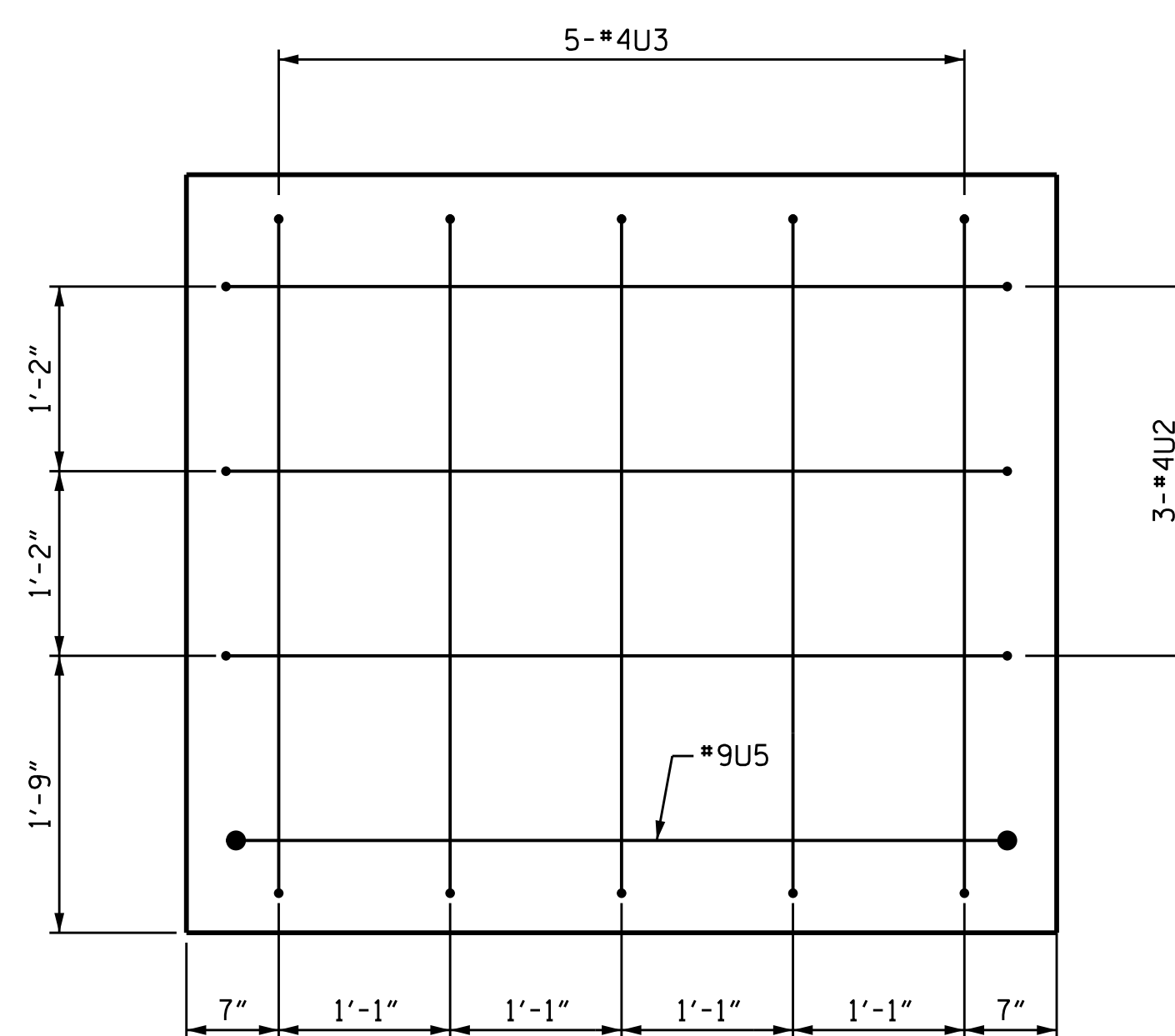
SECTION C-C



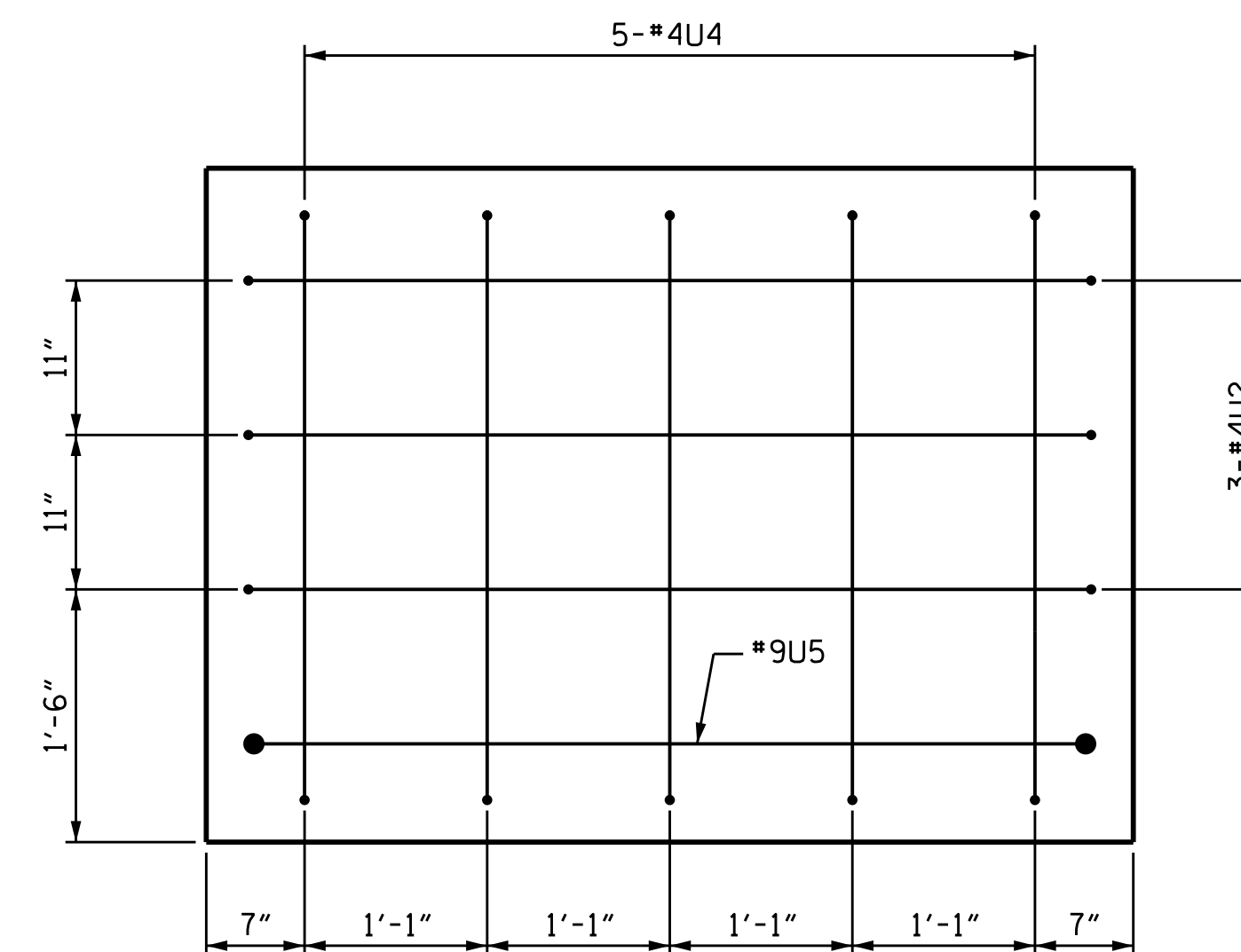
SECTION D-D



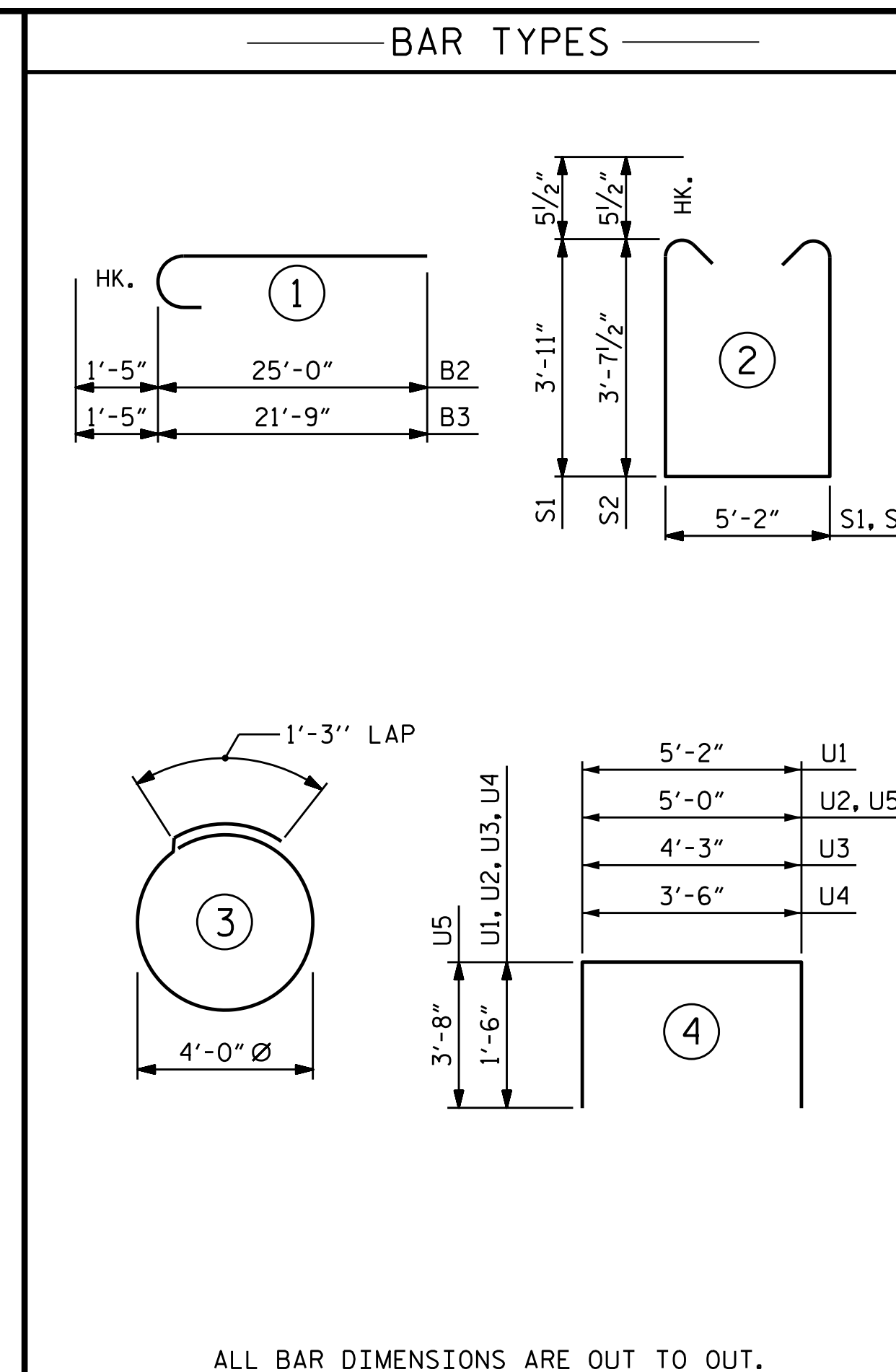
SECTION A-A



SECTION X-X



SECTION Y-Y



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	35'-8"	921
B2	6	#10	1	26'-5"	682
B3	6	#10	1	23'-2"	598
B4	32	#4	STR	19'-1"	408
B5	13	#4	STR	3'-10"	33
B6	6	#4	STR	10'-4"	41
B7	6	#4	STR	4'-3"	17

S1	25	#5	2	13'-11"	363
S2	7	#5	2	13'-4"	97
S3	20	#4	3	13'-10"	185
U1	36	#4	4	8'-2"	196
U2	6	#4	4	8'-0"	32
U3	4	#4	4	7'-3"	19
U4	4	#4	4	6'-6"	17
U5	2	#9	4	12'-4"	84

REINFORCING STEEL (FOR ONE BENT) 3,693 LBS.

CLASS A CONCRETE (FOR ONE BENT)

POUR #1 CAP ▲ 20.5 C.Y.
TOTAL CLASS A CONCRETE ▲ 20.5 C.Y.

PP 36 x 0.50 GALVANIZED STEEL PILES (FOR ONE BENT)

No. 5 600 LIN. FT.

PILE REDRIVES 5 EA.

PILE DRIVING EQUIPMENT SETUP FOR HP 36 X 0.50 GALVANIZED STEEL PILES 5 EA.

▲ CONCRETE DISPLACED BY THE PP 36 x 0.50 GALVANIZED STEEL PIPE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY OF CLASS 'A' CONCRETE FOR THE BENT CAP.

PROJECT NO. B-4932

EDGECOMBE COUNTY

STATION: 25+00.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENTS 2 THRU 4



DRAWN BY: M.K. BEARD DATE: 7/17
CHECKED BY: M. AHMED DATE: 11/17
DESIGN ENGINEER OF RECORD: K.P. NEWTON DATE: 12/17

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36	
1			3			TOTAL SHEETS 46	
2			4				

NOTES

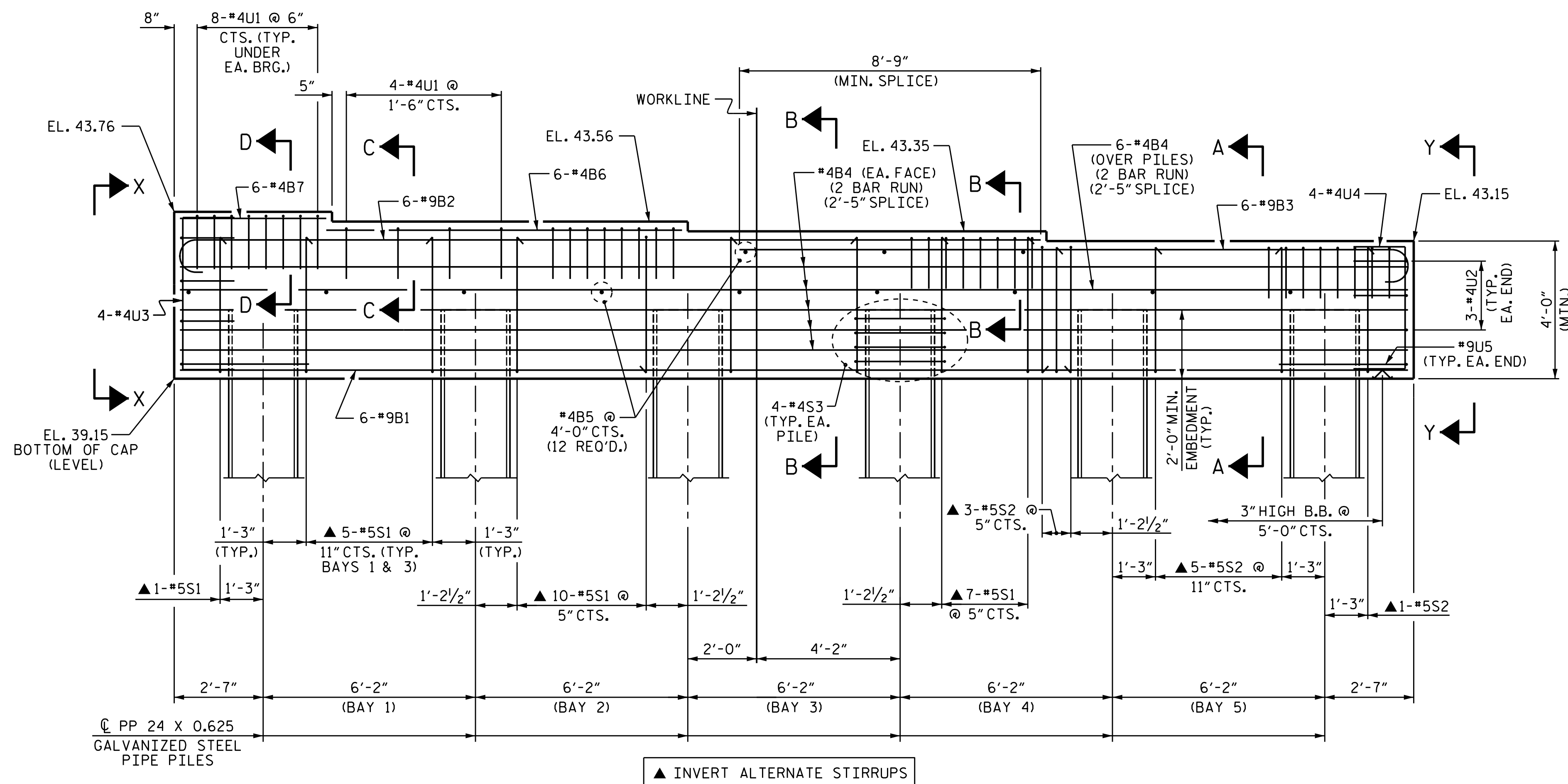
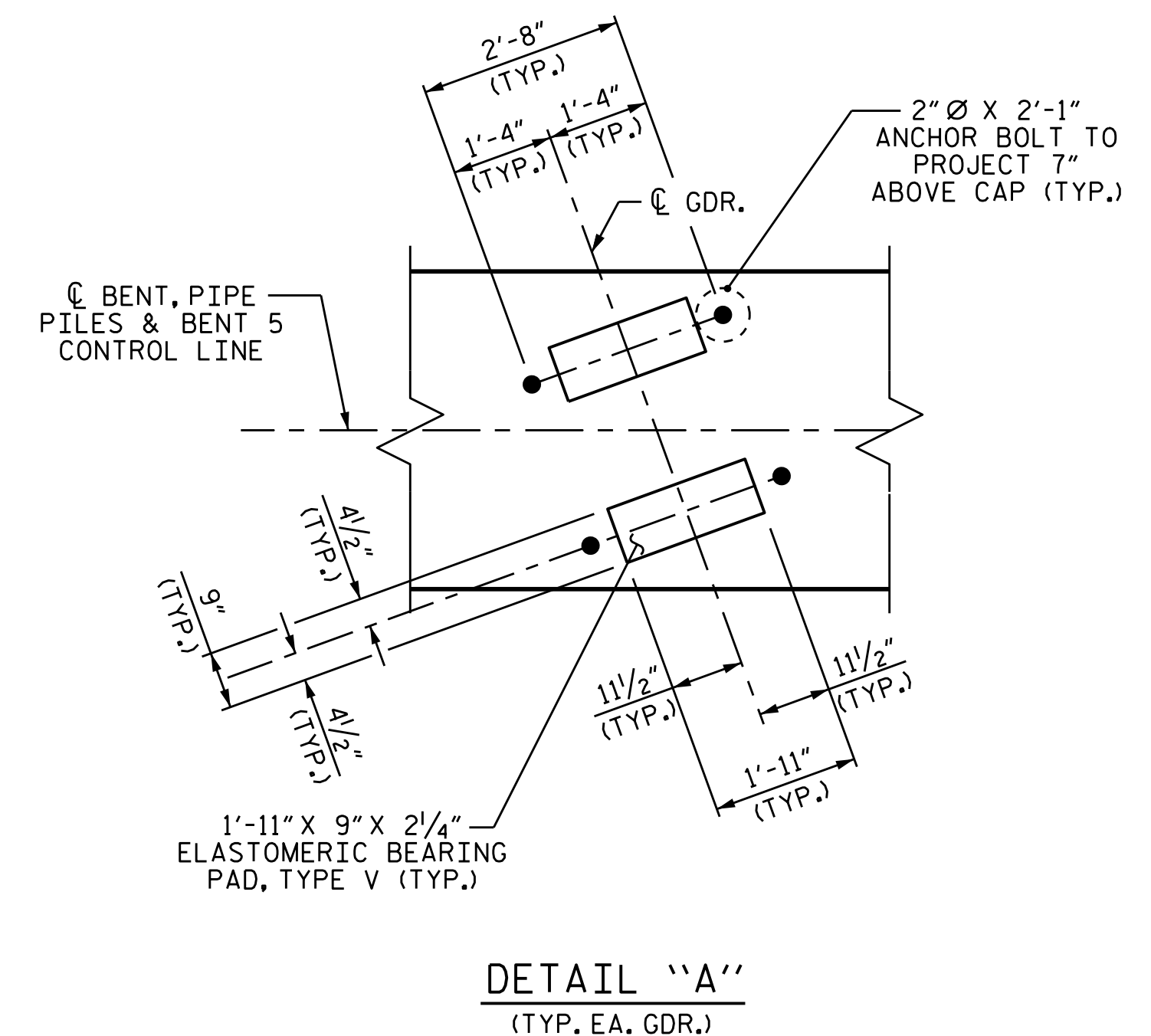
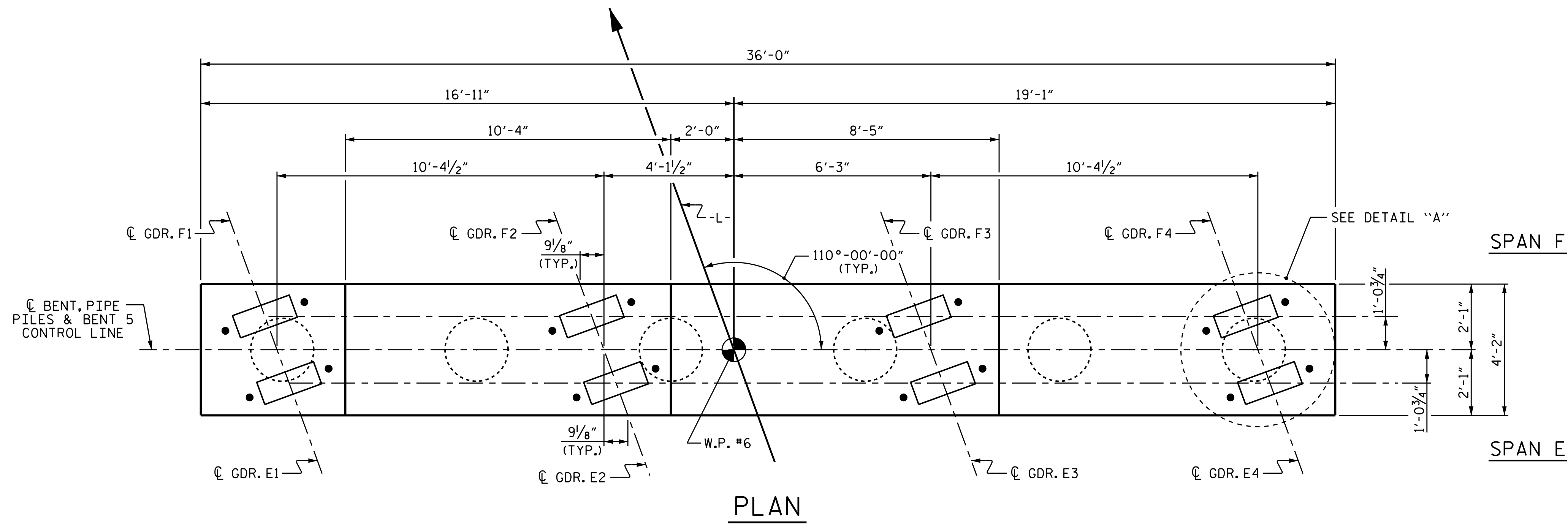
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

"U" BARS IN END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.

FOR PIPE PILE SPLICE DETAIL, SEE "24" Ø STEEL PIPE PILE" SHEET.

FOR ADDITIONAL REINFORCING STEEL IN PP 24 X 0.625 GALVANIZED STEEL PIPE PILES, SEE 24" STEEL PIPE PILE SHEET.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 46.0 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00 -L-
 SHEET 1 OF 2

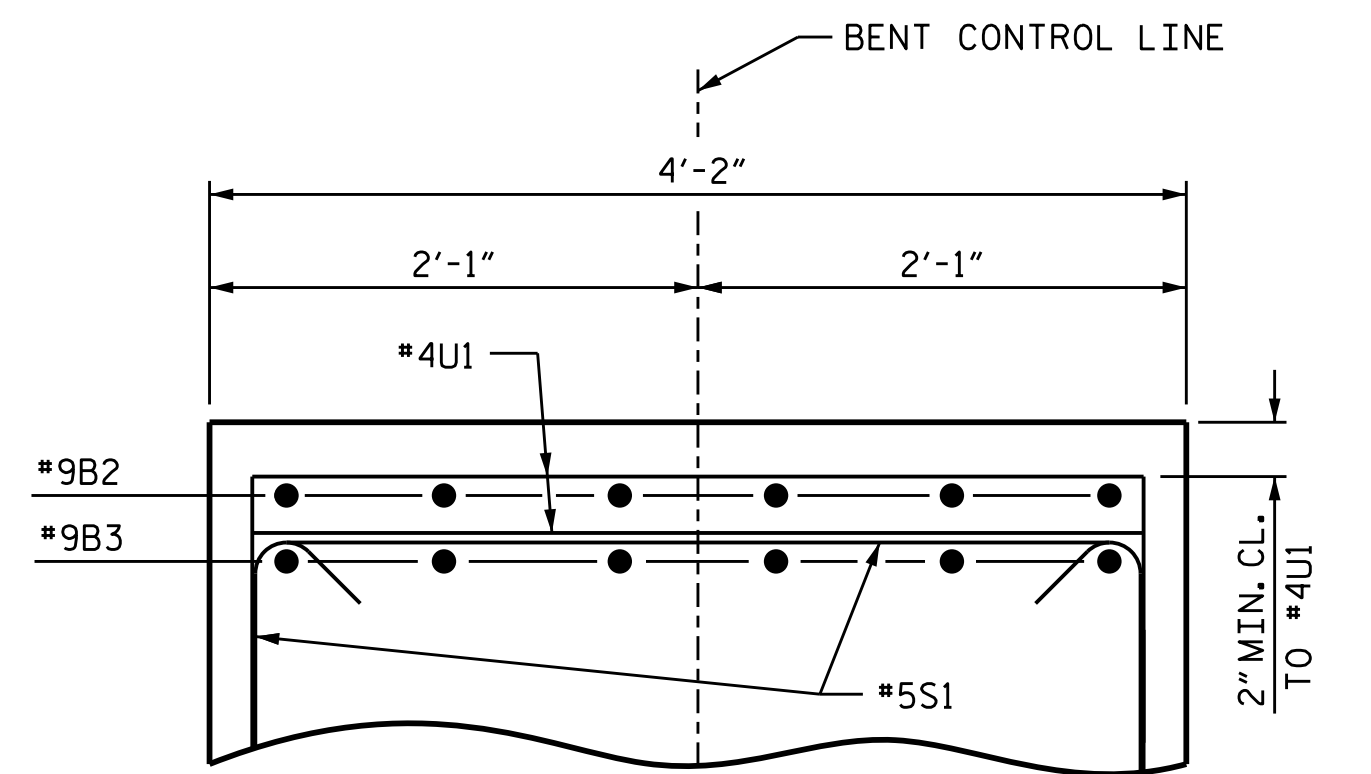
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 5



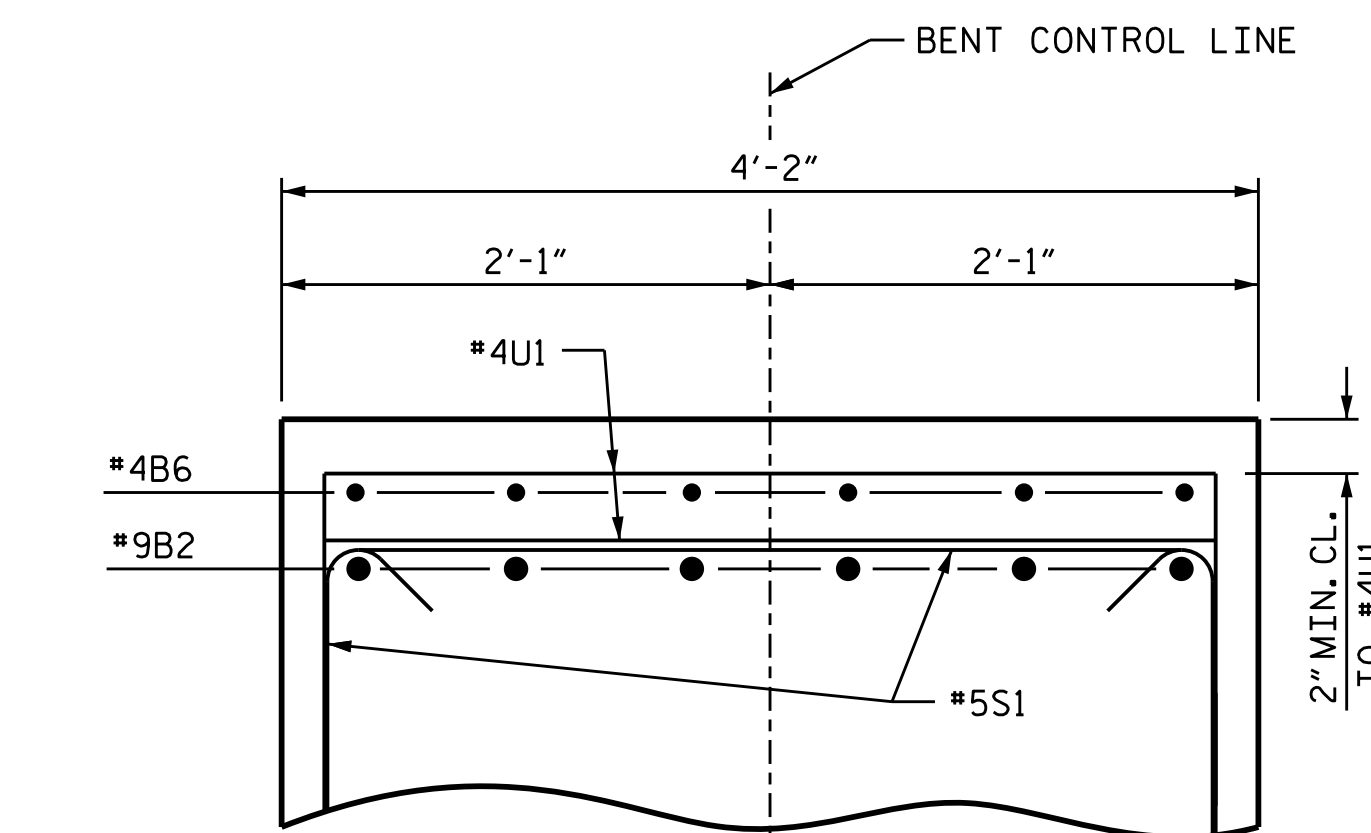
DRAWN BY : M.K. BEARD DATE : 07/17
 CHECKED BY : M. AHMED DATE : 11/17
 DESIGN ENGINEER OF RECORD : K.P. NEWTON DATE : 12/17

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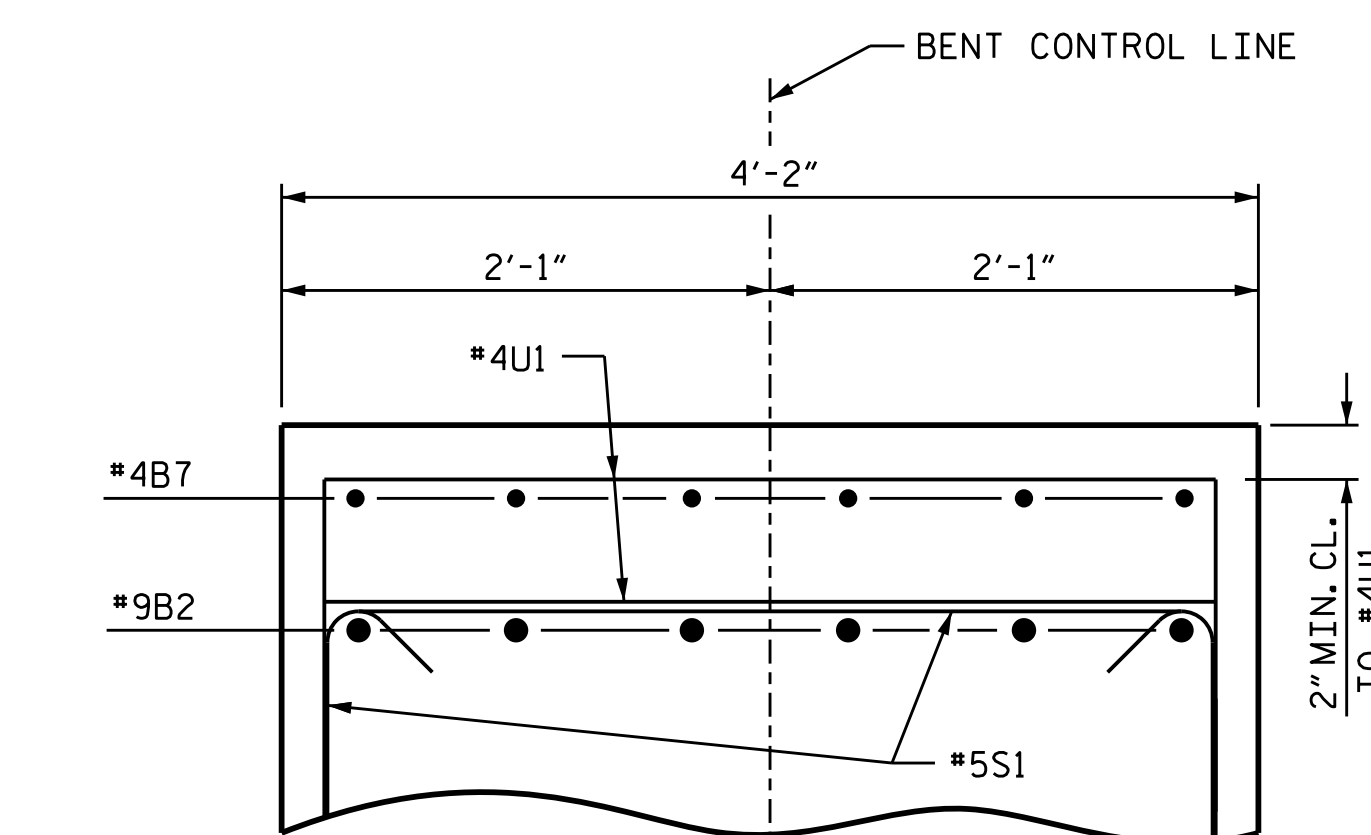
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37	
1			3			TOTAL SHEETS	
2			4			46	



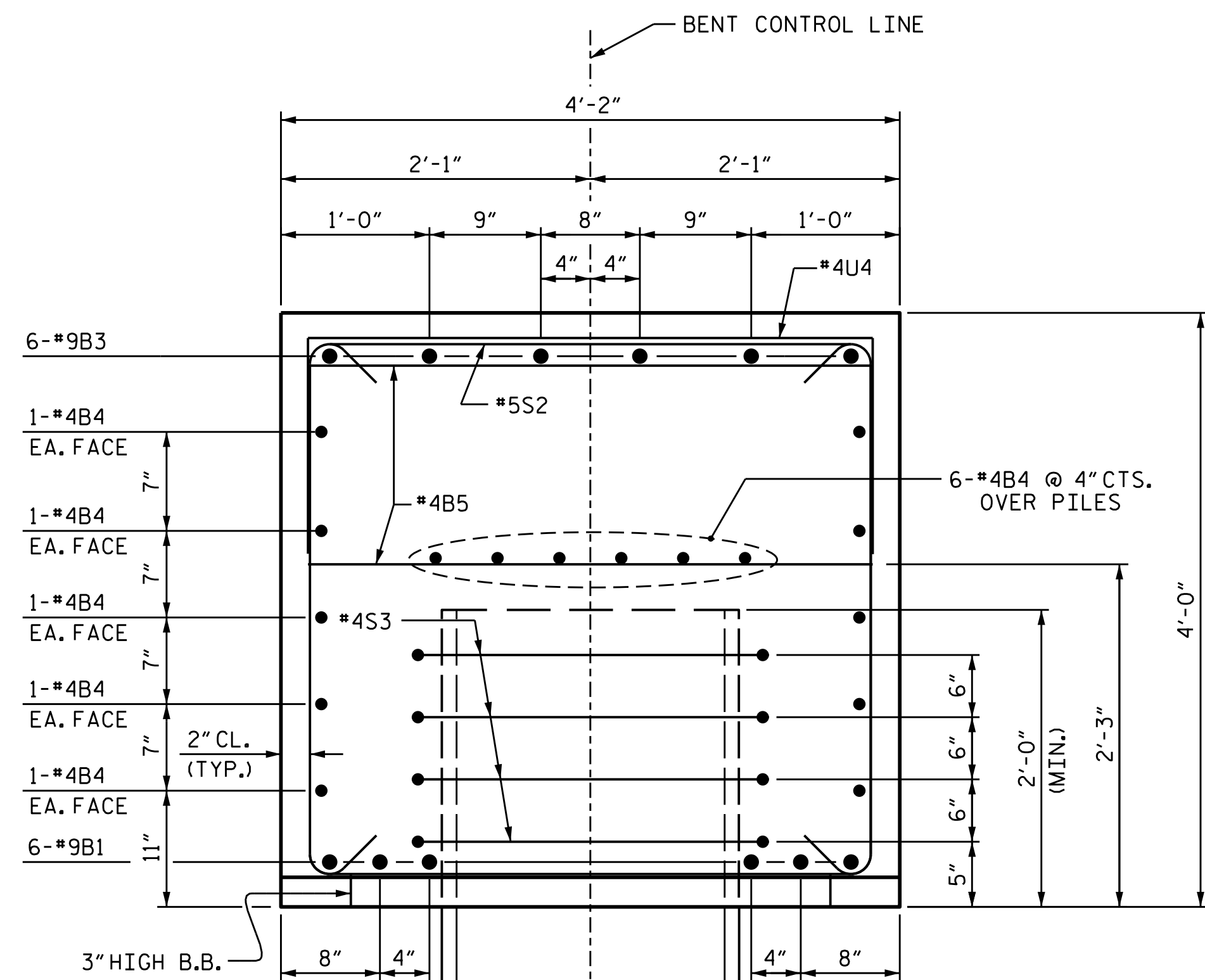
SECTION B-B



SECTION C-C

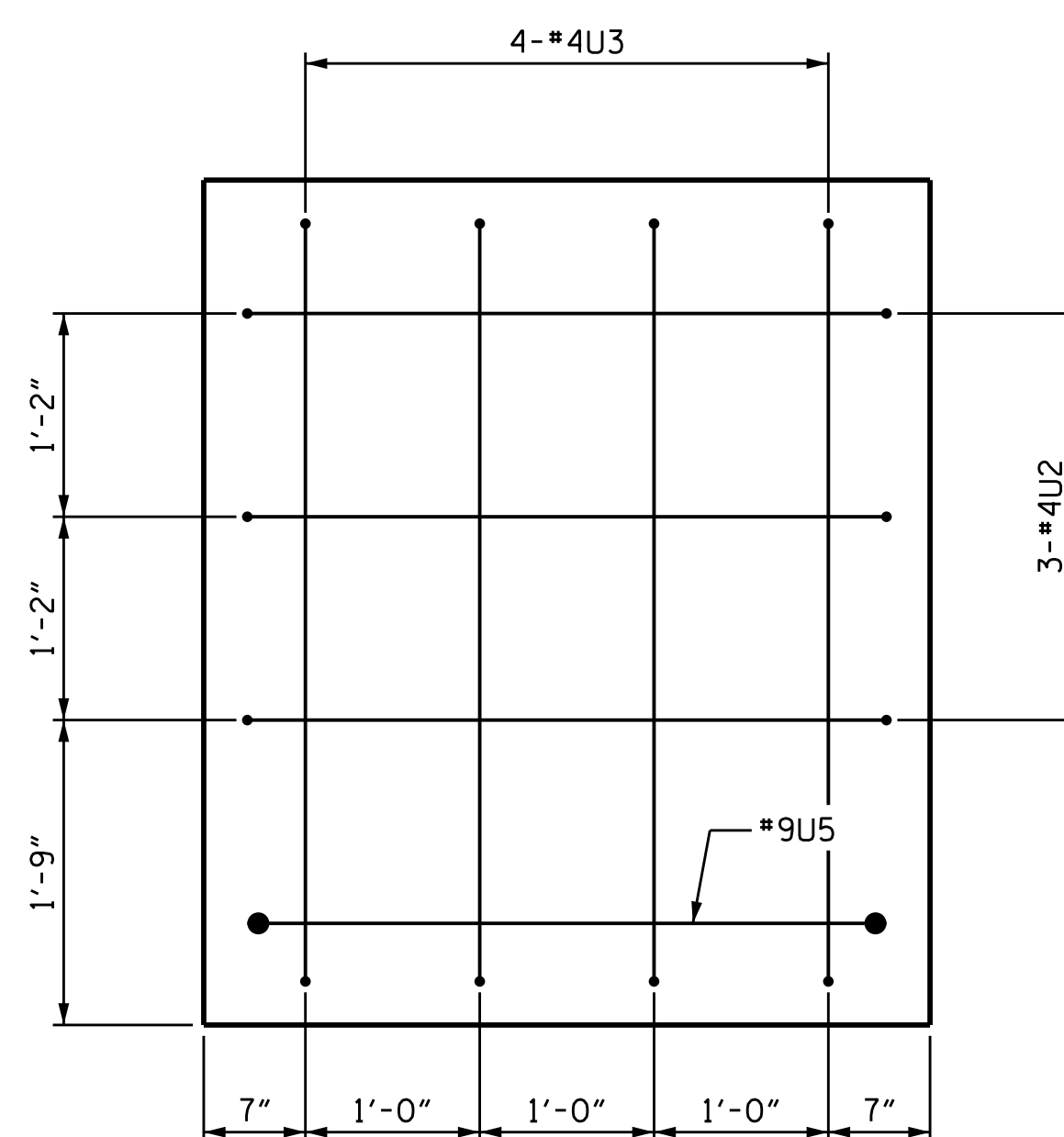


SECTION D-D

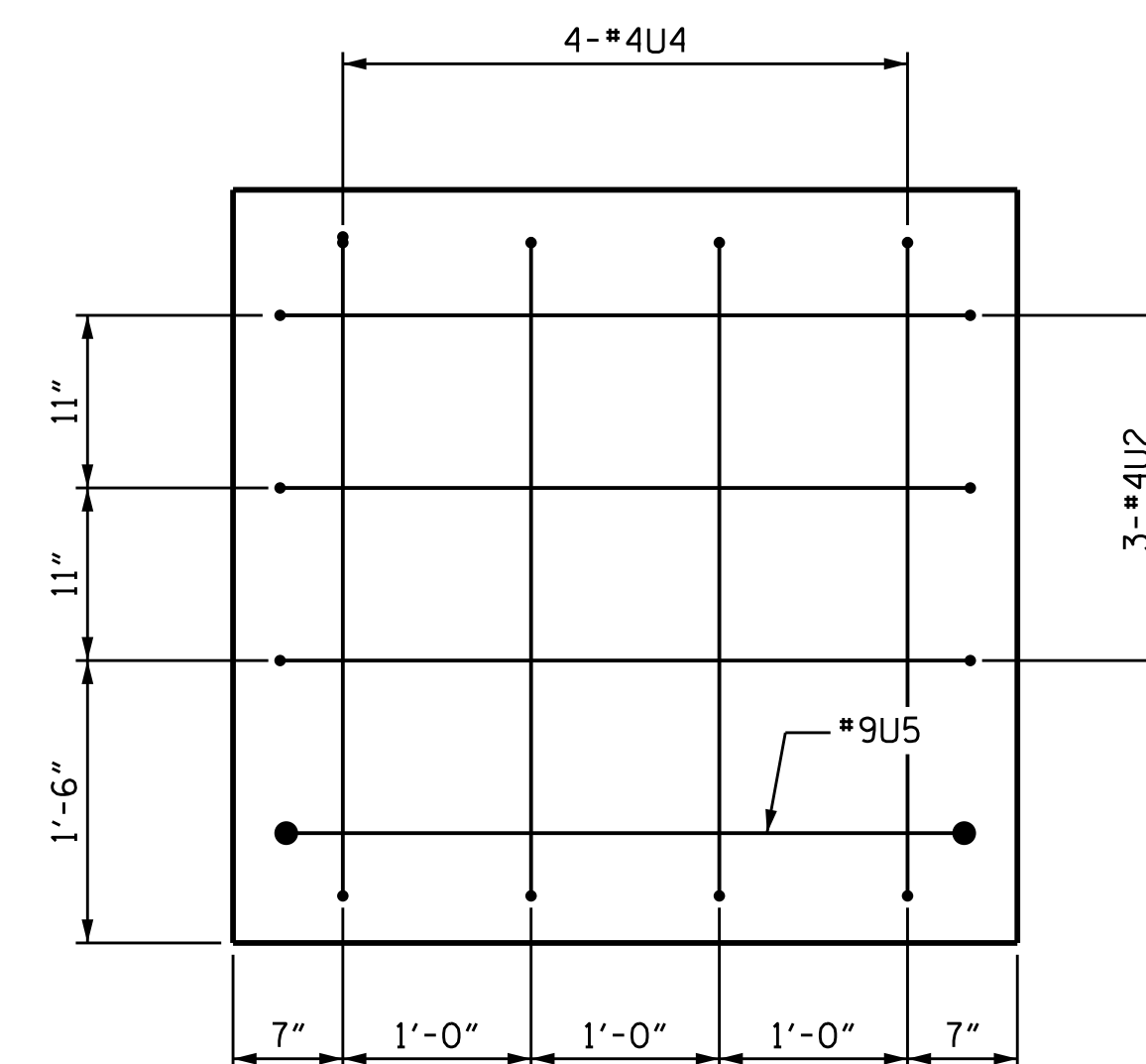


SECTION A-A

CL CAP & PP 24 X 0.625 GALVANIZED STEEL PIPE PILE



SECTION X-X



SECTION Y-Y

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 5					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	STR	35'-8"	728
B2	6	#9	1	26'-3"	536
B3	6	#9	1	20'-8"	422
B4	32	#4	STR	19'-1"	408
B5	12	#4	STR	3'-10"	31
B6	6	#4	STR	10'-4"	41
B7	6	#4	STR	4'-3"	17
S1	28	#5	2	12'-7"	367
S2	9	#5	2	12'-0"	113
S3	24	#4	3	10'-8"	171
U1	36	#4	4	6'-10"	164
U2	6	#4	4	6'-8"	27
U3	4	#4	4	7'-4"	20
U4	4	#4	4	6'-6"	17
U5	2	#9	4	11'-0"	75
REINFORCING STEEL					3,137 LBS.
CLASS A CONCRETE					
POUR #1 CAP					▲ 21.6 C.Y.
TOTAL CLASS A CONCRETE					▲ 21.6 C.Y.
PP 24 x 0.625 GALVANIZED STEEL PIPE PILES					
No. 6					510 LIN. FT.
PILE REDRIVES					6 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 24 X 0.625 GALVANIZED STEEL PILES					6 EA.

▲ CONCRETE DISPLACED BY THE PP 24 x 0.625 GALVANIZED STEEL PIPE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY OF CLASS 'A' CONCRETE FOR THE BENT CAP.

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-
 SHEET 2 OF 2

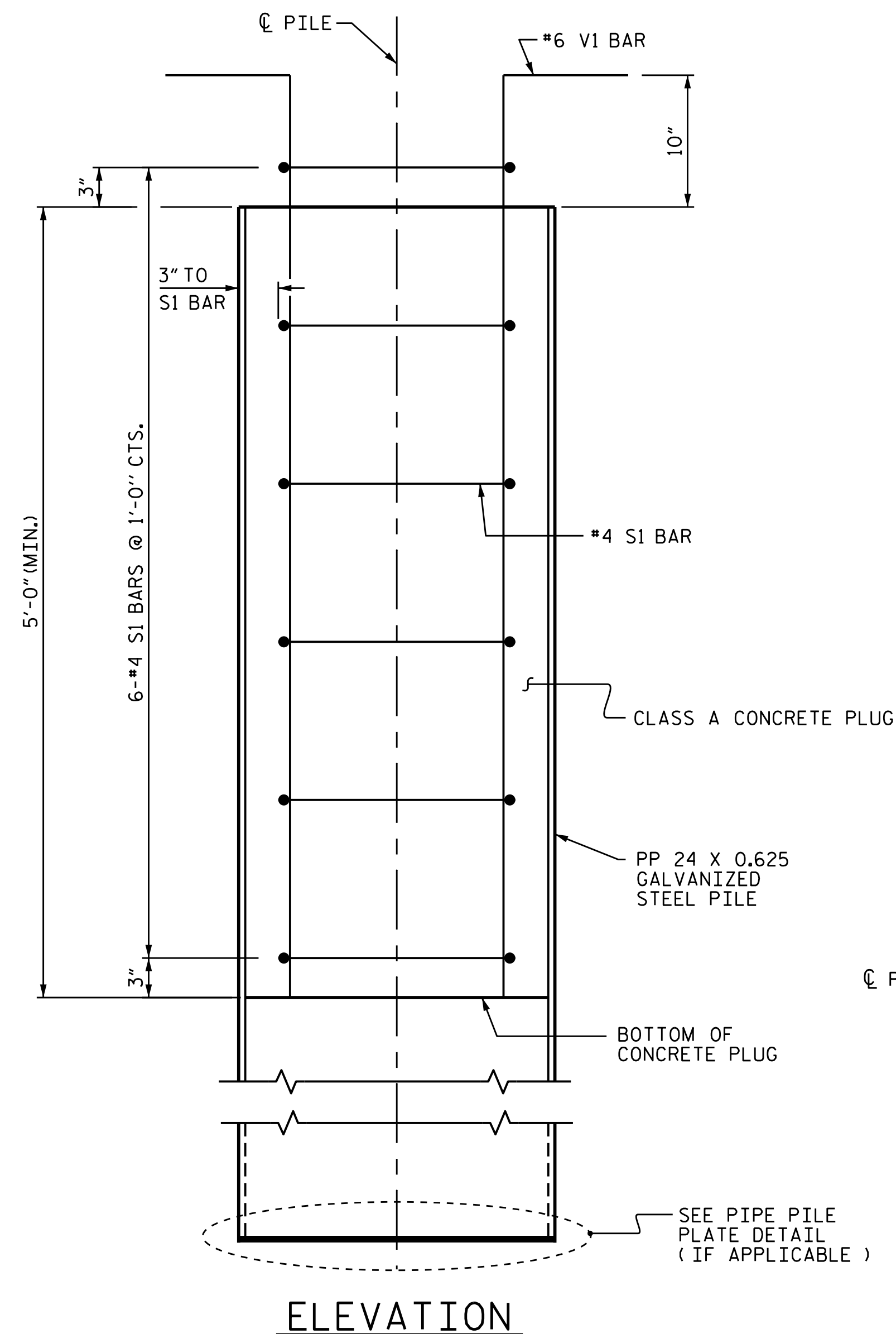
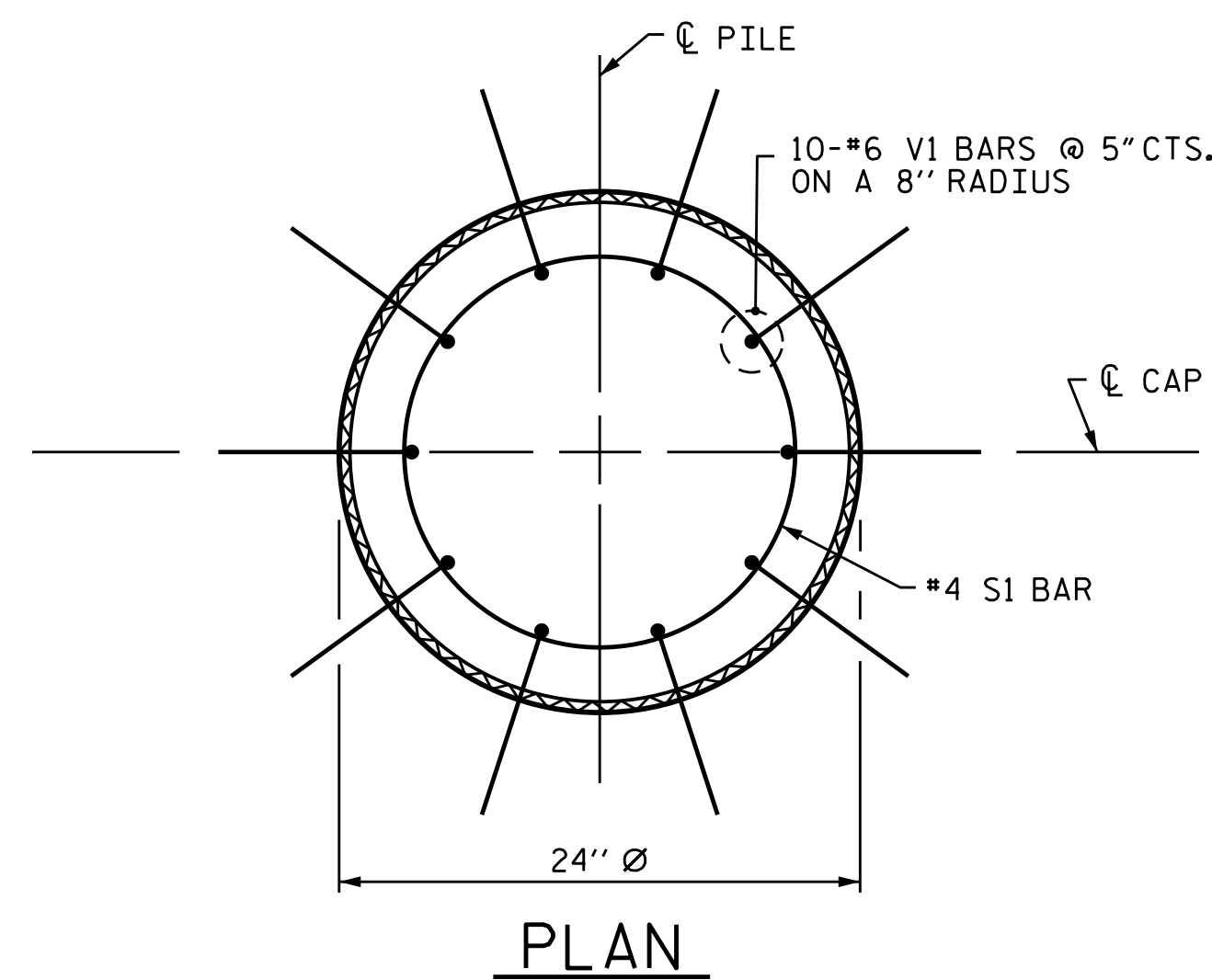


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 5

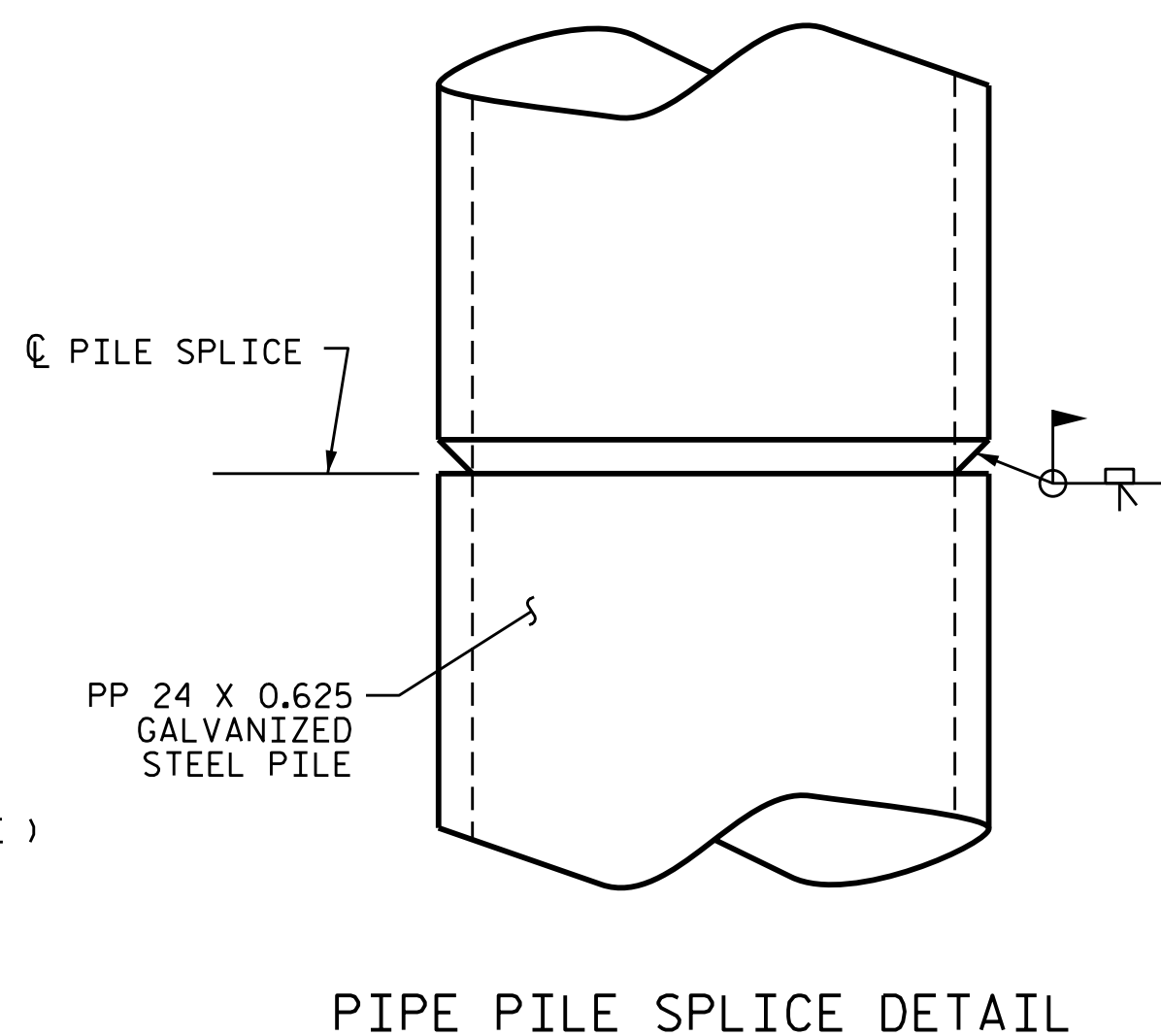
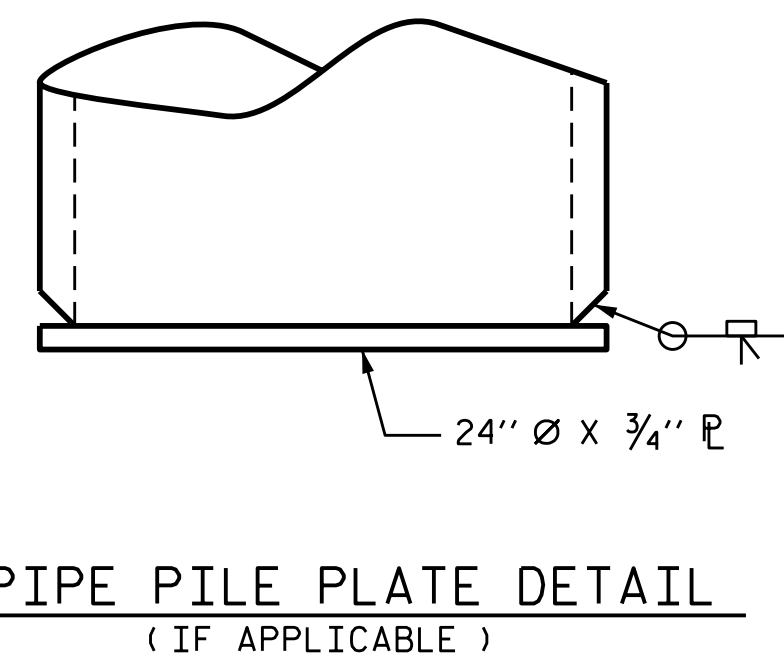
DRAWN BY: M.K. BEARD DATE: 7/17
 CHECKED BY: M. AHMED DATE: 11/17
 DESIGN ENGINEER OF RECORD: K.P. NEWTON DATE: 12/17

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38	
1			3			TOTAL SHEETS 46	
2			4				



PP 24 X 0.625 GALVANIZED STEEL PILE
(OPEN OR CLOSED END)



NOTES

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

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED, GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

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

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

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

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 24 X 0.625 GALVANIZED STEEL PILES.

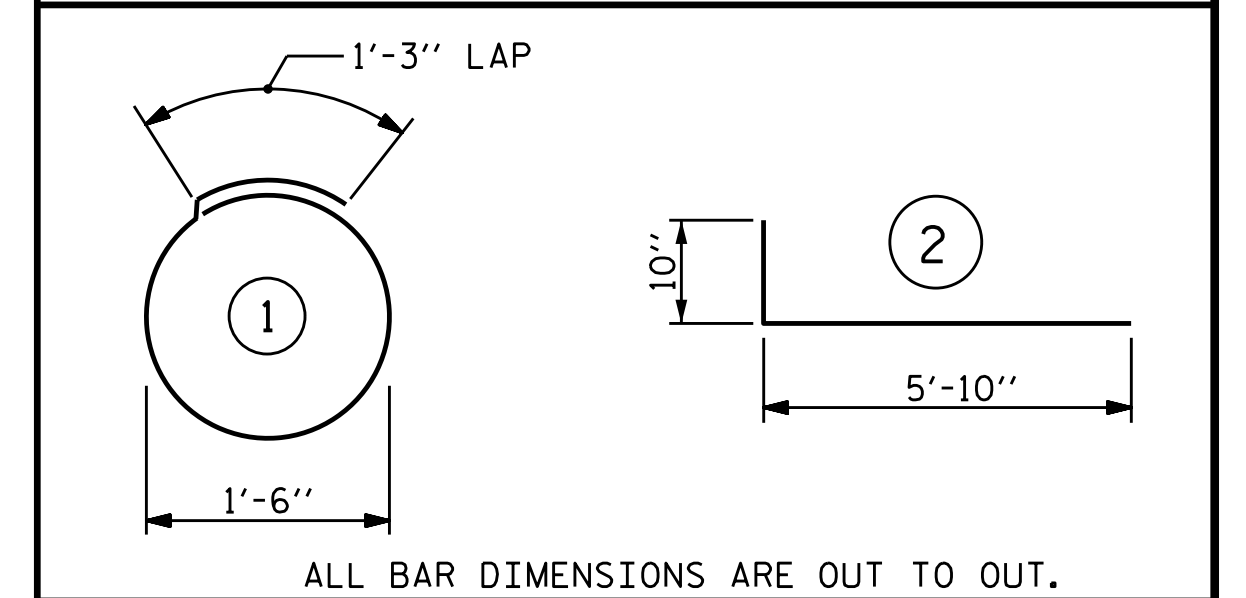
**BILL OF MATERIAL FOR ONE
PP 24 X 0.625 GALVANIZED STEEL PILE**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	6'-0"	24
V1	10	#6	2	6'-8"	100
REINFORCING STEEL =				124	lbs

CLASS A CONCRETE

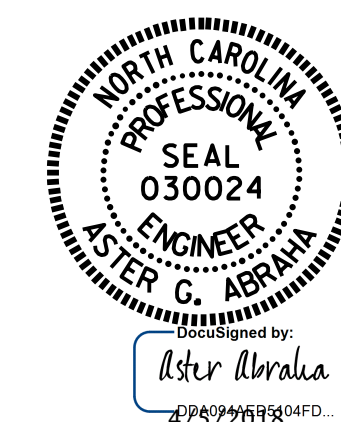
5'-0" MINIMUM PLUG	0.5 CY
--------------------	--------

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4932
EDGECOMBE COUNTY
STATION: 25+00.00 -L-

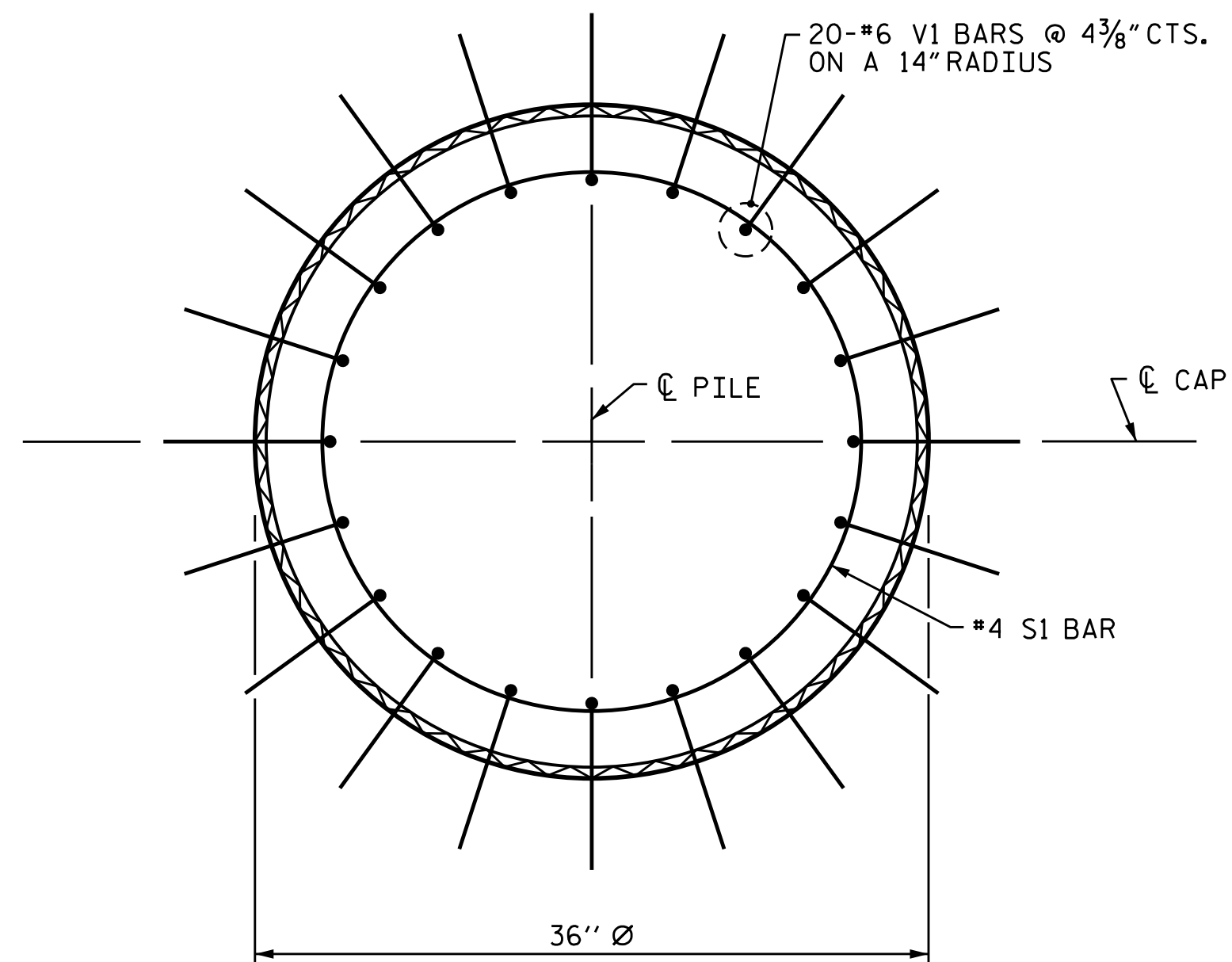


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
24" STEEL PIPE PILE

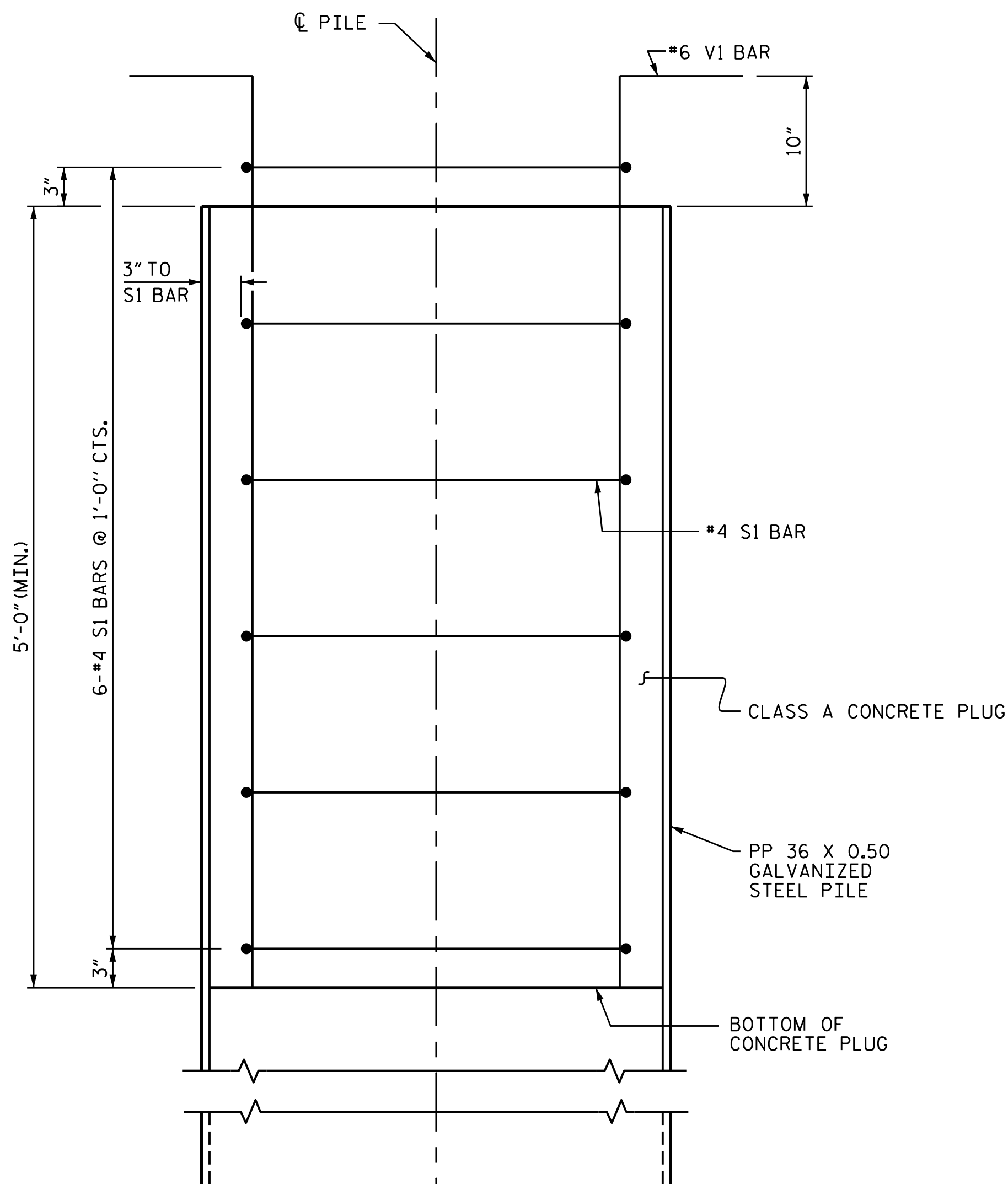
ASSEMBLED BY : M.K. BEARD	DATE : 07/17
CHECKED BY : M. AHMED	DATE : 11/17
DRAWN BY : TLA 8/05	ADDED 10/1/05
CHECKED BY : GM 9/05	REV. 5/1/06R MAA/KMM
	REV. 10/1/11 MAA/GM

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			46



PLAN



ELEVATION

PP 36 X 0.50 GALVANIZED STEEL PILE

NOTES

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

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED.

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

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

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

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 36 X 0.50 GALVANIZED STEEL PILES.

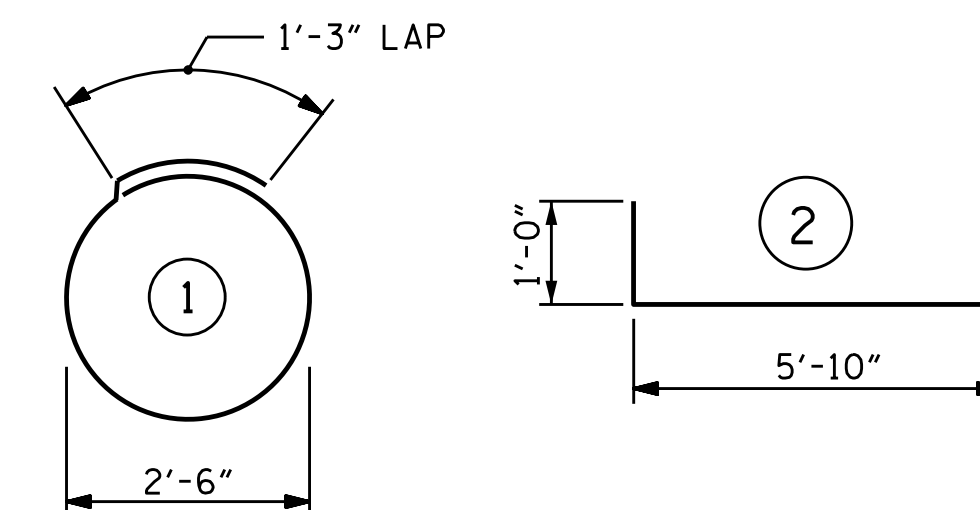
BILL OF MATERIAL FOR ONE PP 36 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	9'-2"	37
V1	20	#6	2	6'-10"	205
REINFORCING STEEL =				242	lbs

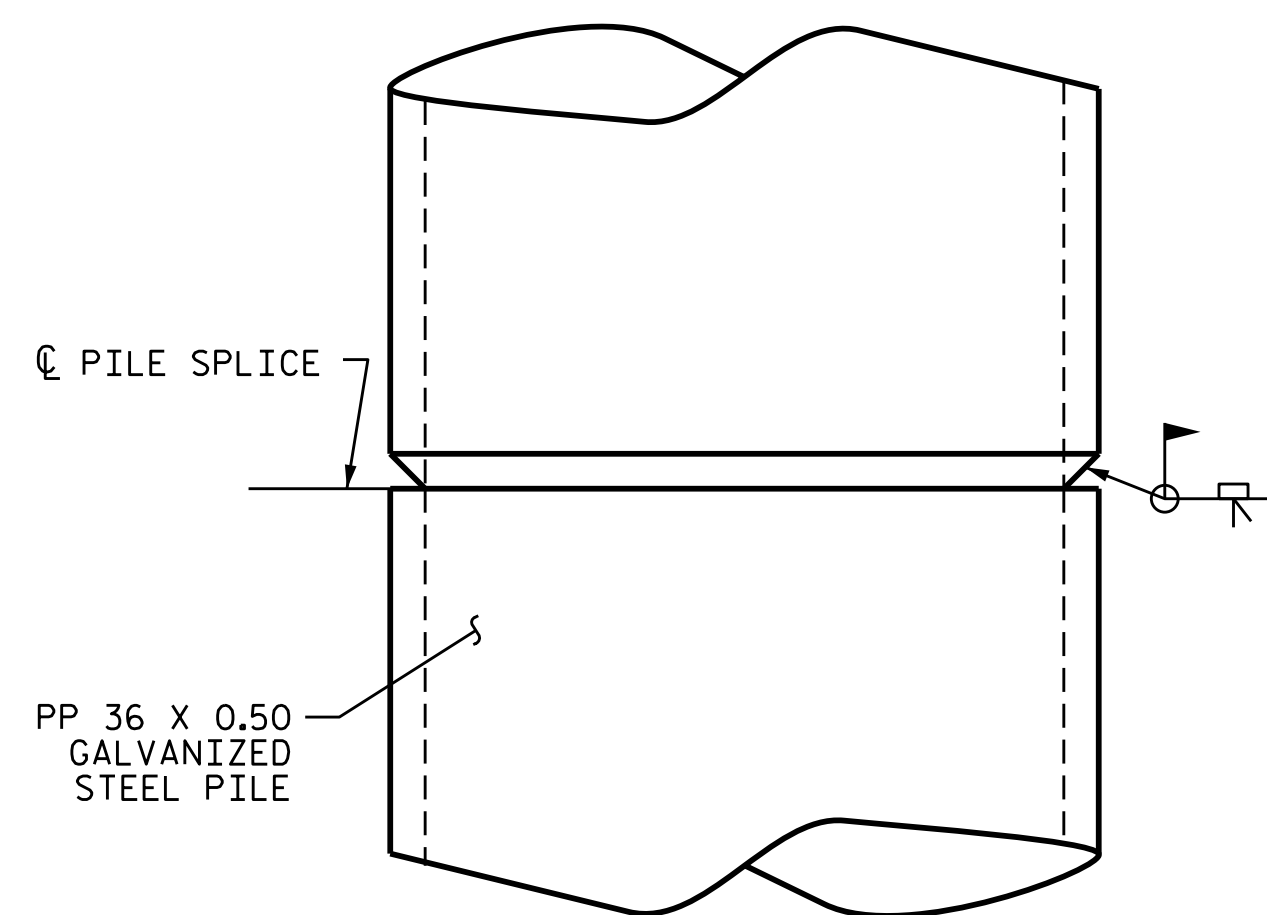
CLASS A CONCRETE

5'-0" MINIMUM PLUG 1.2 CY

BAR TYPES

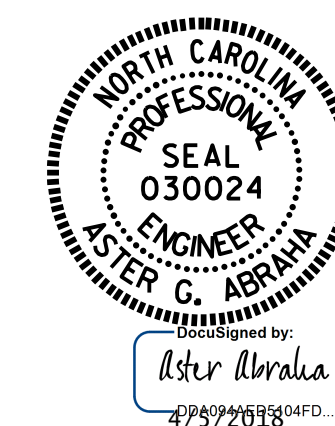


ALL BAR DIMENSIONS ARE OUT TO OUT.



PIPE PILE SPLICE DETAIL

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

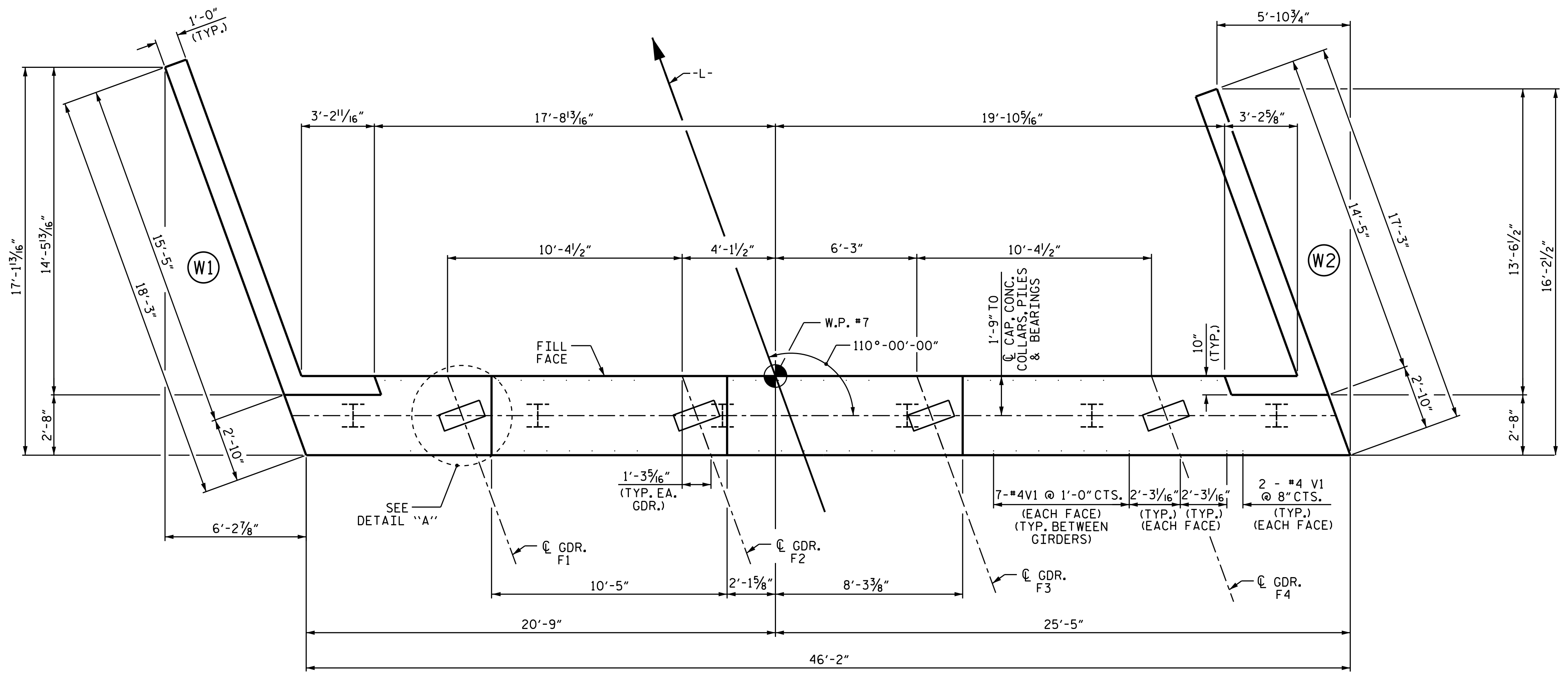


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 36" STEEL PIPE PILE

DRAWN BY : M.K. BEARD DATE : 7/17
 CHECKED BY : M. AHMED DATE : 11/17
 DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE : 12/17

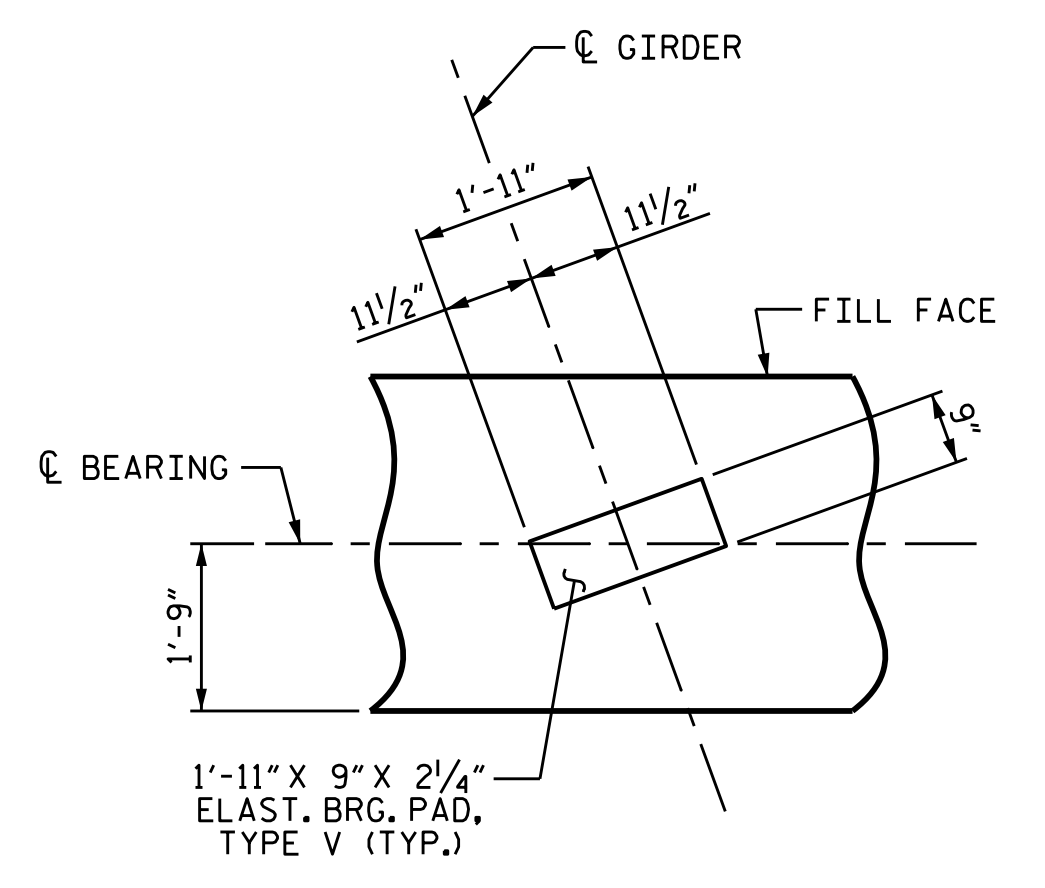
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-40
2			4			46

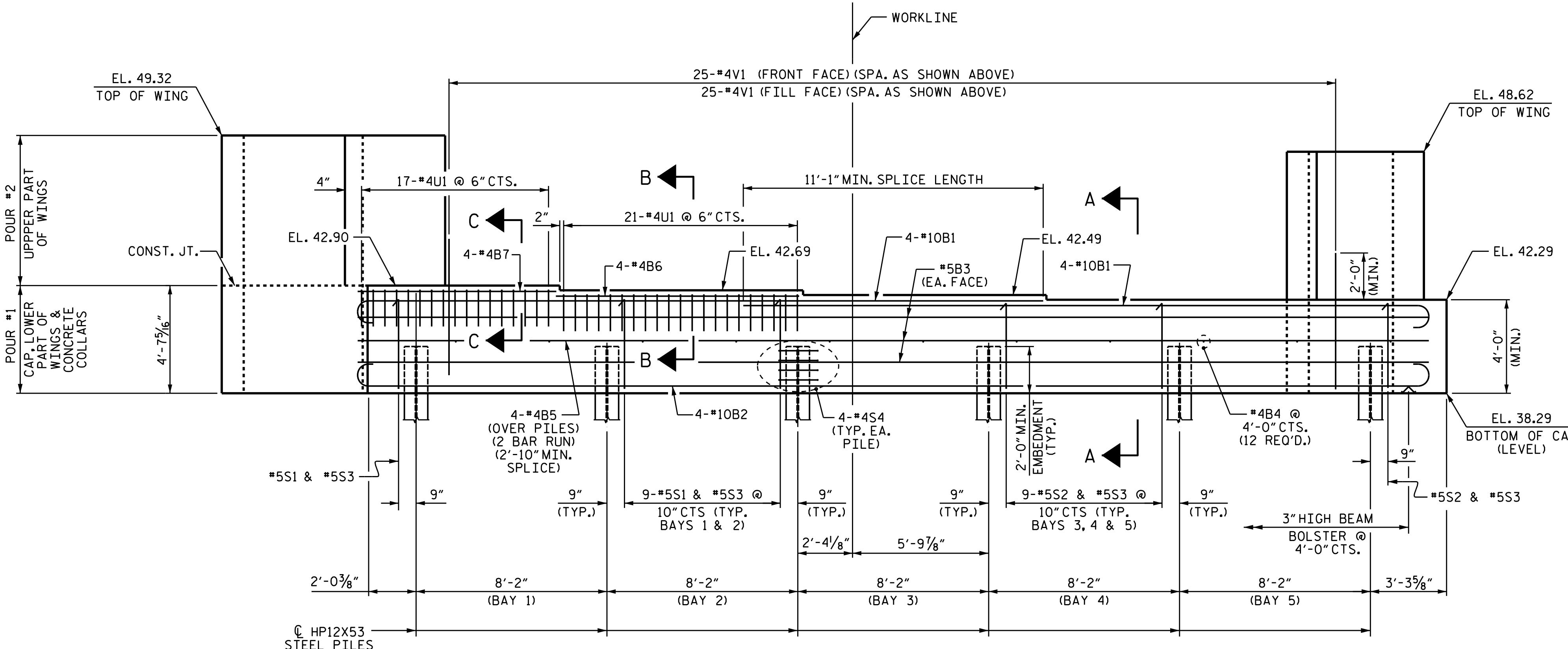


PLAN

NOTES
 THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A"
 (TYP. EA. GIRDER)



ELEVATION

CONCRETE COLLARS FOR STEEL PILES
 NOT SHOWN IN PLAN & ELEVATION VIEWS
 FOR CLARITY

PROJECT NO. B-4932
 EDGEcombe COUNTY
 STATION: 25+00.00 -L-
 SHEET 1 OF 3

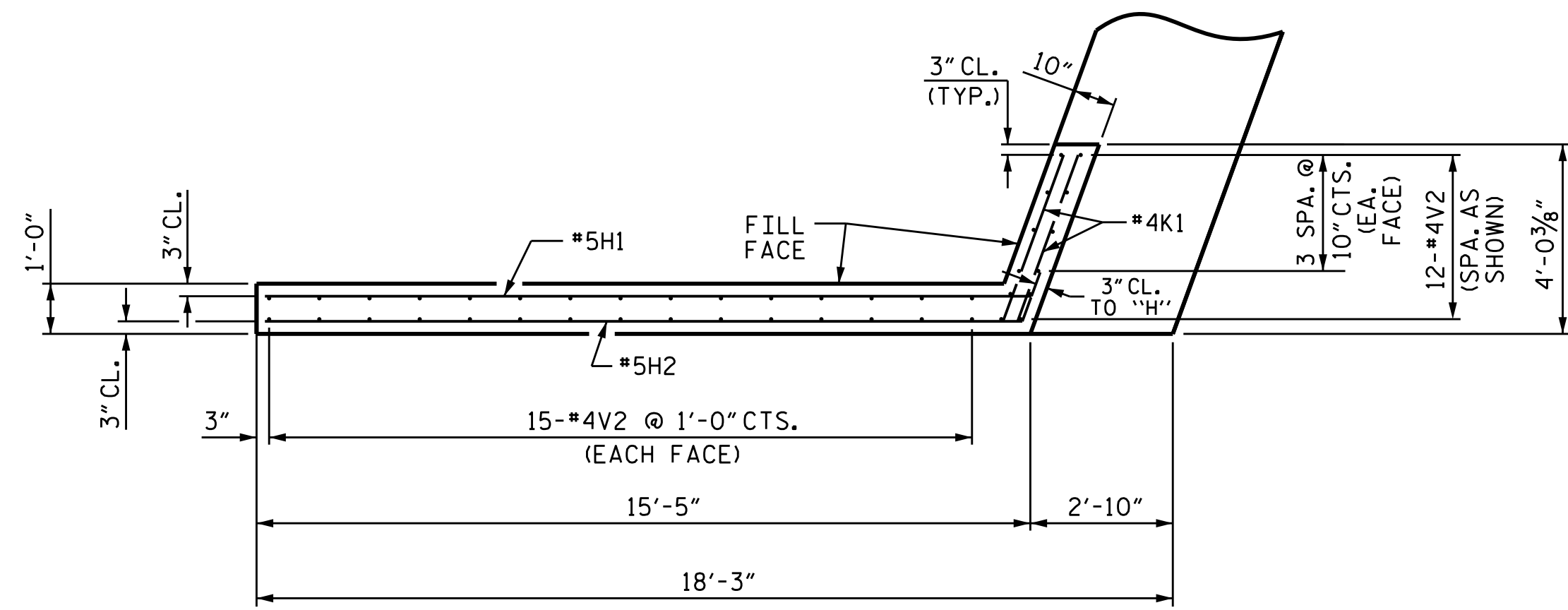
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 (INTEGRAL)



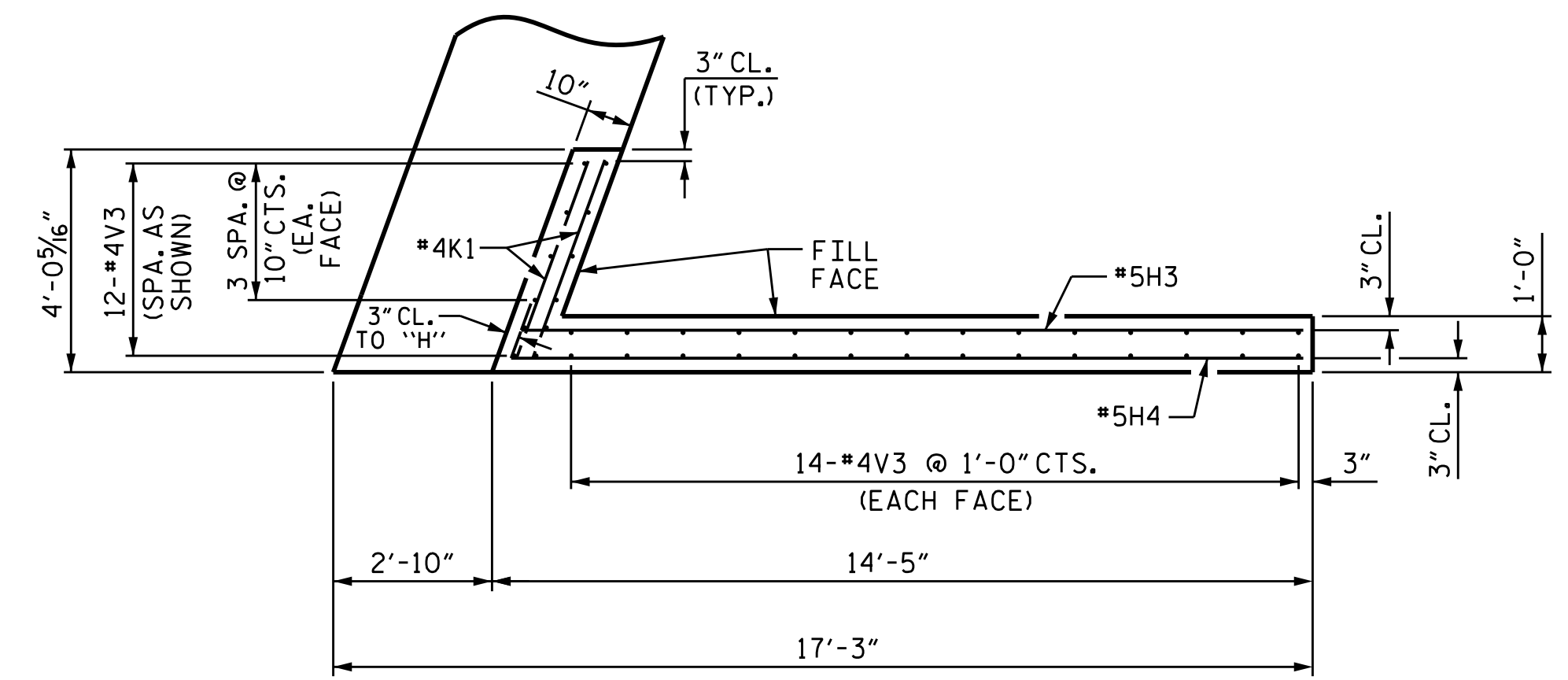
DRAWN BY : M.K. BEARD DATE : 07/17
 CHECKED BY : S. WANCE DATE : 11/17
 DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE : 12/17

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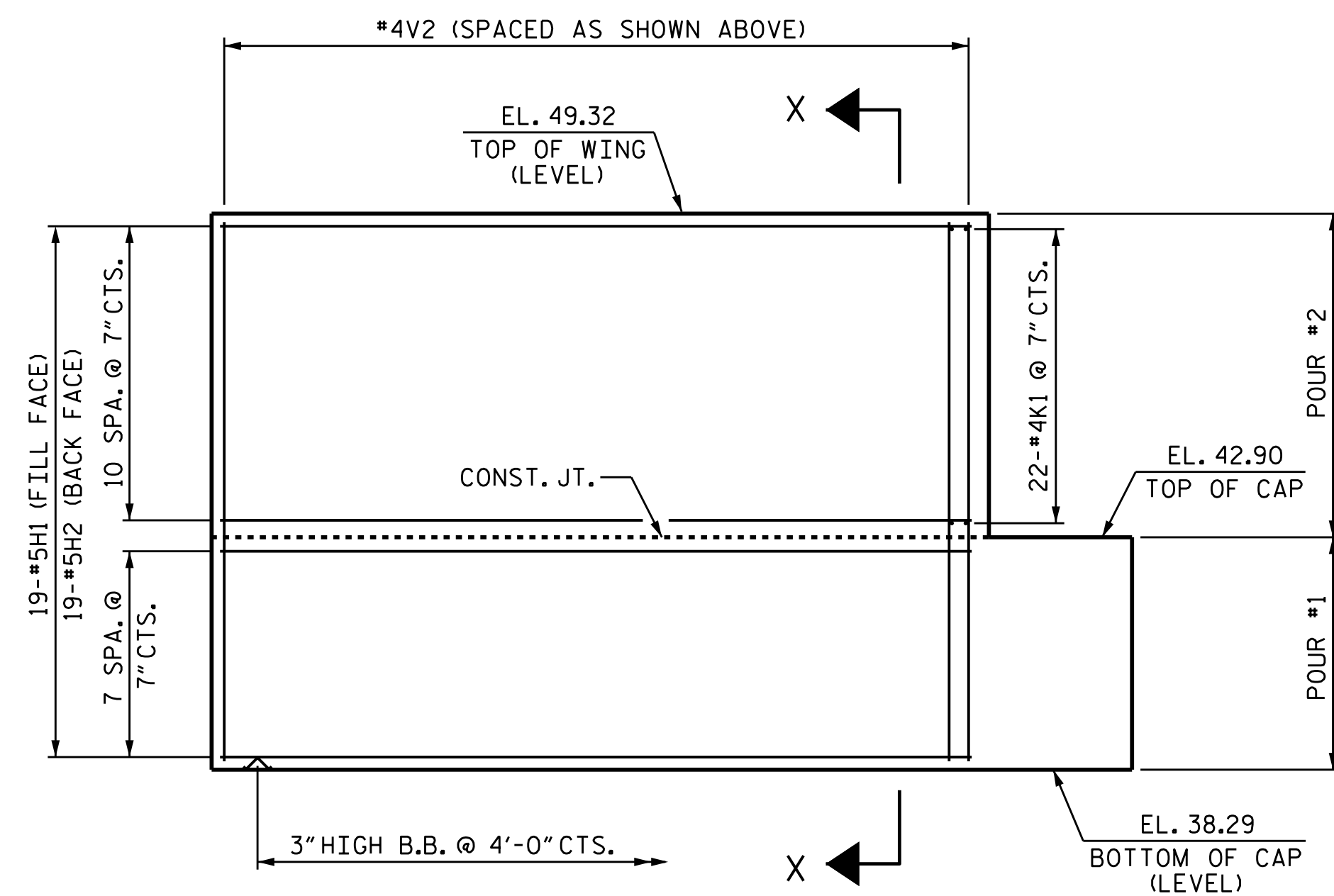
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			46



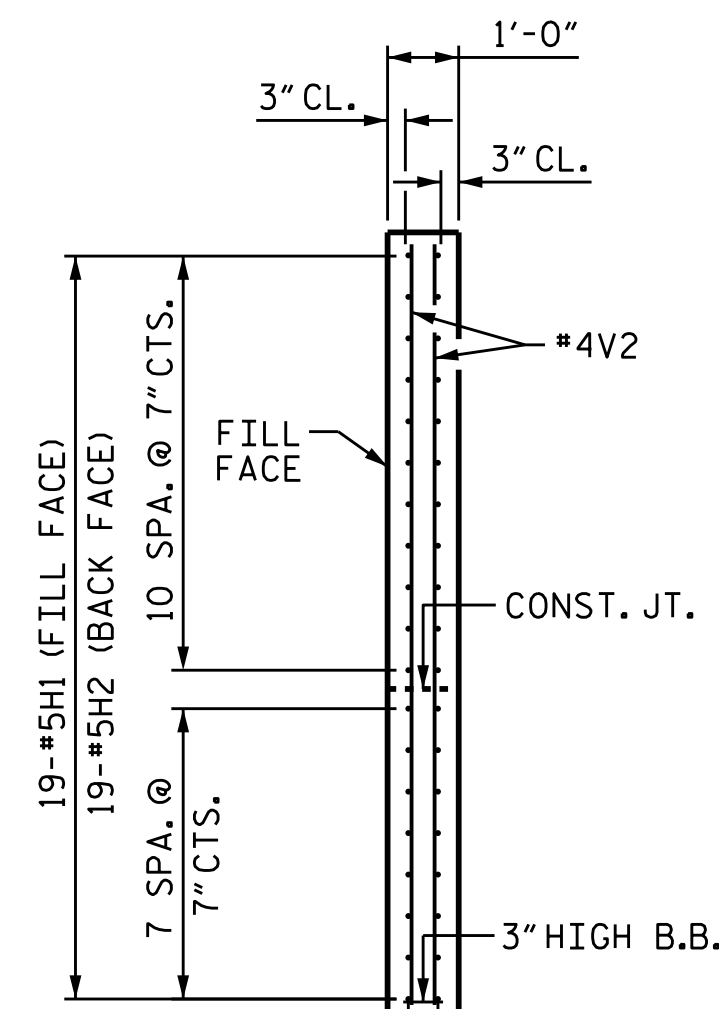
PLAN OF WING W1



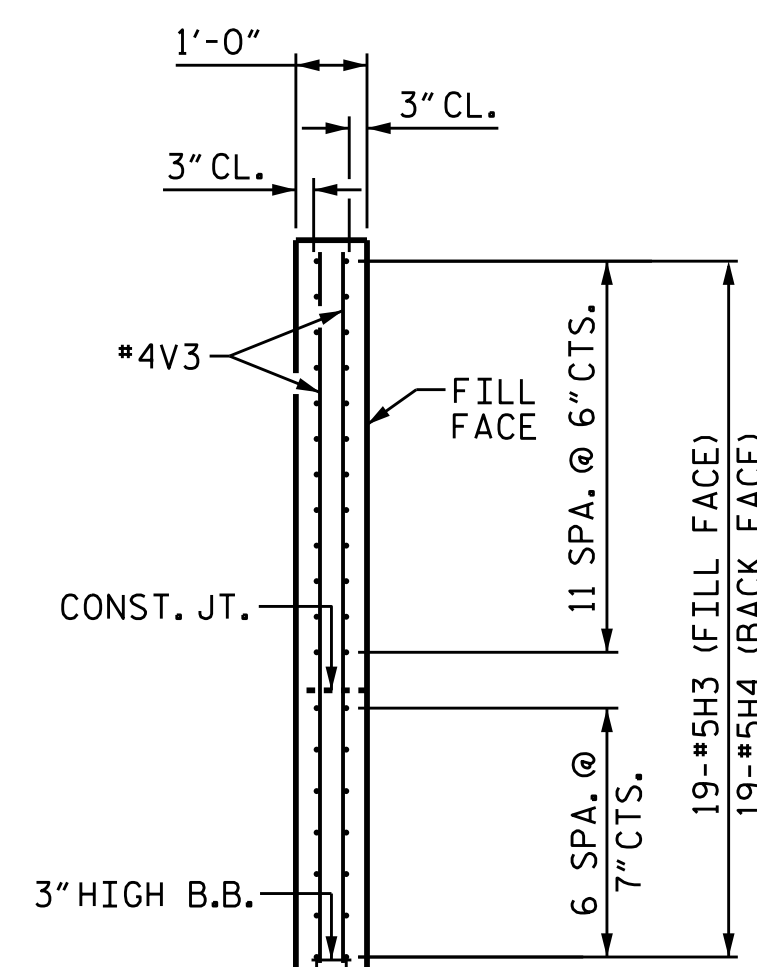
PLAN OF WING W2



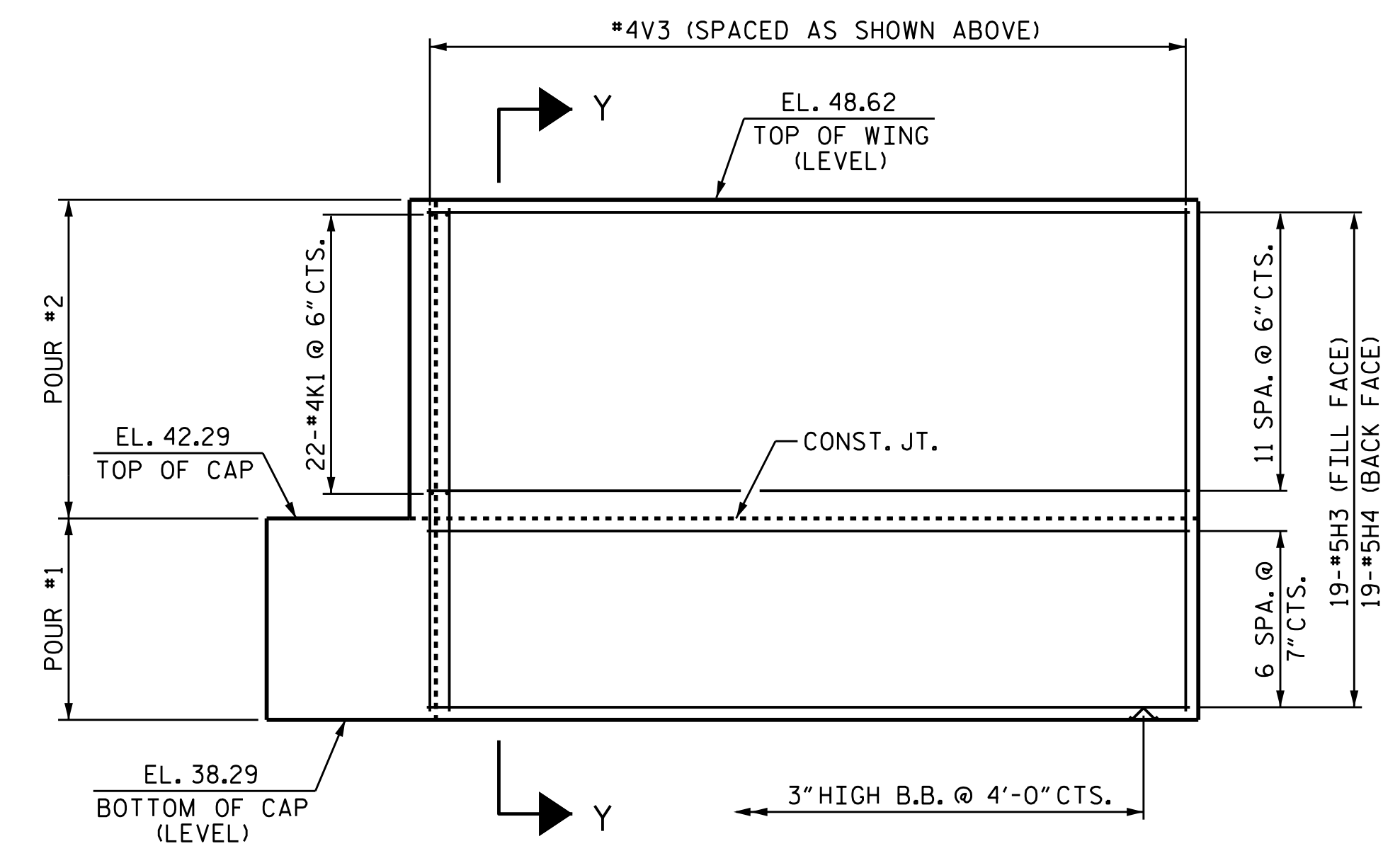
ELEVATION OF WING W1



SECTION X-X



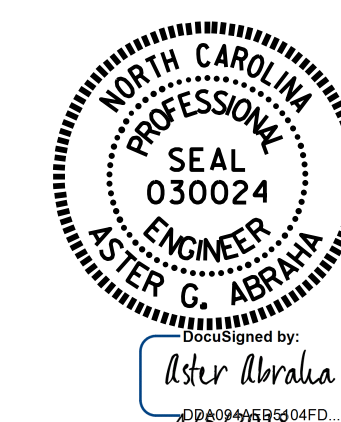
SECTION Y-Y



ELEVATION OF WING W2

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 2 OF 3

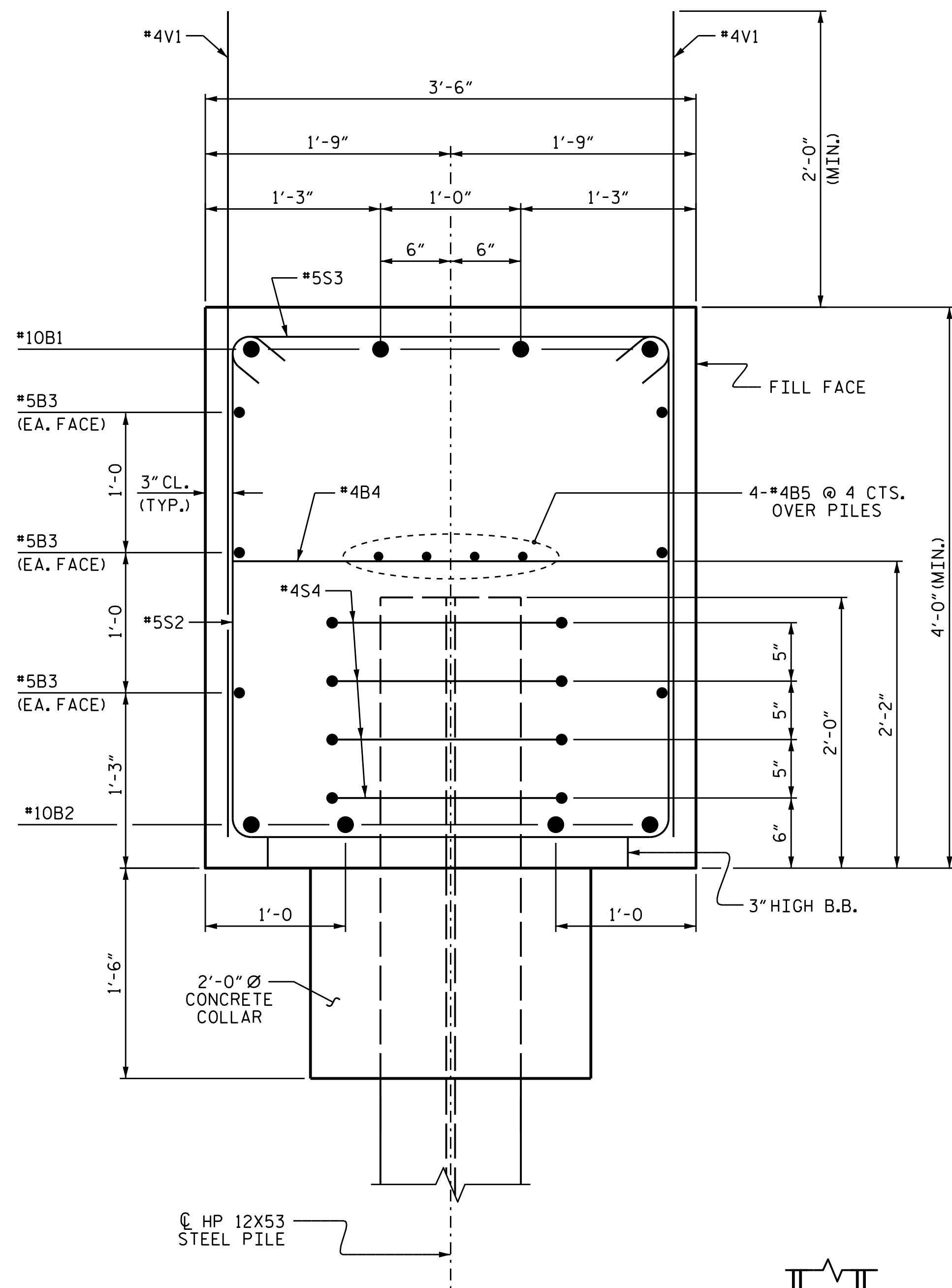


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 (INTEGRAL)

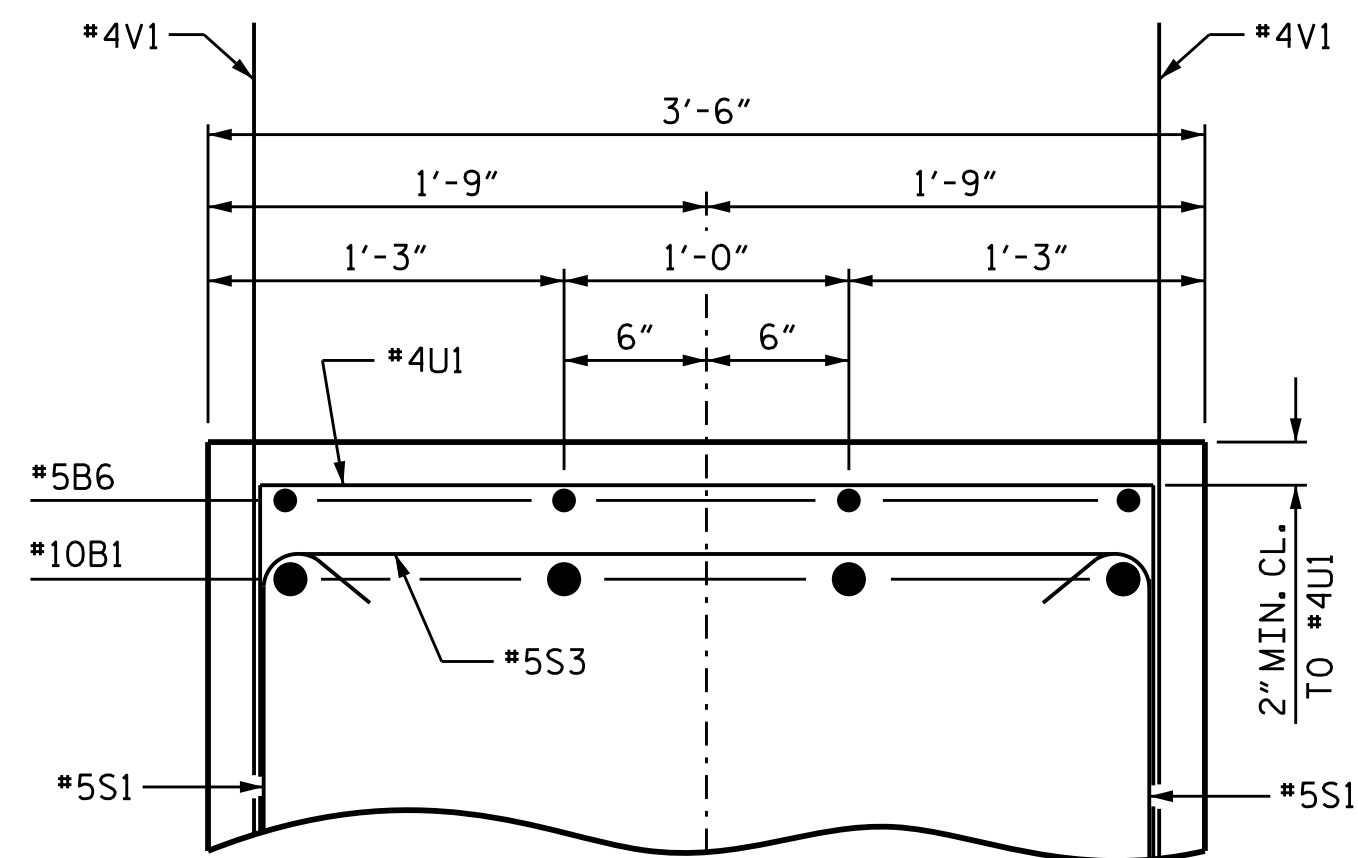
DRAWN BY: M.K. BEARD DATE: 07/17
 CHECKED BY: S. WANCE DATE: 11/17
 DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE: 12/17

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

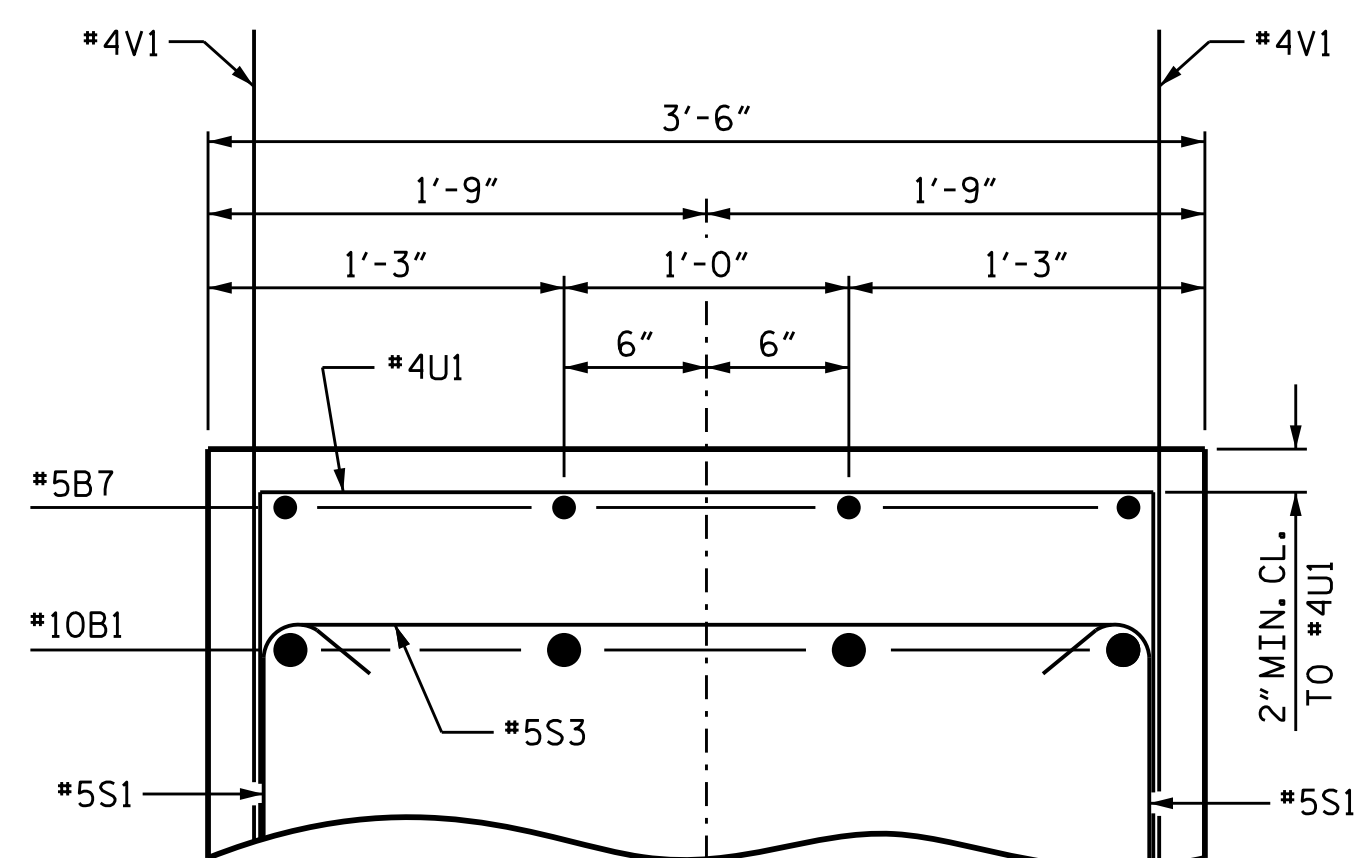
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			46



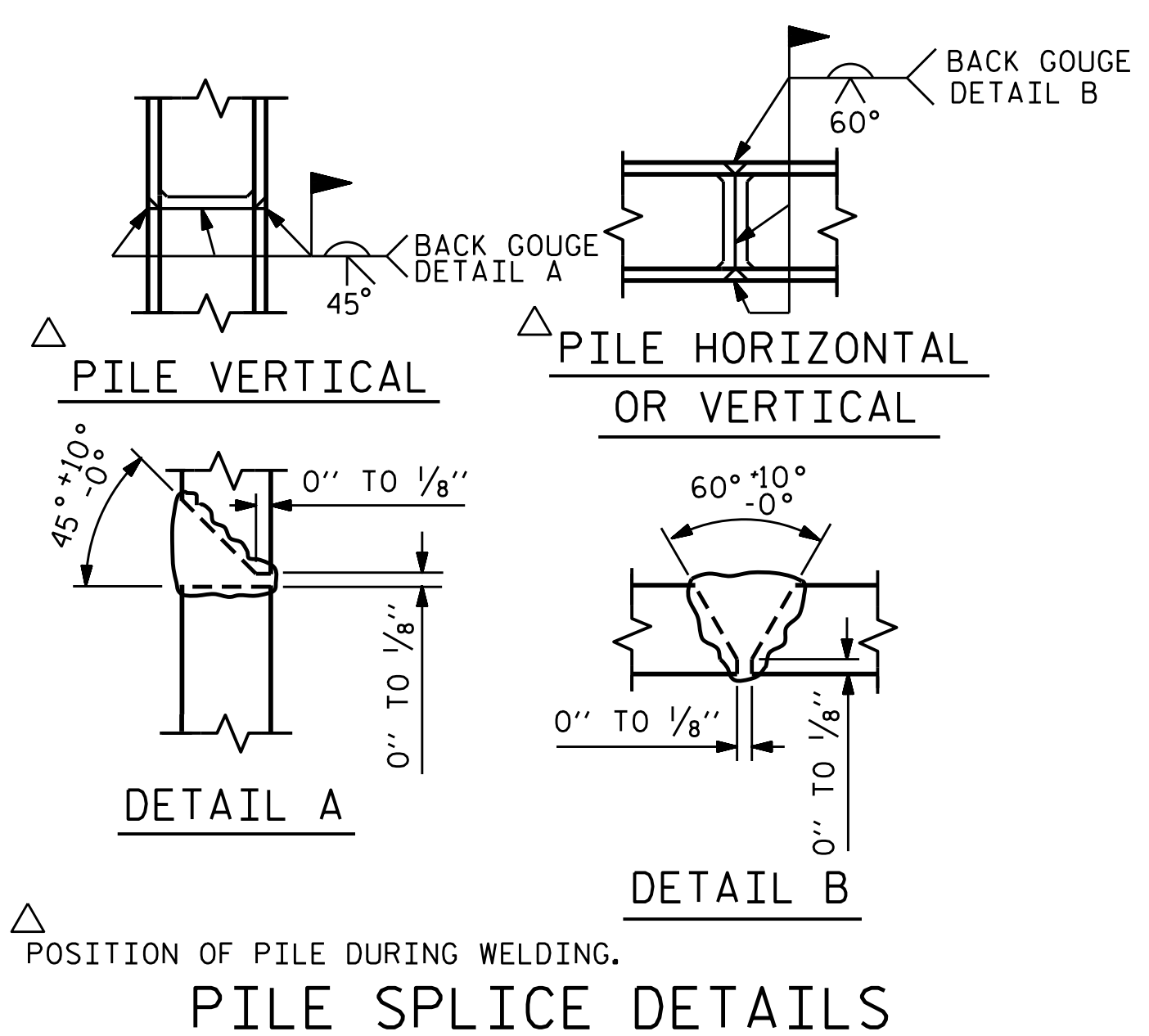
SECTION A-A



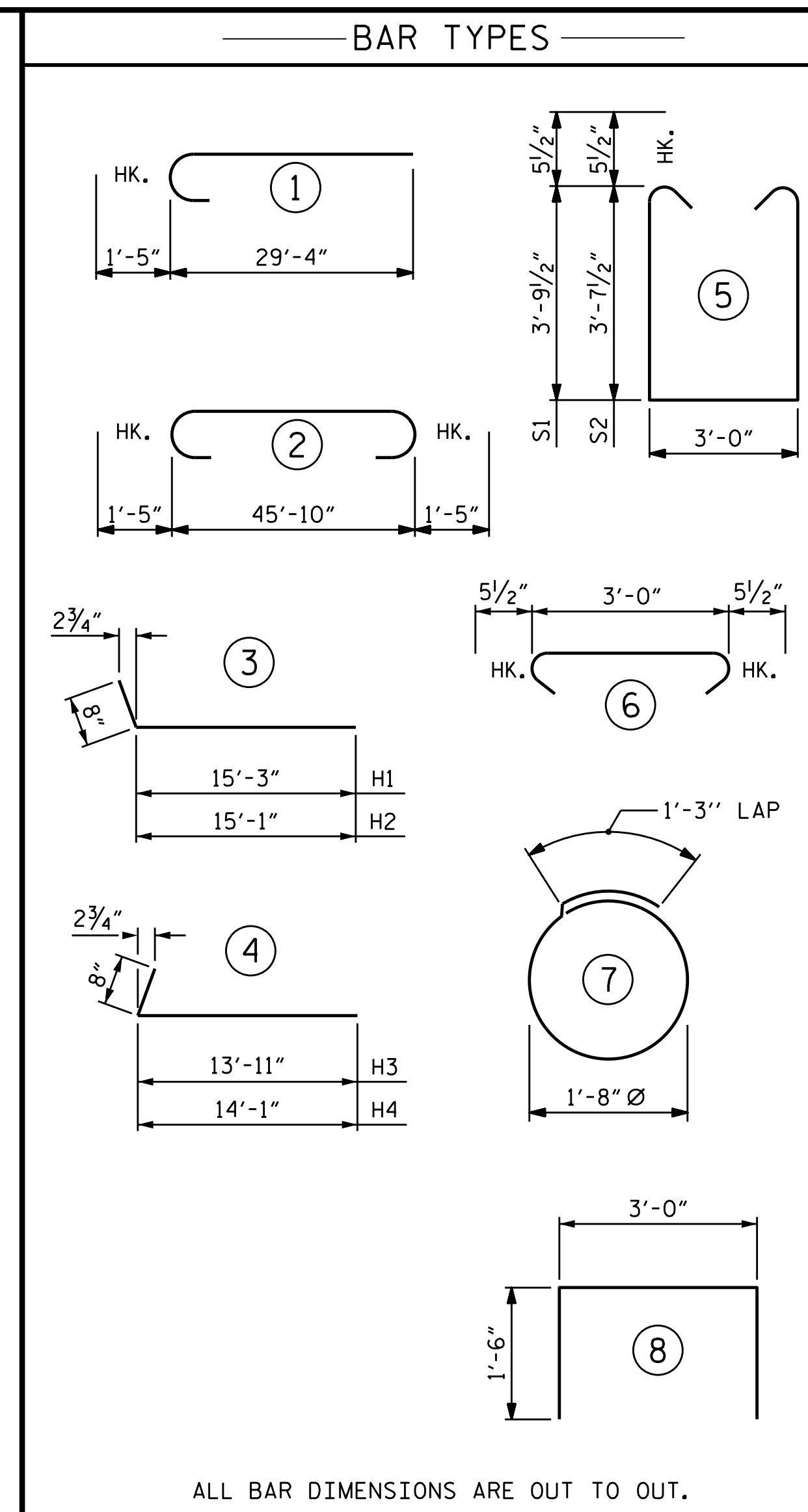
SECTION B-B



SECTION C-C

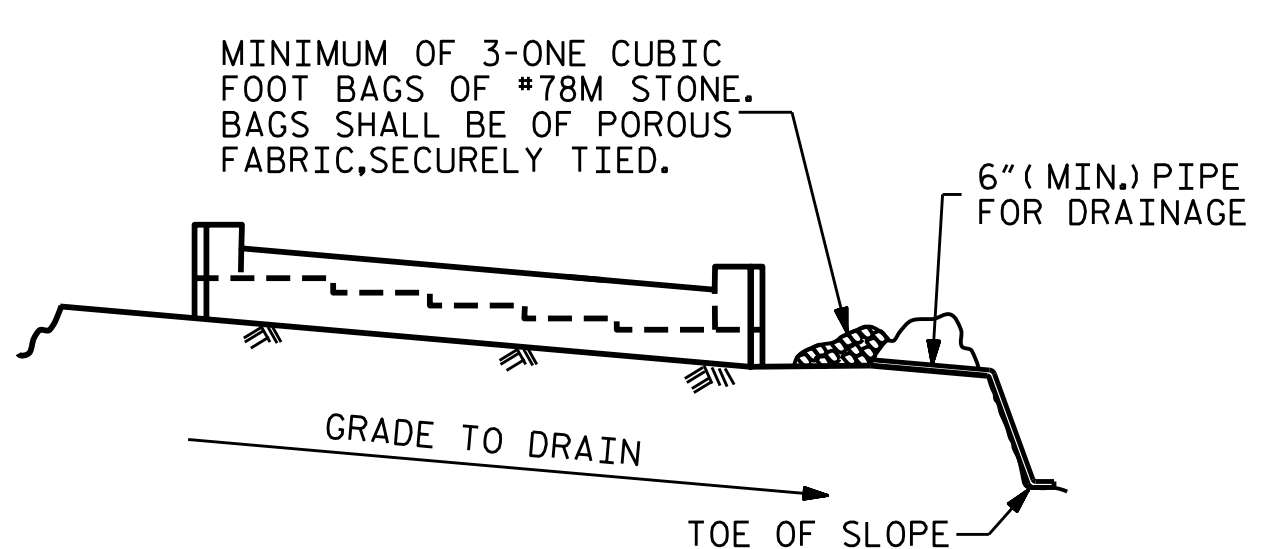


PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#10	1	30'-9"	1059	
B2	#10	2	48'-8"	838	
B3	#5	STR	45'-10"	287	
B4	#4	STR	3'-2"	25	
B5	#4	STR	24'-6"	131	
B6	#4	STR	10'-5"	28	
B7	#4	STR	7'-11"	21	
H1	#5	3	15'-11"	315	
H2	#5	3	15'-9"	312	
H3	#5	4	14'-7"	289	
H4	#5	4	14'-9"	292	
K1	#54	STR	3'-10"	113	
S1	#5	5	11'-6"	228	
S2	#5	5	11'-2"	326	
S3	#5	6	3'-11"	192	
S4	#4	7	6'-6"	104	
U1	#4	8	6'-0"	152	
V1	#4	STR	5'-10"	195	
V2	#4	STR	10'-8"	299	
V3	#4	STR	9'-11"	265	
REINFORCING STEEL				5,581 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS)				30.9 C.Y.	
POUR #2 (UPPER PART OF WINGS)				8.2 C.Y.	
CLASS A CONCRETE TOTAL				39.1 C.Y.	
HP 12X53 STEEL PILES					
No. 6				330 LIN. FT.	
PILE REDRIVES				6 EA.	
PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES				No. 6	



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 DETRIORATED AND LOST THEIR EFFECTIVENESS.

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

TEMPORARY DRAINAGE AT END BENT



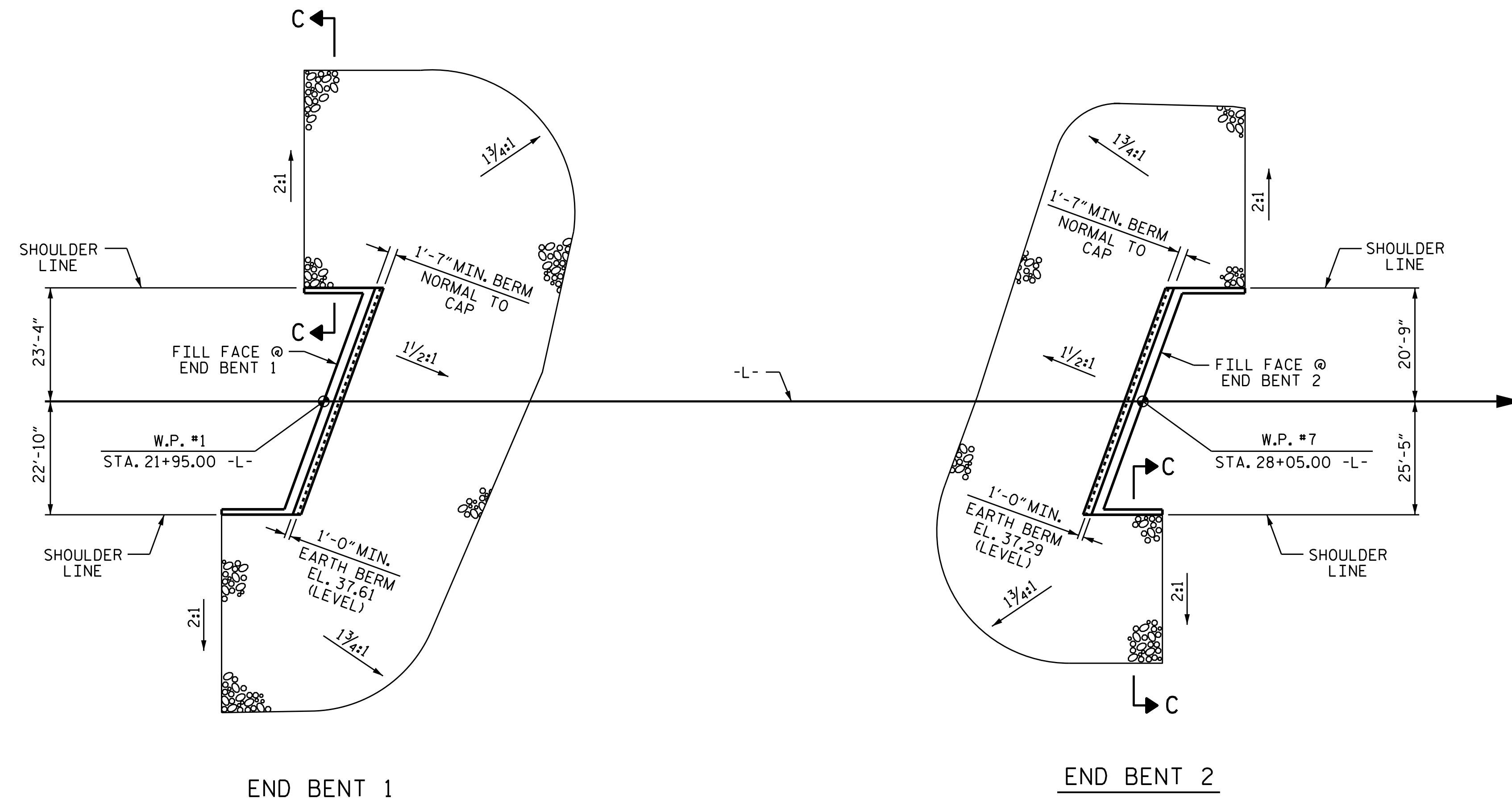
PROJECT NO. B-4932
EDGEcombe COUNTY
 STATION: 25+00.00 -L-
 SHEET 3 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
2			4			46

DRAWN BY: M.K. BEARD DATE: 7/17
 CHECKED BY: S. WANCE DATE: 11/17
 DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE: 12/17

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NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

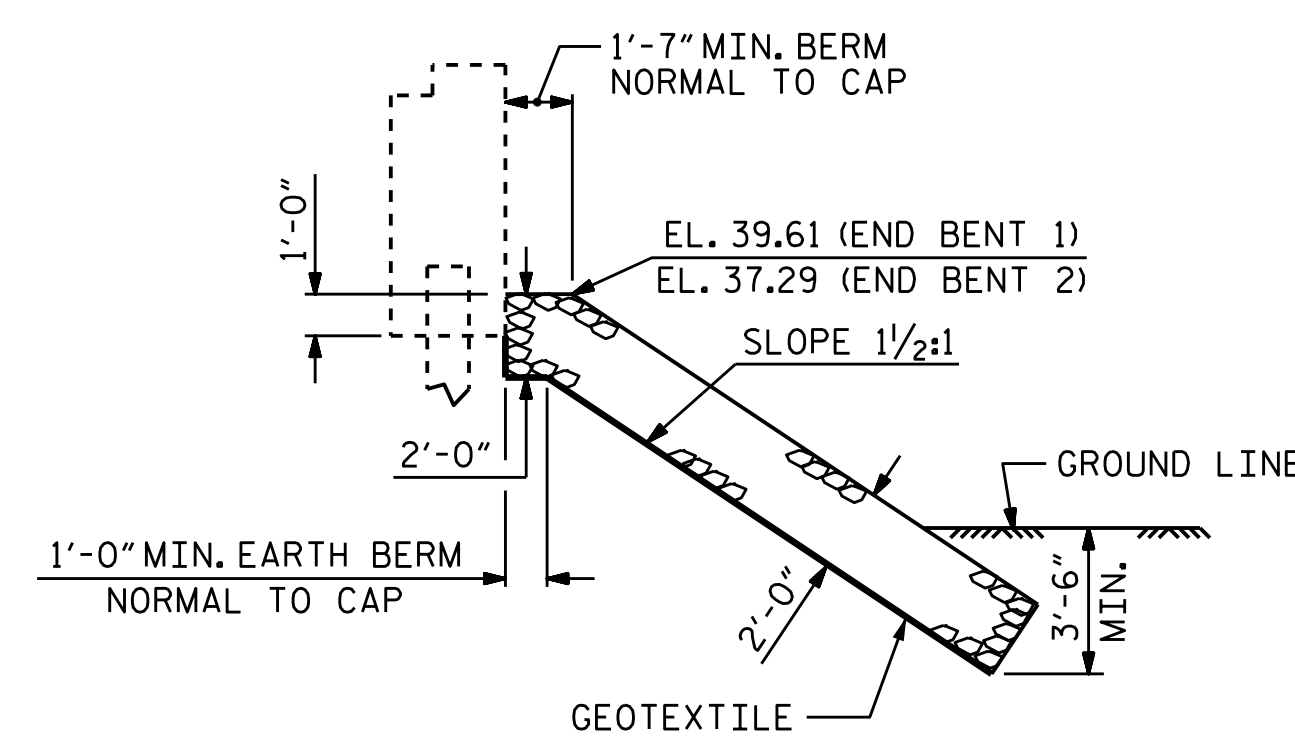


END BENT 1

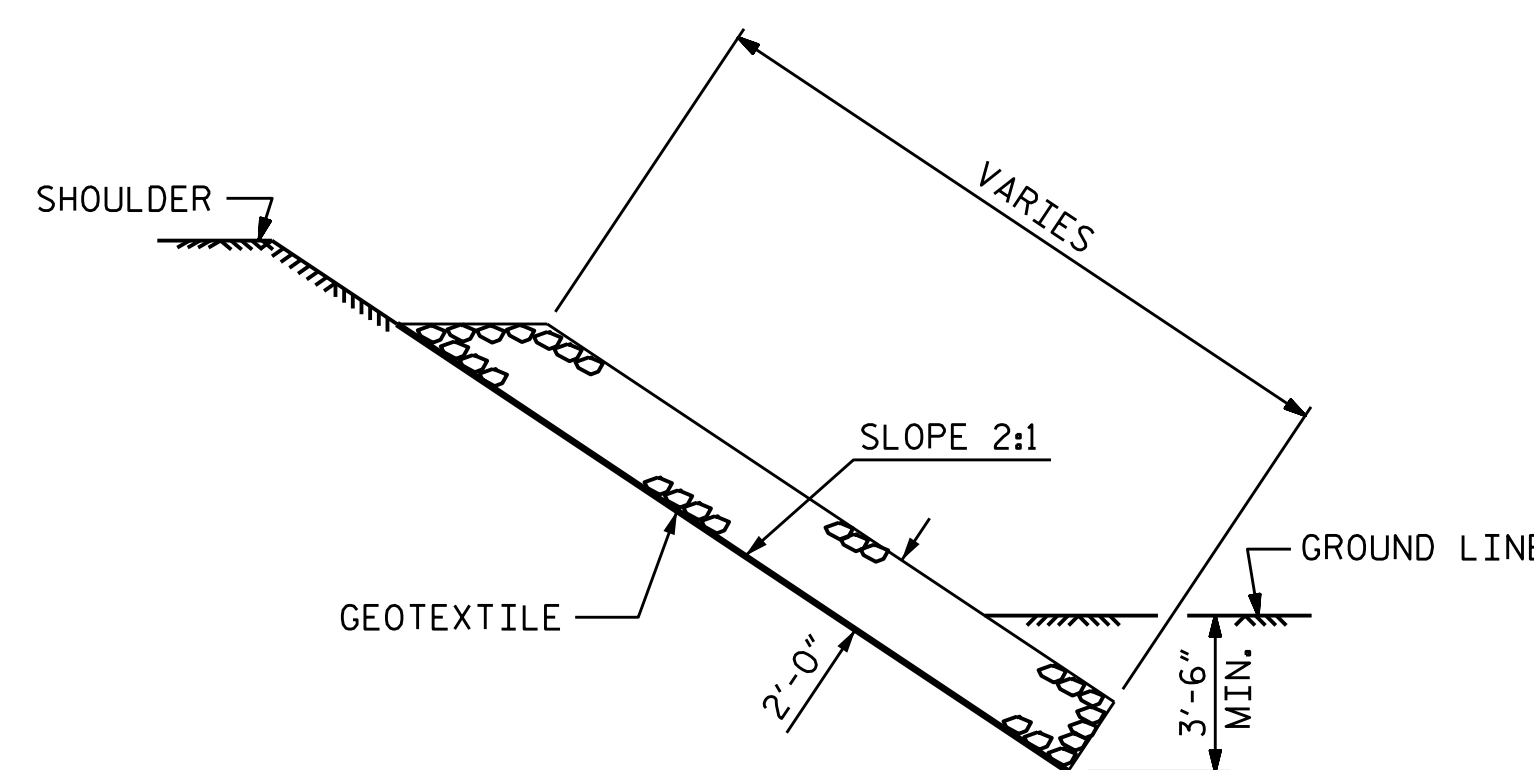
END BENT 2

PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 25+00.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	490	545
END BENT 2	390	435

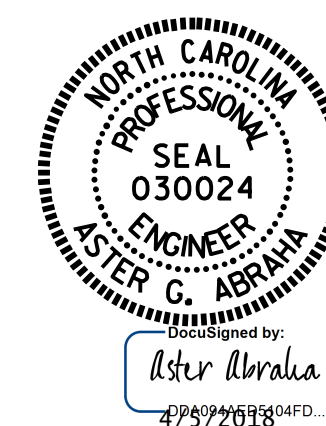


C SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4932
EDGECOMBE COUNTY
STATION: 25+00.00 -L-



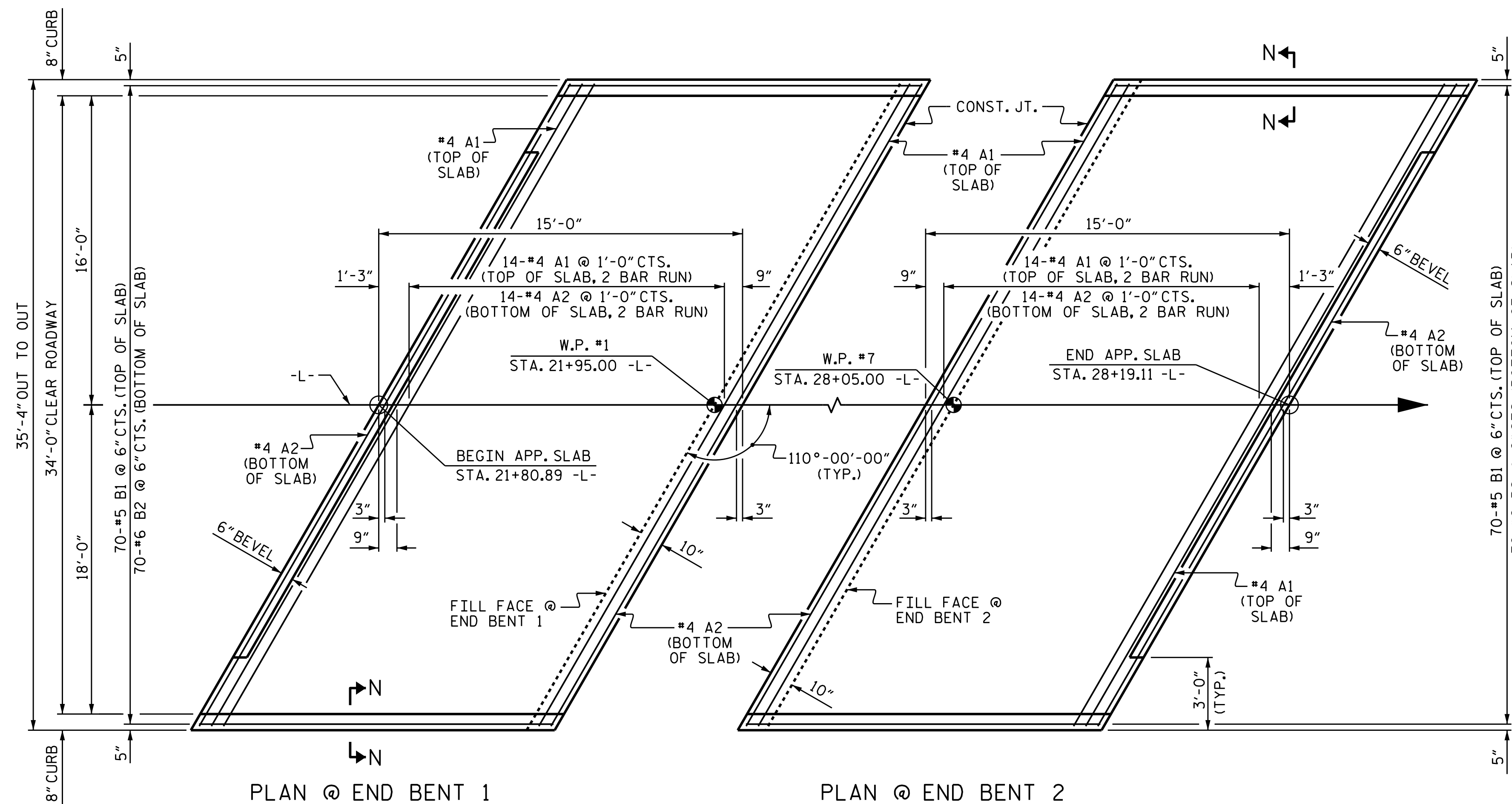
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

— RIP RAP DETAILS —

ASSEMBLED BY : M.K. BEARD	DATE : 11/27/17
CHECKED BY : G.W. DICKEY	DATE : 12/13/17
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : ROU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

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FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			46



PLAN @ END BENT 1 PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 6" 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.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

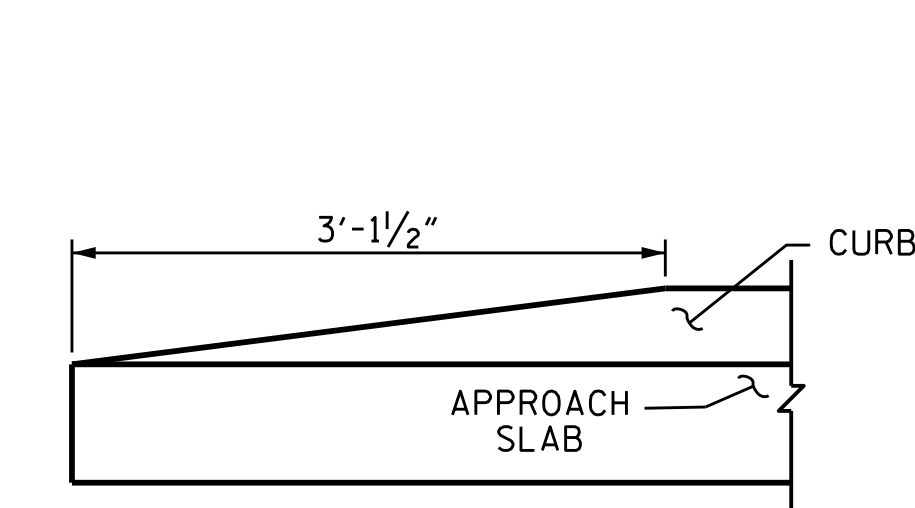
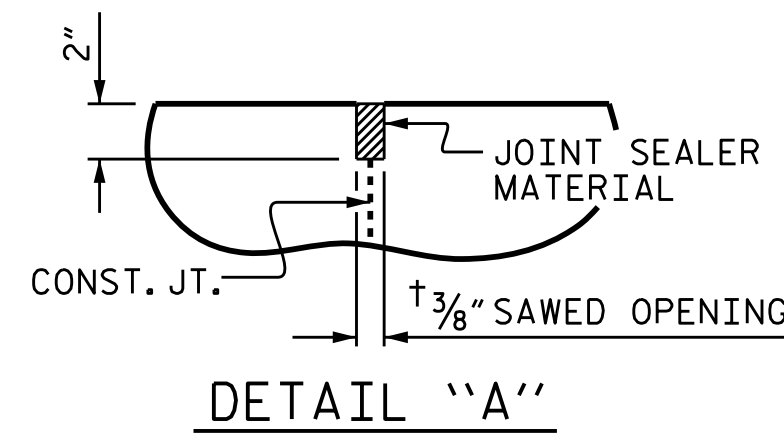
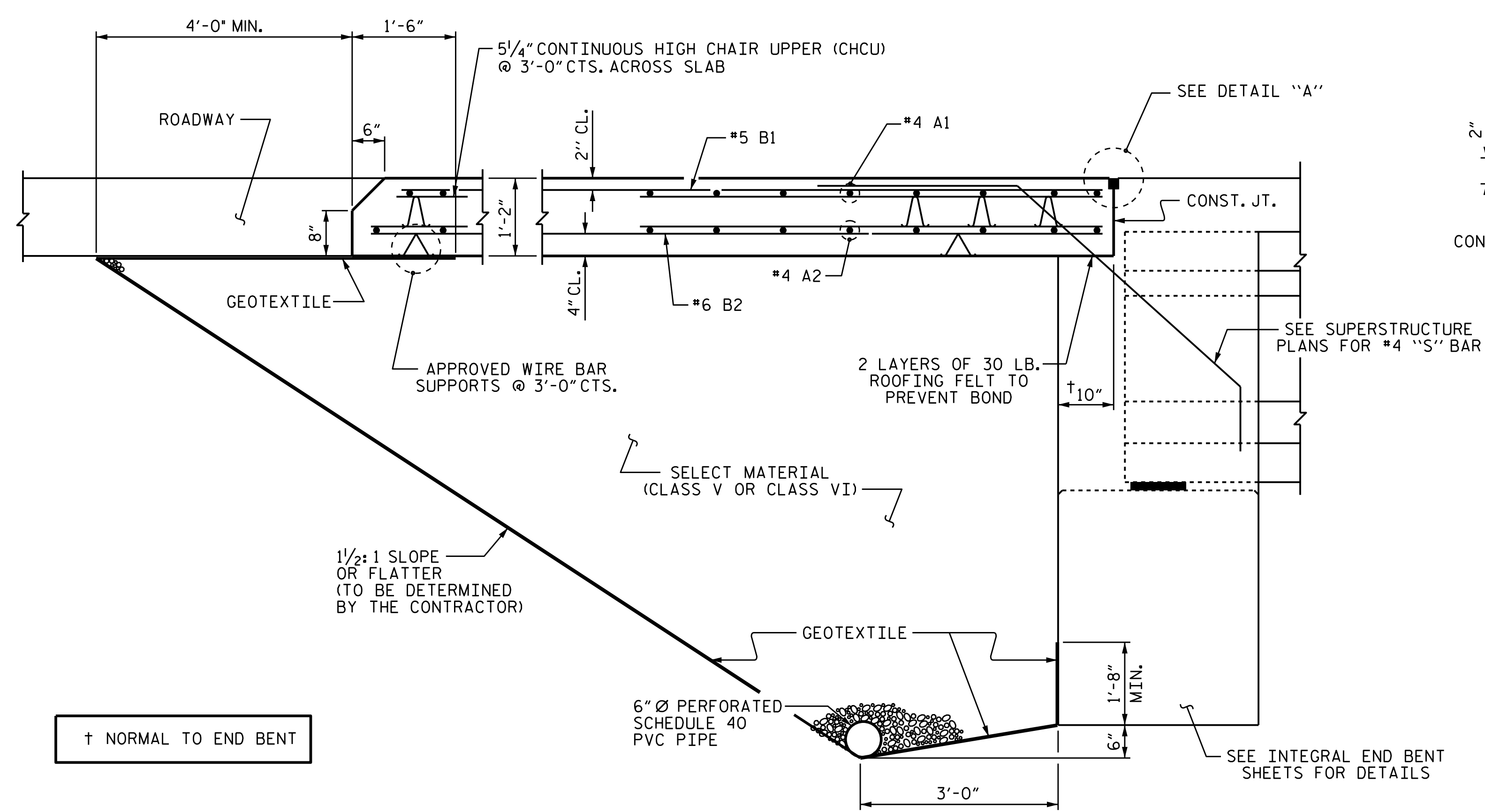
BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	19'-7"	419
A2	32	#4	STR	19'-6"	417
* B1	70	#5	STR	14'-4"	1047
B2	70	#6	STR	14'-8"	1542
REINFORCING STEEL				LBS.	1,959
* EPOXY COATED REINFORCING STEEL				LBS.	1,466
CLASS AA CONCRETE				C. Y.	22.9

SPLICE LENGTHS

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



SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)

PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 1 OF 2

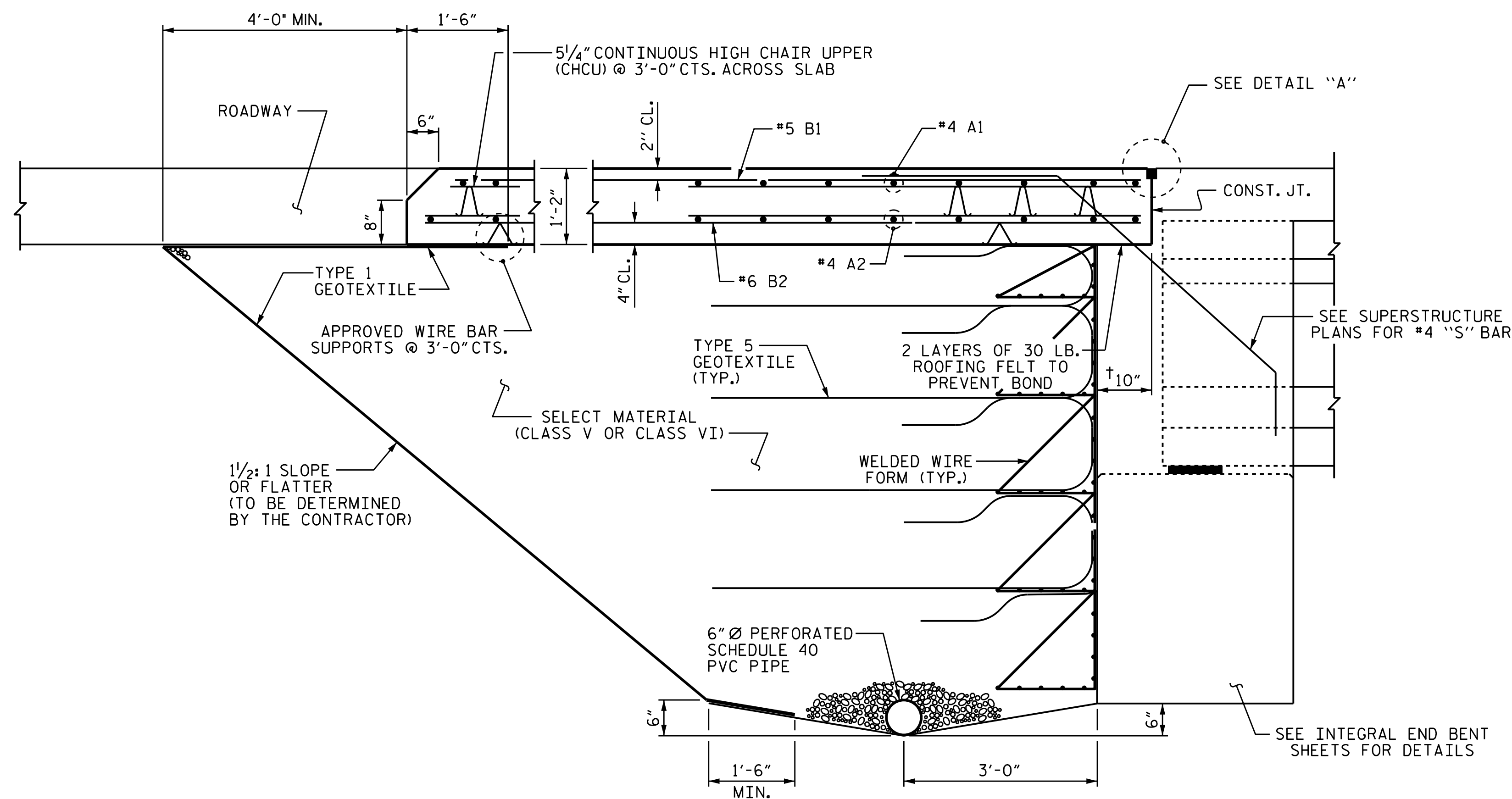
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT
 WITH FLEXIBLE PAVEMENT



ASSEMBLED BY : M.K. BEARD	DATE : 11/28/17
CHECKED BY : A. ABRAHA	DATE : 12/2017
DRAWN BY : TLA	10/05
CHECKED BY : GM	5/06
REV. 12/21/11	MAA/GM
REV. 6/13	MAA/GM
REV. 12/17	MAA/THC

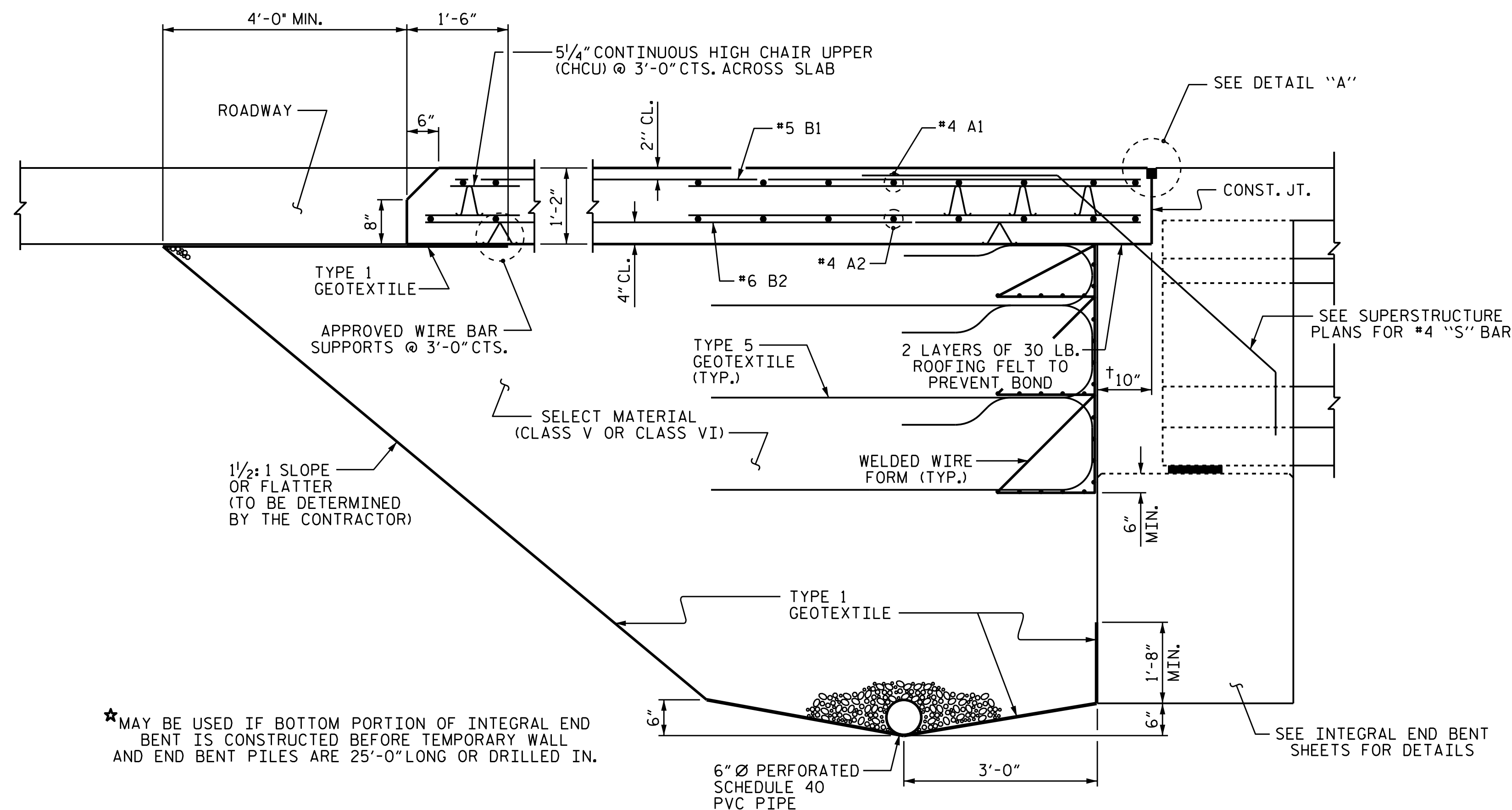
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS 46
2			4			



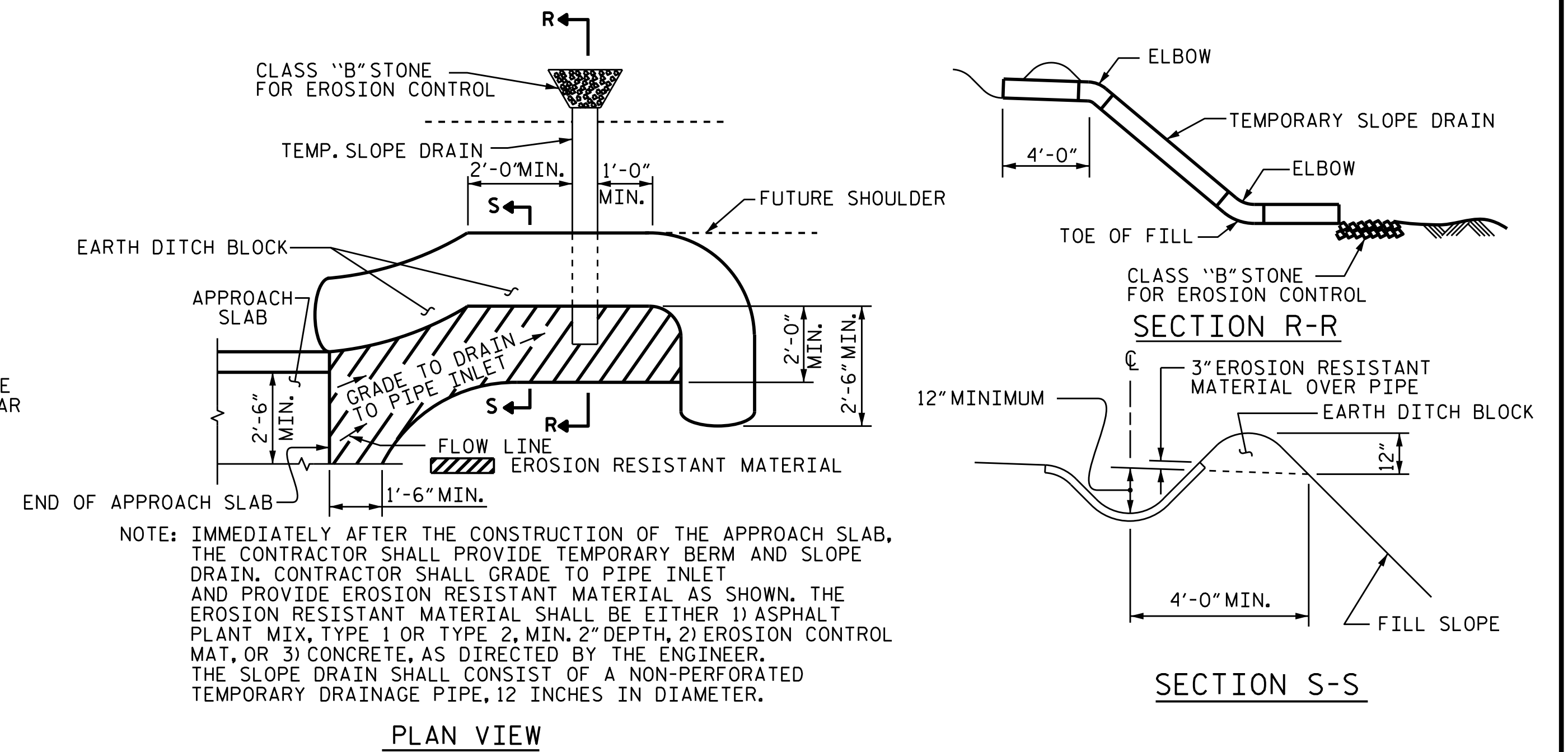
SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)



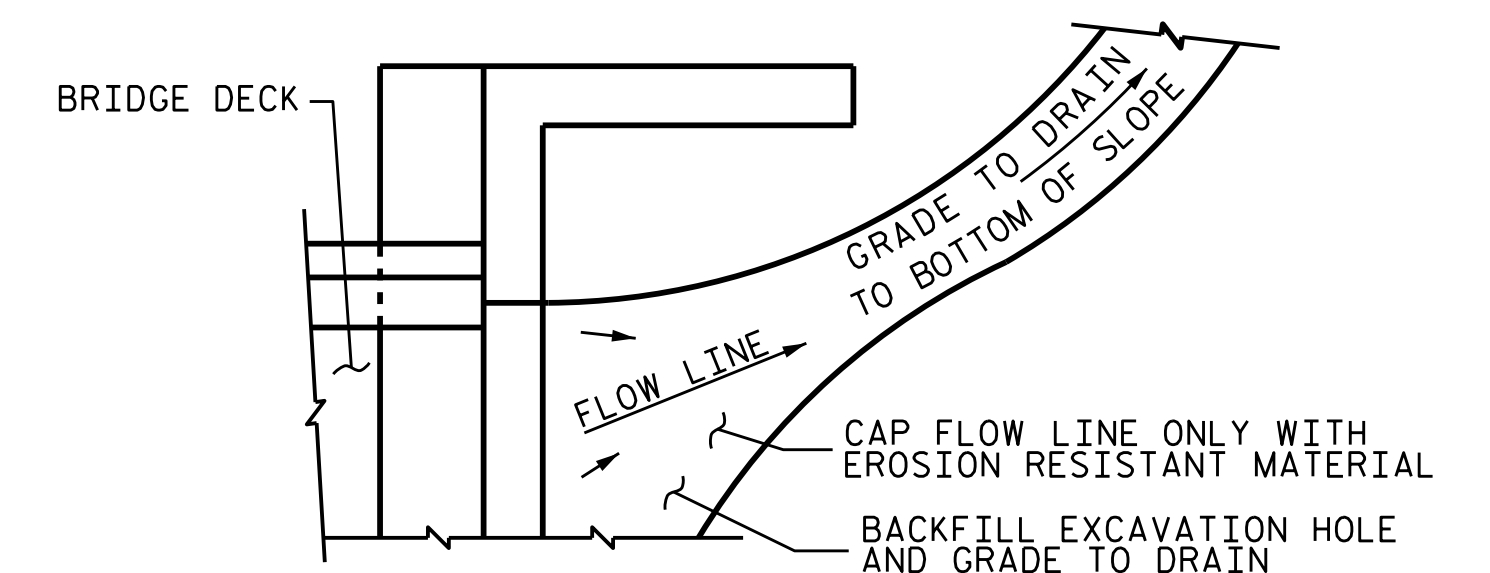
SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

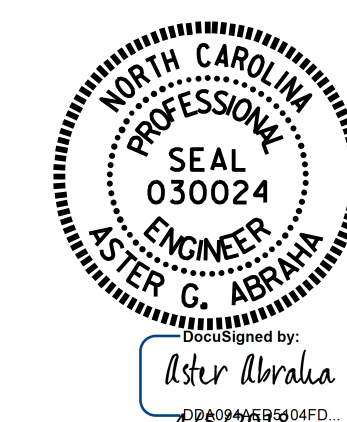
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 6" 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.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



PROJECT NO. B-4932
EDGECOMBE COUNTY
 STATION: 25+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

ASSEMBLED BY : M.K. BEARD	DATE : 11/28/17
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			46
2			4			46

STD. NO. BAS5 (SHT 1b)

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 2018 "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 $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " 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 $\frac{1}{4}$ " 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 $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset 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 $\frac{5}{16}$ " 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 $\frac{1}{16}$ " 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